JUL 1997

BeeCulture

Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

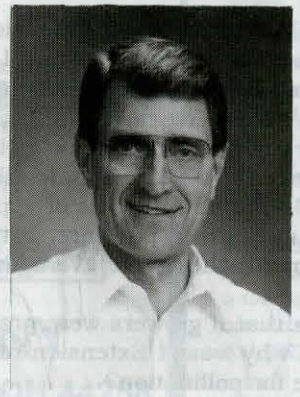
JULY 1997 VOLUME 125 NUMBER 7

FEATURES

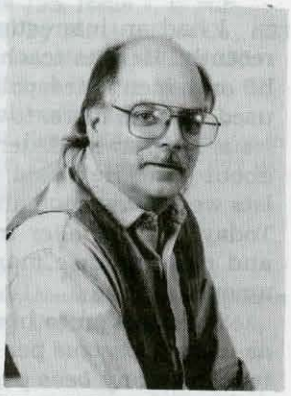
COVER
There's a lot about queens, queen biology, queen management, queen rearing, queen replacement and queen supercedure we already know. But there's a lot more we don't know. Mark Winston's article looks at this very complicated subject.
photo by Kim Flottum

DEPARTMENTS

COLUMNS



JOHN ROOT
Publisher



KIM FLOTTUM
Editor

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INNER COVER

It has been a Spring and early Summer unlike any in the last several years. Colonies across the land have wintered well, built up well, and swarmed at will. "Bees in the trees" has been the rule, rather than the exception.

Don't be fooled.

If, this Spring, you checked your bees and all seemed well, you probably did the right thing last Fall and treated. If so, the *Varroa* population was knocked down to nearly undetectable levels, or should have been anyway. Then, when there wasn't any brood to speak of, the *Varroa* population remained static . . . nearly undetectable.

If you checked this Spring, that nearly undetectable level showed, well, essentially no mites. If no mites meant no treatment, your gamble will be coming to fruit right about now.

Have you checked for *Varroa* lately? Let me share some preliminary results of a research project looking at this very situation. Colonies in this experiment were loaded with *Varroa* last October – 20 to 50 mites per 300 to 400 bees in an ether roll test. Half the colonies were treated with Apistan, label rate, label length. Half weren't treated. Both were treated for tracheal mites.

Come early Spring, half of the colonies not treated were dead. Only three percent of those treated were gone. All of those either starved or went queenless and died.

And, an ether roll produced a couple hundred mites from the untreated, but only two or three (or fewer) from the treated.

And there's the rub.

Lots of people, lots and lots of people, figured two or three (or fewer) weren't enough to worry about, since they'd treated last Fall. *Varroa,* however, isn't that easy to fool, nor does it give up – ever.

In this experiment I mentioned, by June 1, only 10 percent of the Fall untreated colonies were still alive. Meanwhile, those colonies that were treated in the Fall, but not in the Spring, were showing 20 to 300 mites or more in an ether roll test, and weren't, as the experts say, thriving. Little brood, no honey coming in, and worse. These colonies will be dead by Labor Day. Maybe sooner. Sound familiar?

If you didn't treat earlier this year, you'd better check things out now. Or, like that researcher, you'll be cleaning dead hives all Fall.

•

I had an interesting talk with an apple Extension Specialist recently. He was teaching a class on apple culture I was in, and he only mentioned pollination in passing – necessary, bees were used, and no more. It was a gardener's class, so I didn't press the issue right away. Later, I brought up a couple of points he made about yield. He'd said that about 10 years ago, in Ohio, orchardists were harvesting about 400 to 450 bushels of apples per acre. Today, with smaller trees, more trees per acre, better varieties, and more intense management, they were averaging twice that amount.

My question to him was that if growers were producing twice as many *blossoms* per acre, why wasn't Extension recommending twice as many *bees* per acre for pollination?

His answer was that, at one colony per acre, they were still getting more apples per tree than necessary, and growers still needed to thin the crop. His reasoning was that the bees were still covering that acre, and were able to do the job because the blossoms were closer together; thus they could do twice the work in the same amount of time. He didn't discuss the quality of the fruit produced, however.

I'm not sure I agree with that logic, but the results can't be argued with – same number of bees, twice the blossoms, twice the yield.

I'd like to believe he's incorrect in that more bees aren't needed, especially during one of those marginal weather years, but maybe not. Perhaps, way back when, when there were half the blossoms, our bees were underutilized. Now, with many more blossoms, they have been brought up to, or are at least approaching their full pollination potential.

He did say that the recommendation was still a colony per acre, and dire consequences could result without that population. And he admitted there were no feral colonies around to depend on.

What he didn't say was what the result of having the same number of bees would be when the weather was really rotten during bloom. Nor would he even guess.

I hope apple growers will guess though. After all, it's their livelihood at risk, not the Extension Specialist's.

Continued on Page 43

Treating For *Varroa*; Apples, Bees & Pollination; Group Therapy

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Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

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Subscription Information

United States, one year, $17.00; two years, $33.00. Newsstand price: $2.50. All other countries, (U.S. Currency only), $9.50 per year additional for postage. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), Volume 125, Issue 7, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices. POSTMASTER: Send address changes to BEE CULTURE, The A.I. Root Co.,623 W. Liberty St., Medina, OH 4256

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Circulation Figures reviewed monthly by Ernst & Young Accounting Firm, and are available on request.

Guest Editorial

Raw Honey Definition Needed

Michael Meyer

For over twenty years I've been producing what I feel is 'raw' honey. I try not to heat it during extraction, and when it crystallizes, the jars or buckets are re-liquefied at the minimum temperature possible. Over the years, I've found that 105 to 110°F does a sufficient job. This keeps most or maybe all the original enzymes intact, plus keeps the honey tasting as close as possible to the way it tastes as it comes out of the extractor. Honey will flow just fine for all stages of extraction, settling, and bottling anywhere above 90°, so I always supposed that I could claim that my honey was 'raw' and 'unheated,' and all my different labels have claimed this fact. Since our Summers reach 100°F occasionally, and since, according to Dr. Eric Erickson of the Tucson Bee Lab, honey will reach at least ambient air temperature, the bees had let the honey reach at least 100° occasionally.

All the honey I've ever produced crystallizes in about six to eight weeks, especially in the Fall and Winter. This was a headache to change out with the local stores, but in all good conscience, I felt I had the responsibility to my customers to produce the best tasting honey possible, and heating it much higher than I did always changed the taste substantially, driving off the aromatics and causing the honey to have a syrup-type taste instead of the delicate bouquet it had originally.

On a trip to the grocery store, I found a jar of Auntie Jane's Raw Wildflower Honey (name changed to protect me). After some investigating, I found that the huge Midwest packing conglomerate that produced this was heating it to only 140°F instead of the usual 160°, so they felt they could call it 'raw,' I suppose. The honey's taste was generally terrible (in my opinion), but consumers thought they were getting a product which had not been heated. You can suffer third-degree burns at 140°! Raw, my eye! I claim that this company, if the above temperature facts are true, is defrauding the unsuspecting consumer, who generally thinks he or she is getting a product similar to mine, where utmost care is used in all stages of extracting and bottling to preserve the original taste.

For a while, I was all excited about getting some legal wranglings going based upon some kind of fraudulent claims (I'm no lawyer), so I called up the Honey Board to see what was officially on the books concerning a 'raw' definition.

Here, beekeepers, is the official definition, followed and clarified afterward by a definition of commercially raw honey:

RAW HONEY: honey as it exists in the beehive or as obtained by extraction, settling, or straining *without adding heat.* (Italics mine)

COMMERCIALLY RAW HONEY: honey obtained by minimum processing. This product is often labeled as raw honey. With a tag added later: The definition of "minimum processing" can be set by purchasing standards.

Both these definitions as they exist and are applied to practical honey production are jokes. I will address each in turn and then make some proposals, followed by the big picture. I will also address why these definitions might have come about, and who needs to be producing 'raw honey.'

The first part of the raw honey definition is fine. We can produce honey, which for all practical purposes, is the same as it exists in the beehive, keeping in mind the ambient temperature in a particular area or the highest ambient temperature in the contiguous United States (more on this later). The last three words make this definition ridiculous. Let's say you come into your honey house, the temperature is in the mid-50s, and you decide to turn the heat up. Well, you've just added heat, and by definition, have just negated all your honey's definition as 'raw.' Or let's say you've just exchanged a jar of your honey at one of your accounts. Unless you sell it as is, this honey can no longer be classified as 'raw,' since to liquefy it (including putting it out in the sun), heat must be added. I venture to speculate that no one in the United States produces 'raw' honey by this absurd definition.

Now, as far as the "commercially raw honey" definition goes, I wonder what politician wrote this one? Certainly one with some ties to the packers, since this definition could be construed to mean whatever someone wants it to mean. "Minimum processing" sounds good at first, but 'minimum' compared to what 'maximum' or what defined standard? If a packer for years has heated honey to 160°F, then 140°F might be twisted to mean 'minimum processing.' Those of us who for years have traded out our honey and patiently explained to accounts and consumers that our honey and all 'raw' honey will crystallize in time are getting shortchanged. Unscrupulous honey people are taking advantage of this label to dupe consumers and sell them honey which in no way is 'raw.'

The Honey Board* generally agrees that we need a better definition for 'raw honey,' and they would work with us to expand the market niche for this product. That's great news if we can get a definition that means something. This definition must be passed by a general vote of the national beekeeping organizations, of which many members have strong ties to packers and others who might oppose a clearer definition. So here's my proposal, and it is a simple one. We base the definition on temperature alone, such as: "Raw honey is defined as honey kept below ____°F in all stages of extraction, settling, straining, and bottling." All we, the beekeepers, have

to do is agree on a temperature, which should be easy, but in actuality probably will not be so simple. I propose that we adopt the ambient air temperature of the hottest area of the United States where bees are commercially kept, which is probably Arizona, and, again according to Dr. Eric Erickson, is around 115°F.

Giving the packers who might still be interested in marketing raw honey an additional break, I suggest we adopt the temperature of 120°F as the universal temperature *maximum* for 'raw' honey. Those who feel this is too high can change their labels to read something like "This honey has been kept at 100°F or lower in all stages to bring you honey as close to possible as it exists in my beehives." Or something to that effect. But before you scream for a lower maximum temperature than 120°, put yourself in Arizona. There your honey in the hives routinely reaches the 110 to 115° mark during the Summer. Consider also the fact that the combs start sagging and the liquid honey starts running down on the bottomboard around 120°, so honey can't exist in the hive above this temperature for very long. I couldn't find research on this exact temperature, and based it on an article written many years ago.

So what needs to be done? Badger the members of the resolutions committees of the ABF and the AHPA, and also their officers. Tell them you will withdraw your membership unless a better definition is drawn up. Get state associations to draw up resolutions to send to the national organizations. The ultimate objective of this is to raise the price of raw honey above that of regular honey and let the consumers who are so concerned about what they eat pay for all the extra time and trouble that it takes to produce genuine raw honey. At this point, we do not need any mechanism for enforcement, just a definition, as enforcement is a whole other ball of beeswax. Already customers exist out in the real world who are concerned with enzymes and eating products existing as close as possible to their natural state. Other customers are price-conscious only and want a product that tastes good and is price-competitive. Let the division begin and let's start commanding the higher price that 'raw honey' deserves. BC

Michael Meyer is a commercial producer/packer from Springfield, MO.

**In discussions on this topic with Honey Board Staff, it was determined that, indeed, no single definition for raw honey exists. For commercially raw honey, the standards are set between buyer and seller, and a standard minimum processing temperature does not exist. We agree that it is time to define these standards, and support any action by beekeeping organizations and others to do so. However, until such are in force, we do not believe that packers using the term on their labels are fradulent nor unscrupulous. Opportunistic may be a better term. Ed.*

KEEP IN TOUCH

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MAILBOX

Last Volley and Dance

Dr. Wells accuses me of desperate semantic fancies in the May issue. I submit brief comments:

1) I quoted the final paragraph of Eckert's "excellent results:" "The results confirmed the conclusions of previous investigators that bees have a tendency to return to the same portion of a field, or to the same small field, . . . even though other areas of the same forage plant are nearer." Wenner did reply " . . . that statement was not based on actual experiment . . . ."

2) I have repeatedly called attention to Anita Janda's *linguistic* analysis, approved by three linguists (1978), that found bee dances *are a nonhuman language.* Did Thoreau also advise ignoring sources with contradictory views?

3) I confess also calling the "unplanned experimental design" (*Anatomy* pp. 136-138) crucial/critical; the results can be interpreted as robbing rather than "completely anomalous."

The mention of Thoreau reminds me of a reference to his account of bee hunting appears in Wenner et al (*Bee Science*, June 1992, pp 64-70). As in traditional bee hunting bees on flowers were captured in a "bee box," and released to establish a visual "bee line" to hives located three-quarters of a mile upwind; the reverse of the odor-search hypothesis. When a second bee line is established for triangulation several hundred yards to the right or left, that excludes the possibility of wind-borne odors from previous bees to guide them even when the hive is downwind.

