Bee Culture

JULY 1994

Jul

COLUMNS

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FEATURES

Cover
Peters Mountain Mallow. A painting by Carol Happ, nationally recognized endangered species artist.

Peters Mountain Mallow
Peters Mountain Mallow is on the Endangered Species List. It is also pollinated by honey bees. This is truly an unmeasured value of bees and beekeeping.
(by Kim Flottum)
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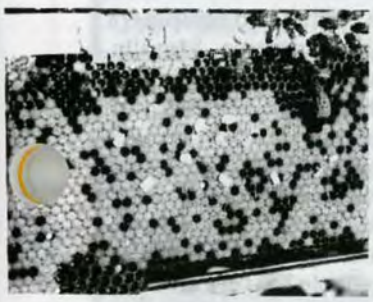

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Chalkbrood
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Death, Where Is Thy Sting?
The social implications of the honey bee's defense will determine much of what we will be able to do, and what should be done.
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INNER COVER

100 Down, And More To Come

This issue marks a milestone of sorts for me. Not major by the standards set by some editors, and certainly not if you consider those who have preceded me here. But nevertheless, any positive anniversary deserves mention.

This is the 100th issue of this magazine that I've had a part in. To me, that's 100 deadlines, 100 'Inner Covers', thousands of pages proofed, hundreds of articles chosen and edited well, you get the picture. It's been over eight years of once-a-month agony and ecstasy. Hard on the nerves and the lifestyle, but I wouldn't have missed it for the world. Not a single minute of it. Not one.

Lots has happened during that time. For sure. Actually, from where I sit more has happened in the last eight years than in the last 80. You can argue that if you want, but consider

The first Editorial I wrote urged readers to vote in favor of forming a nationally recognized commodity group – The Honey Board. Not the first time the concept had been tried, but the first time it became an institution that very soon became pervasive in our industry and in our society.

Right about then tracheal mites were making their presence felt for the first time and life as we knew it changed completely and forever.

Soon to follow were other aliens – *Varroa* mites, closely followed by the long awaited Africanized honey bees. It's been a real roller coaster ride, hasn't it?

Meanwhile, the USDA started playing with the support price, forfeitures skyrocketed, attention focused on honey subsidies and the beginning of the end began for that era of marketing philosophy.

Dovetailed (isn't this a great chance to use that oft misused term) with the decline in support came an incredible increase in honey imports. Not unexpected, all things considered from the global market perspective, but not at all pleasant nonetheless. The roller coaster is getting more fun, right?

Life at home has been far from dull, too. Right away, the Company changed their logo from the familiar script Root, to the skep insignia now seen routinely on all we do. Coincidentally, the candle side of the Company radically revamped their packaging format and, like a rocket, things changed there, too.

Shortly, the decision was made to discontinue the manufacture of bee supplies – a major, and in my opinion historic decision that decidedly changed the focus of the Company, and this magazine.

Then, the name of the magazine actually changed. The traditional, historic and familiar title *Gleanings* went away. From the regular *Gleanings In Bee Culture*, to simply *Bee Culture*. Boy, did that add a 360° loop to the roller coaster!

Actually, when I look back at the 20 or 30 years that came before, I wonder what people in this industry did for excitement. If I was in the bee business – queens, packages, honey, supplies – I suppose "predictable" was better (and more profitable) than all the surprises of the last few years. And profitable and predictable is good, don't get me wrong.

This magazine offers a window on what we do and think and experience. It has been one heck of a show. The last 100 issues is the start. What, I wonder, will the next 100 bring?

Fasten your seat belts and hang on friends, it should be an interesting trip. Have fun.

•

In this issue I urge you to read the article on using the much ballyhooed Information Superhighway. There's no getting around this phenomena. The major commercial players – Compuserve, On Line America and the rest are here to stay. And, the government's E-Mail program is growing in quantum leaps.

The good from all this is that, with very little energy and equipment you can tap the universe, literally. You can talk to nearly anybody nearly anwhere that has the same equipment and objectives you do. (And, I suppose, you can revel in *not* contributing to the Post Office's mess at the same time.)

The down side is that there is so very much available that it can overwhelm the merely curious. The same sort of sensory overload occurs when browsing in a really big bookstore.

Shortly, we hope to add to this cacophany of information. Initial plans are underway to make available, through your home (or office) computer, parts of each issue, articles and items not published elsewhere, perhaps a question and answer spot and more.

So stay tuned, "Gleanings On Line," soon will be.

Kim Flottum

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New Phones

If you've called here in the last 2 or 3 weeks you certainly noticed a change in how your call was handled. In early June the Company installed a completely new system. And, though you may disagree, it is an improvement.

On our old system if you called and the Editor wasn't in (an occasional occurrence), or our subscription desk was busy (an often occurrence), you had the option of leaving a message with the operator (which almost always got delivered), leaving a message on our answering machine, or trying later. Well no more!

Now, when you call, if we're not here you can, if you choose, leave us a message, renew a subscription, air a grievance, (or offer a compliment, which is always an option), report an undelivered issue, ask a question or whatever on our, yes, VOICEMAIL. Probably everyone is familiar with being on the receiving end of this technology – "If you wish to , Press one; If you wish to . . Press Two, etc." It can be frustrating because there's not a real person to ask, yell at, plead with etc. On the other hand, it makes communicating with us very easy, or at least easier, certainly safer, and generally more reliable.

So please call. Got a question about your subscription, missed an issue, want to place an advertisement, want to resubscribe (voice mail is 100% secure) call us at 1-800-289-7668 and, at the prompt, press (yes, you need a touch phone) 3220 – and you're in. Your message is *NOT* recorded on a little answering machine, but in the computer, only accessible by the security code only our subscription people know. Nobody else.

If you want to place a classified ad, simply touch 3215. If you want the Editor's office, same thing, only press 3214, leave your message, comment, complaint, etc. And we'll get back to you.

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Keep these numbers handy somewhere – 1-800-289-7668, ext. 3220 for Subscriptions or Advertising; ext. 3214 for Editorial.

We'll get right back to you.

29¢

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

MAILBOX

Beekeepers Stung

I found something interesting in our Sunday paper last week that I thought you'd find interesting.

Since when does honey come from a hornet's nest? Guess it was too hard to get a picture of a skep.

I will give them this much. It does appear that the insects are honey bees.

Jerry Dietrich
Fort Collins, CO

On Sunday, May 8, 1994 in the USA weekend section of the paper, Kraft Honey Dijon had an ad using a paper wasp nest with honey dripping out the bottom into a Dijon jar. The words, *A Taste That Was Meant To Bee,* were under this nest. We beekeepers all know this nest belongs to the wasp family

and not the honey bee. Whoever designed this ad must be very stupid. We have, for years, been trying to educate the public on the difference between honey bees and wasps, especially the yellow jackets. Over 37.5 million readers will see this picture and believe all bees are honey bees and when they get stung, we beekeepers will get the blame.

I intend to send a letter to the Kraft Company and ask them what idiot came up with this ad and picture. I hope your readers will do the same. Tell them it will be a cold day in hell before we buy this new dressing for our salads.

Kleber J. Minich
Natrona Heights, PA

Answered!

I asked for an explanation of what happened to my overwintering hives in the 'Bottom Board' column of the May, 1994 issue. Essentially what I asked was how could I get mite-like symptoms after using Miticur. Well, the March, 1994 issue of *BeeScience* seems to have provided the answer.

That publication reported on the American Bee Research Conference conducted September 27-28, 1993. One of the papers reviewed was a retest of the efficacy of Miticur for control of tracheal mites. Bill Wilson and Anita Collins, USDA-ARS Weslaco, made tests in the fall of 1992 and repeated them in the spring of 1993. Their conclusion, as reported in *BeeScience* was, "This clearly indicated the Miticur strips were completely ineffective (as) tracheal mite controls."

Dan Hendricks
Mercer Island, WA

Not All The Same

After buying a five-gallon tub of "Liquidose" #434 corn syrup and feeding it, I suspected trouble and called the company. They said stop feeding it – this was not fructose but high maltose. I thought corn syrup was corn syrup – especially if there was no ingredient label. Possibly you might inform readers of possible problems.

Wallace Cole
Washougal, WA

Looking . . .

I am looking for seeds or plants of a honeysuckle bush (not a vine) which produces an almost water white honey of excellent quality. This bush bears white flowers early in the spring and produces red berries later in the year. It is a valuable honey plant, but spreads so rapidly once established, that it is sometimes considered a nuisance. I do not know the name of this bush but if anyone knows what I'm talking about I would very much appreciate if you could direct me to a source of seeds or plants.

Henry Yoder
Route 1, Box 86
Flemingsburg, KY 41041

How Long?

I have a question that I have not been able to get a satisfactory answer for – perhaps you can help.

Is it possible for the *Varroa* and Tracheal mites to exist in a hive, after the bees have left the hive?

Steve Moritz
Dayton, OH

This Long: No bees = no tracheal mites. No bees = no *Varroa* mites, after a day or two at most.

Feeder System

After having tried virtually every type of feeder on the market, and having made several types which were modifications to the existing types, I have come up with what I believe is the safest for bees, and the best feeder type for all climates. One which feeds trouble free as the bees need it and is safe to leave on all year around.

It is made most easily from a standard non-telescoping hive top, by removing the two 1 x 2" cleats from each end, and placing them on the sides forming a shallow box. A piece of scrap screen should be stapled in the bottom of that box

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firmly to form an anchor to the feed which is poured in hot, which hardens to a taffy texture as it cools. The screen simply keeps it from falling onto the bees as it is used in place of an inner cover.

This is not new to many beekeepers but what the feed is made of is. I boil six cups of water in a five gallon bucket over an electric hot plate with a 1/4" thick aluminum plate between the bucket and the hot plate, for even heat distribution. Then I start to add the first of 50 pounds of sugar, mixing and keeping below 240°F. When all 50 pounds are added and the temperature is 240°F I mix in two pounds of pollen substitute. An electric mixer is necessary for this job but a drill motor and metal paint mixer will do.

Your confection should be clear before adding the pollen substitute and creamy white afterward. Use gloves to pour about a half gallon in each feeder, yes they should be on a level surface. This looks good enough to eat but save it for the bees, they'll appreciate it, and pay you back in the fall.

If you like, this is a good time to medicate, I use powdered sugar and Terramycin, one ounce as prescribed by the instructions which come with your particular mixture of the drug. Put it right on the bee's food after it has cooled, spread it out and atmospheric condensation will harden it up so that when it is placed on the bees none of it gets into the brood area accidentally. Never mix any medication with large quantities of food.

For Nosema and to calm the bees I use a spray of treated sugar water and Fumidil-B freshly made, I seldom ever use a smoker, and then only when gathering swarms. As you know my lower brood chambers and bases are all painted concrete, I place them on scraps of metal siding which is right on the ground. Generally a three foot step cut into a bank or hill side provides the platform. I always use screen to keep away the mice, because my openings turned out larger than I wanted them to be, a mold making error, but I haven't lost a hive using this system, we're at 72 hives now (not bad from two, four years ago) with 17 purchased queens and a half dozen swarms.

Yesterday, I visited a yard where my friend has, or had 11 hives and he lost seven to a bear, and I suspect winterkill. We're strapping our concrete hives as a precaution, and even though two were knocked over they weren't hurt. Had they not been so substantial I'm certain that the freezing rain would have killed bees in them. The bear wasn't able to get inside, we just stood them up on the ledge again, and by the way, on sunny days they're boiling from all four holes and the bottom. One hive had a bullet hole in it, from a muzzle loader, I found the flattened ball inside.

Steve Tuttle
Woodland, WA

Editor's Note: Mr. Tuttle has been working with his concrete hive bodies for some time now, and when ready, will give us more on how they work.

Good Frames

I am writing concerning Charles Simon's SuperUnfoundation® frames. I have known Charles for more than 25 years. When he came to me with his idea, I was skeptical. But now several years later, he has developed them, and I have tried them. In fact, I have some in my hives right now. They work! They produce quick and excellent comb. I have never seen better.

And I've seen quite a bit, being a life-time, third-generation beekeeper, 78 years old, co-author with my father of two books, *The Art and Adventure of Beekeeping* and *Mastering The Art Of Beekeeping*, and co-holder with him of the official world's record for honey production from a single hive in a single season with a single queen,

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404 pounds, in the *Guinness Book of Records* from 1976 through 1984.

Ormand Aebi
710 17th Ave.
Santa Cruz, CA 95062

Strong Stuff

As long as the National Honey Board continues to receive support from the honey packing industry it will support that industry. One would not expect it to bite the hand that feeds it. If it did not advertise for all honey, imported and domestic, the honey packers would not sell as much honey and the National Honey Board would receive less revenue. Like any other government bureaucracy bigger is considered better by that bureaucracy. They should call themselves the International Honey Board since they care only about total honey sales and (it seems) could care less about the American honey producer.

The American Beekeepers need to advertise. The housewife buys "Washington Apples" because the Washington apple growers advertise them. She looked for the "Washington Apple" sticker so much that other apple growers placed bogus Washington apple stickers on their apples. Remember, it was only last year? All the American honey producers need to do is run a few, short, clever, well placed TV ads showing the unsanitary conditions that exist in China and other third world countries verses our stainless steel and running water honey processing environment. How about a short clip showing the Chinese beekeeper using the rice patty for a toilet then extracting honey without washing his hands? Any container on the store shelf that stated it contained imported honeys would sit there until it couldn't be found for the dust. American honey would become so much in demand that the price would at least triple. Imported honey on the other hand wouldn't be worth a nickel a pound. The American Beekeeper is good at what he does and produces a clean safe product. Now he needs to learn a little about economics.

Greg Ferris
Indian Head, MD

Appreciates Weaver

We are writing this letter in appreciation of Weaver Apiaries of Navasota, TX. This spring we ordered Buckfast queens from Weaver Apiaries and Yugo queens from Howard Weaver & Sons. We truck our packages ourselves. This spring we drove to Calvert, AL and bought package bees from Andy Webb. Andy is a great guy to deal with and his bees are vigorous. But he doesn't deal in either Buckfast or Yugo queens which are what we had for our customers this year. It is quite a drive from NH to AL! The day of our arrival we received a phone call from home that the "Weaver with the Yugo queens" had called. They could not ship our queens for two to three weeks. This was the day the queens were due to be shipped. Here we are sitting in AL, 32 driving hours from home, and half our queen supply unavailable. Visions of irate customers ran through our minds. Why had they not notified us weeks ago?

A few phone calls later and we were on the right track again. Weaver Apiaries called us back and said they would take care of us. They mailed out Buckfast queens next day Express Mail. The queens were in the Post Office on the morning after our return home. (We got home at 11:30 p.m.)

We would appreciate you publishing this letter as we feel more beekeepers should know that there are still large suppliers out there that come through. We are a "little guy" in the beekeeping business and it would have been just as easy for them to say "sorry can't do it" or "we have to take care of our big customers first." They didn't – they went out of their way for us and we appreciate that so

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MAILBOX

much. We want to share our appreciation with your readers.

Tom Weigelmann & Paula Morse
Wiegelmann Apiaries & Suppliers
Bradford, NH

Good Idea, Great Targets!

Great magazine. Something new every issue. Back a couple of months you ran a review on a top cover with a hole cut out to accept a jar for feeding. It combines the features of having the food over the brood and visibility and doesn't upset the hive so much when you go to add more.

So, having some extra all wood covers I made up a few for test purposes. They work great until the local juvenile delinquents use the jars for targets. I have since modified them by adding a small box (open to the top) around the jar. Three quarter inch pine stops pellets and BB, sometimes stops 22 RF, can't do much if they're shooting a 30'06 though!

David Verville
Plaistow, NH

Bottom Board Believer

When my April issue of *Bee Culture* arrived I was surprised to find that it contained no 'Bottom Board.

I hope the omission of the *Bottom Board* was just for this issue and not a permanent thing. That section of the magazine is one of my favorites.

On another note, am I the only one out there who finds it a bit ironic that government entomologists seem to be pushing so-called non*Apis* bees as pollinators at a time when many beekeepers are dependent on pollination contracts to stay in business? And why is so little research being done by the government on mites and mite-resistant bees? If one didn't know better (and one doesn't), he might conclude that they just don't care. Do they?

Richard Taylor
Interlaken, NY

Royal Headache

This is in response to the notice that warns against the use of royal jelly as proclaimed by the organization called Center for Science in the Public Interest in the May issue Pg. 312.

I hope that the readers realize that what is at stake is the freedom to heal ourselves. To prove that Royal Jelly is truly harmless, to the satisfaction of the FDA will cost someone many millions in redundant studies and paper work. To prove royal jelly is an effective medicine would cost many more millions.

After this exhaustive expenditure will come attacks against the use of pollen, propolis and raw honey.

How does the United States stay "the land of the free and the home of the brave?"

Lois Bowker
Caldwell, OH

Guest Editorial

DROP ALL REGULATIONS?

bob cox

On behalf of the Apiary Inspectors of America I would like to respond to Dr. Roger Morse's recent article entitled "Drop all Regulations" in the April *Bee Culture*. The main message I received in the article was: Drop all apiary regulations and divert the funds from the apiary inspection programs into research and teaching programs like his.

Many of the state apiarists around the country have had some research, as well as commercial experience in apiculture. I am no exception. In fact, my work experience at the USDA's Laramie Bee Disease and Weslaco Bee Mite Research Laboratories in the 1980's especially equipped me to do apiary inspection work. As a group, apiary inspectors appreciate, support and participate in the very activities Dr. Morse is attempting to promote in his article.

However, the idea of completely eliminating *all* apiary health regulations is unconscionable. Health regulations for Man and his livestock go *way* back!

Even before Christ, health regulations for livestock appeared in various cultures. For example, Ancient Greece had laws for apiaries. In the Old Testament health regulations for people and livestock are established. The book of Leviticus describes various inspections, treatments and quarantines enforced by the ruling authorities of the day. Laws and rules never seem easy to live with at the time, but in the long run the wise, prudent and patient enforcement of health rules will help us avoid some unforeseen catastrophe in the beekeeping industry.

Even the article itself is contradictory. In the title and twice in the body of the article it is stated that we should "drop all regulations." Then, at the end of the article (when everyone is tired of reading and many have gone on to other articles) it states that "While I don't think everyone should be allowed to import bees, or that it should not be done without some guidelines, there is need for change." Of course there is a need for change! We *have* been and will continually need to rechart our course as the landscape changes in beekeeping.

Like most people I resist change initially, until I can be shown an overwhelmingly convincing argument demonstrating why I *should* change. Hence, the last few years have been very difficult for most of us in the beekeeping community with the advent of parasitic mites and Africanized honey bees in the United States.

> "Apiary regulations have changed considerably in the last 10 years. Most have made it less restrictive on most beekeepers."

Many things have changed in apiculture: research techniques, focus of research, funding restraints, closing of research laboratories, beekeeping management practices, government price support and loans, volume of imports, honey marketing and promotion (creation of the National Honey Board) and yes, even apiary regulations. Many of these changes have been painful, but necessary in some cases.

Apiary regulations have changed considerably in the last 10 years. Most of these changes have made it less restrictive on most beekeepers. Let's consider Federal apiary regulations. How often have live bees been legally imported into the United States since the 1920's? However, in the last five years two such shipments have been approved (i.e. Roger Morse's British bees and the "Yugo" bees). In response to the migratory beekeeping industry, the federal *Varroa* mite rules were dropped within a month of being adopted. Compare our federal rules to a close neighboring country, like Canada? Their rules are just as strict about importing U.S. bees at the present time.

On the state level, laws and regulations have been changed to better fit the present level of technology and economic constraints on the beekeeping industry. Most state departments of agriculture would like to make sure that their state's apiary laws and regulations are reasonable and those desired by the beekeeping industry. Consequently, advisory boards or panels have been established with state beekeeping organizations to guide changes in state apiary regulations most of the time.

For example, American foulbrood disease and *Varroa* mites must be cleaned up when detected according to Iowa law, but using available technology. The concerned beekeeper is allowed to use Terramycin and Apistan strips when appropriate to keep destruction of equipment and bees to a minimum. Ample time is given to complete the procedures necessary to clean up the disease. If fewer than 10 *Varroa* mites are detected with the "ether roll" test with 300 bees, then the mites must be treated some time before October 15th of the same year. This keeps reservoirs of *Varroa* mites lower, reducing the threat to neighboring beekeepers, yet does not disrupt our main honeyflow in Iowa. This is similar to the September "plow down date" that is enforced in South Texas to control the boll weevil in cotton.

So far I have established that everyone hates change, but we have changed apiary regulations to fit the present situation as best we can. When you consider Dr. Morse's contradictory statement at the end of the article, it appears that he assumes

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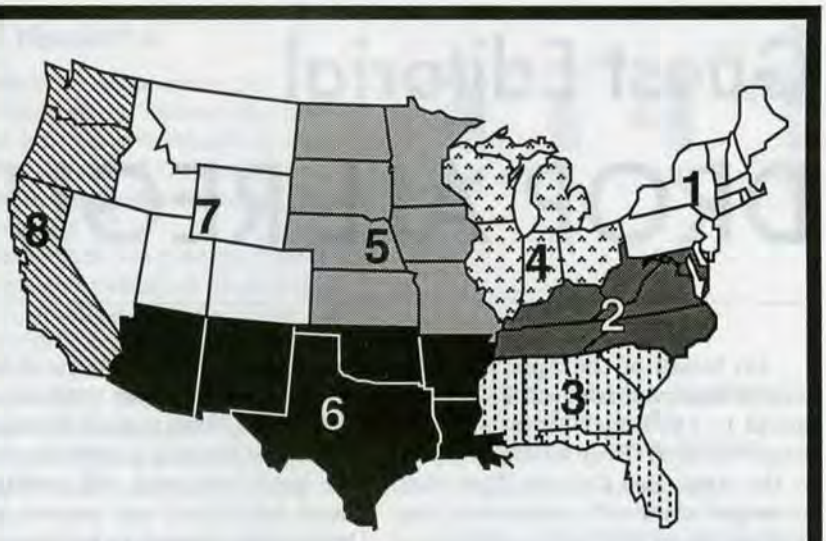
JULY Honey Report

July 1, 1994



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			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Bulk												
60# Light	43.44	46.00	45.58	44.50	41.50	44.08	45.58	49.00	33.00-58.00	45.75	44.06	41.96
60# Amber	41.69	43.25	43.50	40.10	50.00	41.63	44.83	42.00	33.00-58.00	43.49	42.93	39.32
55 gal. Light	0.56	0.50	0.65	0.48	0.53	0.53	0.65	0.52	0.48-0.90	0.58	.60	.578
55 gal. Amber	0.51	0.49	0.45	0.40	0.57	0.50	0.57	0.46	0.40-0.78	0.53	.55	.528
Wholesale - Case Lots												
1/2# 24's	19.75	24.45	18.00	19.80	18.15	20.25	22.08	18.00	17.35-28.00	20.90	21.71	20.28
1# 24's	29.61	31.02	30.00	32.60	29.40	30.50	30.95	31.20	24.00-37.90	30.95	30.49	29.33
2# 12's	26.98	29.47	28.00	28.80	26.28	26.75	28.87	28.87	22.80-35.31	28.50	29.25	26.91
12 oz. Plas. 24's	26.37	28.03	24.00	27.40	25.00	25.25	29.42	25.20	22.90-37.90	27.45	28.24	25.45
5# 6's	28.17	28.58	31.50	32.33	24.00	27.25	28.69	28.69	18.00-38.00	30.07	30.14	28.53
Retail Honey Prices												
1/2#	1.37	2.05	1.08	1.92	0.99	1.39	1.92	1.10	0.90-3.50	1.35	1.26	1.15
12 oz. Plastic	1.55	1.71	1.89	1.74	1.33	1.54	1.60	1.70	1.19-2.00	1.62	1.66	1.51
1 lb. Glass	1.78	1.96	1.91	2.14	1.69	1.82	1.97	1.73	1.39-2.69	1.83	1.82	1.76
2 lb. Glass	2.98	3.34	3.25	3.44	2.78	2.59	3.07	3.07	2.09-3.99	3.13	3.39	3.03
3 lb. Glass	4.19	4.70	4.50	5.69	3.65	3.86	4.53	4.13	3.50-5.69	4.41	4.24	4.32
4 lb. Glass	5.11	5.50	5.50	5.81	5.81	4.80	5.81	5.81	4.49-7.40	5.55	5.64	5.25
5 lb. Glass	6.58	6.82	6.90	6.90	5.99	5.97	7.24	6.63	5.89-8.95	6.87	6.31	6.45
1# Cream	2.27	2.05	1.99	1.89	1.99	3.15	2.62	2.85	1.49-4.00	2.37	2.20	2.22
1# Comb	2.68	2.18	2.63	2.80	2.98	3.71	2.80	2.75	1.50-4.00	2.90	2.86	2.99
Round Plastic	2.51	2.50	3.00	2.89	2.89	3.50	2.89	2.00	2.00-4.00	2.66	2.89	2.73
Wax (Light)	1.82	1.13	1.63	2.28	2.65	1.85	2.28	1.33	1.00-4.00	1.85	1.73	1.68
Wax (Dark)	1.33	1.05	1.25	1.68	1.68	1.08	1.68	1.20	0.95-2.75	1.35	1.76	1.33
Poll. Fee/Col.	29.65	30.00	30.00	32.50	25.00	17.50	35.00	31.00	15.00-55.00	31.00	30.77	30.11

MARKET SHARE

The first season without a subsidy. The loan program is still there, but what happens when producers can't repay loans because they can't sell (no buyers), or can't make a profit (buyer's prices too low)? Well, the honey is sold by the government to pay the loan. And you thought imported honey was cheap! Fire sales aplenty this fall. Watch out.

Region 1

Honey crops looking to be about average this season; cold winter and cool spring contributed to slower than usual buildup. Sales and prices steady to increasing a bit.

Region 2

Summer crop should be average to a bit above due to good start this spring and normal summer flows. Local honey doing alright with prices and sales steady, but fall will tell different story, perhaps.

Region 3

Dry spring has slowed buildup, so crop looks to be only average. Sales and prices of local honey strongly affected by imports and non-local product.

Region 4

Long hard winter and cool spring slowed buildup across the region. Mites have taken their toll, too. Early summer was dry which slowed flows even more. Average expected though by season's end. Sales and prices steady.

Region 5

Sales and prices of local honey holding even for now, a good sign. In spite of hard winter, spring buildup generally strong and fast and prospects for above to far above average crop looks good.

Region 6

Mixed reports on early spring results but some places too wet, some too dry now. Overall an average crop expected, but hot and cool spots will abound. Sales steady with prices the same.

Region 7

Early summer flows seem to be average to better this year, promising at least an average crop, but most likely even better than normal. Sales and prices steady to declining a bit as warmer weather comes in. Local honey still commands a better price, but fewer sales.

Region 8

Spring and summer buildup average to strong along whole region. Swarming heavy in southern areas but lighter up north. Many operations heading or already east for the Dakota crop. Prices and sales steady, but imports a big part of the picture.

EDITORIAL ... Cont. From Pg. 387

that each and every beekeeper will just be careful not to harm beekeeping out of goodwill and concern for his fellow man. That's a false assumption. He should read the headlines of the newspaper sometime. Good laws that are enforced fairly protect us and give us guidance in life. Isn't that what we tell our children when instructing them?

There are many ways to promote beekeeping and solve it's problems. Extension, teaching, and research are all important tools in enhancing the health of the industry. However, regulation of diseases and pests and honey promotion also aid the industry. Most state apiary inspection programs are involved in all of the above to a greater or lesser degree. For instance, Iowa State University no longer does any research, teaching or extension in apiculture. These functions are now performed by the state apiarist and his assistants in cooperation with the state beekeeping organization. Without the state apiarist position there would be little honey promotion, teaching, extension, or research activity in apiculture carried out in Iowa. It is unlikely that money from the state department of agriculture would be diverted into university or USDA research if all apiary regulations were dropped. We are a small enough interest group that we should work together for our cause — beekeeping — and not fight amongst ourselves or else we will simply get less and less of the pie.

Should we drop all regulations? Certainly not! Should apiary regulations change gradually when there is good reason to alter them? Yes! If you have opinion on this subject, I would like to hear from you and so would your state apiarist. BC

Bob Cox is the Iowa State Apiarist, and the President of the Apiary Inspectors of America. He can be reached at (515) 281-5736, Henry Wallace Building, Des Moines, IA 50319. You can reach your state apiarist by obtaining his/her address from the 'Who's Who In Beekeeping' Directory published in the April Bee Culture, *or calling us directly. We will be happy to help.*

Book Review

Bee In Balance - A Guide To Healing The Whole Person With Honey Bees, Oriental Medicine and Common Sense.

Amber Rose R.A.C., L.C.S.W., ISBN 0-9641810-0-2 Soft. $34.95

There has been, almost forever it seems, a mystique surrounding the term 'Apitherapy' At its worst most people not connected with beekeeping have viewed it as falling in the realm of 'almost witchcraft.' Mostly it has been thought of as a folk remedy that was probably harmless, and certainly unscientific.

To make myself perfectly clear, Apitherapy encompasses the use of all the products produced in a beehive in a healing manner. These include honey, propolis, wax but certainly most famous is bee venom. And that's what this book, for the most part, discusses.

But there is more, as the title indicates. And acupuncture, too, often falls under the 'folk remedy' mystique. This therapy though has a more traveled history than apitherapy.

Amber Rose worked closely with both Charles Mraz and Pat Wagner when researching this book. From them and others she learned the basics of Apitherapy. She learned the fundamentals of handling honey bees, and the people who are being stung.

But this book covers more than how to sting people, where to sting people, how often to sting people, how many times to sting people and when to quit stinging people. It covers 'why' sting people and, to my mind what's even more important, all the things that are going on in that person's mind while they are being stung, and what you can do about it. There's a lot of information here about bees and people, but there's also a lot about people, which, I think, is probably more important in the long run than just how stinging works.

There is also in this book extensive information on the practice of Acupuncture, but during my review I did not have access to that. Which, I think, is just as well because I have absolutely no background in it. The author does, however, being a trained and certified practitioner. And, I discovered there are many similarities between the two – acupuncture and apitherapy Certainly many of the treatment sites are the same, and if those positions work they work for similar reasons, and if they don't similar techniques can be used to help. It is a marriage of therapies that many endorse.

Charles Mraz, the Guardian of American Apitherapy (my term) has contributed a long and revealing foreword to this book. It is standard Mraz, if you are familiar with his style. His admiration for this work is unabashed which says much for the author, her skills and her product.

Apitherapy may soon be considered real medicine because of the efforts of Charles Mraz, Pat Wagner, Amber Rose and the legions of followers they have. *Bee In Balance* is a good first step.

RESEARCH REVIEW

roger morse cornell university ithaca ny

"The more we learn about the pollination of the plants that are important to us, the less, it seems, we know."

Studies with cotton in Arizona indicates that there is insufficient pollen moved from one forager bee to another forager in a hive to have an effect on pollination. In the case of apples and sunflowers it has been shown that pollen from one field bee can be brushed onto another bee in a hive and the second bee can transfer the pollen from her body onto a flower's female part, bringing about pollination.

All pollen transfer is accidental. Honey bees do not purposefully set out to pollinate flowers. The bees are interested in gathering pollen and nectar, their chief foods. Pollination takes place because of the design of the flowers.

The authors below write, "Cotton stigmas need approximately 100 viable pollen grains to set a full boll." There are about 30 seeds in a normal boll. They state further, "It does not appear that foragers can obtain sufficient pollen solely from pollen transfer in the hive to set a boll with a single visit to a flower."

These data emphasize that one cannot make too many general statements about pollination. We know that some pollen is tranferred between bees in a hive but how important this may be in practical agriculture varies from one crop to another. A peach, for example, has one seed (pit) and only one pollen grain is needed to set fruit. Cotton is obviously different. Each crop must be judged by itself, taking into account the amount of pollen needed, flower structure and a host of factors that affect pollen tube growth and fruit development.

Sex Life of The Avocado

Avocados go to an extreme to prevent inbreeding. The flower opens twice. In the first stage, the stigma, the female part, is receptive to pollen and fertilization may occur if pollen is deposited on it. The flower then closes and opens the following day at which time the stigma is withered and the anthers shed pollen, which they did not do the day before. Interestingly, a single inflorescence on a plant may have both types of flowers open at the same time. Thus, while pollen from a flower cannot fertilize its own female part, flowers on the same florescence may fertilize one another. This, of course, is still inbreeding since both are on the same plant.

There are two types of flowers opening in avocado. The type "A" flowers open in the morning of the first day and the afternoon of the second. The type "B" flowers open in the afternoon of the first day and the morning of the second. Growers must therefore interplant type "A" varieties with other type "A" and type "B" with type "B" so as to have plants in flower at the same time and to bring about cross pollination.