Toge S.K. Johansson
East Berne, NY

Good Advice

I recently was invited by a garden club to speak on the subject of beekeeping. The entire group was astonished to find out how complex the world of beekeeping has become. The material that I covered brought forth many questions pertaining to bees and beekeeping. Of all the questions asked, one still stands out in my memory. This particular person asked me what keeps the various chemicals used for mite control from contaminating the honey. I was a little surprised due to the fact that up to this point, I had not yet mentioned the mite problem. My reply seemed to satisfy this individual's concern over the pureness of our honey supply. I mention this because we as beekeepers have to realize the importance of reading and adhering to the directions given for the various hive treatments that have become necessary in hive management. In conversations with some bee inspectors, all mentioned they had witnessed situations in which there were chemical treatments being abused. The beekeeping industry can ill afford an incident in which honey has been found to be contaminated. The majority of people who purchase honey products do so because honey is a pure, natural product. Please do your part to keep it that way.

Mark Rinderman
Painesville, OH

Tiny Tips?

Stuck in my memory bank from long ago is a tip I read somewhere. That is, when checking the frames of a hive, remove first number two. This because number one is often fastened to the side with burr comb. From time to time I take under my wing a new member of our bee club and work with them on their procedures and I show them tricks like this.

It seems to me it would be valuable if *Bee Culture* had a department called "Tiny Tips" or some such to collect small but useful tidbits like this. They even could be reprinted from time to time in a small booklet, something like *The Best Of Richard Taylor.*

I have a bunch I'd like to contribute but I was thinking of a department where you would solicit contributions. There are a number of "How To" books, as you well know, in addition to the two biggies, *Hive* and *ABC,* but these tiny but useful tips don't merit inclusion in them.

I can imagine that in the back of the bottom drawer in your desk you have a file labeled "Someday-Maybe." Perhaps you might consider filing this note there. I shouldn't be surprised if someday you might suddenly have a need for some filler and something like this might serve that need.

Dan Hendricks
Mercer Island, WA

Editor's Note: *Too often those who have been at a thing for some time forget the details and the 'tricks' they use. Sharing these would indeed be a service to all.*

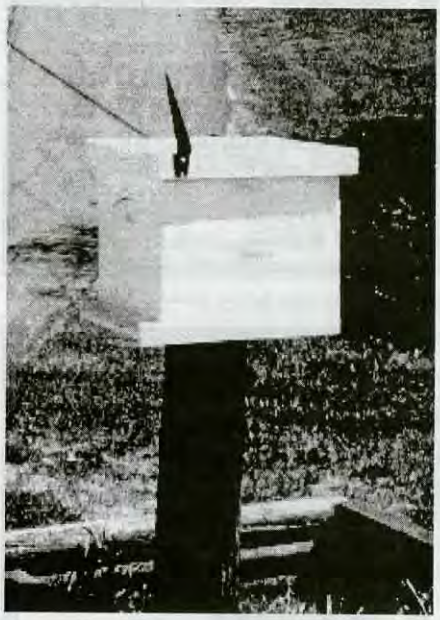
Need More Like Him

Thanks for an excellent *Bee Culture* magazine.

Here are snapshots of my beehive mailbox and our skep entrance sign, Honey "B" Hill. We have had lots of comments on our sign and mailbox (a great way to advertise our honey crop). I have 50+ colonies of bees and produce tulip poplar, blackberry and sourwood honey in Henry and Patrick counties of Virginia.

I enjoy going to the elementary

MAILBOX



school and giving talks and demos on beekeeping. The live observation hive is quite a hit with the kids. I also show videos of bees.

I am a member of the state and local bee association hee in Martinsville, VA.

Looking forward to the next bee magazine.

James F. Compton
Martinsville, VA

Feral Colonies Gone

It's been just amazing around here, (western NY) at the lack of honey bees visiting our fruit trees and dandelion garden (three acres of lawn).

I have been keeping a couple hives for the past 10 years (actually until the Fall of '95 when the *Varroa* infestation of our "ARS-Y-C-1" that we switched to was to much for the little gals).

Each year I've noticed a decline in the foraging bees but since our own hives are vacant they have been virtually non-existent! This year to date I have counted a grand total of one (1) forager on our property! I used to actually hold off mowing the lawn to let the bees get their share of pollen and for my enjoyment watching them work.

I do believe from my observations that the feral colonies of my rural area have been totally wiped out. I guess this is just one more reason to start over again. Besides I miss setting up my lawn chair to the side of a hive and with a little daughter on my lap letting the stress from a day at "the office" melt away.

Tim Queeno
Lima, NY

Expensive Choices

The freemarket and the "American Way" have never failed the people. Whenever there has been a real demand, a host of creative entrepreneurs have stepped forward to supply that need. The inherent principles governing such basic economics are equally simple: Consumer choice, competitive pricing and customer satisfaction. The critical question here is why has this system failed the honey bee, and the persons dedicated to its management? That is, in fighting the global scourge of "Killer Mites," how has the beekeeping world become hostage to a single, and relatively speaking, expensive product: Apistan. Even if no more effective miticide exists at present, where are the innovative competitors who can break the back of this practical monopoly: Just imagine a new patent featuring an alternate delivery system, with increased effectiveness, at half the cost! If you held such a patent, the beekeeping world would beat a path to your door. And I for one would be at the head of the pack!

William A. Simmons
Cleveland, TN

Editor's Note: *Alternatives are being developed, but my sources say they, too, will be, relatively speaking, expensive. But a further question is, what is 'relatively expensive?'*

Thanks For The List

This is a letter of thanks for publishing the list of associations in the April issue of *Bee Culture.* It resulted in two new "solid" members for us – Rev. Roger Messick

Continued on Next Page

MAILBOX

and his lovely wife, JoAnn. Our association is so small, that additions are greatly welcomed and sought after. We've climbed to 12 now, thanks to your good magazine.

My husband is a beekeeper (sideliner) and I'm his worthy(?) assistant. We belong to our local association, the North Harris County Beekeepers Association, and our state association, the Texas Beekeepers Association. As the new editor of TBA's newsletter, *the Journal*, I especially enjoyed your article on copyrights and wholeheartedly agree. I checked it out on your website, then read it in your magazine. Thanks again.

Linda Smith
Spring, TX

Anxious To Learn

I'm a new subscriber (Feb. 97) and a new beekeeper in Northwestern Montana, although I grew up in Wadsworth, OH. I look forward to every issue and I learn something new every time. I began keeping bees primarily for the benefit of my gardens at Shady Side Herb Farm, although I can see myself with many, many hives in a couple of years. I thoroughly enjoy the hobby!

Keep up the good work because I'm anxious to learn!

Amy Shade
Montana

They Said It Wouldn't Work

In the middle of February my bee buddy, Don Gruitt asked if I would look at one of his colonies that was not doing well. A quick inspection revealed a nice looking queen that was producing nearly all drone brood. What to do? We discussed a few options, then I suggested we experiment by killing the queen and lettimg them develop a new queen from a frame of eggs from my best colony. The idea was that we would get cross breeding between his drones and the queen produced from my colony's eggs. Here in southern Maryland we don't normally see drones until late March or early April.

February 20th. Don killed his drone laying queen and February 21st we introduced the frame of eggs from my colony. On February 22nd we attend the MD State Beekeepers' meeting and told some of our leading experts of our experiment. They emphatically informed us that we were wasting our time and that we should have united the weak colony with another colony. The following week Don found several queen cells on the introduced frame as well as one queen cell on one of his own frames.

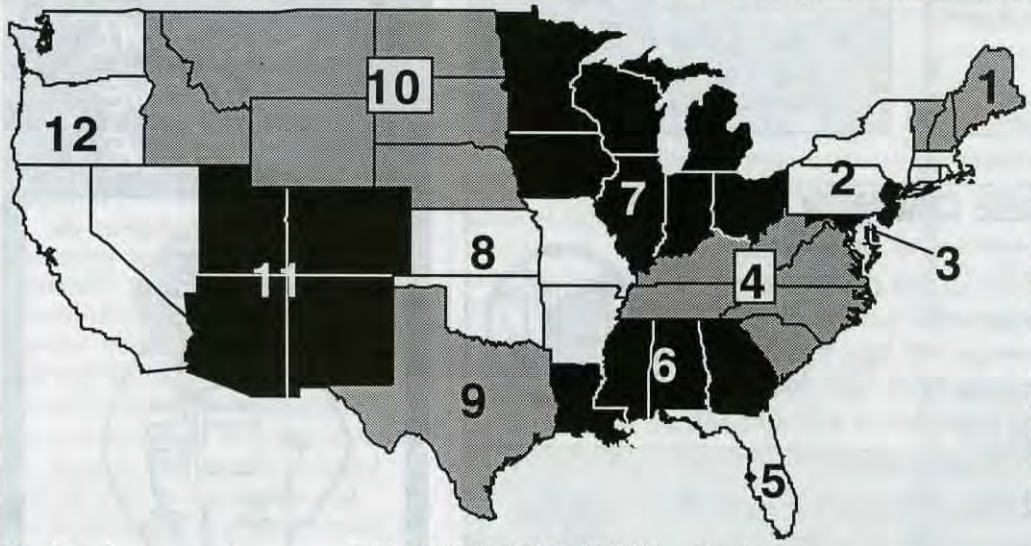
Thirty-seven days later, on March 27th we inspected the colony to see if we had a laying queen. It was about 1:00 p.m. on a warm sunny day and to our great surprise and delight we saw the queen fly onto the landing board and run into the hive! Eleven days later Don found nearly three frames of solid brood, some of which was capped, indicating the queen started laying the 39th day.

In retrospect we were fortunate in having warm weather during the queen's mating time. Cross mating would have been assured if he had destroyed the queen cells produced by his own bees. Don fed a 1:1 sugar solution during the entire period which helped produce a healthy queen. It was fun to try this simple experiment especially since it had a happy ending and proved that the experts aren't always right.

Bob Cory & Don Gruitt
Southern Maryland

Editor's Note: *It is doubtful that queen mated with drones from the same colony. This seldom, very seldom occurs. The new queen was fortunate to find drones to mate with so early in the season, but even luckier to have flying weather when she needed it.*

JULY – REGIONAL HONEY PRICE REPORT



Region 1

Prices have declined a little since last month, especially bulk and retail. Overwintering seems about 85-90% average survival this year, certainly an increase. Swarming activity was up this year and the crop looks to be about average to a bit below.

Region 2

Prices declining across the board, slowly and in little bits. 90% + made it over Winter, a great increase over last year. Lots of swarming activity and an average to just a bit down crop.

Region 3

Prices stable pretty much across the board. Winter survival pretty good, but some pockets hard hit for an overall average of 75% survival. Even so, swarming up. Average crop predicted.

Region 4

Prices up a bit in bulk and wholesale but steady at retail. Overwinter survival high, but spotty in a few areas. Over 80% average. Swarming up this year, way up in most places. Crop looks only average.

Region 5

Bulk prices down a little, but wholesale and retail have gained some since last month. Good survival for overwintering, the same or higher than last year, swarming about average, but crop predictions already down.

Region 6

Bulk and retail prices climbing, but, strangely, wholesale dropping. Overwintering over 85% average, swarming up, but only average crop predicted.

Region 7

Prices steady to rising at retail, but bulk and wholesale dropping. Overwintering success higher this year than last, but still only averages 80%. Swarming up this year, not surprisingly, but crop prospects average at best, significantly lower for most.

Region 8

Bulk and wholesale prices only steady to lower retail steady to a bit higher. Overwintering mixed. Some did well, some lost as much as 50%. Swarming about average, but mixed reports on crop outlook.

Region 9

Prices steady to a little lower this month. Pretty good overwintering average, swarming about average, and crop prospects look favorable, so far.

Region 10

Prices steady to a bit lower, but uncertainty rules the day. Crop outlook all over the map as cool, wet weather continues. Cautious pessimism is the word.

Region 11

Bulk prices up, but both wholesale and retail falling. Overwintering averages about 70%, but ranges 40-100%. Crop outlook mixed so far, but average to a bit down seems the rule.

Region 12

Bulk prices steady, but wholesale and retail dropping slowly. Overwintering success, about on line at 85%, up from last year though. Crop outlook promising so far.