Avocados are different in another way. A mature tree may produce about a million flowers but only one or two percent set fruit. The flowers are small, only about half an inch in diameter. This differs from apples where seven percent of the flowers may set fruit, or blueberries where nearly all of the flowers form fruit. Since an avocado fruit may weigh a pound there is obviously an overabundance of flowers but nature is well-known for being wasteful in an effort to make certain that reproduction takes place.

A recent study in Israel shows that honey bees collecting pollen and/or nectar cannot avoid the sexual parts of the small flower. The pollen collectors appear to be better pollinators.

When honey bees visit avocado flowers the pollen appears to accumulate in specific areas on their bodies, areas that the researchers call "collection sites." However, these same sites that collect pollen as a result of touching anthers also easily come into contact with the female part of the flower. In the case of avocado there is probably little accidental exchange of pollen within a hive as bees brush by each other.

Avocados originated in Central America where there were no honey bees. The authors of this paper suggest that honey bees are not well-suited for avocado pollination, a statement that I think conflicts with their data. In the United States, 85% of all avocados are grown in California where about 100,000 colonies of honey bees are rented for pollination each year. That's a little over a colony per acre. The rest are grown in southernmost Florida where fewer colonies per acre are rented. BC

References:

Loper, G.M. and G. DeGrandi-Hoffman. *Does in-hive pollen transfer by honey bees contribute to cross pollination and seed set in hybrid cotton?* Apidologie 25: 94-102. 1994.

Ish-Am, G. and D. Eisikowitch. *The behavior of honey bees visiting avocado flowers and their contribution to its pollination.* Journal of Apicultural Research 32: 175-186. 1993.

? DO YOU KNOW ?

A Bit About Bee Biology

clarence collison

Recently I participated in an ecology day at a local elementary school, talking about the importance of honey bees to man, birds and wildlife through their pollination activities. In addition I took the opportunity to promote honey and taught the children how to react whenever they encountered a stinging insect. As usual the observation hive was the highlight for all age levels and seeing the queen was the most exciting part of the activity. Many beekeepers are often asked to give similar programs in schools and to various adult organizations. Each time I make a presentation like this I am always amazed at how little the general public knows about honey bees, the products of the hive and the value of our industry.

How familiar are you with basic bee biology and these other important related areas? Please take a few minutes and answer the following questions to determine how well you understand these important topics.

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. ___ Queen honey bees lay eggs throughout the day and night.

2. ___ Populous colonies with older queens tend to produce more drones than small colonies with young queens.

3. ___ All three types of brood-cells found in a honey bee colony are reused for brood production.

4. ___ Bee space (the distance between combs and the exterior parts of the hive) is 1/2 to 3/4 inches in width.

5. What is the residue remaining after the wax rendering process? It is composed of wax moth cocoons and detritus from the brood nest and is usually dark brown to black. (1 point)

6. What are the two primary functions of comb in the honey bee colony? (2 points)

7 A _____ is a chemical excreted from the exocrine glands of an animal that elicits a behavioral or physiological response by another individual of the same species and so acts like a chemical message. (1 point)

8. Describe two different approaches that a beekeeper can use to move a hive of bees in the back yard 30 feet. (2 points)

9. What are two disadvantages of starting a colony from a captured primary swarm rather than purchasing a package. (2 points)

Please select the correct answer from the list below for the questions that follow:

A. Workers Only
B. Drones Only
C. Queens Only
D. Workers and Queens
E. Drones and Queens
F. Drones and Workers
G. Workers, Queens and Drones

10. ___ Have a sting.
11. ___ Gather nectar and pollen from flowers.
12. ___ Lays fertilized eggs.
13. ___ Produced from a fertilized egg.
14. ___ Have both compound and simple eyes.
15. ___ Body tissues contain 32 pairs of chromosomes.

16. Please explain why the American Indians referred to the honey bee as the "white man's fly." (2 points)

17 Please explain why the cappings over the brood cells are colored differently than those placed over cells of honey. (2 points)

18. Under what conditions will you possibly find two laying queens in a colony? (1 point)

19. What are the two basic steps associated with a newly emerged virgin queen destroying all other queen cells present in the hive? (2 points)

Answers on Page 420

PETERS MOUNTAIN MALLOW

The most undervalued aspect of the honey bee is its contribution to the continuation of the natural beauty of our land. Their visits to the floral virgins that cascade down hills, stay hidden in forests or flourish in gardens and yards are the make-or-break for the next generation of seeds and plants and once-again flowers.

The Peters Mountain Mallow is one of the plants that benefits from the honey bee's continuous quest. Perhaps more than most, the Peters Mountain Mallow needs the honey bee's pollen transfer services – this surreal translucent flower is near the top of the federal list of endangered species.

Discovered in 1927 by West Virginia botanist Earl L. Core, the original stand of nearly 50 plants was found growing in soil-filled pockets and crevices on a sandstone outcrop near the summit of Peters Mountain.

But by 1986 that population had fallen to *only four plants*, and the Virginia Chapter of The Nature Conservancy, by 1992, had acquired title to the land to protect its habitat. They now own the 400 acre "Narrows Preserve" that holds the Mallow. Further, federal laws have since been amended to extend criminal sanctions against individuals who trespass, remove or destroy endangered species which includes the Peters Mountain Mallow.

Once protected, a recovery team, established by the U.S. Fish and Wildlife Service, VA Dept. of Ag., VA Division of Natural Heritage and VA Polytechnic Institute and The Nature Conservancy set out to learn more of the Mallow's biology and habitat. Dormant seeds found at the site were sent to the University of Kentucky where it was discovered that fire was required to begin germination. Planned burns, though difficult to control exactly, will help Peters Mountain Mallow once again thrive in the sandstone outcrops on the high points of Virginia.

Can a value be placed on the loss, or salvation, of a single species of plant?

But a second, though certainly less noticed threat is occurring that could certainly hamper the return of this rare and beautiful flower. And that, of course, is the dwindling population of honey bees, in Virginia and elsewhere.

Pollination of the Peters Mountain Mallow is facilitated by other insects seeking both nectar and pollen, but honey bees are far and away the most efficient of these agents. And with encroaching urbanization, pesticides and other man-made dilemmas, these other, natural pollinators are disappearing, too.

This decline, coupled with burn restrictions have led the Peters Mountain Mallow right to the edge of extinction, and it is not known, nor will be for some time whether it can recover in its natural habitat. The prospects are indeed dim.

But Peters Mountain Mallow is definitely a honey plant. And, though it may not play a significant role in producing a honey crop, honey bees play a life-and-death role in its survival. And, one wonders, can a value be placed on the loss (or salvation) of a single species of plant?

•

Carol Happ has spent her artistic career pursuing the rare and endangered floral species of America. Starting in her native Ohio, she has expanded her horizons and her audience internationally.

These hard-to-find plants are exactly that, and Carol has slogged through swamps, climbed mountains, avoided snakes and spiders and the deadly-like to find, then record the rarest of this country's rarest gems.

Her paintings have been honored in many places and she has had several one-person shows hosted by museums and horticulture societies around the U.S.

Carol Happ has captured forever not only this beautiful flower, but many, many more. Endangered and only rare cactus from Big Bend National Park in Texas are another of her favorites. But from the honey bee's perspective, there are few, if any, rivals to this fragile, translucent pink beauty – The Peters Mountain Mallow.

To keep forever alive the memory of this endangered flower, and the necessity of the honey bee as pollinator, we have worked with artist Carol Happ to make this outstanding painting available to everyone. On the back cover is more information on how to obtain an artist's signed and numbered print. .of Peters Mountain Mallow.

CHALKBROOD

NO KNOWN CURES, BUT LOTS OF HELP

dewey caron

Beehives are a great place to live. They're warm and food and moisture are readily available. One of the groups that find the beehive to their liking are the fungi. The vast majority of fungi we might discover in a beehive do no harm and some are beneficial to bees. All organisms, including humans, have beneficial and harmful relationships with fungi. The athlete's foot fungus is an example of a harmful human fungus. Insect pests such as gypsy moths and cockroaches have fungi — in fact, we use a fungus to control these pests.

One particular fungus, *Ascosphaear apis*, is the cause of what we recognize as chalkbrood disease. Like most fungi that inhabit our planet, it is very host specific. Other bee species, such as the alfalfa leafcutting bee and the hornfaced bee, both used as pollinators in the U.S., have closely related species of fungi that attack their larvae.

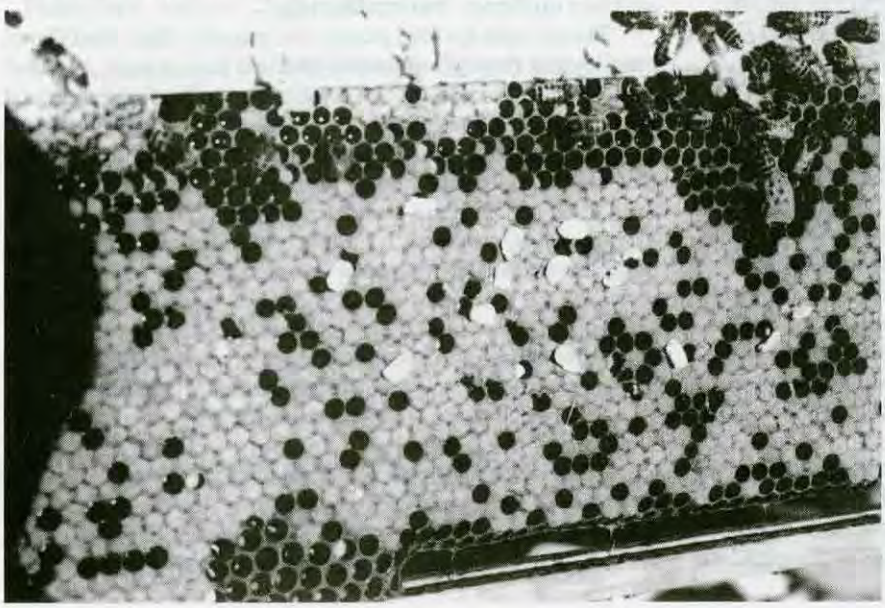
Chalkbrood is a "new" disease for the beekeeper but it probably has been present in colonies for years. The initial report of chalkbrood in the U.S. came in 1968; Canada first reported it in 1972. Once individuals began looking for it though it was readily found. It is now known to be widely distributed throughout the United States, Canada and the rest of the world.

As with most bee diseases, chalkbrood is recognized by its symptoms. That is, we don't actually look for the fungus, but rather we look at what happens to bees, specifically larvae, when they are infected. Dead brood are fully expanded, fill the bottom of the cell and look like little, white pieces of chalk – hence, the common name.

The feeding larvae is the stage of development which is susceptible to chalkbrood fungus. The larva ingests the fungus with its food, or it may pick up spores adhering to the cell walls. These spores can survive a long time and may even be able to survive outside the hive in the soil. Once inside a larva, the fungus grows in the digestive tract. It kills the larva after it has straightened out, before or after the cell is capped. We may see the dead larval body when looking at the brood area, or we may see the cadavers on the bottom board or in front of the landing platform of the hive.

There are two native strains of the fungus. Sometimes, instead of a white chalk-like cadaver, beekeepers see one that is covered with gray or black material. These are fruiting bodies and will eventually produce new spores which will infest more larvae

Affected larvae turn a chalky white (or sometimes black) often they die and become hard. Colonies with high hygenic traits tend to clean these out, removing further sources of infection. Unhygenic colonies don't, and generally have more trouble.



Biology

The fungus that causes chalkbrood remains present throughout the year in a colony and may infect and kill a few bees each brood cycle. It seems to be more prevalent in the spring and is referred to as one of the spring "stress diseases." It can be found in colonies all during the summer, however. Some bees are better house cleaners than others. They get rid of the diseased larvae, and thus the pathogen, more rapidly and completely, reducing the extent and severity of the disease in their colonies.

Instead of a few scattered cells of disease, some beekeepers see whole patches of brood killed by the fungus and report as much as 50% of their brood lost. Generally, fewer than 10% of the colonies in an apiary show symptoms of the disease, and these often have less than 50% of the brood cells affected. In instances of heavy infestations it is often possible to pinpoint some manipulation or management that has helped chalkbrood become established.

The major factor in spread of chalkbrood is feeding pollen contaminated by chalkbrood spores. Even a

few can contaminate a batch of pollen. If not removed from the pollen (a difficult procedure, at best) during the cleaning process, the beekeeper, in effect, feeds the disease to his colonies.

Chalkbrood studies resulted in an interesting finding at the USDA lab in Beltsville. They discovered that colonies with chalkbrood had less American and European foulbrood. This effect was caused by the presence of linoleic acid which suppresses the development of foulbrood bacteria. Chalkbrood has a high level of this acid. Linoleic acid is also found in most vegetable oils, which is what we use to make extender patties, so feeding these patties has the same effect.

Control

We do not currently have fungicides to control chalkbrood in a colony so we use Best Management Practices (BMP) to deal with the disease.

Since the disease shows up most frequently during the spring and summer months, beekeepers should insure that their hive manipulations do not promote the spread of the disease. Too prolonged an inspection or unnecessarily examining colonies during cool spring temperatures may lead to brood chilling. Cooler temperatures help spore growth of chalkbrood. Management that leads to brood chilling should be avoided.

Likewise, disruption of the normal brood sphere should be avoided. Too early reversal of brood boxes or moving frames in or out of the brood sphere may lead to chilled brood. Avoiding such manipulations is most important for beekeepers who have symptoms of chalkbrood in their colonies or a history of colonies showing symptoms.

Since the disease exists as spores and contaminates wax cells, it is good management to remove and render frames from the brood chamber that have shown high levels of larvae with the disease. Mark the infected frames as you discover the disease during inspections (with a thumb tack or permanent marker pen) for removal later in the season. Replace these combs with foundation, being sure to allow the colonies to draw foundation frames during favorable periods to ensure good, usable, complete frames.

"Chalkbrood spores have been shown to be active for at least a year in pollen samples and over 15 years inside a beehive."

As with any management plan that includes feeding, beekeepers must be diligent when selecting the pollen they feed. Many beekeepers have contaminated their beehives with American foulbrood by feeding contaminated honey. Today, many do the same with chalkbrood by feeding their bees with contaminated pollen. Know your sources – avoid feeding honey or pollen unless you know the source is free of disease pathogens. If you use pollen collected from your own hives, check to insure they are chalkbrood-free. Remember, the best house cleaning bees clean up the disease very quickly. Carefully examine the bottom board and the pollen-collecting device for mummies. Install a false hive bottom so debris such as chalkbrood mummies will fall into a collecting device that you can periodically remove and examine for mummies. If in doubt don't use the pollen.

I know of no way to determine if pollen you purchase is free of chalkbrood – obviously if you see mummies or mummy parts, the source is contaminated but no easy test is available to indicate if the fungus is present in spore form. Again, if in doubt, don't feed. Alternately, test feed a batch to be sure brood (minimum of two cycles) remains free of the disease. Chalkbrood spores of the fungus have been shown to be active for at least a year in pollen samples and over 15 years inside a beehive.

BMP for chalkbrood include keeping interhive movement to a minimum. Bees carry the spores of chalkbrood fungus in their honey stomachs so drifting of adult bees between colonies should be kept low. This means giving each colony a specific identity, with color combinations, space between colonies, using natural landmarks as much as feasible, and by spreading colonies in an apiary site rather than making nice, neat rows of white painted boxes all appearing the same to an incoming forager.

Beekeepers also help spread the disease. Although spread by contaminated tools has been reported, intentional or incidental transfer of combs from an infested to a clean colony is the biggest threat to our own bees.

Environmental factors play a role too. If weather is wet or cold and brood expansion is slowed during the spring, chalkbrood may be heavier or the losses from chalkbrood may be more critical to the colony. Colonies that are poorly vented and moist often show higher chalkbrood levels. Colonies weakened by other diseases show more chalkbrood disease. Dampness and brood chilling definitely seem to promote spread of the fungus.

Yet another BMP for chalkbrood containment is to requeen colonies that have heavy or persistent infestations. Hopefully the new queen will yield workers who are better housecleaners and will clean up the disease faster. The new queen should be from more chalkbrood-resistant stock. USDA research has demonstrated chalkbrood resistance by both elevated hygienic behavior of nurse-age workers and decreased longevity of fungal spores. Housecleaning behavior can be tested by putting freeze-killed brood into a colony and determining the speed of removal in comparison to other colonies. Requeening also results in a break in the brood cycle, which adds the opportunity of giving the workers a chance to clean up the brood nest and remove the source of infection.