	Reporting Regions												Summary		History	
	1	2	3	4	5	6	7	8	9	10	11	12			Last	Last
Extracted honey sold bulk to Packers or Processors													Range	Avg.	Month	Yr.
Wholesale Bulk																
60# Light	65.68	67.67	60.00	70.81	64.50	69.52	69.46	78.00	58.00	69.52	62.00	66.49	54.00-87.00	67.55	67.51	57.35
60# Amber	62.60	64.25	60.00	65.33	54.00	67.58	70.06	65.67	53.00	67.58	57.50	62.75	51.00-87.50	64.24	64.47	55.40
55 gal. Light	0.90	1.12	1.00	1.00	0.84	0.94	0.90	1.00	0.95	0.94	0.87	0.92	0.66-1.23	0.94	0.97	0.86
55 gal. Amber	0.87	0.99	1.00	0.98	0.85	0.91	0.89	0.94	0.90	0.91	0.83	0.87	0.66-1.15	0.91	0.93	0.80
Wholesale - Case Lots																
1/2# 24's	28.35	25.03	32.50	30.13	32.50	38.00	27.01	32.50	32.00	32.50	27.50	28.20	20.40-48.00	29.11	31.73	27.50
1# 24's	41.93	42.08	38.40	42.25	45.20	43.16	41.26	41.04	51.50	43.16	45.65	44.25	32.40-54.00	43.09	42.08	37.07
2# 12's	36.26	36.77	40.20	41.58	39.20	38.26	36.41	38.40	38.00	38.26	34.90	35.25	29.40-48.00	37.39	38.34	34.74
12 oz. Plas. 24's	34.29	38.36	38.40	35.31	29.30	33.00	32.84	35.40	46.50	33.00	40.45	30.75	15.56-48.00	35.44	35.37	32.58
5# 6's	39.70	42.31	46.50	45.08	38.25	41.84	39.23	41.84	45.00	41.84	41.84	36.49	31.80-52.50	41.22	**38.55**	**35.79**
Retail Honey Prices																
1/2#	1.72	1.50	2.83	2.17	1.28	1.62	1.65	1.89	2.96	2.83	1.70	1.74	1.09-2.96	1.76	1.85	1.73
12 oz. Plastic	2.17	2.31	2.25	2.23	2.14	2.07	2.13	2.21	2.74	2.27	2.17	2.16	1.59-2.99	2.22	2.23	1.98
1 lb. Glass	2.62	2.51	2.50	2.74	2.08	2.68	2.53	2.69	3.62	2.80	3.02	2.65	1.99-3.75	2.67	2.73	2.40
2 lb. Glass	4.32	4.41	4.50	4.86	3.81	4.59	4.40	3.94	4.52	4.60	4.00	4.43	3.29-6.09	4.42	4.60	4.01
3 lb. Glass	5.91	6.70	6.50	6.08	5.34	6.68	6.06	5.47	6.83	6.19	6.02	6.06	4.50-8.00	6.08	6.19	5.28
4 lb. Glass	7.27	8.95	7.75	7.00	7.50	7.93	7.75	8.00	7.75	7.70	7.95	6.40	6.00-10.25	7.74	7.77	6.16
5 lb. Glass	8.84	9.83	9.75	8.65	7.63	9.67	8.67	9.48	9.50	9.63	8.42	8.88	6.69-12.95	9.06	8.63	7.92
1# Cream	3.10	3.05	3.79	3.31	3.67	2.86	2.64	2.90	4.65	3.87	3.32	3.12	2.19-6.00	3.13	3.17	2.89
1# Comb	4.00	4.48	3.74	3.61	4.05	4.05	4.01	3.75	6.00	4.05	4.95	4.16	1.95-6.00	4.19	4.31	3.74
Round Plastic	3.79	2.92	3.50	3.00	4.65	4.65	3.07	3.99	5.75	4.65	6.50	4.00	2.60-7.50	3.86	3.80	3.53
Wax (Light)	3.00	3.05	2.00	2.25	2.08	3.10	2.76	2.50	3.75	3.60	2.93	3.77	1.75-6.00	3.04	2.99	2.37
Wax (Dark)	2.60	2.73	2.00	2.05	1.60	3.00	2.52	1.80	3.38	3.27	2.58	3.07	1.20-6.00	2.62	2.58	1.94
Poll. Fee/Col.	33.23	44.60	25.00	32.75	20.00	35.00	35.44	35.00	15.00	34.68	34.68	31.57	15.00-55.00	34.03	35.24	36.66

What's New
BOOKS & VIDEOS

Sixty Years With Bees. 282 pgs. Soft cover. Color, black & white photos, line drawings. ISBN 0987908-74-8. Northern Bee Books, Scout Bottom Farm, Mytholmoyd, Heddon Bridge, West Yorkshire, England. $25 U.S.

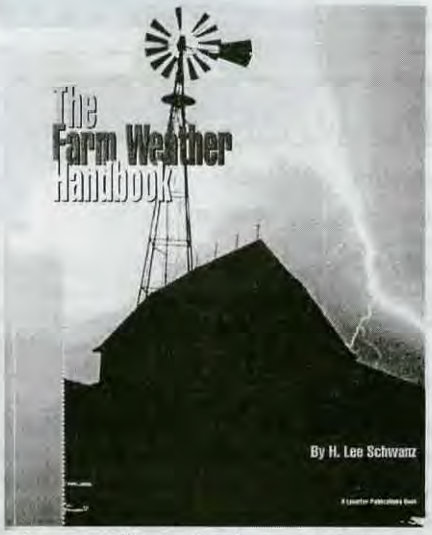
Donald Sims has kept bees for, about, 60 years. This book is a result of the skills he picked up, and some tricks he learned along the way. They are, almost exclusively, British flavored and favored, and moreover, he has run in the neighborhood of only 40 colonies, and almost always with help.

This book is meant for the dedicated hobbyist, as the equipment used, management employed, and attitude displayed are definitely for amateurs. But there are some good ideas, and techniques any beekeeper can use.

The Farm Weather Handbook. H. Lee Schwartz. Soft cover. Color, black & white photos and lots of maps, diagrams and charts in color and black & white. ISBN 0944079-07-5. Lessiter Publications, Inc. Box 624, Brookfield, WI 53008. $29.95 plus $4.00 shipping and handling.

Two sayings come to mind almost instantly when the topic of weather comes up: If you don't like the weather around here just wait five minutes and it'll change, and; Everybody talks about the weather, but nobody ever does anything about it. This book won't change the weather, nor will it replace the weather channel, but it will give you some insight on why it rains when it does, when it may again and which way the wind will blow next.

This book was written for farmers, but a wise beekeeper will be able to use its information. For instance,



when are flower buds on apple trees, or almond trees formed? Or, how does this year's weather affect next season's clover crop? And how does all this affect the 'possible' price of domestic honey next year?

Knowing what the weather was, what it will be tomorrow, and next month are all a part of keeping bees, and selling honey. This book will help. As Benjamin Franklin said, "Some are weatherwise, some are otherwise."

The Asiatic Hive Bee. Apiculture, Biology, and Role in Sustainable Development in Tropical and Subtropical Asia. 310 pgs. Soft. B & W. Edited by Peter G. Kevan; 37 authors, 38 chapters.ISBN09680123-0-2. Enviroquest, Ltd., 352 River Road, Cambridge, Ontario, N3C 2B7, Can.

This $30.00 book brings together what is known about the Asiatic hive bee (*Apis cerana*), from a practical viewpoint, and points out the extent of knowledge, and the areas where more needs to be learned. The authors are well-versed in the biology and management of both *cerana* and *mellifera,* so their contributions are valuable as to the potential for the development of apiculture using *cerana.*

Seven sections cover basic information, practical concerns of apiculture, natural history, general biology, management and improvement, bee botany and pollination, diseases and problems, business and economics, promotion and finally hive design.

It also has a comprehensive list of agencies working in this area, what they are doing and how to get the reports. There's also a chapter on the role the FAO is taking and their objectives in a long list of projects.

Finally, there is a list of contributors' addresses, for anyone interested in following up this subject.

Bee Products. Properties, Applications and Apitherapy. Edited by Avshalom Mizrahi and Yaacov Lensky. 269 pgs. Hard cover, black & white. ISBN 0306-45502-1. Plenum Publishing Corp., 233 Spring St., NY, NY 10013. $89.50.

This book is the proceedings of the conference on "Bee Products: Properties, Applications and Apitherapy," held in Tel-Aviv in May, 1996. It covers 31 topics in the technical and practical uses of bee products and techniques.

Honey, propolis, pheromones, proteins, royal jelly, venom and other products are discussed, along with contamination, quality and techniques for determining origins of these products are covered.

This is a highly technical, well referenced and organized book. However it is one of the very few to scientifically examine this politically and medically volitile subject. It is a good first step.

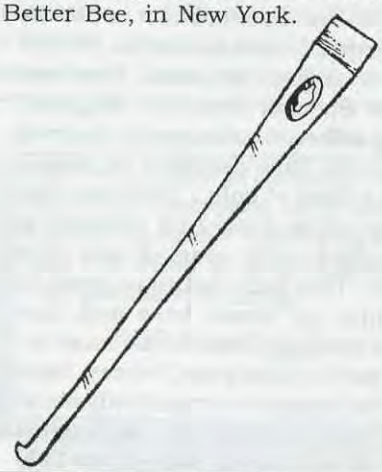
Tracheal Mites: Detection, Life Cycle and Treatment. Diana Sammataro, 13 minute video. Produced by Vesta Video Productions. A.I. Root Co., 623 W. Liberty St., Medina, OH 44256. Cat. No X250V $29.95 pp.

This informative video is based on research conducted by Sammataro and others at Ohio State. It shows two easy ways to check for tracheal mites, the life cycle, and treatment methods. Ideal for review, or for beginning beekeepers, especially at meetings and like events. Early reviews have been excellent from both the practical and scientific communities.

ITALIAN HIVE TOOL

In my search for a better hive tool (the 'traditional' is O.K., and the others on the market all have strong, and weak points in my opinion), I recently tried Brushy Mountain's (and others) Italian model. Twelve inches long it has the length I like, but the width is narrower than I'm used to, so it kept slipping out of my "used to a regular" grip. The frame lifting end, once you get used to it works well, and the scraping end isn't too wide, but it too thick for some applications

It works great for observation hives, nucs and mini-nucs because it's so narrow, and I couldn't bend it in regular use. Only $6.26 + p&h from Brushy Mtn., 800 Beeswax, and Better Bee, in New York.



Roger Morse

Research Review

"It's clear that the inside of a beehive is much safer than being outside, and that bees don't live as long as we thought."

Nectar-foraging honey bees have an average life span of only 7.7 days in the field with a range of two to 17, days according to a report from California. The conclusion is that foraging bees face a "constant probability of death from the time they initiate foraging." The authors report, "The most likely cause of mortality in our experience is predation while bees either forage in flowers or fly between the floral source and the hive."

In other words, foraging is dangerous business! There are a great number of other insects, spiders, birds, and other animals that enjoy feeding on foraging honey bees. It is possible, too, that a forager loaded with sweet nectar is a tasty morsel. The data suggest that the primary cause of death in foragers is not old age, inexperience, drifting, or other factors, which would show a different death pattern.

Foragers reach peak performance after seven to 10 days in the field, however, only 21 percent of them lived more than 10 days. Older bees did not move as fast through the plastic tunnel that connected their hive with the outdoors, indicating that older foragers, like other older animals, move slower. The older bees in these tests showed only minor wing damage, but this may still reduce flight efficiency to a considerable degree.

The data above were obtained by making three introductions of 40 marked bees, each three days apart, into an observation hive. The bees were marked as they emerged from their cells with numbered, colored discs that were glued to the top of their thoraces. When they started their lives as foragers, each marked bee was trapped and weighed, either when she departed or when she returned so as to determine what she did while in the field. In these observations, all of the test bees foraged for nectar. In this manner, we could examine the lifetime foraging activities of 33 workers.

The paper reviewed above gives us much more precise data on how long bees live and what kills them than we had before, but it is not the first paper to ask questions on how long bees live. Dr. John Free and Yvette Spencer Booth in England, using different techniques, reported that bees that emerged in March lived a total of only a little over five weeks, while those that emerged in June had a life span of only four weeks. This included time spent in the hive as house bees and that spent foraging. And, at the most active part of the year, honey bees' lives as foragers averaged only about nine days, which is not too different from that reported above from California. I think that most of us thought that honey bees lived longer when they were foragers.

Question: How does this affect foraging? Visscher and Dukas ask that if predation during flight to and from the flowers is great, then do bees have a strong preference for food that is close to the hive? Predation might also affect field behavior and cause bees to carry larger loads. These authors offer no speculation, but their data suggest that research in this area might cause beekeepers to make management decisions to make their bees more efficient. My own immediate thought is that a large number of colonies in a single apiary might force bees to fly long distances for food, and this might expose them to more predation. This is obviously a fertile field for research.

Long-lived bees

In reviewing the literature on how short their field lives are I came upon a number of papers about long-lived bees.

Dr. John Anderson, in Scotland, wrote in 1931 that he had data showing that a small number of bees lived over Winter, and through one month of queenlessness, for a total of 304 days. However, he also wrote that the bees would not have lived so long if they had been observed through the Summer nectar foraging period.

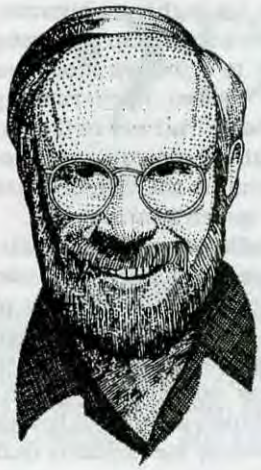
Free and Spencer-Booth observed that a very small number of bees lived over Winter as long as 217 days, but not longer than 228 days. These data agreed with that of other researchers, one of whom they cite observing that some overwintered bees lived as long as 320 days in Wisconsin. A number of people have speculated that bees in certain races live longer than do others, but no one has any data to support this claim. What is clear, however, is that the inside of a beehive is a relatively safe place as opposed to the great outdoors. BC

References:

Anderson, J. *How long does a bee live?* Bee World 12: 25-26. 1931.

Free, J. B. and Y. Spencer-Booth. *The longevity of worker honey bees.* Proceedings or the Royal Entomological Society of London. (A)34: 141-150. 1959.

Visscher, P. K. and R. Dukas. *Survivorship of foraging honey bees.* Insectes Sociaux 44: 1-5. 1997.



Mark Winston

Queen Rearing

"I want to turn your attention to queens, and what we know, and don't know about them."

I'm getting tired of mites. It seems like I can't go to a beekeeping meeting, sit down with my students, or go through my bees without having to talk about and think about mites. Legal mite controls, illegal mite controls, resistance, importing new stock, overwintering mortality, enough colonies for pollination; it goes on and on. The large majority of my *Bee Culture* columns have the words "tracheal mites" and "*Varroa*" somewhere in the text, and if they are not in there directly, they lurk somewhere in the dark recesses where columns come from.