Ultimately, chalkbrood BMP dictate the maintenance of strong healthy colonies receiving proper nutrition. There are different levels of resistance and queens from more resistant colonies should be selected for breeding lines. Where disease oc-

Continued on Next Page

CHALKBROOD ... Cont. From Pg. 395

curs, more active management to assist the colony to recover while reducing those actions that promote its spread is the best plan. Feeding sugar syrup, pollen free of the fungus, drying out damp colonies and promoting brood expansion are all advisable BMP especially if your bees have chalkbrood disease. BC

Dewey Caron is Professor and Entomology Extension Specialist at the University of Maryland. He is also Chairman of the Eastern Apicultural Society.

RARE, BUT SPECTACULAR
Death, Where Is Thy Sting?

mark winston

I received a letter from a Brooklyn, New York couple the other day reminding me that some people have an extreme dislike of being stung. They were criticizing an article I wrote a few years ago for the Encyclopedia Brittanica about Africanized bees. I attempted to take a balanced approach in this article, emphasizing that the importance of bees for honey production and pollination made it imperative that we learn to manage and live with Africanized bees. I concluded by saying that "people must learn to adjust to a new, successful, and highly adaptable organism in their midst." My correspondents indicated that "Professor Winston, in spite of all his knowledge about bees, must have sustained one too many bee stings himself, resulting in some brain damage." They went on to say that "if some of the so-called good honey bees also have to be exterminated along with them, so be it and good riddance to the killer bees. Believe me, the human race will somehow learn to survive with less pollination of crops."

My first reaction to this letter was to dismiss it as coming from city-dwelling fringe elements, but in the same week I received a paper from the May issue of an English academic journal, the Quarterly Review of Medicine. This article described the symptoms, reactions, and attempted treatments of five males who had been the victims of separate stinging attacks by Africanized bees in Brazil. The clinical language and excruciating medical detail of the article were frightening even to me, and suddenly I began to see the Africanized bee from the perspective of the non-beekeeping public. We beekeepers brush stings off as part of our livelihood, but most people view stings with the same terror that is elicited by shark attacks, snake bites, and Stephen King movies.

Honey bee stings are a marvelous adaptation for defense, at least from the bees' point of view. Honey bees are unusual among insects in that the bee's sting remains imbedded in vertebrate victims following stinging, and the bee dies. The sting itself is composed of two barbed lancets supported by hard plates and powerful muscles, connected to a venom sac and to specialized glands that produce alarm odors. When a bee stings, the lancets scissor their way into the victim, and barbs anchor the sting so that it remains in the skin when the bee pulls away. The sting continues to throb for 30 to 60 seconds, injecting venom and giving off alarm odors that alert other bees and mark the victim for continued attack. Presumably, the advantage of sacrificing a bee's life is that additional venom is injected when the sting is left in the victim. In colonies with many thousands of workers, the loss of a few during nest defense is thus balanced by having a more potent and effective sting.

The venom itself is a blend of compounds that are highly effective against a wide range of potential attackers. The major component is a protein called melittin, but venom contains other compounds such as histamine. The complex nature of the venom may be due to the wide variety of insect and vertebrate pests and predators that can attack bee colonies; different components of the venom seem to be important in repelling different species of attackers. For example, the amount of histamine in a bee sting is not toxic to vertebrates but is a significant part of toxicity against other insects, including other honey bees. Against vertebrates, each of the major venom components has somewhat different effects, the sum of which we see as an allergic reaction.

Human reactions to stings take place on three levels: local, systemic, and anaphylactic. In the first kind of reaction the initial localized swelling is followed by more extensive swelling a few hours later, and the affected area may be red, itchy and tender for two to three days. A systemic reaction generally occurs within a few minutes of stinging and may involve a whole-body rash, wheezing, nausea, vomiting, abdominal pain, and fainting. In an anaphylactic reaction symptoms can occur within seconds and they include difficulty in breathing, confusion, vomiting, and falling blood pressure, which can lead to loss of consciousness and death from circulatory and respiratory collapse.

Africanized bees and the European-derived bees we now use in North America are almost identical in the effects of a single sting, but they do differ in that Africanized colo-

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"We beekeepers brush stings off as part of our livelihood, but most people view stings with the same terror that is elicited by shark attacks, snake bites, and Stephen King movies."

DEATH ... Cont. From Pg. 397

nies are capable of sudden large-scale attacks induced by only minimal disturbances. While some colonies of European bees will sting readily and some Africanized colonies are gentle, the average Africanized colony is considerably more aggressive than most European colonies. Furthermore, the extreme attacks that can occur with Africanized bees are almost unknown in European bees. Thus, an attack by Africanized bees can quickly escalate into a mass stinging incident, in which one or more victims may be frequently stung and pursued for distances of over half a mile by attacking bees. In this kind of attack, victims can receive hundreds or thousands of stings within minutes, leading to death from a large-scale systemic reaction.

These large-scale systemic reactions were the subject of the Quarterly Journal of Medicine article. Although unusual, whole-body reactions are truly scary and involve almost total breakdowns of organ systems, leading to death. Typically, the victims were admitted to Sao Paulo, Brazil hospitals after receiving 200 to more than 1,000 stings. The victims' typical reactions were described with such frightening medical terminology as intravascular haemolysis, respiratory distress, hepatic dysfunction, hypertension, myocardial damage, shock, coma, acute renal failure and bleeding. In regular language, the victims received toxic doses of venom, resulting in the heart, lungs, blood and urinary systems all failing within 24 to 48 hours.

These reactions were not due to sting allergies, but rather to receiving a high dose of poison because of the large number of stings received. Even worse, 3 of the 5 victims studied failed to recover in spite of receiving sophisticated treatment with antihistamines, corticosteroids, bronchodilators, vasodilators, intravenous saline, bicarbonate, mannitol and mechanical ventilation, among other things. In other words, prompt, state-of-the-art medical attention was not sufficient to save these individuals.

How common are these mass stinging incidents? While it is difficult to determine the precise number of human deaths due to Africanized bees, the few available statistics indicate an increase in fatality rates of five to ten times or more from the pre-Africanized levels. For example, about 400 people died due to excessive stinging in Venezuela between 1975 and 1990, and about 180 such deaths have been reported in Mexico since 1989. To date, there has been one fatality in the U.S. following stinging from Africanized bees in Texas. Generally, fatality rates have been highest during the first few years of Africanization, and elderly individuals make up the majority of fatal stinging cases. Some of these stinging incidents can be spectacular; one individual in Costa Rica was stung over 8,000 times, an average of seven stings per square centimeter of body surface.

Unfortunately, these unusual stinging incidents have the potential to seriously damage beekeeping in the United States, because these rare but spectacular and life-threatening occurrences play to people's worst fears about bees. As responsible beekeepers, we need to take these events seriously, and to do what we can to both minimize the possibility of mass stinging and to de-mystify bees so that people's intuitive fears can be overcome by familiarity with this basically beneficial insect.

Good beekeeping is consistent with reduced stinging. For example, annual (or more often) requeening with non-Africanized queens will eliminate most problems from managed colonies. Also, choosing isolated apiary sites and eliminating Africanized colonies from beeyards will reduce the potential contacts between people and Africanized bees.

I think we need to do more, however, to positively promote the image of bees with the general public. Contact and familiarity with bees is the best way to reduce people's fears and to encourage an image of bees not as "killers," but rather as life-givers, through their role in pollination and honey production. To that end, I like some of the wackier things we do to get publicity, such as bee beards, queen-finding contests, etc. While these activities may seem frivolous and could be seen as presenting beekeepers in an unflattering light, they do attract people to bees and that proximity leads to familiarity and a loss of fear. We performed mass beebearding at last year's Western Apicultural Society Conference, and I vividly remember how far away most of the public stood as we started, and how at the end there were hundreds of people mingling with the bearders, having lost their fear of bees and gained a real interest in these marvelous insects. Two of our University secretaries even put on bee beards, and they proudly show off their beard photographs to everyone who visits the Conference Center.

Another superb way to get our

"I like some of the wackier things we do to get publicity, such as bee beards, queen-finding contests, etc. While these activities may seem frivolous and could be seen as presenting beekeepers in an unflattering light, they do attract people to bees and that proximity leads to familiarity and a loss of fear."

message across is in schools, and school visits with observation hives are very effective in reducing fears and encouraging interest in bees. Penn State University developed a program that took school visits one step further; they invited teachers to the campus for a two-day program that demonstrated how honey bees could be used for classroom teaching. For example, what could be a better science lesson than training bees to forage at a hidden dish containing sugar syrup, and then having the students interpret the dance language and find the dish? At the end of the program, each teacher was given an observation hive stocked with bees to take back to his or her school, insuring that there would be a good follow-up to the program.

Nevertheless serious stinging incidents will happen and a final step that we should encourage is the development of an effective antivenom. The sting kits available today are effective against allergic reactions, but do not provide an adequate response to the large quantities of toxins injected in a mass stinging incident. An antivenom specifically directed against bee stings would have saved the lives of the Brazilian victims where available medical technology was not effective.

A combination of aggressive public education, attention to safety with our bees, and the development of an antivenom to provide additional protection against stinging fatalities are excellent ways to diminish the real and perceived impact of bees on the public. The Africanized bee problem can be serious for beekeepers, but perhaps the most difficult problem they cause is one of public relations. Now that the bees are in the United States, we need to be more active in promoting bees as interesting and important insects. Stop for a minute the next time you're routinely working your bees, marvel at the extraordinary adaptations and behaviors that make honey bees one of nature's miracles, then take that feeling and head right over to the nearest school and start sharing that wonder with the kids. It will be the best thing you can do to maintain the viability of our industry. BC

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

YELLOW JACKETS

The Insect From Heck . . .

charles simon

I love yellow jackets at least I did. But sometimes things occur in this field in such strangely coincidental ways that I would suspect mystical significance if I were that type of person, which I'm not.

As a bee remover, I am often called upon to deal with yellow jackets. Everybody hates them. In fact, I can't remember meeting anyone who had a good word for them – except Ormand. (Ormand Aebi, author of *The Art and Adventure Of Beekeeping*, and *Mastering The Art of Beekeeping*, and beekeeper extraordinaire. Ormand says that yellow jackets will always have a friend in him. When you have yellow jackets on the ranch, he says, you should rejoice because they feed on the larger gnats and young flies that bother the livestock. He recalled watching the yellows swooping down and scooping up the flies that congregated on a warm wall, basking in the sunshine.)

I was going to try to write an article depicting their good qualities. After all, the Good Lord created them. They do have a purpose. But the Good Lord created the devil as well. And yellow jackets, when they are out of their proper place and come into conflict with (our) civilization, can seem like the direct spawn of evil.

No sooner had I typed the period of the opening sentence of this article when the phone rang. It was a woman's voice:

"Charles Simon?"

"Speaking," I said.

"This is the Santa Cruz Police Department."

"Yes, how can I help you?"

"We have some bees for you."

"Okay. Please tell me more."

"Well, there's a nest for you to pick up in a canyon. That is, if you're interested."

"Of course I'm interested. I'm always interested. What are the particulars? Who is the landowner?"

"Well, we don't know, actually. Why do you need to know that?"

"Because I need someone to bill for the service. There has to be a person responsible for the property."

"We thought you did it for free, for the bees."

"I don't work for free," I said. "Maybe *you* do; and if you do, I'd like you to come right over. I'm way behind, and I could use some help around here."

"Seriously," she said, "we have a problem."

"Seriously," I said, "I'd like to help. Tell me the particulars. Maybe we can work something out."

"Well, there's this hive of bees down in the canyon off Western Drive. A girl was walking in the woods, and she was attacked. She dropped her backpack and everything and ran. And now the bees won't let her get her stuff back."

"So basically, what you're saying is, you want someone to go in and get her stuff for her and maybe never mind the bees?"

"That would be good."

"*That* I would most probably be willing to do for nothing."

"Okay," she said. "Let me give you her number. You can talk to her. Whatever you work out is fine."

So I called the girl and arranged to meet her on the street near the location.

She was a sweet young girl, a student at the university, with a ring in her nose as well as a rhinestone stud, several earrings in her ears, short and long violet and green hair, and multiple tattoos. She was most appreciative of my coming. It was not the sort of thing I was going to be able to charge for. Just too easy. I mean how hard could it be for an experienced bee man such as myself to walk in and retrieve her belongings? At first I wasn't even going to suit up. But there was an outside chance that they just *could* be AHB. After all, we *are* expecting them in the area and we really don't know for sure when. And they *had* attacked her, and would *not* let her back into the area. That in itself was suspicious. You can't give much credence to media or government reports. (Quote from *Bee Culture*, May 92, page 270, in the article, *Better Bait Hives*, by Roger Morse, paragraph one: "It should come as no surprise that most of our knowledge of Africanized bees in Mexico and the United States has come through the use of bait hives." Well, it comes as a surprise to me. And if it's true, then we're in bigger trouble than I thought.)

I have been using bait hives — we call them "catcher hives" around here — for years, and I have found the commercial variety to be completely useless (they *might* make good flower pots), at least when *I* use them. I've even put one of them up directly against a swarm after it had clustered in a tree and got no response. You might just as well put a "for rent" sign on an empty box as use the synthetic pheromone. And, by the way, I have found that a specifically prepared hive, on the stand next to a

"Yellow Jackets have a purpose. The Good Lord created them. But the Good Lord created the Devil as well."

working colony is more effective than catchers placed high up in trees and on roofs. That contradicts the scientific findings but I am willing to concede that maybe it's just me. Or the idiosyncrasy of geography, or something. Maybe down in Texas, in the desert or semi-desert, where the bees have absolutely no other choice, or in a woods of thin trees they will go for the bait hives. Or maybe the AHB like them.

So I suited up.

The items I was to retreave turned out to be a set of keys and a pair of gloves. No backpack. She told me how to get there: You go down the path, down, down, until you see a large tree laying across a creek. The bees were there, in the roots of the tree, and that's where the items were dropped.

It was steep. In order to get to the base of the tree, you had to slide. I spotted the keys *and* the "bees" at the same time. They were yellow jackets, in a huge ground nest with many access holes. When I spotted them, they spotted me. It crossed my mind that it was going to be difficult to climb out of there after I rounded up the stuff.

It took those bugs just about a quarter of a second, maybe less, to figure out that I hadn't taped my ankles. I took a few stings and looked around for the gloves. I spotted them. I had everything spotted, but the yellows were going up my legs in alarming numbers and stinging prodigiously. I made a run for it. Adrenaline took over and carried me up the hill. It wasn't difficult at all; in fact I flew up. By the time I got back to the van, things had become acutely painful, however.

The girl was distraught to discover that the bee man, with all his protective gear and expertise, had not only failed to retrieve her things but had managed to get stung as well. I reassured her that it was just a setback, but I could see that her confidence was eroding, especially watching my antics as I attempted to kill the bugs in my pants.

In case you don't know, the yellow jacket's sting is not barbed. They can sting you repeatedly, and their venom is different than the bees', considerably more virulent. I say this from experience. And they not only sting but bite; they are well-equipped bugs.

This incident occurred over two weeks ago, and I'm still suffering the effects. At first the pain was excruciating. The ankles swelled up so much that I could not flex my feet. It hurt to put on shoes, and lacing them up was out of the question. I got no sleep the first night. The pain would not let up. I took nothing for it, because I wanted to see what it would do. I saw. It was an aggressive burning, cutting sensation. And there was a fever besides.

After two days, the swelling went down and the pain turned to itching. My feet were still too sensitive to tie the shoes. Now there are tiny scab-covered wounds which itch intermittently but intensely. Just when I think it's over, it starts up again. Very interesting.

Anyway, after killing and removing them from my legs, I taped up the ankles. There is a cliché to cover this, but I don't need to say it.

I went back down. Dozens of them assaulted my ankles, but they were unable to get through. Many attached themselves to the creases and overlaps of the tape and the edge where the tape met the beesuit, working with frightening determination to chew their way in. I retrieved the objects and went back up, this time verifying that it was indeed a difficult climb. A normal person, or one low in adrenaline, attacked here, without anticipation or protection, could very easily lose it and not be able to get out at all.

When I got back up, they were still all over my ankles, working. Several were buzzing around me. The girl was afraid to come close enough to get her stuff. She did it anyway, brave girl. But they weren't interested in her at all.

She shook my hand, expressed her gratitude quickly, and fled, leaving me alone with a new kind and intensity of pain to experience and learn from. In all my previous years of dealing with yellow jackets, I'd only been stung maybe four times, and they were far between, albeit memorable for the amount of discomfort they were able to generate. I am talking as a bee man who pretty much likes getting stung by bees, within limits – at least I appreciate it. But this was something else. The last several weeks have been an exercise for me in just how bad yellow jackets might be.