Enough. For this month, anyway, I will not use the "m" word again. There is a life outside the "m" word, and there are things about bee biology and beekeeping that remain as mysteries to be explored and management techniques to be developed. I want to turn my attention to queens, and to what we know about how and why they are reared.

My laboratory changes its focus every few years, as old students graduate and new ones begin, as we answer old questions and turn our attention to novel issues. Often, a new direction arises from questions left by past research. We currently are turning our concentration to queen rearing, a subject that has recurred in my laboratory for different reasons and now has resurfaced in a new way.

Its first incantation was during my earliest bee research, which was on swarming, in which I investigated the conditions in colonies that lead to queen rearing. More recently, my students, colleagues, and I have concentrated on queen pheromones, doing almost endless experiments exploring the role of queen substances in suppressing the rearing of new queens. Two other questions have always been in the back of my mind, however, which are rising to the surface today: Which bees rear queens, and what happens to them that turns on the behaviors associated with queen rearing?

A key question in understanding who rears queens is to determine whether queen rearers are specialists or simply generalized brood rearers. Nurse bees produce brood food in two different head glands, the mandibular and hypopharyngeal glands. They feed predominately hypopharyngeal gland secretions to worker larvae, and a higher proportion of mandibular gland brood food to queen larvae. What we don't know is whether all nurse bees are capable of, and do, feed whatever type of larvae they encounter, or whether some workers specialize in feeding queen larvae. If so, do they produce more mandibular gland substances, or do they produce the same amount as worker larval feeders but secrete more of that mandibular food to queen larvae?

There are hints in the older literature that some workers may specialize in rearing queens when colonies lose their own queen and turn to emergency queen rearing. For example, there seems to be a trend in some studies for adult worker bees to enter unsealed queen cells more often than other workers, although these studies are far from definitive.

A recent Ph.D. graduate from my laboratory, Tanya Pankiw, has found firmer evidence for specialization, or at least for workers of some genetic backgrounds being more likely to rear queens than others. She was investigating the response of worker bees to queen pheromones, and discovered that there were clearly distinguishable lines of worker bees that were highly attracted to queen pheromones, but others that were almost oblivious to the same pheromones. To our surprise, the high-responding workers were considerably more likely to be found in and around queen cells than the low-responding workers. This suggests, first, that there is some genetic basis to which worker bees rear queens, and second, that some individual workers may become queen-rearing specialists because of their genetic makeup.

We are following up this result in two ways. First, it certainly has not escaped our attention that a colony full of high-responding, queen-rearing bees might be an excellent unit to use in commercial queen rearing. This season, we are beginning experiments to test that hypothesis, and we will be comparing the number and quality of queens reared by high responding and "normal" colonies used as starter hives for queen rearing. Second, we hope to probe the specialist question further by examining mandibular gland size and contents in queenright and queenless bees. Our hypothesis is that a small number of workers will be found with enlarged mandibular glands in queenless colonies, and further, that those individuals will be the ones to enter queen cells.

Another interesting question about mandibular glands concerns their chemical makeup. We know that mandibular gland secretions are sweeter than hypopharyngeal gland brood food, and that the higher

Continued on Next Page

"These studies also have practical significance. Obviously, if we can manipulate the brain chemistry of bees in ways that would encourage queen rearing, we might be able to produce better colonies of queen-rearing bees."

QUEEN REARING ... Cont. From Pg. 21

sugar content is a key element in stimulating queen larvae to eat more, grow larger, and turn into queens rather than workers. However, there are other substances in the mandibular glands that are thought to be important in turning larvae in a queenly direction. One compound in particular, nicknamed 10-HDA, has been considered a significant component, and is interesting because it is closely related to the substances 9-HDA and 9-ODA, the major components of queen pheromone produced by the mandibular glands of adult queens. However, 10-HDA is most abundant in the mandibular glands of older workers that have gone beyond the nurse bee stage of their lives. So, we hope to examine the history of 10-HDA development in queenless worker bees, especially those feeding queen larvae, in order to pin down the ontogeny and importance of this substance in bee biology.

Another fascinating issue about queen rearing concerns what actually happens to a worker bee that turns her to rear queens. It's not one bee, of course; when a colony loses its queen or becomes crowded prior to swarming, many workers begin to build cups and rear queens. A number of factors in the colony lead to queen rearing behaviors, but of primary significance is the amount of queen pheromone present. It is the queen's mandibular gland secretions that inhibit the workers in the colony from rearing new queens. When the queen is removed, all of her pheromone is removed with her, and at least some of the workers initiate queen rearing. Workers also begin queen rearing when colonies become so crowded that the queen's pheromone is not well-distributed, leading to a decrease in the queen's message and eventually to queen rearing and swarming. Finally, workers may rear queens in the presence of the old queen prior to supercedure, although to date there is no evidence one way or the other concerning the role of queen pheromones in that process.

What interests us now about queen rearing is to determine what happens to those bees that start rearing queens when their colony's queen is removed. We know queen pheromone will prevent queen rearing, and that workers begin rearing queens in the absence of pheromone, but what occurs inside a bee's body that initiates and maintains queen rearing? Presumably, the queen's pheromonal signal is perceived through the worker bees' antennae, but what happens to that signal when the pheromone disappears? One possibility is the loss of queen pheromone leads to a change in the signal coming down from the antennae into the bee's brain, which might affect the brain's chemistry in a way that induces worker bees to enter the queen-rearing mode.

Bee brains are full of the same types of neurochemicals that work in our brains. For us, improper levels of brain chemicals such as dopamine and serotonin lead to mental and physical illnesses, including depression, schizophrenia, Parkinson's disease, and others. For bees, perhaps neurochemical changes in these substances as well as in nonhuman brain chemicals such as octopamine could lead to queen rearing. We have some preliminary evidence that this could be the case, and that there *might* be a decrease in brain substances associated with queenlessness, and this decrease *might* be associated with worker bees that rear queens. However, our data are highly ambiguous, and we could be barking up the wrong tree. We hope to grind up more bee brains from worker bees rearing queens and those that are not, compare their brain chemicals, and definitively determine the role of these chemicals in queen rearing.

These studies also have practical significance. Obviously, if we can manipulate the brain chemistry of bees in ways that would encourage queen rearing, we might be able to produce better colonies of queen-rearing bees. Much as human health can be improved by medications that stabilize brain chemistry, so could colony performance be enhanced by our ability to manipulate the brain of a bee.

A final area of research we hope to pursue is to continue studying the factors in the colony that lead to queen rearing prior to swarming and supercedure. Decreased distribution of queen mandibular pheromone is the primary factor in the initiation of queen rearing associated with swarming, but there are other queen pheromones that might be involved as secondary factors, and brood odors also have been implicated as secondary inhibitors of queen rearing. In addition, nonpheromonal factors such as congestion, a rise in brood nest temperatures under crowded conditions, the rate that nectar and pollen come into the colony, and perhaps even an innate seasonal probability of swarming could be involved. For supercedure, we have absolutely no idea what signals are involved in rearing a new queen to replace the old one. Is it the old queen's pheromone bouquet that changes; do worker bees perceive a drop in brood area or a spotty brood pattern, does the old queen behave in an unusual way? We simply don't know.

Yes, there are interesting questions out there beyond mites, and useful biology to be studied, understood, and applied toward improvements in bee management. Good beekeeping involves much more than just disease management, and beekeepers and bee researchers should not lose sight of the world out there beyond the "m" words. BC

Mark Winston is a professor & researcher at Simon Fraser Univ., Burnaby, B.C. Canada.

?DO YOU KNOW?

The Foulbroods

Clarence Collison

Most bacteria are beneficial saprophytic organisms, however, there are two serious bacterial diseases associated with honey bees; American foulbrood and European foulbrood. Every time a beekeeper breaks down a honey bee colony, it is important that the brood area be checked for any symptoms that might be associated with an unhealthy condition. Being able to recognize the early symptoms of these diseases and knowing what to do about it is an important aspect of successful colony management.

Take a few minutes and answer the questions to find out how well you understand these diseases.

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

1. ___ Both American foulbrood and European foulbrood are found in Europe and North America.
2. ___ American foulbrood is most prevalent in the spring.
3. ___ European foulbrood kills honey bee larvae faster than American foulbrood.
4. ___ European foulbrood and American foulbrood are bacterial bee diseases that affect both larvae and adults.
5. ___ In many states colonies infested with European foulbrood are destroyed by burning by apiary inspection personnel.
6. ___ Larvae suffering from American foulbrood appear to be undernourished.
7. ___ Larvae are susceptible to both American foulbrood and European foulbrood infections at any stage of their unsealed life but the older they are the less they are affected.
8. ___ *Melissococcus pluton* is the causative agent for American foulbrood.
9. ___ American and European foulbrood are host specific to the western honey bee, *Apis mellifera*.

Please match the following disease characteristics with the correct disease.

A. European foulbrood B. American foulbrood

10. ___ Most likely to clear up in the colony with a honey flow.
11. ___ Produces oval endospores.
12. ___ Caused by a rod-shaped bacterium.
13. ___ Most likely to be spread from colony to colony by robbing bees.
14. ___ Dead larva strings out or is "ropy".
15. ___ Larval death normally occurs before the cell is capped.
16. ___ Italian honey bees were originally resistant to it.
17. ___ Causative agent often associated with several species of bacteria.
18. ___ Scales produced by the disease are rubbery.
19. ___ Vegetative cells are not infective.
20. ___ The tracheae of infected larvae appear as fine silvery tubes immediately below the skin, especially as the larvae turn brown.
21. ___ If left unchecked, it can destroy a colony.
22. ___ A pupal tongue is visible as a fine thread from the bottom to the top of a cell.
23. Name three ways in which American foulbrood is spread within an apiary. (3 points).

ANSWERS ON PAGE 59

Vol. XXIII. MAR. 1, 1895. No. 5.

1894 - 1896

January 1894 saw a significant change in the format of the magazine. It still measured 9¾" tall by 6½" wide, but the size of the type was enlarged, and the space between the lines was increased (that space, in printer's jargon is called leading). This made reading easier, but reduced the amount of information that could be included in each issue. A.I., however, refused to have his material printed in the new format, and kept his writing small, tight and not as easy to read.

His articles included *Ourselves and Our Neighbors, High Pressure Gardening, Notes on Travels,* an occasional *Our Homes, Amateur Gardening,* and an even rarer editorial. A.I.'s topics covered, for the most part, gardening, health, travel and religion. The religious topic always seemed to come up when discussing the other three, though. He was focused, no doubt about it.

C.C. Miller's column, *Stray Straws,* got a new header and was longer. He continued to poke at some people, praise others and inform on most any subject. E.R. often answered questions asked, explained why things were, or defended himself or the Root Company. The ongoing banter was popular.

Some of the great minds of the day discussed at length whether bees aided pollination. The debate centered on a USDA report that said they didn't, but in the end common sense, good observations and reason prevailed.

Jake Smith wrote a few well informed articles on commercial beekeeping, the Rambler submitted his 100th article, Manum was also writing and a new column, 'Seasonable Questions' by C.C. Miller began.

Yellow Jasmine was confirmed as poisonous, telescope covers seemed to keep colonies dry (E.R. Root), veils using strings were shown (and were being sold), but they weren't any better than the ones today, the Root Co. proved that overheating darkens wax, and the 62nd thousand ABC rolled off the presses.

The business manager (J.T. Calvert) started a column entitled 'Special Notes' each month, detailing excess merchandise at reduced prices, special or seasonal pricing and the like. It was an ad, really, but not called one. Clever.

Eight, 10 or more frames in a hive – which is best? Weight, cost, production ability, and width of cover (one regular board fit eight frames, more for wider at extra cost) were discussed along with queen 'cramping' when introduced, clipped, or marked. She'd double up and stay that way for one to four hours. No explanation.

E.R.'s biography was published in *ABJ,* then reprinted in *Gleanings.* Though written by C.C. Miller after E.R. visited him, those editors certainly had a mutual admiration society. C.C. finished his piece as follows: "May he long be spared to bless the field of apiarian literature with his graceful pen." Whew.

Towards the end of the year the Company put in a larger boiler and new woodworking equipment so they could make up 100,000 sections/per day. E.R. rode his bicycle to southern Wisconsin (he took a train part way). The Rambler started a California Echoes column (life and times out there) and said that the state's climate made a desirable home, far better than the East. And Mason jars for honey were available for those who cannot do better.

At the end of the year a D.C. powered elevator was installed in the three-story-building (it's still here, still D.C., and still runs), and A.I. Root changed, officially to The A.I. Root Company, with stockholders. E.R. was Vice President, A.I., President and J.T. Calvert Sec/Treasurer. So it begins.

1895 was an important year for the magazine, the Root Company and beekeeping in general. All of the old columns were still in place, but some new writers showed up during the year, including N.E. France, a commercial keeper from Wisconsin, Boardman of feeder fame and others.

Florida had a very hard freeze that year, queen breeders were destroying hives that had 'paralysis,' honey barrels if kept dry don't leak (but use the 370 lb. size, not the 570 lb. size). To empty a candied barrel take off the hoop, remove the head, put the hoop back on and dig out the honey. Sounds like lots of fun.

E.R. suggested that beekeepers ask for honey whenever they are in an eating place (still good advice) and in March the entire factory was shut down for a week for boiler repairs and La Grippe. Wax was selling for 29¢ or 32¢ in trade.