When I got home, I called the police and spoke to the woman I had talked to earlier, telling her that, in my opinion, someone ought to be commissioned to kill the nest, because somebody innocently taking a walk in the woods was going to get attacked, and could become disoriented and be unable to escape. In fact, the worst case scenario seemed inevitable. It was a truly dangerous situation. She asked if I wanted the city to hire *me*. I said, sure, I was available. But even if they got somebody else, they should, I stressed, get *somebody*.

She said she'd get back to me. So far she hasn't. Even if they don't hire me, I might have to do it anyway. The hostility and potency of that particular nest of yellows combined with the difficulties of the terrain, the well-used appearance of the path, and the populous neighborhood – sombody is going to get hurt real bad – or worse. Since I see all this, I feel responsible.

I have an attorney friend who says that whenever he does anything for a client for free he gets screwed. He believes that it is a law of nature. You're not *supposed* to get something for nothing; therefore, when you *do* something for nothing, especially and specifically in the area of your profession, you will pay. If the client doesn't pay, if *you* usurp that obligation from its rightful owner, then *you* will be the one, because somebody has to pay.

I don't know about that philosophy but I did the good deed, and I did pay still am paying, in fact.

What did I learn? No amount of experience should be an excuse to take this business casually. The yel-

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"... it was huge, and angry. It looked like a cement fortress. You have to respect this creature."

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low jacket can be extremely dangerous. Though you are experienced, competent, provident, careful and wise, *something sometime* is probably going to get you. And it may be the one thing you neglected to cover. So, tape your ankles. And zip your veils. It is better to be as prepared as possible and have nothing happen than to be unprepared when something does.

Which brings me to the next yellow jacket job of this season.

This one was in another canyon, on a golf course. Difficult to access, naturally. And it was huge and angry. From a slight distance the edifice that the bugs had created for themselves looked like a cement (it was actually yellow jacket paper) fortress built into the side of the hill, with no less than a dozen holes, each with yellows pouring in and out. It was awesome. You have to respect this creature.

In over 20 years of dealing with them, I have never seen such nests, such size and ferocity. Two in a row! And so early in the season! Somewhere I'd gotten the idea that the nests died back to the queens for winter, to repopulate in spring. That would account for the lateness of the yellow jacket season as compared with that of the bees. But it doesn't explain what I am encountering. Whatever. My job was to kill them, not figure them out — although the two functions do dovetail.

I taped my ankles real well this time. Fully suited and confident, I approached. This time I was taking no chances — everything was covered, and I was going to be safe! *Wrong!*

Since there were so many bugs and so many holes, I decided to vacuum off a considerable amount of them before applying the poison, to make the operation neater. During the course of closing off some of the holes, I began receiving stings to the wrists and arms — *through* the glove cowling and *through* the beesuit. Interesting, I thought, I didn't know they could do that, and continued to work, but not for long. So I found myself once again making a run for it, leaving the vacuum on, the hose opening at one of the holes, to fend for itself and catch what it could.

Back up the hill, I crushed the adhering bugs and went back down to reassess the situation. They were on me instantly this time. I was a marked man.

I changed to a fresh pair of gloves. No effect. They knew me.

I put a beesuit on top of my beesuit. And I found out that yellows can sting through two beesuits, specifically at places where they can get a good grip in creases and at seams and at the place where the glove cowl elastic grips the arm.

So I would run in, adjust the hose, sometimes moving it to a different hole, and run out, receiving stings each time. And each time I messed with it, huge angry clouds would issue, attacking or trying to attack me, the vacuum and the buckets. After an hour of this, there appeared to be just as many of them as there had been before I started.

So I decided to end it the quick and dirty way. I marched in with my

sprayer and applied liberal doses to each of the holes. They came boiling out, but they were disoriented by the contact with the poison and unable to mount much of an attack. I saturated the nest, covered everything with dirt, and saturated that. Then I left.

"I think it's done," I said to the man. "But if there's any life left in two or three days, call me, and I'll come back and finish the job." He hasn't called, so I guess it is done.

That night the pain was as severe as before. The fever came back. Now there is the intense itching.

I am thinking of buying another suit, to find out if they'd be able to sting through three of them.

I have been asked why I do it. I suppose I could come up with some smart answers: Somebody's got to do it. I do it because it's there, because there's a need, because I can. Because it's a natural *spinoff* of bee removal which is a spinoff of beekeeping, and because I am willing. But why am I willing? Not for the money. Not because I like to kill bugs. I respect them and would much rather leave them alone. Why do I do it? I really don't know. BC

Charles Simon still removes Yellow Jackets, and even honey bees from places they shouldn't be. He is an avid beekeeper and occasional contributor to Bee Culture.

EGGPLANT

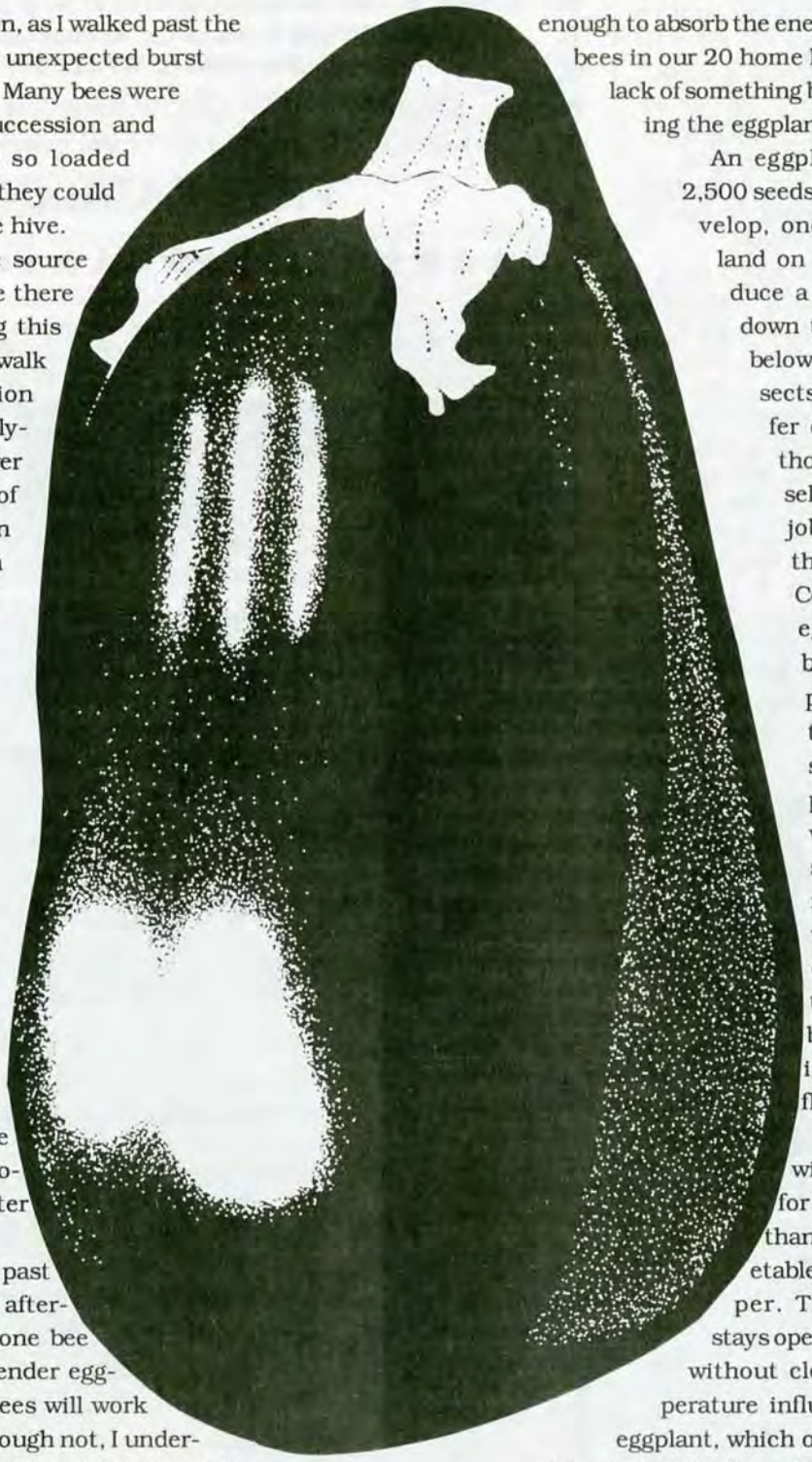
mary & bill weaver

Early this afternoon, as I walked past the home hives, I saw an unexpected burst of purposeful activity. Many bees were taking off in rapid succession and others were landing so loaded down with pollen that they could hardly waddle into the hive.

Curious as to the source of all this pollen, since there is not much blooming this time of year, I took a walk in the general direction the bees seemed to be flying and found my answer about three-quarters of a mile away. Sweet corn pollen was shedding in a neighbor's garden and the corn tassels were just covered with bees "tanking up" on the unexpected pollen boom.

I've read that ten average-sized pollen loads are necessary to provide the protein to raise one honey bee so this unexpected pollen bonanza, in a period of dearth, would help keep hive population up and produce a good-sized winter cluster.

But when I went past our garden later in the afternoon, I noticed one lone bee working the large lavender eggplant flowers. While bees will work eggplant for pollen (though not, I understand, for nectar), the eggplant flowers are less attractive to bees than other flowers. Apparently the pollen production on the neighbor's sweet corn was not large enough to absorb the energies of all the worker bees in our 20 home hives, so this one, for lack of something better to do, was working the eggplant flowers.



An eggplant fruit may have 2,500 seeds. For each seed to develop, one pollen grain must land on the stigma and produce a pollen tube to grow down to fertilize the ovule below. Bees and other insects help with the transfer of pollen. Eggplants, though, are sufficiently self-pollinated to do the job quite nicely all by themselves, thank you. Commercial growers of eggplants don't rent bees, and a seed company president told us that all their eggplant seed is raised on plants in fabric cages which contain no insects at all, self-pollination giving them a very acceptable seed crop. I've read, though, that the number of seeds is higher in cross-pollinated flowers.

With eggplant, the window of opportunity for pollination is larger than for some other vegetables, like squash or pepper. The eggplant flower stays open for two to three days without closing at night. Temperature influences pollination in eggplant, which originated in the tropics, and is therefore a heat-loving plant. At temperatures below 65° pollination doesn't oc-

cur in eggplant, either because the pollen doesn't germinate after landing on the stigma, or the pollen tube doesn't grow quickly enough. So, at low temperatures, no new fruit will set. But at high temperatures that would stop new fruit production in tomatoes and lima beans, the eggplant production keeps going strong, as it does in okra. A condition called "catfacing," in which a large scar occurs on the blossom end of the fruit can occur in eggplant with inadequate pollination.

Fifteen years ago, eggplant varieties in American seed catalogs had deep purple, pear-shaped fruit. Today, gardeners find eggplant in many shapes and hues, including the new opalescent pinks and the striking new deep pink variety, aptly named NEON, that was a stand-out in Johnny's Selected Seeds variety trials last year.

If you've been discouraged by bitterness in eggplant in the past it's not a problem in some of the newer varieties. Bitterness occurs in eggplant varieties with a greenish tinge to the flesh and a green calyx. Oriental varieties like *Orient Express* and *Ichiban*, with their long, slim fruits and purple calyx, have a pure white flesh which is bitter-free. The oriental varieties also have much slower seed development. Even if they're left on the plant a bit too long, the seeds should not enlarge and harden as they do in our older varieties. The oriental types also do better in cooler temperatures than traditional American varieties.

All the varying colors and shapes of eggplant, from large and pear-shaped to long and slender to small and egg shaped, from white to lavender to opalescent pink to bright neon pink to deep purple and almost black, even to ash-colored, brown, green and yellow — all this present day variety is believed to have originated in India. The original wild parent plants had smaller fruit and thorns that covered the stems, leaves, and calyx.

The eggplant's ancestors were cultivated in India and in China. They were first carried west to Spain in the twelfth century by the Moors, and by the sixteenth century were well known in Europe. The fruits were brought to the Americas from Spain, and were cultivated in Brazil by 1650.

At first, people were afraid to eat it because the eggplant, like the tomato and potato which were also used as ornamentals, is in the same family of plants as the poisonous deadly nightshades, the Solanaceae. Eggplants were referred to as "madde apples," and were believed to produce insanity and death if eaten.

It wasn't until well into the 1800s that eggplant was used as food in America, and it has never reached the esteem here that it holds in Japan, where it is one of the most widely used vegetables.

A number of insect pests can plague eggplant. For the gardener who is also a beekeeper, it's nice to know that these insect pests can be foiled in ways that won't hurt the bees.

Floating row covers like Agryl and Reemay are helpful when plants are small, to fend off the tiny flea beetles whose energetic chomping can make tender eggplant leaves look like they've been shotgunned. Simply drape the covers over your plants, leaving plenty of slack for growth and cover the edges with soil, rocks, or bricks. Although the row covers look rather opaque, rest assured that plenty of light can get it for good plant growth.

As the plant grows, the leaves become tougher and less appealing to flea beetles, which are most prevalent in early summer. Later in the season the covers can be safely removed. I've read that a larger eggplant can lose 1/3 of its leaf area to flea beetles and still produce a good crop. Tarnished plant bugs, which suck eggplant juices, and the Colorado potato beetle are also foiled by the floating row covers.

Treat spider mites with a strong spray of plain water instead of a toxic spray. You'll wash them away, and few will find their way back to the plant.

If your first frost comes later in the fall, and you find you have a significant disease and insect problem on your hands by late summer, do what New Jersey commercial growers do around the first of August — cut the plants down to a stub, remove the rest of the plant and burn it. Your disease cycle will be broken and the overpopulation of insects, suddenly finding themselves with nothing to eat, will head for greener pastures.

Your eggplant will soon sprout a new green top from the food stored in its roots, and by late September or so, you'll be picking eggplant again, without a lot of your former disease and insect problems.

To save seeds from eggplant, make sure the variety you're growing is not a hybrid, which won't breed true, and that it is separated from other eggplant varieties by about a quarter of a mile. Otherwise it should be caged with a floating row cover early in the season to prevent honey bees, bumblebees and solitary bees, among others, from carrying pollen from one variety to another and ruining your seeds' purity.

Let the fruit you'll use for seed get past its prime, turning from shiny and smooth to dull and a bit soft. It's best to let fruit overripen right on the plant.

Then harvest the eggplant with a knife or scissors and scrape out the pulp. Most of the seeds will be in the lower part of the fruit. Pick the seeds out of the pulp, a rather slow process, and rinse allowing bits of pulp and lightweight seeds to float off and be discarded. Then drain the good seeds in a strainer and spread them out to dry on a glass (not paper — they'll stick) dish, stirring every day or so until they're thoroughly dry. BC

Bill & Mary Weaver raise bees and eggplant in PA.

BEE REMOVAL

As A Part Time Business

howard scott

John Phillips, of Hanson, Massachusetts, a carpenter by trade and a beekeeper by avocation, began removing bee colonies from people's homes 13 years ago, when carpentry work was slow. Today, he has built the removal work up to a solid seasonal business. Phillips completed 170 honey bee, wasp, hornet and yellow-jacket jobs last season (80% were honey bees), which lasted from April to October. Best of all, he can fit his carpentry jobs around his bee work.

Phillips says, "The key to insect removal is to do the minimum amount of work and the minimum amount of damage. A lot of beekeepers try this, and they wind up spending so much time trying to take something apart or put it together, that they soon give up. Over the years, I've learned by doing."

Tagging along with Phillips is a real learning experience. He and his nephew, Richard, arrive at the site in the morning. From the initial phone call he has determined the type of insect, the nest location, estimated the amount of carpentry work required and quoted the customer a ballpark $135 for two to three hours of work. If the job should run over that time, he might press for more money. But 90% of the jobs run according to estimate.

Phillips goes inside the house and feels the heat in the wall to determine the center of the hive. Then he goes outside, confirms that they are honey bees, observes where they are coming in and going out, and makes a notch by the entrance. He also sizes up the situation, and determines that it is better done from the inside.

Phillips says of his decision, "All things being equal, I'd rather remove the bees through the outside than the inside, because there's less disruption to the residents. But I consider which way takes less work, which way will be easier to put the woodwork back in place with a minimum of damage and which way is safest. If I can stand on the ground and remove a few shingles to expose the nest, I'll do it from the outside. But if it means me climbing a ladder to the second or third floor, I might decide to do it from the inside."

On this inside job, Phillip's informs the occupant to stay in the kitchen. He closes the door to the living room and covers all windows but one. This is Philips' key directing the bees to the light and catching or killing them at the light source.