The Root Co. no longer was selling bees by the pound (too many died), only nucs or queens. Boardman's feeder was illustrated (and sold), and in July 10,000 copies of *ABC* were printed with ads in the back. Also in July, a second floor, new boilers and exhaust fans were added to the wood shop, and much ado about the two national beekeeping groups uniting (or not) was made. That debate is still going on, isn't it?

The eight or 10 or more frame debate continued. Dadant's advocated 12 or 14 and consistently got good yields. Can't argue with that. Eight was considered too small, finally.

The Root Co. was selling 300-500 wooden bushel boxes for gardeners every day and carloads of California sage honey at 8¢/lb. E.R. was still using a screwdriver for a hive tool and that Summer, after the basswood planting area was drained (they put it in a swamp!), it produced a bumper crop.

The Root Co. that year bought out Thos. Newman of Chicago (past Editor of *ABJ)* and his supply business, and hired Geo. York (current Editor of *ABJ*) to run it. The business was to be called The A.I. Root Co., Geo. York, Manager. York kept putting out *ABJ* on his own.

Was *Braula* already in the U.S.? Yes, says E.R. And in early October L.L.'s brother-in-law wrote a long piece on honey bee introduction into the U.S. (brought in by

Honey Grades, The Weed Process, Langstroth's Death and Health Food.

the colonists, don't you know?).

On October 7, 1895, while giving a sermon, L.L. Langstroth died. A.I. and L.L.'s daughter made a quick comment, but in the December issue, 13 pages were devoted to the Father of Modern Beekeeping. Contributions came from Thos. Cowen (Ed. *British Bee Journal*), Charles Dadant, Gravenherst (Ed. Of *German Bee Journal*), W.C. Clark and Thos. Newman (former Eds. *ABJ*), A.J. Cook and others.

About this time A.I. got onto a health food kick and started his beef and hot water diet. Called the 'meat cure,' it was advocated by a clinic in Battle Creek, MI. It seemed to help, A.I. put on weight and he was able to ride his bike again. E.R. started, too. Then, they started selling health foods – graham crackers, granola, glutten meal, caramel coffee, wheat germ grits, and whole wheat wafers. Mmmm.

During his travels that year, A.I. wrote about oyster culture, watching an operation in a hospital, migratory beekeeping in Florida and agriculture in Georgia, where they seemed to do most things according to 'High Pressure Gardening' rules, but not everything, and he told them so, in the journal. He also spent a lot of space discussing the cost of meals in various places, and how difficult it was to get steak and hot water for breakfast.

Julius Hoffman lost two children that year, there was a 10-page 'symposium' on Wintering – good bees the right age, good food, suitable protection and ventilation from the bottom up. Some were still using chaff hives, and cellar Wintering was popular. The basics don't seem to change.

Finally, the Weed process of sheeting wax was introduced. E.B. Weed, formerly of Detroit, Brantfort, CT and now Medina developed the process. But Root's engineer Washburn made it work. Washburn, you may recall, developed the first roller comb mills for The Root Co. Weed patented the new process, however.

Basically, the process feeds a continuous sheet of wax, any thickness, from between a set of dies onto a 'bobbin.' That sheet is then continuously fed through the foundation roller mills and embossed and cut to length. It was much faster than dipping a board in hot wax, peeling off the sheet and feeding it through the mill. The process is the only one used today on a commercial level throughout the world. The Root Co. still has the original machine Weed and Washburn built, and up until about 10 years ago, was still using it to make foundation.

In 1896 the mast head changed. A.I. was Editor of The Home and Gardening Department, E.R. was Editor of The Apicultural Department and J.T. Calvert was listed as Business Manager.

A.J. Cook, in California, wrote to encourage beekeepers there to form an association, similar to the citrus industry (essentially a co-op), to increase honey prices, reduce railroad costs and eliminate crooked commission men and middlemen.

Benton, USDA Apiculturist (of queen cage fame) released his Gov't. Bulletin #1, *The Honey-Bee: A Manual For Instruction In Apiculture.* You could get a copy from your congressman for free.

Calvert wanted to get out of the 5¢ - 25¢ shelf business in 1896, and in January advertised six pages of close out prices, and the Weed machine was making a pound of foundation/minute. They also sent out 75,000 catalogs that month.

E.R. discussed a new (to him anyway) term – To Super: to put on sections or extracting supers. It is a verb, now, too. And do larger cells make larger bees? E.R. says no. Some thought yes. The battle begins, and won't be finished until *Varroa* arrives a century later. E.R. was right, it seems, for a variety of reasons.

Mid-year or so, the Root Co. started selling carloads of equipment to the California Honey Exchange – they were up and running and had money (they had to, or Root said don't sell to them, in an earlier editorial).

Selling honey was as much a problem then as now, and another symposium was held on how-to sell door-to-door, to grocery stores, to middlemen and to commission houses. Some people can sell ice in the Artic, and some can't, still.

In February, John H. Martin, (known as the Rambler for over six years), retired. He was married, had a large apiary in California and needed a rest. But he didn't for long. He started an adventure story, "Beekeeper Fred Anderson," that ran all year. He also kept up his California Echoes. He was busy.

Honey grades were decided that year – Fancy, #1 and #2. All commission houses had to list what price each was if they wanted to advertise in the journals. The Power Of The Press!

"From Our Neighbor's Fields" started then, with excerpts from the other bee journals, and E.R. showed that using old, black comb darkened extracted honey. So there. They also built a 52' x 120' lumber storage building to keep their basswood white, changed the color of the cover (from light green to white) and were using four huge wax extractors (solar) in the beeyard.

C.C. Miller detailed a huge wagon to move an entire apiary, and wondered why one would take the bees off. Just move to the next crop, he thought. Not a bad idea, then or now.

Lots of bee biology was published that year – egg positions, drone production, egg laying capacity, swarming . . . And the Rambler said that open yard feeding (sugar syrup in a barrel) resulted in lots of dead bees, and happy neighbor bees.

The year finished off with pleas from E.R. to readers to contribute to Langstroth's Memorial, and to help the cause of the war refugee children in Armenia during their war with Greece.

And A.I., always the Home Editor, finished the year with a lengthy article on Water Closets. Mixed journalism, (more than one subject in a magazine) still ruled the day at *Gleanings In Bee Culture.* BC

CATALOGS

Richard Bonney

Do you view your beekeeping catalogs as a resource? Do you have a bunch of them? Do they have an honored spot on the shelf where you can always find them in time of need? Do you pore over them when they arrive, exclaiming over the new items that have appeared, muttering about the old items that seem to have disappeared, noting the inevitable price increases and the occasional changes in format? Do you argue with the editorial comments found in some and laugh at some of the claims made for products in others? I know I do all these things at one time or another. I'm sure many beekeepers do, too.

On the other hand, some beekeepers get by with an absolute minimum of catalogs – one, or perhaps two. To them catalogs are utilitarian; need something, look it up, order it. In fact, many commercial beekeepers don't even look it up. They simply call their usual supplier, local branch or dealer, tell them what they need and that's that. Don't clutter up the place with unnecessary duplication, is the rule. And here is where they go wrong. Catalogs aren't all the same. The offerings aren't all the same. The prices aren't all the same. An annual perusal of several catalogs is part of a beekeeper's education. Especially if you've only been around a few years.

With this in mind, I suggest that you seek out a few catalogs if you don't already have some. Where do you seek them? An excellent starting place is this magazine. Working my way through a recent issue, I found at least ten display ads placed by equipment distributors. A couple of these companies are not familiar to me and it is not clear if they are full line distributors, or do they have only the limited line mentioned in the ad. Six of these companies listed an 800 number for placing orders, and although only five of them explicitly offered catalogs, I assume that all of them actually do.

I don't necessarily advocate that everyone should have a catalog from every potential source, but I do suggest that everyone would benefit from having more than one. Again, they are not all the same. Of the ten I have received so far this year, the number of pages ranges from 12 to 72, the size from 6" x 9" to 8 1/2" x 11". Presentation ranges from black and white to glorious full color, while content runs from basic – everything a novice might need to get started – to full commercial – practically everything a sideliner or commercial operator might want. Some are not much more than simple lists, others explain their products and illustrate lavishly. All but three are indexed, although the quality, accuracy, and completeness of the indexing is variable. I lose patience quickly with poor indexing, and I seldom pay serious attention to a catalog that is not indexed at all.

Then, prices vary widely. Taking some random examples, outer covers may be found for as low as $11.00 and as high as $19.60, frames from $7.00 to $13.90 per ten, and a shallow super from $6.50 to $12.80. Quantity purchasing will lower these prices, of course, but the variation still exists, and don't forget to factor in shipping charges. An apparent good deal may be canceled out by these charges if you live too far from the source.

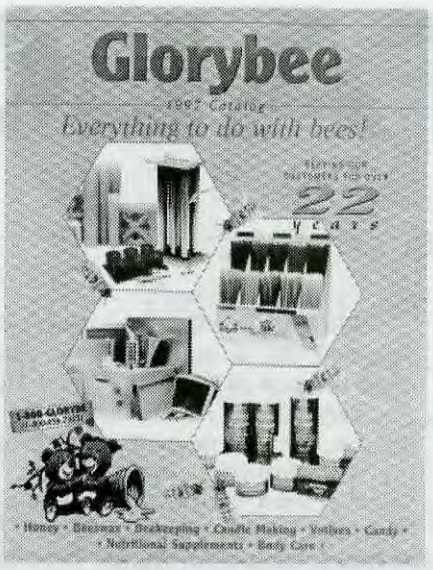
But all this aside, what is in these catalogs? We know that the basic stuff is there – woodenware, foundation, smokers, protective wear – the essentials of keeping bees. Everyone has these. There are differences, of course. Some price variations were just mentioned. Quality and selection also vary. Some catalogs offer a single quality or line of woodenware while others may have as many as three lines – a good, better, and best situation. Some offer one style of coverall or bee suit, others offer two, three and more. But even these can be considered basic needs. Let's look beyond the basics. I will mention some pieces of equipment that I have

Continued on Next Page

CATALOGS ... Cont. From Pg. 27

used, items that I believe are worthwhile but under used because beekeepers do not know of their existence, or do not know where to find them. I'll start with the double screen or Snelgrove board.

The double screen is listed in two of my ten catalogs. In appearance, this device has the dimensions of an inner cover although it is a little thicker. Instead of a wood frame with a wood or masonite center, it is a wood frame with a two layer screen center. It also has several closeable entrances built into the upper and lower rims. Three uses come quickly to mind for the screen



board – as a divider in two queen colonies, as an aid in wintering a weak colony over a strong one, and as a ventilation device when confining or moving a colony. Once you own one you will think of other uses.

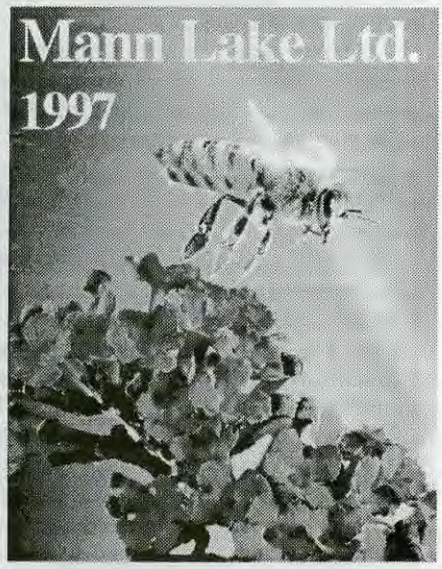
The slatted rack is a little better known; it is listed in four catalogs. Although some beekeepers disagree about the value of this device, I believe it has merit. It helps in hive ventilation and encourages the queen to better utilize the bottom hive body, My own casual observations, not tested in any way, is that hives with this device in place seem healthier. A perennial question about the slatted rack is – how long do you keep it on the hive? The answer - forever. Once it is installed in its place on top of the bottom board it is a permanent part of the hive.

Another accessory item, the triangular bee escape board, shows up in only two catalogs. In my experience this escape board is far more successful than the conventional Porter bee escape. It has no moving parts to become jammed with bees or propolis, and the bees seem to move through it more readily. The few problems I have heard have resulted from placing the board on the hive upside down. Unfortunately, it is usually shown in catalogs upside down so that the triangular maze can be seen. Without thinking, beekeepers sometimes put it on the hive that way, and of course, it doesn't work.

Another seldom listed item is the propolis trap. I found it in two catalogs. True, many beekeepers have no interest in collecting propolis, but many others do, and this device makes the collection process so much easier. When the trap is placed in the hive as an intrusion in bee space, the bees fill it with propolis. Then, a short time in a freezer and the propolis pops right out. There is a demand for propolis. You can test your own local market by displaying a few attractively labeled one ounce baggies of propolis with your honey and wax products. You can make back the cost of a propolis trap very quickly by selling only a few ounces of the material.

Pollen substitute caught my eye as I browsed, and I was surprised at my subsequent discovery – almost every catalog lists some kind of pollen substitute. The reason for my surprise is the number of queries I have seen on the internet, or had put directly to me, as to what are the ingredients of pollen substitute and where can these ingredients be purchased. People want to make their own. My experience has been that it is so easy to buy five pounds of good quality substitute already mixed, why mess around locating the individual ingredients for probably more money?