Phillips says, "Fortunately the room is small. I have problems when there's a lot of open space, flying stairways, that sort of thing. I always bring tarps to create a small space."

Next Phillips determines that the hive is above, not behind the brick fireplace. This means that he won't have to do any masonry. If necessary, he can do masonry work but this raises the cost of the job. Plus it's harder to get the restored masonry to look perfect. Tapping on the wood, he determines where the two-by-fours are, and that the hive encompasses the space between two two-by-fours, or is about 16" wide.

Phillips goes to work pulling out the woodwork. His nephew busies himself with placing the buckets and hive tools at close range. Phillips takes off the fireplace molding, then cuts out a square of sheetrock, exposing a mass of wavy combs covered by bees. Using his hive tool, he cuts out chunks of the nest, placing them in a swarm bucket. Sometimes large jagged masses come undone. When one bucket is filled, he fills a second bucket. Richard brings the buckets outside to their truck. Phillips continues doing this until the wood panels are completely visible. Meanwhile, in the darkened room, bees are clustering at the lighted window.

On the adjacent two-by-four space, Phillips notices more comb, which he removes. With flashlight, he stares down in back of the fireplace and confirms that there is no nest there. He says, "I always check the surrounding area for additional comb. That's why I cut out a bigger than necessary piece of sheetrock."

After he cleans out all the comb in the woodwork, he begins eliminating the bees in the house. Using a whisk broom, he gathers clusters of bees against the window, and sweeps them in the bucket.

From the outside, Phillips plugs up the hole by caulking the area. Sometimes he might nail a piece of wood or use flashing. He says, "This is an important part of the job. Amazingly, some removers forget to do this. If the hole isn't plugged, foraging bees will return and go in the hole. Plus another colony could find the hole. One thing I give with each job is a guarantee that they'll never get another beehive in the same place."

After removing the bees and comb, Phillips starts putting the house back together. He cuts a new piece of sheetrock and replaces the one he had cut into, nailing it to the wall. Then he tacks on the molding. The print wallpaper is missing, but the owner, an elderly man, doesn't mind. One part of the job Phillips doesn't do, because of time constraints in applying primer and multiple coats, is painting. But he tells his customers how to do it.

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This is the colony exposed in the wall.

Once exposed, you need to make sure where it is, and isn't. Then make sure you get it all. You also need to make sure the outside entrance is blocked.

Removing great sheets of comb and bees is messy, but necessary. Loose bees are collected later at a single window.

Finished with the work, Phillips and Richard wait outside for a half-hour, then return to the still-darkened room to kill any remaining bees by the window. According to Phillips, the wait insures that all bees will be captured. Lastly, the duo open the draperies, clean up and collect their fee. Phillips accepts checks and even charges a few jobs, when the people inform him in advance that payment must come through channels.

With five hives at home and a sideline business selling honey and bee products, Phillips uses the captured bees, honey and wax. He keeps his hives strong with periodic infusions of new bees from these removal jobs. People put empty hives on his grounds and, for a fee, he fills them with bees. He adds the honey to his stores, and sells jars at fairs and in a few natural food stores. He makes candles from the wax to sell at fairs. He gives away hornets' nests to schools or science centers. Last year, he estimates gathering 400 pounds of honey and 90 pounds of wax this way.

Phillip's business has grown from word of mouth over the years, and by regular mailings of his business card. The cards say, 'Bee Removal,' along with his name and address. He sends his card to police departments, fire stations, cooperative extension services, dog officers and exterminators. Every year, he sends out more cards, because jobs change, people forget and there are always newcomers. Phillips says, "Most exterminators won't touch bee jobs with a ten-foot pole, so they are always looking for someone to recommend."

Phillips will travel, but of course the customer pays for travel time. From his Halifax home, he will travel roughly a hundred-mile radius. He goes east to Cape Cod as far as Eastham, south to the Rhode Island border, west to Worcester and north of Boston. When traveling a distance, he tries to bunch two or three jobs. He does this by asking a customer to wait a week or so until he can get a few other jobs. Otherwise, he might recommend that the person hire someone else.

Phillips comments on timing: "It depends. Some people who've had a hive in their house for a while don't mind waiting. Others want you to come immediately. One woman walked into her house and found hundreds of bees. Evidently, the bees had eaten through the sheetrock. She needed immediate service."

There is some competition, but there aren't many really good people in the field. Phillips knows of two bee removers who actively seek out the business and seem to be competent. Often, he recommends these two individuals if the job is out of his area. In addition, there are many amateurs. Some are beekeepers who want to get into a sideline; others are carpenters who do the work as a service to their customers. Typically, neither group does it well, according to Phillips. He has heard of carpenters trying to coax bees out by traps by putting a hive nearby, or of spraying water into the colony. The beekeepers often misjudge the extent of carpentry work involved.

One problem common with amateurs is not getting all the comb out of the wall. Later when the comb melts it attracts ants, mice and wax moths. Plus the dead brood smells and honey oozes through the walls. It can make a terrible mess and is too often overlooked by inexperienced removers.

Phillips quotes a flat fee for most jobs. His bee removal jobs run from $100 to $200. Hornets' nests located on trees run $60 to $90. Yellow jackets in walls run $80 to $100. Bee removal jobs are more because they are messier. He estimates this fee, based on a $35 to $40 an hour base rate for two. This includes travel time. The average beehive removal fee is about $135, for two to three hours' work and relatively minor carpentry. If it takes longer than three hours, or if the carpentry work is more extensive than originally planned, Phillips might ask for more money than the estimate. Once he had to take apart a window molding to get at a hive then found the casing was rotten. The customer had to pay for the window casing replacement.

Except when he travels a distance, he typically does one removal job a day. Phillips explains, "After some jobs, your bee suit and tools and hair are so gunked with honey, that they have to be cleaned. I own two suits for that reason, but if possible, I only schedule one bee job a day."

One thing he does not like to do, because of wasted time, is go to a prospect's house to size up jobs. So he has perfected his technique of quoting over the phone. First he asks the customer to describe what he sees. Then he asks about the woodwork. From this information, he can size up the extent of the job. But sometimes people can't even determine the type of insect involved. If necessary, he will have the person send a dead insect in an envelope to him, so he can quote accurately.

Phillips gives an example of a tricky situation: "When a woman insisted it was honey bees because of the yellow spots on the ceiling and the dripping-down of fluid, I asked her to smell and taste the liquid. She says that it wasn't sweet. It was moisture from a hornet's nest. I know that bees, unless they are sick, will never allow honey to seep away."

Phillips carries only his personal medical insurance, but no workman's compensation. Fortunately, he has never been injured on the job.

John Phillips concludes: "Every job is a challenge, a new puzzle. I guess that's why I like the work."

Howard Scott keeps bees and is a free lance writer from Pembroke, MA.

BEES & BYTES

Your Onramp To The Super Highway

stan kain

Have you ever hung on to a worn out pair of boots you should have thrown away? Maybe a smoker that you needed to replace? We're all guilty of clinging to the past in one way or another. Maybe it's a familiar tool, a piece of clothing or even worse a misconception. So why do we hang on to these things? Because they are comfortable, of course. I plead guilty to all of the above.

A few years ago I left a high stress profession in search of a less complicated lifestyle. I started keeping bees, remembering my youth and how I enjoyed the beehives kept on my parent's farm. This was one way to recover a bit of my less complicated childhood.

I built some hives, asked a lot of questions and soon had some healthy, active colonies. As a natural response to my years in the news business I always seem to have questions. The more I watched my bees the more I wanted to learn and I wanted more interaction than I could get from simply reading a book.

Following my usual approach I joined a local bee club. The primary lesson I learned from this experience was that every beekeeper had his own way of doing things and it usually contradicts what the last beekeeper told me. I still wanted to become a better beekeeper.

For years, I swore I would never own a computer. I don't like automatic bank tellers, talking checkout stands at grocery stores or mechanical-sounding telephone operators. I can't even remember the personal identification codes to access bank machines or telephones. Well, my life was about to change. So were my beekeeping practices.

When I started writing a few freelance articles I pounded them out on an old manual typewriter, standing firm against computers and word processors. In time, I began writing a beekeeping column in a local newspaper and an old computer soon found its way into my life. Hitting the books, I locked myself in my office for hours on end talking to a machine that could care less. The computer and I soon developed a respect for each other. Why, I even bought a modem, so I could connect my computer to the telephone line. Now, I could access other computers and information around the world. Life would never be the same again.

With volumes of knowledge locked away in computers everywhere, I wondered what might be available to interest a beekeeper. Surprise! Access to the Internet, an information network connecting government, business, universities, researchers and private individuals together, opened an entire new world.

Many state and federal government offices, as well as university research departments have reams of information available to anyone via computer, and (almost) free for the asking. I don't think you could name an area of interest where information isn't available via computer modem. I'd like to share some of the areas of value to beekeepers, and since many of you have computers and if you don't, this may be the justification you need to buy one.

Most federal offices have some sort of computer access – "bulletin boards" where you can read new information releases or post messages, which will be answered by electronic mail sent right to your computer. The Freedom of Information Act and your tax dollar are used to provide every person with valuable, unclassified information from virtually every government agency. It's up to you to learn how to obtain it.

The Food and Drug Administration even supplies a toll-free number for accessing their information. This bulletin board is a great source of knowledge. They post news releases on a regular basis, list new drug and device product approvals and offer drug bulletin texts, articles and a consumer magazine index. Hobbyists and commercial beekeepers, as well as others in agriculture can certainly benefit from this information. The bulletin board number is (800) 222-0185.

Do you know a single beekeeper who isn't concerned about pesticides? Would you like to know more about their use? Well, the Environmental Protection Agency has a computer bulletin board just for you. The Pesticide Information Network may be accessed at (703) 305-5915. The

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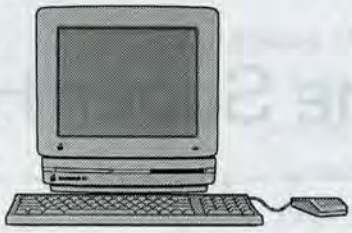
agency has a complete database of chemical information focused on pesticides. You'll also find pesticide monitoring project compilations and a restricted use products file. With the available information, we can certainly do much more to ensure the health and well-being of our bees.



None of us like to think about the Internal Revenue Service. We must, however, and often need forms or would like information regarding new tax issues. The IRS has a computer board called, what else but, "1040 BBS." The board can be used by anyone for obtaining electronic filing information, 1040 forms and notices issued by the IRS. You can access the service via (202) 927-4180.

One of the very finest sources of information for beekeepers I have found is called "BEE-L" or BeeList. On BeeList, you have an opportunity to read information, ask questions or learn anything about bee biology. You'll meet some of the top bee biologists and researchers in the world on BeeList. This is a worldwide discussion group and everyone from novice beekeepers to research scientists are welcome. In fact, you can request a free subscription and receive all the communications passed along the list. You'll get plenty of information about mites and AHB, too. Some state beekeeping newsletters are available through the list. Everyone is welcome to ask questions and the authorities on bee problems are happy to help out.

Do you have some extra honey you'd like to use for making a special treat to serve guests? How about some mead? You'll find an assortment of recipes for making mead by accessing the Internet. The address is: Gopher: wiretap.spies.com. Strange sounding address, isn't it? No, it's not a clandestine government agency.

I like to know about plants and their value to my bees. You can connect with the Missouri Botanical Garden, via Internet, access Gopher: mobot.org. This source offers volumes of information, including plants of North America, journals and other items of interest.

What about the honey subsidy program? How do you feel about low-cost imported honey selling on the American market? Would you like to let your federal representatives know how you feel? Maybe you'd like to tell President Clinton or the Vice-President. You can find telephone and fax numbers for your representatives on Internet. You can send direct electronic mail anytime you wish, virtually for free, to the president, vice-president or anyone else with a modem connection – all from your home computer.

Do you have concerns about the federal and food labeling laws and their effect on your products? By ac-

BEE LIST INFO

How do I subscribe to BEE-L?

Send mail to the listserve computer, from the Internet the address is listserv@uacsc2.albany.edu. From BitNet, the address is listserv@ALBANY.BITNET To subscribe, the body of your message must contain the line: SUBSCRIBE BEE-L <your full name> Be sure to substitute your real name for the <your full name> placeholder. You do not need quotes or any other delimiters surrounding your name.

How do I get help using the listserver?

Send a message to the listserver, with the one word HELP in the body of the message. Address the message to listserv@albany.bitnet if you are on BitNet, or address it to listserv@uacsc2.albany.edu if you are on the Internet. The listserver will mail a help document back to you. Sending the message INFO? will cause the listserver to mail you a list of additional help documents that are available. These additional documents are requested by sending the message INFO <topics> (be sure to substitute the desired document name for <topic>.

Sci.agriculture.beekeeping FAQ
(Frequently Asked Questions)

This is the first FAQ for Sci.agriculture.beekeeping. A FAQ file is dynamic, and changes as information is added and deleted, hopefully to be archived for reference. If you think something is missing, or need something that is not here, then by all means ask, suggest, and do not be shy! This file is for all beekeepers.

POINTERS TO APICULTURAL INFORMATION ON INTERNET

Sci.agriculture.beekeeping Usenet newsgroup
Bee-l@uacsc2.albany.edu Listserv List

There are probably hundreds of 'Frequently Asked Questions' that have already been asked, answered and recorded. To find out what's already there request and download the FAQ file and print out those questions you want to read. Print and read is cheaper since you're not paying for line time. There' also a list of unanswered questions you may be able to contribute to, or give answers to. Have fun!

WHAT MODEM

If you'd like to take advantage of valuable information available through the Internet, Bulletin Boards or other computer services, you're going to need a modem. Let me explain.

Your computer can "talk" to other computers by way of regular telephone lines, if both computers have modems. Modem means modular demodulator. A modem may be a simple plug-in board you put in an empty slot in your computer or a separate unit. You can probably install the plug-in card yourself, following the instructions that come with the modem. Plug-ins are the least expensive and work well.

You will need a telephone "splitter" jack and an extra telephone cord. The splitter will allow you to connect your existing telephone and the modem to the same telephone jack. Again, instructions are included with the package.

When you purchase a modem you will receive a communications program, or "software." This program will supply your modem with technical information needed to "talk" to another computer and allow the modem to "dial" the telephone number of the service.

You'll find modem advertisements bragging about their speed. Modem speed is measured in "baud" or BPS (bits per second). That means how fast the modem can transfer information from one computer to another. The speed may range from 300 BPS up to about 28,800 BPS. High speed costs more, as you might imagine. A 2400 BPS modem will do just fine. You can probably find one with a simple communications program in a computer magazine for about $25.00 . all you need to begin exploring the information highway with your computer.

cessing Gopher: esuda.gov, you can find rulings on labeling requirements for ingredients, serving sizes, terms, fruits and vegetables, fat and cancer nutritional claims and related topics.

Do you sell pollen, propolis, royal jelly, or holiday gift packs of honey? Do you advertise? Are you willing to ship? How would you like to tell over a million and a half people about your product? It's not as expensive as you think. You could tell that many people about your honey in four lines for as little as $56.00 for 26 weeks! It's all in knowing a little bit about computers. In fact, you could find a lot of free advertising space if you look around. Incidentally, beekeepers haven't even touched this advertising medium. It's wide open. Perhaps the future holds a nice little mail order service for you. The opportunities are as great as your imagination.

The Internet Gopher offers a simple way to gain access to a new world. You can reach nearly any department in a university located in your state. Agricultural information abounds for those willing to learn just a little bit about how-to-do-it. If I can learn to operate a computer and access this gold mine of information, so can you. It takes a little patience (less than working with bees, actually) and the determination to explore something new.

As beekeepers, we are facing new challenges with Africanized Honey Bees, Varroa mites, tracheal mites, pesticide poisoning and a multitude of other issues.To face the challenges of the future, we must learn all we can. A simple personal computer tied to a telephone line permits us to share information with others in our profession around the world.

This is only a brief overview of the numerous services available to users. There are specific groups dealing in bumblebees and other insects. You can get information about the Small Business Administration. What about local long-range and short-range weather forecasts? Numerous computer programs are available to assist in business and agriculture practices. They're free in many instances.

The more I learn about this computer access, the more I find myself concerned with the future. Unless we take time to learn about this new means of communications we will fall behind. I envision a new Dark Age

HOW DO I GET THERE?

To obtain information from a particular computer or individual you must know the "address." Currently, there are over two million computers connected to the Internet. Just one of those computers may be used by several hundred people at a university. Of course, Internet is just one Onramp to the "Information Superhighway." You also have Bulletin Board Services(BBS) and private online firms such as Prodigy, Compuserve and On Line America.