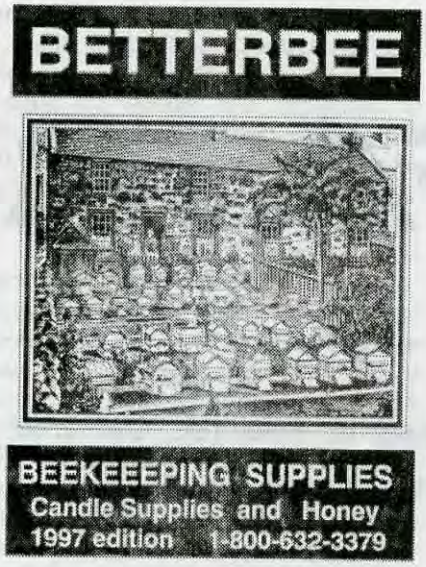
Observation hives are an under rated beekeeping accessory. Beekeepers can be so much more in



touch with their bees if they have an observation hive available to look into on a regular basis. Most catalogs offer observation hives and from the illustrations they all are similar, a single frame thickness and one, one and one half, or two frames tall. Some specifics vary – glass (you provide) or plexiglas (they provide), assembled or unassembled, and method of feeding – but the most variation is in the price. The range is $17.50 to $120, and the higher prices don't always mean the most features.

The queen catcher, another apparently little known device, is one

"Everyone would benefit from having more than one catalog."

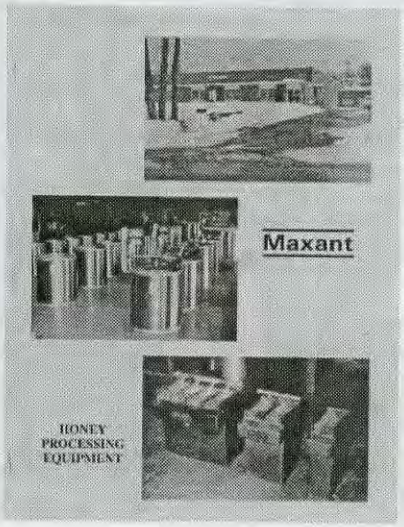


that I really like and it only costs about $4.00. I find it in only two catalogs, and most of the beekeepers I talk with have never heard of it. This tool is a clam shell arrangement with handles and a spring closure. It is about 2" x 2" and slotted, so that workers can pass in and out but the queen cannot. It is not intended for use in marking queens. It does not hold them immobile. I use it simply for catching and holding the queen while doing certain hive manipulations. I don't capture the queen every time I open a hive but the tool is particularly useful when doing something where the location of the queen is important – making a split or making up a nuc, for instance. With the queen set out of the way, you can work freely, and you release her where you want her when you're done.

These are certainly not all of the little known beekeeping aids. They are just a sampling. Browse through those catalogs. Investigate some of the things you don't have or never heard of before. Ask other beekeepers about their little known discoveries and take some questions and ideas to your next club meeting.

Beekeepers are often at a loss for program material for their club or association meetings. Here is a possible program. Make a list of some the lesser known tools, devices and aids, perhaps starting with those listed here. Inquire at a meeting as to who has any of them. Have a meeting where as many items as possible are brought in, shown, handed around, and discussed. As a corollary action the club librarian could obtain copies of as many different catalogs as possible to keep on hand for reference, both for that meeting and later.

Another category of equipment to bring for this same session is protective gear. The variety of bee suits (with veil), and coveralls (without veil) gets larger and larger each year, and the materials used to make them is ever more varied – cotton, cotton twill, cotton/poly, nylon, Tyvek, Visa – are all mentioned. Prices for bee suits range from $42.00 to over $180 and coveralls from $8.50 to $49.50. Try to get a selection of these brought in, as well as a variety of gloves, veils, and helmets. What are the real differences?



While you're looking at these catalogs, look at some of the opportunities for quantity purchasing, another good club activity. For instance, one catalog lists a particular foundation at $7.50 for 10 sheets plus $4.66 shipping (to my address), or $1.22 per sheet delivered. The same foundation is available in quantity, 200 sheets for $132 plus $11.24 shipping, or $0.72 per sheet – a considerable savings. You may not need 200 sheets of foundation, but you and three or four others together might.

But even if you do not make any of this into a group activity, you can still have an interesting session by yourself, reading and comparing a few of those catalogs. You may be surprised at what you have missed. Order a couple of them. BC

SOME GENERAL & SPECIALIZED BEEKEEPING EQUIPMENT SUPPLIERS

B & B Honey Farms 800-342-4811	Rossman 800-333-7677
Betterbee 518-692-9669	Ruhl Bee Supply 503-256-4231
Brushy Mountain 800-233-7929	Cowen Ent. 801-477-8902
Dadant's 217-847-3324	Lapp's Supply 800-321-1960
Kelley's 502-242-2012	Glory Bee 800-456-7923
Mann Lake 800-880-7694	Cook & Beals 308-745-0154
Maxant 508-772-0576	Catamount 800-773-2307
Mid-Con 800-547-1392	Perkiomen Valley 610-754-7631
A.I. Root Co. 800-289-7668	Draper's 402-274-3725

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This Fall, Try Selling At A

CRAFT FAIR

Beverly Stanier

The Craft Fair business can be profitable and provides new sources for wholesale, mail order and other sales. Especially if you produce *barrels* of honey.

It would have been great if our wayside honey stand (May '97) had sold our entire honey crop. Somehow each year, we expanded "just a little more." Our colonies grew from five to 75, and our bees were no longer producing a few 60-pound pails but supplying honey to fill a few drums. We had some steady wholesale customers, but we still needed to seek other markets. Since we like dealing directly with our customers and we liked the returns on retailing our own product, we decided to sell at craft fairs. The craft fair boom was on here in the mountains and lakes region of the Northeast, and there was no lack of available shows with promoters willing to rent booth space.

We realized that our honey products alone wouldn't bring in enough to make craft fairs a viable semi-retirement business. We needed to have a greater variety of products with a higher average dollar value. So, since Ted and I have always enjoyed working with our hands, creating for the sheer fun of seeing something take shape, rather than to possess the final product, we merged his love of blacksmithing into an expanded product line . . . honeycomb candles in a variety of shapes and sizes, rolled candle kits, hand-dipped beeswax candles and beeswax furniture polish. Our candles were a natural with his wrought iron candle holders, and the beeswax polish was the final touch on plant hangers and hooks. When honey didn't sell, wrought iron did and vice versa. Our products were diverse enough to appeal to a variety of interested buyers, and the ever present observation hive never failed to attract them to our booth.

As craft fair novices, we had a great deal to learn in selecting shows. We needed a better approach to this type of selling rather than "pay your money and take your chances." We asked more questions of other craftsmen, learning from them what shows they attended and how happy they were with the results. Just because the jeweler does well at a show doesn't guarantee the honey man success. However, if the promoter does his/her job well, then at least the playing field is even with the chance of selling your product.

If you wish to sell your products at craft fairs, do some homework. Scout out the fairs in which you are interested. Ask questions of the participants. With long established fairs, find out how many people attend. Is the show well-organized and advertised? Is the promoter on site and available to help with questions or problems? Is the show juried? Does the promoter limit the number of craftsmen with like products? Does the clientele attending have interest in your particular product? Do you have sales tax permits for the states in which you exhibit?

Along with doing some of the more traditional craft shows, we scouted out "back to the past" fairs, colonial musters and historical-type gatherings. We were networking and finding better success, returning to those shows which had proven profitable. We were not restricting ourselves to only those shows, however, but continuing to try a few new ones each year, as well. We found that established customers came to specific shows seeking us and our products.

Each year we made sure we had

new items to offer . . . lip balm, hand cream, and others. Returning customers never thought, "hmmm, same old thing," but delighted in finding our new products. Sometimes we thought the well of new ideas would dry up, but somehow, we continue to find new offerings.

The craft show business is fun and can be profitable, often providing sources for new wholesale accounts, mail order business and nicest of all, new friends. Not being tied to a retail store has allowed us the time needed to manage our colonies and go to Florida during New Hampshire Winters. One year we did 44 days of shows – a grueling marathon of traveling, setting up, selling, tearing down and on to the next. It seems the best shows were the farthest from home.

Higher entry fees, along with the sheer volume of shows available, have more and more shows competing for the dollars available. From June to mid-October, the shows are out of doors, and therefore, subject to weather. It is discouraging to pay a booth fee of $275, drive four hours, and then have it so blistering hot or such torrents of rain that the customers stay away. It is essential to have a good rain-proof tent because the show goes on regardless, the fee is never refunded, and your products can suffer the consequences of weather. Of late, we have found that our best shows are September through December. September and October is harvesting season when people traditionally think of buying honey. In November and December, holiday season looms and folks have a reason to buy. We have attended excellent Christmas shows where a few snowflakes in the air fuel the desire to finish holiday shopping. The pre-Christmas shows are the only time we have sold our gift baskets.

Five to six years ago when we first offered rolled candles, we were the only game in town. Demand for this product was heavy, both wholesale and retail. In the past year especially, it is evident that this product has become readily available. Everyone from the big discount chains to craft shops is offering honeycomb candles in either do-it-yourself form or already rolled. The competition is fierce, and honeycomb candles are less of a curiosity. It is necessary to phase out some products and to introduce new items.

An exhausting schedule and a severe case of tendinitis in Ted's smithing arm caused us to rethink our marketing strategy. Although we will still attend two Christmas craft shows with our wrought iron and honey products, we now plan to concentrate on beekeeping and expand our efforts in pollination, nuc sales, hand dipped candles, honey, hand creams and other spinoff products from the hive. The latest publicity on the plight of the honey bee here in the Northeast has given the public a new awareness of its importance and a welcome increase in the price of honey. BC

Bev Stanier, and husband Ted run Mountain Harvest Honey Farm in Conway, New Hampshire.

Making The World's LARGEST SKEP

Roger & Mary Sutherland

"We harvested the rye, built the frame, made the rope and stitched it all together."

In the Summer of 1988, 50 members of the Southeastern Michigan Beekeepers' Association met for a Summer picnic and skep-making workshop. On that occasion, 12 skeps of various sizes were completed, and afterward, it was suggested that for another club project, we should use the remaining rye straw to begin construction of the world's largest straw skep and challenge other bee clubs throughout the United States and the rest of the world to top our record. Seven years later, in the Summer of 1995 – although the leftover straw was long gone – the idea was again proposed to the entire membership of the Southeastern Michigan Beekeepers' Association, and a decision was made to proceed with the project.

Because historically straw skeps have been an important part of beekeeping, especially in England, we thought that *The Guinness Book of Records* in Middlesex, England, might accept 'record-size skeps' as a category. Several months after applying to Guinness, we received the following reply: "Your letter to 'Facts on File' about creating a large bee skep has been forwarded to our office here in England. We have carefully considered your proposal, but I am afraid it is not currently suitable for publication in *The Guinness Book of Records.* We receive over 10,000 inquiries each year, and only a very small proportion of these are used to establish new categories." (Unfortunately, dribbling basketballs or crowding people into telephone booths make the record book, but not straw skeps.)

After the rejection by *The Guinness Book of Records*, we decided to proceed with the project anyway, with the hope that other clubs might choose to top our record.

Tom Lisk (left) and Roger Sutherland (below) collect and bundle the straw for transport.

In order to make our skep project more informational and meaningful to our members, we researched the history and use of skeps by reading a book entitled *Skeps: Their History, Making, and Use* by Frank Alston, published October 1987 by Northern Bee Books, Scout Bottom Farm, Mytholmroyd, Hebden Bridge, West Yorkshire, England. According to Alston, the first hives in England were made of willow or hazel stems woven around stakes culminating in a point. A wet mixture of cow or oxen dung, combined with gravelly dust, sand, or ashes, covered the hive. When this material hardened, it provided a waterproofing and protection from the elements. This wicker hive was referred to as an "alveary."

The straw skep which replaced the wicker hive probably had its beginning in Europe, to the west of the River Elbe, as early as the beginning of the Christian era, according to Alston. He further writes, "Its use spread westward and was introduced to Britain by the Anglo-Saxons. This straw hive we refer to as the skep continued to be used through the centuries until well into the present century. It is known from records of the old Cumberland and Westmoreland beekeepers that in 1906, almost 25 percent of all colonies of bees were housed in skep hives."

As to the name "skep," Alston says, "The name of 'skep' is generally regarded to have been derived from the Norse word *skeppa*, meaning a container and a measure for

Frances Alloway and Dick Miller form the rye-straw rope which was used to build the skep.

grain, equal to half a bushel. . . . From its introduction by the Anglo-Saxons for use as a hive until the present time, when its use is for swarm collection, various types of skeps both in size and fashion, have been used. . . . Skep making became a craft. Very often a beekeeper would learn to make his own skeps, but otherwise they were made by someone skilled at the craft."

Skep making and use in hiving bees changed very little until the beekeeping revolution of 1851 brought about by Langstroth's invention of the movable-frame hive.

Beekeepers today may wonder how bees constructed comb inside the straw skep; how bees were cleared from the structure; and how the honey was removed. Several references provide some insight into the answers to these questions. In *ABC and XYZ of Bee Culture* (1929 ed.) by A.I. and E.R. Root of the A.I. Root Company, Medina, Ohio, the authors say that usually cross sticks were fashioned inside the bell-shaped straw skep to keep the combs from falling down. "This is the kind of hive which was so highly praised by poets. It has the merit of extreme simplicity and cheapness."

In the publication *Honey, A Comprehensive Survey,* by Eva Crane, Bee Research Association, 1975, the author includes the following vivid account, taken from a housewife's diary written in 1796, of bee removal from the skep by killing the bees and harvesting their honey:

"September 28 – John comes in to say we must take the honey from the bees, so he set to the making of sulfur papers, which he do put too near the fire, it flaring up did burn his fingers, thereby, he did drop all on my clean hearthstone, and did dance about like a bee in a bottle."

"September 30 – We did have a busy time taking the honey from the bees yester night. Me and Sarah and Carter's wife did have to do it all, John saying his fingers being very sore from the burns. Sarah did dig a big hole in the ground for each skep, wherein we did put a sulfur paper which we did set alight, and put the skep of bees on the top, the smell of the sulfur do kill the bees, and so we *do* get the honey there from. It do grieve me to kill the poor things, being such a waste of good bees. We shall break the honeycomb up and hang it up in a clean cotton bag to run it through, then we shall strain it divers times and when clear put the pots reddie to use. The wax we do boil many times till it be nice yaller colour and no bits of black in it, when it can be stored for use for the polishing and harness cleaning."

Photographs pictured in *ABC and XYZ of Bee Culture* (1929 ed.) show beekeepers in Vlagtwedde, Holland, removing the honeycomb from skeps. Below the photographs, the explanation of this activity reads as follows: "After killing the bees, the cross sticks are pulled out with pliers when the honey is ready to be dug out. After breaking out the combs from the skeps, the contents are sorted with the comb of best quality

Fiber Art students from the University of Michigan visit to view the skep as a "work of art."

Continued on Next Page

MORE ON SKEPS

What do you know about the skep – that ubiquitous symbol of beekeeping? I didn't know as much as I wanted, so I did a bit of research. Here's what I discovered. Skeps represent one of several types of ancient hives. They were typically made of either coiled straw or wicker (thin, flexible twigs). Straw skeps were often protected from the elements with a cover made of stalks or straw. Wicker skeps were usually plastered over with a mixture of mud and dung to seal the cracks and help keep the rain out. This procedure was known in English as "clooming" a skep. Sometimes a skep was also furnished with a woven straw cap called a "hackle."

Skeps were made in various sizes. Some beekeepers used small skeps because they wanted their bees to swarm to make up for colonies killed at the end of the honey season during the extraction process. Skep beekeepers of earlier times typically removed the honey crop by smoking the bees with burning sulfur (known as "brimstoning" them) or by plunging the skep into a container of hot water. More knowledgeable skep beekeepers removed only the combs full of honey, without destroying the bees and brood. Some skep beekeepers even went so far as to feed wintering colonies if necessary.

England and central Europe were the location of the skep's greatest popularity and use. Straw skeps in Europe evolved into two distinct types. One type was "cloomed and hackled," as were earlier wicker hives. Typically, these skeps were placed on their own separate stands. Uncloomed skeps, the other type, were placed in a row under a small lean-to, which provided protection from the weather. This lean-to was known as a "penthouse." In England, skeps were sometimes placed in a recess or hollow in a wall.

The word "skep" derives from earlier forms of the word, such as "skeps" in Middle English and *skeppa* in Old Norse. The root meaning of the word is "basket." Webster's New World Dictionary gives three definitions for "skep": (1) a kind of round basket of wicker or wood; (2) the amount held by such a basket; (3) a beehive, especially one of straw. In addition to these uses as a noun, the word "skep" has been used as a verb, as in "skepping a swarm," where the term means "to cause bees to enter a skep." (For this old usage, we would now say "hiving" a swarm.) The Oxford English Dictionary cites a wonderfully evocative 1842 use of "skep" in this sense to describe a natural scene with "flowers as thick as swarms of bees a-skepping."

The noun "skepper" used to mean a person who makes skeps. The term appears as early as 1499 in English records which mention one "Edmund Bartlet, skepper." Though not as common as they once were, skepmakers can still be found here and there.

So there you have it. A bit of information about skeps. For thousands of years, they were state-of-the-art as domiciles for the honey bee. Then in 1851, the Reverend L.L. Langstroth made his epochal discovery of the principle of the bee space, and the era of the movable-frame hive had begun. But skeps remain with us, both as literal objects and as poetic symbols of beekeeping and its history. The A.I. Root Company, which publishes *Bee Culture,* uses a symbolic skep as its logo (check out the cover of this journal). It seems likely that the skep will long remain a near-universal symbol of the ancient craft of beekeeping.

by Richard Dalby

placed in a case." The pictures also show the remainder of comb being placed in a wooden barrel and stomped down with a wooden stomper. The crushed honey in the barrel was referred to as 'baker's honey.'

One of the first priorities, when planning to make a large skep, is locating a source for the best kind of straw in sufficient quantity. Most references state that rye or wheat straw was the most commonly utilized for skep construction, depending upon what was grown locally. In some localities, other cereal grains were used, as well as a variety of reeds and rushes. We wanted to use rye straw because of the longer stem length and size. After an extensive search, we learned that the Ford Motor Company Farm, located in Ypsilanti, Michigan, was planting rye in the Fall for plowing under the following Spring. The farm manager, Doug Wilken, agreed to let us cut the rye if we would assure him that the harvest could take place before the plowing schedule. In the Spring, we carefully watched the rye's growth, and when the stems were sufficiently long, but before seed development, we assembled a crew to cut the crop. (We reasoned that seeds in the finished skep would attract mice or other rodents.)

It was in early June that the recruited group of beekeepers began to harvest the rye, using old-fashioned scythes to cut the stems. Some of us found out quickly that handling a large scythe was an arduous task which involved some skill. We were extremely fortunate to learn that one of our crew, a recent emigrant from Romania, had spent a fair amount of his youth cutting grain by hand in his native country. We marveled at his ability to cut the rye, allowing it to fall perfectly into windrows, thus making it

an easy task for the rest of us to gather and bundle the straw for transport.

Drying the bundles of green straw was the next step to be accomplished. Because the early part of June 1996 in Michigan was quite wet, some of the rye was lost due to molding. July and August, however, were essentially devoid of moisture; therefore, the bundles, which were loosely placed over drying racks, became golden and ready for assembling into long ropelike loops.

In making a skep, one normally starts at the top by coiling a tightly bound rope of straw counterclockwise, stitching each coil together as the work progresses. Because of the size of our skep, which was to be 57 inches high, with a base diameter of 45 inches, we decided to start at the bottom and work upward. Before any straw rope was formed, however, a conical wooden lattice-type framework was constructed to provide shape and give additional strength to the skep. To build this structure, white oak strips cut one inch by one-quarter-inch were used. This framework was attached to a wooden platform which could be moved about easily.

Once the framework was assembled, a series of skep-making work sessions were scheduled in October. Volunteers from our beekeeping organization met at the home of a beekeeper outside Ann Arbor, Michigan, to begin making the straw rope. A long, narrow table, fashioned from bee boxes and wooden planks, was used to lay out the straw for forming the rope and binding it with sisal twine. When approximately 12 feet of the three-inch diameter spiral-bound straw had been completed, it was attached to the base of the skep frame. When another 12 feet of rope was ready, it was spirally rotated above the base loop and stitched to the base loop by using a homemade wooden bodkin threaded with sisal twine. This process was repeated until the entire framework of the skep was covered.

To keep the dry straw flexible during the rope-making process, it was sprayed with water the evening before each work session. This was especially necessary when forming the acute round turns of rope at the top of the skep. It should be noted, too, that in order to more easily form the top portion of the skep, the diameter of rope used there was slightly reduced from the three-inch size used on the lower part of the project.

Completed skep with some of the construction workers. Top row: Joan Doman, Don Garnham, Roger Sutherland, and John Wrosch. Bottom row: Frances Alloway, Tom Lisk, mary Sutherland, and Cindy Lisk.

Throughout October, one group of beekeeper retirees made the work session a regular Tuesday afternoon activity. Even nonbeekeepers joined in the fun and watched the steady growth of the skep. As the project progressed, we received a call from a professor who was teaching a course in fiber art at the University of Michigan, asking if her class could view the skep. We had not thought of our project as a work of art, but apparently the students did, and because they had no idea what a skep was, we instructed them on the use and history of straw skeps. Later, the Detroit ABC television station videoed the partially completed skep and developed a short TV segment on honey bees, which was shown on the evening news, Channel 7, Detroit.

On October 26, 1996, the final loop of straw was put into place, and a photograph was taken of several of the volunteers huddled beside the finished skep.

One might ask what the benefits are of such a project and what we planned to do with a 57-inch-high straw skep. Group projects, we believe, especially when a number of individuals are involved cooperatively, can bring out the best in people. Already our club is planning a teaching-demonstration apiary for its next cooperative endeavor. This apiary will be located near the facility where our annual Southeastern Michigan Bee School is held each year. Having a hands-on apiary project where novice beekeepers can arrange to meet with experienced ones throughout the year certainly will be of value to new beekeepers.

Plans for using the skep are not definite at this time, but our organization is working on some possible uses. Each year the Southeastern Michigan Beekeepers' Association enters an educational exhibit at the Michigan State Fair and this year, the skep may be used as a backdrop for our honey and wax displays. Also, because the Michigan Honey Queen is often invited to be in parades around the state, our skep may be used on the floats which carry her and the Honey Princess. Perhaps readers of this article will come forth with additional ideas for using the skep. BC

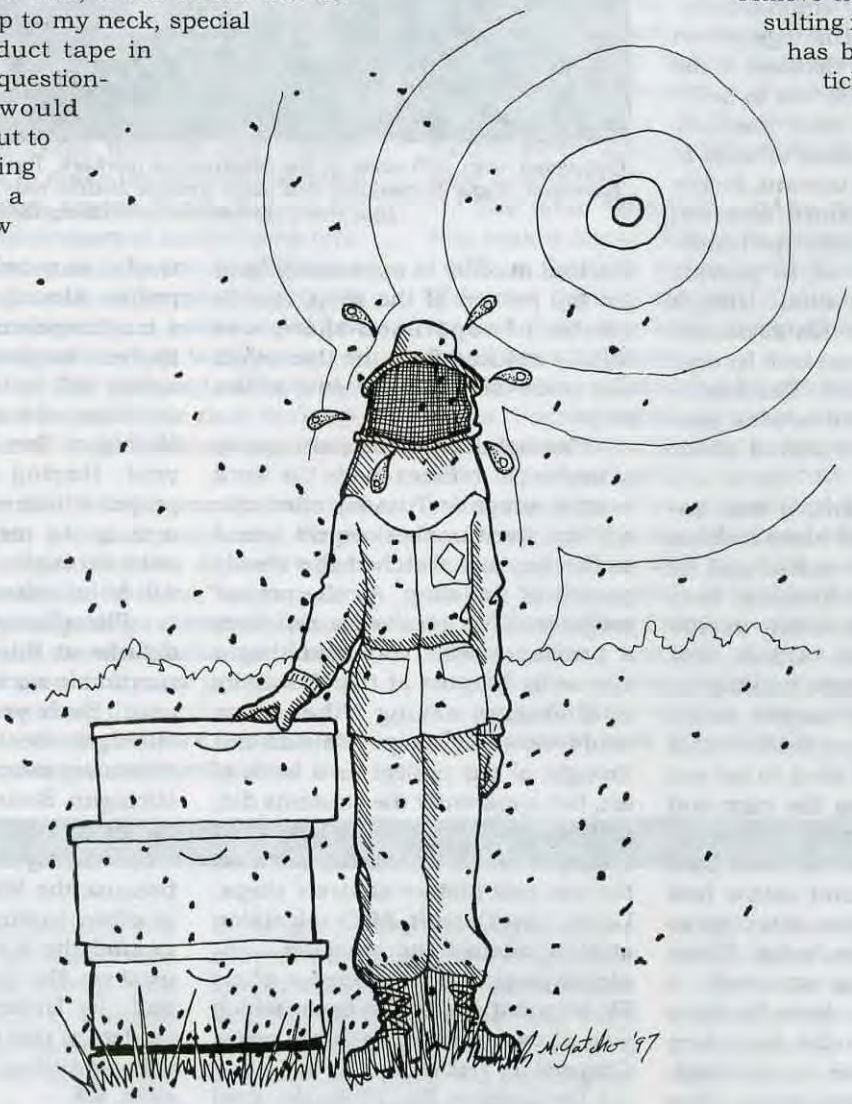
If you wish to learn more about this project or have suggestions, please contact Roger Sutherland, 5488 Warren Road, Ann Arbor, MI 48105, or call him at (313) 668-8568.

Roger and Mary Sutherland are hobby beekeepers (and skep builders) from Ann Arbor, Michigan.

Don't Become An OVERHEATED BEEKEEPER

James E. Tew

I grew up in a hot climate, but I will spare you the autobiography. When I took up beekeeping, my primary concern was to avoid all stings. Not just to avoid a few stings, but to avoid *all* stings. To that end, I dressed myself in the typical designer beekeeper ensemble. A full length white bee suit, a veil which was securely tied, gloves up to my neck, special boot leggings and duct tape in various and sundry questionable places. I would robotically stagger out to the bee hives looking like something from a late night fright show and try to squat in order to light my smoker - all the while feeling impenetrable. No bee could get me. With smoker lighted and hive tool in my gloved hand, I was ready for the attack. In general, I was never stung, but I have long grown to appreciate the procedure that I performed in order to work bees in my earlier years. Though I was never stung, I got hot in a hurry. At this point, I hope that I have painted a mental picture for you of a fully protected beekeeper wearing every known piece of beekeeping protective equipment designed to deter stings. Now, hold that mental image while I discuss various attributes of the design.