Useful Electronic Mail (E-Mail) Addresses

Dr. Edward E. Southwich, Dept. of Biological Sciences, State Univ. of NY
Internet: eSouthwi@ACSpr1.ACS.Brockport.edu

Eric C. Mussen, California Extension Apiculturist, Univ. California, Davis
Internet: ecmussen@ucdavis.edu

President Bill Clinton
Internet: president@whitehouse.gov

Vice President Al Gore
Internet: vice.president@whitehouse.gov

Stain G. Kain, Author of this article
Internet: stankain@delphi.com

Agricultural Resources

Farming and Agricultural News
Internet Usenet Newsgroup: alt.agricultural.misc
Cornell University Extension Network
Internet Telnet: Empire.cce.cornell.edu

Government Sponsored Bulletin Boards (List)

Internet Gopher: marvel.loc.gov Choose: Fed.Govt.Info./ Fed.Info.Resources/Info. BYAgency/General Info./Federal Boards.

Internet Gopher

The Gopher is your best friend. When you access the Internet, go to GOPHER. The gopher divides the world by continents, then countries and states. At the state level, you can see every gopher connection in the state. Find the university of interest, then look at their electronic mail address book. You can find the Extension Entomologist or other experts to help you with your questions. As an example: Find the universities in Brazil. Perhaps you could find someone there to discuss Africanized Honey Bees in South America. The possibilities are endless.

SUGGESTED READINGS AND SOURCES

The Internet Yelow Pages by Hahn & Stout (Osborne McGraw Hill)
Internet: Mailing Lists by Hardie & Neou (Prentice Hall)
DELPHI — The Official Guide (General Videotex Corporation)
The Internet Companion by LaQuey (Addition-Wesley Publishing Company)

INTERNET ACCESS SERVICE

DELPHI INTERNET Call 1-800-695-4005 for information
There are several Internet access suppliers. DELPHI offers complete Intenet access for less money than other services and it's the one I use.

COMPUTER CLASSIFIED ADVERTISING

Nearly all services offer classified advertising. CompuServe has over 1.5 million subscribers worldwide. Membership for computer access is $8.95 per month. You can run an ad for 26 weeks for $14.30 per line. Most other services offer similar deals. For CompuServe information, call 1-800-848-8990.

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lurking ahead. A time when those who have taken the time to learn about computer information services will have access to the knowledge of the world. Those who did not learn will be left in ignorance. It's your choice. Even now, you can purchase U.S. postal stamps, pay bills and order many products from the computer keyboard. You don't need a state of the art system, or even a color monitor to obtain this access. A search of the classifieds can turn up many suitable computers for under three hundred dollars.

If you would like specific addresses for a particular service I have mentioned, you can send a SASE to me at P.O. Box 1599, Atascadero, CA 93424-1599. I'd be happy to recommend a book or two to help you learn about modems and the Internet. If you have a computer and a question, you can contact me by E-mail at: Internet: stankain@delphi.com or at CompuServe I.D. 74134,2617 BC

Stan Kain keeps bees, and navigates on the Information Super Highway from his base in Atascadero, CA.

HOME HARMONY

ann harman

Salads

Think about this one a salad fork is a common part of a place setting but you never see a "salad knife." Somehow this means that salads need only a fork. I wish that were true. I agree with the Chinese — in the matter of salads — that a knife is a kitchen tool, not a table implement. You have probably encountered salads such as I have and wished that they had been served in large mixing bowls.

Instead, the salad is served in a flattish dish, not a bowl. In order to look impressive the dish is full — very full. Such a dish insures that half the salad will disappear over the edge as you try to distribute the ingredients. Now your attack begins. First, since the lettuce is approximately the size of bed sheets it will need to be cut or it will become plastered to your chin. Cherry tomatoes have great eye-appeal as both food and salad decoration. Just try to stab one with your fork. Every cherry tomato plant produces tomatoes too big to fit in your mouth without halving. Any attempt at cutting into a whole cherry tomato with a dinner knife usually results in the tomato rolling like some errant bowling ball across the table into someone's lap. For some reason carrots — the longer the better — are sliced into paper-thin strips, too thin to be stabbed with a fork. Therefore, they require your best spaghetti-eating technique. Whole radishes will roll to join the cherry tomatoes — vegetable billiards? Now top this all off with enough salad dressing to fill a bathtub. Voila! A salad. No thanks.

You can become a "salad master-chef" with just a few simple fruits or vegetables and a tad of good dressing. Your salad can be beautiful to look at and still be manageable with a fork. First you must be prepared to do all the tearing, chopping and shredding in the privacy of the kitchen. In these days of food processors, such preliminary preparation need not be time-consuming. However, I will insist that you tear the lettuce into bite-size pieces, not cut it.

The choice of ingredients in a tossed salad is large. "Lettuce" comes in many different types which add different textures and flavors to a salad. Romaine lettuce need not be reserved for the popular Caesar salad. Combine romaine with a loose-leaf lettuce for enhanced flavor. Endive or chicory has a very slightly bitter flavor and its curly leaf adds an interesting texture. Combine it with other lettuces. Watercress, used with care, adds a peppery taste. Chinese cabbage, sliced, adds both flavor and crunchiness. Look through your seed catalogs for interesting greens to grow for your summer salads. Although some of these will not prosper during our hot, humid summers, others will. For times of dearth, investigate your local supermarket at different seasons and experiment with combinations of different greens. Don't neglect spinach. You don't have to reserve it for a "Spinach Salad." Take advantage of its dark green color and pleasant, distinctive flavor to enliven a tossed salad.

In the spring try some tender, young dandelion leaves, sorrel leaves or wild mustard leaves. Select those wild greens that you can identify but pick and use them before the plant matures. Then the leaves tend to be tough and bitter.

A little care in the preparation of salad greens will make a big difference. The most important thing is washing and drying. Leaves of spinach, in particular, but also those of other greens are crinkly and tend to hold grit in their folds and pockets, not a desirable addition to a salad. Wash greens well. Next, equally important, is drying. Water held in the folds and pockets will dilute the dressing, making it watery. If you plan to prepare the greens in advance or coat them with a little salad oil, they must be dry.

Here's a hint to keep salad greens from wilting when dressings containing vinegar are poured on. Prepare your greens (bite-sized pieces, remember?) and place in a large bowl. Sprinkle salad oil (your choice) over in the proportions of about one tablespoon to the equivalent of one head of lettuce. Toss gently until the leaves are coated.

Now for some of the other ingredients of salads. Tomatoes are a popular choice, particularly if homegrown. However delicious and decorative they are, tomatoes can cause problems. The skin can be difficult to cut through especially when the salad bowl is full and the piece of tomato is large (or if it's one of those cherry tomatoes). Tomatoes, when cut, tend to release large quantities of juice. Therefore, cut and add tomatoes to the salad just before serving. If you want to use tomatoes as decoration as well as ingredient, try cutting vertically into narrow wedges. Cherry tomato halves do not contribute as much juice and they can be placed cut-face down to preserve the decorative shape.

Vary your ingredients. Blanched snow peas or sugar snap peas are delicious in a salad. Matchstick zucchini, although bland in flavor adds texture. A hint of garlic can make a salad more interesting. Onions, particularly red onions, are a popular salad ingredient. Although rings look *pretty*, they too have to be cut. Slice the rings into quarters or cut the on-

ion vertically to have onion crescents. Try to use fresh herbs if possible. Their flavor cannot be matched.

And for a final touch – violet blossoms or nasturtium blossoms or daylily (hemerocallis) blossoms as a top decoration – edible, of course.

Now that you have chopped, shredded and torn your salad ingredients, take a good look at them. Do you need a knife to eat it? No? Good! Let's have some dressings.

Don't let the dressing be the dominant ingredient. It is surprising what a small amount of dressing a salad actually needs. However, sometimes it is nice to have a zesty dressing if the rest of the meal has rather mild flavors.

Your choice of honey will influence the final flavor of your salad dressing. In fact, you can use the same recipe with quite different honeys and create two completely different dressings. Clover and alfalfa honey are mild and contribute a nice flavor, leaving the herbs and spices to dominate. Orange blossom honey is best reserved for fruit salad dressings unless you are using very small amounts. Its wonderful floral aroma and taste really enhance fruits. Very strongly flavored honeys, such as buckwheat, should be used with caution in salad dressing since that flavor will tend to dominate everything else you add, including the actual salad ingredients. Experiment with your favorite local honeys to determine which flavors you prefer in your salad dressings.

Honey Salad Dressing

This honey salad dressing has a surprise ingredient, the Hot Pepper Vinegar, and can be used for a lettuce or a fruit salad. The recipe makes quite a quantity, so you can give some to your friends. Try this – it's really good – with a backyard picnic this summer.

Hot Pepper Vinegar

1 cup+ 2 tablespoons water
6 Tablespoons white vinegar
1/4 teaspoon Cayenne pepper
1/8 teaspoon salt
4 jalapeño peppers, quartered

In a 2-quart saucepan combine water, vinegar, seasonings. Bring to boil over high heat. Add jalapeños and remove from heat. Cool and refrigerate, covered, overnight. Strain before using. Makes 1-1/2 cups.

Dressing

1-1/2 cups chopped pecans
1 cup honey
1/2 cup sesame seeds, toasted
1/2 cup coarsely chopped onions
1 egg
Hot Pepper Vinegar – all of the 1-1/2 cups you made

In processor or blender combine pecans, honey, sesame seeds, onions, egg. Process until smooth. Pour into jar. Stir in vinegar. Keep in refrigerator until ready to use.

Paul Prudhomme's Louisiana Kitchen

Honey Apricot Dressing

The National Honey Board has published a really wonderful cookbook. If you don't have a copy yet, find one so that you can start enjoying some really good recipes. The tart-sweet flavor of apricots is very refreshing on a hot summer day.

1 can (12 ounces) apricot nectar
1/4 cup honey
2 cloves garlic, minced
1/3 cup vegetable oil
1/2 cup raspberry vinegar
1-1/2 teaspoons cornstarch
1/2 teaspoon ground ginger
1/4 cup minced fresh basil or 1 tablespoon dried basil, crushed
1/8 teaspoon salt
1/8 teaspoon pepper
1 tablespoon toasted sesame seeds

Whisk together apricot nectar, honey, garlic, oil, vinegar, cornstarch, ginger, basil, salt and pepper in medium saucepan. Bring to a slow boil over medium heat. Reduce heat to low and simmer 5 minutes, stirring constantly. Cool; add sesame seeds and refrigerate tightly covered up to 10 days. Makes about 3-1/2 cups.

Sweetened With Honey The Natural Way
National Honey Board

Honey Rum Dressing

If you are in a hurry and need a quick salad dressing, try the following two recipes instead of opening a bottle of the "same old stuff."

Use this on a bowl of fruit: fresh pineapple, papaya, mango, peach, kiwi, bananas.

1/4 cup honey
2 tablespoons rum
1 tablespoon lime juice
1/8 teaspoon ground ginger

Combine and mix until well blended. Makes about 1/2 cup.

The Complete Book of Salads
Ortho Books, editor

Honey and Poppyseed Dressing

1/4 cup honey
3 tablespoons lemon juice
2 tablespoons oil
2 teaspoons poppy seed

Combine and blend well. Can be refrigerated for several hours to blend flavors. Makes about 1/2 cup.

The Cranberry Connection
Beatrice Ross Busek

Raspberry Vinaigrette

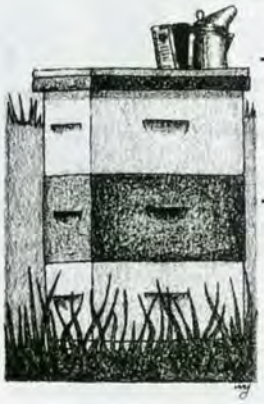
This next dressing is delicious on just plain salad greens. The raspberries make a bowl of greens seem like a fruit salad. Use three or four different kinds of greens for this dish.

1-1/2 cups fresh raspberries
1 tablespoon honey
1/4 teaspoon dried whole thyme
1/4 teaspoon freshly ground pepper
3 tablespoons white wine vinegar
3 tablespoons water
2 teaspoons vegetable oil
1-1/2 teaspoon soy sauce

Combine all ingredients in blender. Blend until mixture is smooth. Strain to remove seeds. Cover and chill thoroughly. Serve with salad greens. Yield 1 cup.

Cooking Light
Oxmoor House

I think the next time I go to a restaurant I will take a paring knife in my pocket to cope with the stubborn vegetables. I wonder if I should take a big bowl, too?



BEE TALK

richard taylor

"I sometimes feed my bees sugar syrup, but only in extreme circumstances."

I don't think I've ever talked, except incidentally, about feeding bees, so maybe it's about time I did. Probably the main reason I've skipped this subject is that I never do it; or rather, hardly ever. Many seasons go by without my buying a single pound of sugar. But this year was different, and all of my hives had feeder jugs on them, because it was steadily cold and wet and the bees were not able to do a thing. They would have been standing still or falling behind without those syrup jugs on them. So it's obvious, *sometimes* feeding your bees can be critical to getting a crop; but most of the time, I am convinced, it is useless.

A common fallacy among beekeepers is that, sugar being much cheaper than honey, you can overharvest your hives and then compensate for your greed by giving the bees sugar syrup. The reason that is a fallacy is that a gallon of syrup does not even come close to being equivalent to a gallon of honey. By the time the bees have taken it down and reduced and inverted it I'd bet it isn't equal in energy to a quart of honey. I have no empirical proof of that, but I do know that bees that are heavy *with honey* in the fall, and still have more than they need in the spring, build up to strength much faster than those that were fed sugar syrup, even lots of it.

So syrup feeding is, to my mind, something you do in the spring *if* circumstances call for it, that is, if a colony is weak, or if the spring is cold and wet, like this year.

The effect of feeding sugar syrup is that it greatly stimulates brood rearing, just as an early nectar flow does. To the bees, these are one and the same thing. So your purpose is not to get this syrup into the combs for storage, but rather, to make the bees think they are having a nectar flow. It is for this reason that I do not approve of punching lots of holes in the lid of the feeder jar. If you do that, then the syrup disappears from the jar in a hurry, goes into the combs, and the bees think the nectar flow is over. I punch just four small holes in the center of the lid. Even so, the syrup disappears fairly fast, but it is used for brood rearing rather than being stored.

This looks like pretty casual beekeeping, but it works fine and the bees are deeply grateful.

What I'm talking about here is a one-gallon wide-mouth glass jar. You can get all these you want for nothing from your local recycle center, and they can be used year after year and never rust. To make the syrup, just pour a 5-lb. bag of granulated sugar into the jar and fill it up with hot water, stirring with a wooden spoon or stick. I don't add any medication. Terramycin deteriorates when wet, and I never bother myself about nosema. A spell of nice warm dry weather, sooner or later, will fix any nosema.

Beginning beekeepers sometimes imagine that, since sugar feeding stimulates brood rearing, which is what you want for strong colonies that will produce big crops, then the more syrup you feed the stronger your colonies will be. But what actually happens, if you overdo things here, is that the available comb space gets filled with brood, the extra syrup gets stored in the combs, the queen has no areas left for egg laying — and what you get are some big, early prime swarms. So the rule is: As soon as there is abundant bloom, as from dandelions, and the prospect of warm,

reasonably dry days, discontinue any feeding.

And what about pollen cakes? And soy flour? My opinion is that pollen patties are perhaps worthwhile if you can trap your own pollen and make them up yourself, but I doubt they are worth buying. The bees almost always can get enough pollen in the spring. Sugar syrup is easy to use and pretty much solves any problem. As for soy flour, I have never been able to get the bees to use it, and this has been the experience of others, too. I suspect that, so long as they can get some real pollen, they will not go near soy flour.

Now when you invert a gallon jar of syrup over the inner cover hole, you would think you would need to cover it with an empty hive body and lid. That's fine if you have some old hive bodies lying around, but it really isn't necessary. I usually just leave the jars exposed, and maybe a little rain might drizzle into the hive, but not enough to matter. And you can tell at a glance at the whole apiary which jugs have been emptied.

Now there are a few other special situations when feeding might be necessary. For example, if you hive a swarm on foundation, and then it rains for a week, you might find that the bees have all starved. This is very rare, but I have seen it happen. Apart from starvation, it is very worthwhile to feed bees, whether from a swarm, package or whatever, that have been hived on foundation, as it greatly hastens their drawing it out.

Packages of bees should be given some sugar syrup if they are not hived within a day or two. Don't paint the syrup on the screen with a brush, as this can injure the thousands of little tongues that are lapping the syrup from the screen. The simplest thing is to lay the package on its side in some sort of tub and pour a bit of syrup right through the screen. The bees get drenched, but that doesn't matter, and no syrup is wasted.

If you gather a swarm and hold it in a swarm box for more than a couple of days you should feed it. Just invert a jug over the hole in the top of the swarm box, same as you would with a hive. Nucs, too, must be fed, for they have no significant field force.

Queens with their attendants, in their mailing cages, should never be given sugar syrup. They get sticky, and perish. You do need to give them a drop of water (from the tip of your finger) once or twice a day, to prevent dehydration. If they have been in the little mailing cage for several days, and have eaten a hole in the sugar candy, then you should replace that candy before trying to introduce the queen to a colony. You can make the candy by mixing a drop or two of honey with a spoonful or two of powdered sugar, kneading it with your fingers into a ball. But it must be stiff, fairly hard, for otherwise it can drizzle right out within the warmth of the hive, or even in a warm room.

So much for feeding. Bees are the only livestock I can think of that do not *have* to be fed, and I think we should bear that in mind. Bees are normally quite capable of feeding themselves all that they need. Autumn is going to come, and you will be tempted to get as much of that fall honey for yourself as you can, making up the difference with sugar syrup, but I suggest you think twice. Maybe it's a good idea, and maybe I'm the one who is off the track here, but do, at least, think about it first. BC

Postscript: The April "Bee Talk" struck a depressed note, which produced a flood of mail, so please note: I shall answer every single letter, but it is going to take time, and meanwhile, God bless my many friends.

?Do You Know? Answers

1. **True** Egg laying is a major function of the queen and she will lay between 175,000 and 200,000 eggs annually. Egg laying occurs throughout the day and night. Most queens probably lay between 1,000 and 1,500 eggs daily during the most active period of broodrearing. The egg-laying process requires approximately 9 to 12 seconds. After laying a number of eggs, the queen remains motionless, during which time she is groomed and fed by workers.
2. **True** The number of drones reared by colonies is determined by several different factors: amount of drone comb constructed, the colony size, quality of the queen, food stores, time of year etc. Populous colonies with older queens tend to produce more drones than small colonies with young queens. Some of the same factors also affect the swarming impulse and drone production normally precedes swarming preparations.
3. **False** Both worker-size and drone-size cells are reused for brood production in the honey bee colony. Queen cells, however, are destroyed by the workers after the queen emerges or is killed by rival queens prior to emergence.
4. **False** Bee space (distance between combs and the hive parts that is kept open by bees; free from burr comb and propolis) is 1/4-3/8 inches in width.
5. Slumgum
6. Storage of food (honey and pollen); Rearing of brood
7. Pheromone
8. Either move the hive in small increments over a long period of time to its new location or move the hive to an interim location which is several miles away and then move the hive to its new location after approximately three weeks.
9. Many beekeepers regularly go out, capture and hive a honey bee swarm. Disadvantages of starting a new colony with a captured swarm in comparison to a package are: 1) not all swarms are equal in strength 2) primary swarms are normally headed by an old queen which is often replaced soon after installation 3) many swarms are difficult to capture due to their clustering location 4) potential of picking up some bee diseases and parasites would be greater with a swarm 5) packages are available earlier in the season than a swarm; swarming tends to occur just prior to or during the beginning of the major nectar flow(s).
10. D) Workers and Queens
11. A) Workers Only
12. C) Queens Only
13. D) Workers and Queens
14. G) Workers, Queens and Drones
15. D) Workers and Queens
16. There were no honey bees in North and South America prior to the migration of Europeans to these continents. Since the American Indians were not familiar with honey bees until they were imported by the settlers they called this new insect the "white man's fly."
17. Cappings placed over honey cells are generally 100% new wax, those over brood are only partly wax. Old wax is used in capping brood cells and often contains pollen, propolis and bits of cocoons.
18. There is normally only one queen in a colony, although under conditions of supersedure an old queen and her daughter may be present and laying. Both may be present for many days or weeks without any show of animosity toward each other. The old queen, however, usually disappears within a week or so after the young queen begins to lay.
19. The virgin queen's powerful mandibles are used to make an opening in the side wall of the queen cell. She inserts her abdomen into the opening and stings her rival to death. Worker bees dispose of the carcass and destroy the queen cell.

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

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

Questions?

Cold Queens

Q **A queen I had purchased got chilled when the temperature fell to 23°F. She seemed dead, but I revived her by blowing on her gently, and introduced her to my observation hive. Now a friend has told me that she will be a drone layer as a result of being chilled. Is this true?**

David F. Verville
Plaistow, NH

A I have never heard of such a thing. I think it is not true. I once inadvertently left some queen bees in my car overnight, in their mailing cages, and found them chilled and motionless next day, but I never noticed any problems with them after they had been introduced to some of my hives.

Clean It Up

Q **How can you clean up a solar wax extractor after melting old dark combs in it? It is a real mess.**

Pat Morris
Newfield, NY

A Wait until mid-morning of a sunny day, by which time the slum gum will have become soft, and you can scrape it out very easily with a big spoon or stick. Wrap the lumps in newspaper and use them for starting up your fireplace next winter.

Pollination Fees

Q **I started with two hives and have eight now. The beekeeper who sold me the first two said I could get $8.00 each for pollination, so I contacted a pear orchardist and he offered me $25.00. I took him six hives and he cut me a check for $150.00 instantly! When I saw the beekeeper who had sold me the two hives he advised me to keep all this to myself, for otherwise competitors would move in and offer pollination for $15.00 per hive. Since then I met someone who said he gets $47.50 per hive in almond orchards. Who is telling me the truth here?**

Del Gallant
Laytonville, CA

A I think you were being misled by that eight dollar figure. Twenty-five dollars per hive is very reasonable by today's standards, and I suspect the $47.50 quotation is not out of line either. Beekeepers who can move *strong* colonies in and out of orchards when needed can command very good rentals.

Moving Honey

Q **Last year I lost seven colonies to *Varroa* mites. To protect them from wax moths I sealed them up with paradichlorobenzene crystals inside. Now I have 30 full-depth combs solid with honey which is not fit for human use because of the contamination by moth crystals. I want to feed it back to the bees. Can I do this by putting empty supers on top of my hives and putting the combs of honey in these? Will the bees clean out the honey and take it down below into their hives? I have never had foulbrood, so am not afraid of spreading this.**

Dan Turbeville
Ocean Springs, MS

A The method you describe does not work. I tried it once, years ago. The bees would just move up into that super and build more combs there, even with an inner cover underneath with the hole open. You have two choices here. First, you can wait until there is a dearth of nectar – mid or late summer, I would suppose – and set the combs of honey out near your apiary for the bees to clean out. Or second, you can put the combs in supers *underneath* your hives, right on the bottom boards, and the bees will eventually move the honey up into their hive. Trouble is, they will also probably start raising brood down there in the super.

Comb Honey & Moving

Q **Can comb honey production, using round selections be incorporated into renting bees for pollination?**

John M. Tomac
University Park, IL

A I do not think so, because moving bees around for pollination seriously cuts down honey production, and very strong, well-managed colonies are needed for getting comb honey.

Lost Queen

Q **Why do bees sometimes fail to replace a lost queen and allow the colony to be taken over by laying workers? I have seen this happen several times.**

George Robertson
Raleigh, NC

A A colony of bees, suddenly deprived of their queen, will almost immediately begin to rear new queens by constructing queen cells around suitable larvae. I have never seen an exception to this. Many things can go wrong, however. Most typically, I think, the virgin queen they raise gets lost, perhaps to a bird, on one of her mating flights, leaving the colony hopelessly queenless. Or, perhaps the lost queen was only producing drones.

Preservation

Q **I have acquired seven hives, many of them old and deteriorating. Bottom boards, etc., will need to be replaced. I have heard that creosote is good for protecting hives. How should it be applied. Should I dip the hive parts before assembling them? Or what?**

A. Richard Boerner
Madison, OH

A Creosote has been declared a carcinogen and can no longer be purchased. But whatever you use as a wood preservative, you should not dip the parts, for many preservatives are toxic to bees and should therefore not be applied to the inside of a hive. Your best bet, I think, is to paint the hives, outside only, and then see that they are up off the ground when put to use.

Please send questions to Dr. Richard Taylor, Box 352, Interlaken, NY 14847, enclosing a stamped envelope for response.

Answers!

Richard Taylor

Gleanings

JULY, 1994 • ALL THE NEWS THAT FITS

Conservationists Blamed
AUSTRALIA'S FIRES DEVASTATING

No amount of rhetoric can adequately describe the needless waste and horror of the January '94 NSW bushfires.

One can talk till the cows come home about temperatures, arsonists and once-in-a-lifetime events but the reality is that the fires NEED NOT HAVE BEEN SO SEVERE.

That part of the conservation movement (including active, passive and irregular supporters from the top of our administrative and social system downwards) which advocate "no human interference," "closure of public access," "protection of habitat at all costs" and concepts of a like nature have to bear responsibility for a large part of the conflagration and its resultant damage.

Anyone with even the remotest knowledge of the nature of Australian bush flora knows that regular, low intensity burning is an essential part of its life cycle. The decorticating bark (candles) of our gums, the oily flammability of dead leaves literally cry out for fire. Mature trees have fireproof bark. Dormant buds lie beneath, waiting the day when they will sprout into new life restoring leaves. Pods must be opened by heat/fire to release seeds for new generations of short lived species. Bush animals instinctively know what to do to protect themselves.

Flames which reduce forest litter and do not go above two or three meters cause minimal damage, renew life and prevent these deadly conflagrations.

What is the point of preserving a habitat year after year only to have it burn with such intensity that the very plants and animals it was supposed to harbor are destroyed or the few survivors starve. The soil is laid bare to the forces of erosion. Where is CONSERVATION in that concept?

Whole colonies of our national symbols are burnt to death while the conservationists sing songs about "preserving the bush" and "true blue." What song will they sing now? Hopefully it will be a dirge to their own unrealism.

Far from leading the nation in conservation, NSW has been travelling out on an unsustainable tangent. It is now left out on a burnt and disgraced limb. Other states seem to have taken a more realistic policy of jointly utilizing and sustaining our bush. NSW must now fall in and take a lead from them.

From Australasian Beekeeper

MICHIGAN QUEEN

Rachel Hempel

The Michigan Beekeepers Association's 1994 Honey Queen is Rachel Lee Hempel of Three Oaks, Michigan.

Rachel's parents are Phil Hempel, owner of Blossomland Bee Supply Company of Berrien Center, and Sandy Blake of Three Oaks. Rachel is a senior at Galien High School and plans to major in pre-law next year. She is very active in sports and student government.

Rachel will reign until March, 1994, and is looking forward to a busy and fun year attending fairs and parades, visiting orchards and going to various Michigan Beekeepers events.

New Members Appointed
HONEY BOARD NEWS

Mike Espy, U.S. Secretary of Agriculture, appointed two producer members, one exporter member and one cooperative member as well as alternates for each position to the National Honey Board. The new members' three-year terms commenced April 1 and expire on March 13, 1997.

Binford Weaver, Navasota, TX, was reappointed as producer member representing Region 5 (Alabama, Arkansas, Louisiana, Mississippi, Missouri, Oklahoma, Tennessee and Texas). Bobby Coy, Jonesboro, AR was appointed as alternate.

Stephen A. Conlon, Proctor, WV, was appointed to serve as producer member representing Region 7 (Connecticut, Delaware, District of Columbia, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia and West Virginia). David E. Hackenberg, Lewisburg, PA, was appointed as the alternate for Conlon.

John (Doug) McGinnis, Edgewater, FL, was appointed to serve as exporter member. Robert E. Coyle, Bellevue, WA, a honey importer, was appointed as the alternate for McGinnis.

Albert B. Belliston, Burley, ID, was appointed to serve as honey marketing cooperative member and David B. Allibone, Sioux City, IA, was appointed alternate for Belliston.

Outgoing Board members are Ed Doan, producer member Region 7, Hans Boedeker, importer/exporter member and Dale Bauer, marketing cooperative member.

The National Honey Board consists of 12 honey industry members and one public member. The industry members include seven producer members, two handler members, two at-large importer members (or one importer member and one exporter member) and one representative of a marketing cooperative. There is an alternate for each member.

The new members were seated at the Board's annual meeting, June 14-17, in Denver.

Popularity Declining, Finally
ARTIFICIAL SWEETENERS & SOFT DRINKS

The United States carbonated soft drink industry is the largest single commercial user of high-intensity sweeteners. U.S. soft drink consumption totaled 12 billion gallons in 1992, about 48 gallons per person, with diet soft drinks capturing 30% of the market. Aspartame is the leading sweetener for diet soft drinks. High intensity sweetener's share of the soft drink market has been declining recently. Nonalcoholic drinks containing natural ingredients without preservatives have gained consumer acceptance, such as tea and fruit juice. Some analysts believe that diet soft drinks are at a saturation point and will lose share to new-age beverages, good news for fruit and citrus growers.

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Display Index

Share Beekeeping With A Child

shawn kime

As a very young child, I thought everyone's father was a beekeeper. I talked to my friends about bees as if they were just as important to their families as they were to mine. Some of them thought it was unique, many found it somewhat interesting, others simply wondered what in the world I was talking about.

I am absolutely certain that my life would not be the same today if my father hadn't introduced me to beekeeping. Although there were many times when I regretted being in a beekeeping family, I now understand what an important impact it made on me. Beekeeping taught me some of life's most valuable lessons and for that reason alone it ought to be passed on to younger generations.

One lesson that beekeeping instills is a good work ethic. No doubt about it, beekeeping requires a great deal of drive and dedication. Young people can learn the importance of putting work before play and enjoy the satisfaction of a job well done.

Today's kids seem lazier than ever. They find television, movies and video games much more appealing that good hard work. Many of my peers find it too excruciating to take out the garbage, rake leaves or mow the lawn. Compared to a long day of harvesting honey these simple chores seem relaxing. In high school, while many of my friends were out all night partying, I was moving hives into the orchards. Keeping bees teaches children to set priorities. When I was 14, my father and I worked from sunset to sunrise during the busy pollinating season. What seemed like cruel and unusual treatment actually taught me that one must sometimes work until the job is done, despite being tired or wanting to quit. This experience makes it easier for me, as a college student, to spend long hours and many nights working on an important assignment.

Children may also learn a sense of responsibility from beekeeping. You must be responsible for your bees or they will die. The beekeeper has to watch for diseases, check the food supply, administer medications, and put on supers and mouse guards at the proper time. When children learn to be responsible for bees, they're ready for just about anything – feeding the dog, doing homework, keeping a clean room, or holding a part time job. It is clear that beekeeping is a literal training ground for responsibility.

It's also an excellent decision-making experience. Most children don't have many decisions to make, except whether to go to the mall or the movies. When they grow up, lack of significant decision-making in their formative years could result in failure to succeed. Young beekeepers have an opportunity to make a variety of important decisions – when to put on supers, when to take off honey, when and how a split should be made and the like. Decisions like these are vital to the profits of a bee business and survival of a colony. Learning to make tough beekeeping decisions prepares children to make even tougher decisions that can affect their lives in the future. With experience in decision-making, a child will have an advantage in life.

I was about seven when I asked my father if I could have my own hive. He decided a hive with two extra supers was worth $70 and I worked it off at the rate of two dollars an hour. He let me pick out which hive would be mine so I chose the tallest hive I could find, smiling as we put my name on the lower supers. We have kept track of that hive ever since. It provides me with honey to sell, plus pollination fees, but I must also pay the expenses of that hive. Although it's nice to collect money from a hive, it's essential for a child to understand how the economic system works, that you must spend money to make money in a business or an investment.

Earning their own hive gives a child a sense of ownership and responsibility and represents pride and importance. By working for it, a child achieves a sense of accomplishment.

Aside from the intangible feelings that comes with owning a hive, a child gets the all important tangible item – money and with money come the lessons of spending wisely and saving. Children value money more when they have earned it fairly. They are also less likely to spend it unwisely. Learning to manage money early in life is a lesson that will last a lifetime.

It is never too early to introduce your son, daughter, niece, nephew, grandchild or even a friend's child to beekeeping. Get them interested when they're young. The first time I went in the bees, we had to tie a rope around my waist to pull the suit up. I could barely move without tripping over the pant legs.

When they are old enough to actually do some work give them a chance to own a hive. The child won't be the only one who benefits. The personal satisfaction you receive from giving a child a head start in life and the bonding you share is a gratifying experience. Remember, you will create more than just a new beekeeper.