Facial Sweat. Much like a big truck blowing black smoke while pulling a steep hill, I noticed that, even in cooler weather, the white cotton suit was surprisingly warm. I would heat up quickly when performing the most routine of tasks (like walking). Resultant sweat would run down my neck from my face. Breathing would become a bit labored. As I leaned over the hive in order to remove frames (potentially resulting in a weak bad back as has been discussed in articles years past), sweat would begin to run down from my forehead and puddle on my eyeglasses. Inside my veil, there was no way to get to them to wipe them off. I tried putting a tissue within my veil to address that need, but with gloved hands, it was to no purpose. I removed my glasses, letting them lay inside my veil, and would do the best I could with my nearsighted eyes. Why not wear a sweat band? I did that. It only prevented perspiration buildup for a few minutes. If one is only going to be in the bee yard for a only few minutes, a sweat band is a good idea. However, after wearing a sweat-saturated sweat band all day, my skin beneath the wet band would become angry and irritated. People having long hair must deal with keeping hair out of their face even though they can't reach inside the veil - plus the hair can add to the heat inside the veil. Moistened bandannas can be tied around the neck or can be used across the forehead and underneath hair in the

"It's hard to avoid heat, but don't get overheated."

back. Frequently, after being sweat saturated, I would simply push the sweat band up into my bee helmet. (So my glasses were in the bottom of my veil while my sweat band was pushed up on top of my balding head. It sounds as though this beekeeper was becoming increasingly disheveled.) To this day, sweaty glasses are a problem for me.

Life Inside the Veil. Aside from facial sweat, there are other considerations when wearing a bee veil under hot weather conditions. Water (or liquid) intake is impossible while fully suited. As a younger beekeeper, I have tried pouring water though the wire cloth on the veil - both for drinking and for cooling. While the cooling part worked okay, the drinking part was pretty miserable. The water had a "taste" about it - to say the least. I have had a degree of success pushing a long plastic straw through the fabric portion of the veil and getting to water than way. The small hole could be retaped with duck tape - ever the beekeeper's able ally. The drinking cup must be capped or the bees will be drinking along with you.

Never, never spit from inside a veil. Ironically, veils in years past did have an "expectorate tube" for tobacco chewers. My mental image of that device incites a retch reflex within me. Though early hive smokers were fueled with tobacco and were patterned after smoking pipes, I have never known of anyone being able to smoke tobacco inside a bee veil. Depending on your view of tobacco use, these apparent disadvantages could either be positive or negative attributes.

The hats commonly worn under the veil are damnable things. A bee veil and hat seems happiest when worn in a the beekeepingly fashionable "half-on/half-off" position. This position requires the hot beekeeper to tilt his head back and peer from under the brim of the cockeyed hat - sweat band up on the his head and glasses loose in the bottom of the veil. Though the hat can be easily straightened, just a quick lean-over to staple a bottom board, or to pick up a hive tool, or to see if that really is the queen that you just stepped on, and the hat - held on by the veil - will again go its wild way. I find the plastic hats to be the most durable, but they amplify noise if worn alone when used for other tasks - such as mowing the lawn. The fiber hats are the lightest and coolest, but don't stand water well. They quickly take on an outright odd look after a few wettings. Occasionally, I will see a beekeeper using a chin strap on the traditional plastic pith helmet but such straps are not common. What about veils that don't require hats? I prefer them. Most of the suits having the "monk-looking" veil can be worn with a baseball cap underneath. Such veils can also be a bit more easily unzipped for imbibition. Normally, I wear a half suit and tuck the bottom edge in my jeans.

Dressing for the Occasion. How much bee work needs to be done? A short job will normally only require lightweight protection. However, if the day's task is to remove hundreds of pounds of honey from strong colonies that just went into a nectar dearth, it's time to really suit up. Under such heavy work conditions, especially in warm climates, sweating is inevitable. But that's not all bad. Sweating yourself wet also cools more than having bare skin exposed to the sun ...in my opinion. But a wet suit is a clingy suit. A tee shirt underneath will offer an extra layer of padding against stings. As suits become saturated, they don't offer as much protection as a dry fluffy suit.

But all suits are not made equal. There are whole body suits, half suits and even no suits - just street clothes and a veil. Still the most common suit is the white full body suit. It get dirty immediately and it clearly shows all the propolis, wax, bee poop, grass stains, smoker residue and fast-food droppings that it comes in contact with. In general, the newer the beekeeper, the whiter the suit.

As alternatives to cotton, protective suits can made from other materials. "Rip-stop" nylon is one such material. Stinging bees purportedly cannot hold onto the smooth surface of nylon in order to administer a sting. But rest assured that they can hold onto the veil cords - like birds on a fence - and sting away. I never found these suits to be particularly cool. Another interesting suit, also made from plastic composition, is the venti-

WATCH OUT!

Symptoms of Heat Exhaustion*

* Flushed skin, which may be pale & clammy
* Body temperature of 100°F or *less*
* Weakness/Dizziness
* Headache
* Nausea/Vomiting/Diarrhea

Treatment for Heat Exhaustion

* Assist person to a cool quiet environment
* Moisten skin with cool cloths
* Use a fan, if available
* Drink cool liquids, avoiding alcohol
* Raise the feet
* Remain quiet until symptoms subside
* Avoid further exposure to heat/humidity for several days
* If symptoms persist or become worse, see a doctor

Symptoms of Heat Stroke*

* Hot, Dry Skin
* Temperature of *over* 105°F
* Confusion
* Stupor
* Delirium
* Seizures
* Coma

Treatment for Heat Stroke

* Heat stroke is a **medical emergency** and requires emergency treatment
* Remove clothing as able
* Cool the body with cool cloths and a fan
* Give oral liquids **only** if the person is alert and able to swallow
* Transport to the nearest hospital or call 911

*From: The University of Missouri-Rolla http://www.umr.edu/~umrshs/heat.html

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OVERHEATED ... Cont. From Pg. 37

lated bee suit. Its fabric is a lot like that of a plastic dishwashing scouring pad. You can easily blow right through it. It prevents stings in that it is too thick for the bee's sting to reach you. It has Velcro® straps on the wrists and ankles. When worn, it tends to be a bit scratchy so plan to wear tee shirts and shorts underneath. Smokers are the bane of all plastic composition suits. A hot smoker can cause permanent damage to plastic suits by melting spots the smoker contacts. With any specialty suit, naturally you must plan to spend a bit more. Suits made from plastic reinforced paper are available from some bee supply outlets or from chemical or scientific sources. The advantages are that they are functional, relatively inexpensive, reasonably cool, and generally clean. The disadvantages are that they, for the most part, are good for use only a few times and though affordable, they are not free and not all that cool either.

Gloves - Clumsily Useful. Most new beekeepers and beekeepers who are working large numbers of colonies, will wear gloves. In general, they protect your hands, but specifically, they protect your hands from stings. The problem with gloves is that they obviously make you a bit more clumsy when handling frames or picking up supers. Canvas gloves are the cheapest and can be washed, but they wear out the fastest. Better are gloves of leather or even goatskin, but all gloves are hot. I like gloves that have the ventilated wrist. In years past, gloves were available having gauntlets made completely from nylon mesh. Though they did allow occasional stings, they were cooler. I have tried plastic gloves on several occasions only to have my sweat-saturated hands look like something not of this world. These gloves allow more nimble movements, but hold sweat and water in too well. They are fine for a quick use, but not for the big jobs. Importantly, under the right conditions, bees can sting through them.

No doubt about it. Under very normal conditions, protective clothing can be very hot and there's not always much that can be done. If removing honey with a gasoline-powered bee blower, slip the air exhaust nozzle in any available opening in your suit and then hit the throttle. Looking like the Pillsbury Dough Boy, with your suit ballooned out, you may cause a community spectacle, but it will result in a cooling burst of sweat evaporation. BC Editor Flottum recently told me that battery-powered leaf blowers are available. They might be useful in keeping cool inside a bee suit on a hot day. We have tinkered with a water-cooled vest that was designed to be worn beneath toxic waste cleanup suits. A vest having a plastic reservoir for holding water and frozen cold packs is attached to a circulating pump that causes the enclosed cool water to pass over your chest and back and be re-circulated. Though causing a fairly strange sensation, it does keep you cool, but requires charged batteries and frozen cold packs and a good deal of money. For a while a small solar-powered fan was attached to a fiber helmet and was made available to the beekeeping industry. The little fan would blow and blow when its solar panel was exposed to the sun. Its air stream was blown into the helmet across the forehead. I still see these hats advertised occasionally, but they aren't as common as they once were (Which probably makes a statement about their usefulness).

Use common sense. Don't work in the heat of the day but rather in early morning or late afternoon. Find shade for both you and your colonies. Be reminded that shade does not always equate with coolness - but still, it's better than being in direct sun. But what if worst comes to worst and your best plans cannot be followed? What if you are forced into working under conditions that are too hot for whatever reasons? What are the signs for which you should watch?

How to know when you are too hot. Heat exhaustion occurs when your heated body loses excessive amounts of body fluids and important salts. Heat exhaustion can really make you feel bad, but worse, if left untreated, it can lead to heat stroke which is a bonafide medical emergency. Just as you would take precautions against excessive numbers of stings, take precautions against excessively high heat. Always have cool water or a cool drink nearby. I prefer GatorAid® diluted fifty percent with water. Beekeeping can be hard work easily enough. Don't make it worse by getting too hot. BC

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DANCES WITH BEES

Charles Simon

"Beekeeping, as well as much of the rest of the world, is governed by concepts developed in a different time. If the corporate paradigm of maximum profit could be replaced with one of reasonable profit, the picture would change. But spirituality is not written into the bylaws of corporate structure."

Looking back, twenty-seven years with the bees doesn't seem like much. Things change, but mostly they stay the same. The excitement I used to feel about beekeeping I still feel, maybe more. But five seasons ago, the *Varroa* which I had been hearing about since 1987 (the year I started actually developing the alternative frame I had been dreaming about) arrived. My two plus decade run of perfection with the bees received its biggest setback. Prior to that, the worst thing I had to face was the time I bought a hive to help out a fellow beekeeper, and it turned out to be infected with foulbrood.

I came into the apiary in the Fall of '92 ready to harvest, only to find all my 35 big, strong hives empty of bees and robbed-out.

Without bees, the equipment starts to deteriorate immediately and the vermin move in. But you have to salvage what you can and get it ready for Spring. Hours spent working in the silence of a bee yard without bees, without the sweet scent of combs and the buzz of harmony, but rather with wax-worm funk, mouse-chewed frames, mouse-fouled hives, worms, lizards, and foul odors, is truly some kind of apicultural hell.

The yard is out in the woods. It's hard to get to. In fact you can't get there at all during long periods of the Winter. And every time I went, there was more equipment qualifying for the beyond-recovery pile. I did a lot of thinking that Winter. I talked to everybody, including the Editor. Kim doesn't beat around the bush. He told me what I didn't want to hear: use the chemical or lose the bees.

I am coming from the organic farm movement. Beekeeping for me is supposed to be a natural, chemical-free process with a high-quality, organic product, or so I thought back then. I did not know it at the time, but you cannot produce certifiably organic honey when you use commercial foundation. But finding this out later dovetailed fortuitously with my reinvented frame, the SuperUnfoundation™ frame, which uses no foundation at all.

I could not bring myself to use the chemical. I was going to have to wait and see and look for another way. A beekeeper I was corresponding with from Missouri offered another point of view: In the greater scheme of things, those that fail are as important as those that succeed. So I consoled myself with the idea that I was now a participant in the natural-selection process.

Spring came, and with it a surprising number of swarms. I was ending the 1993 season with 15 strong, fully-loaded hives. But it happened again: When I got to the yard for the harvest, the bees were gone, and the hives in the process of being robbed-out, already too far gone to even bother with what was left. The following year I purchased the miticide and then could not bring myself to use it, and so I lost it all again. At the end of '96 (when this was written) I have six strong, new swarms, and some new information and questions.

Most inventions come about in a two-step process. First, a problem is identified; then the solution is created. Sometimes the "problem" might not be recognized as a problem; it might be just the ordinary way something has always been done.

I am a "question authority" kind of a guy, but when I got into beekeeping, I studied hard and accepted that the patterns were the way they were for good reasons. Early on, I could see the cosmic perfection in Langstroth's definitions. But, nevertheless, I felt something was wrong with foundation, and I couldn't shake the feeling. I didn't know why; it was like an instinct always telling me not to use the stuff. But I thought it was just me, and so I spent years convincing myself to like it, developing my skills and priding myself on how fast I could foundate and wire a frame. Like a good soldier with his weapon, I could virtually take frames apart, clean them, and put them back together with my eyes closed.

But by 1987, I'd had it with foundation, and I found myself questioning more of our basic practices. Reduced-drone beekeeping is forced by foundation, for example, especially in regard to the *Varroa* situation. With plastic foundations and combs, which are obviously the most defined, the bees cannot cut out sections to produce drone brood as they do with combs built on wax foundation, and they get so desperate that they build cross and burr combs to the extreme. Besides, I reasoned,

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"It is not going to be easy to reverse a hundred years plus of certain practices. There is not going to be a pill. It's going to take a myriad of little changes and adjustments."

there must be something unhealthy about the bees having all that wax to secrete and not enough to do with it. That more drones were needed was evidenced by some companies offering drone-brood foundation for the purpose of trapping *Varroa* in drone-brood. But in recent years I have not seen the advertisements for drone foundation in the magazines. I guess it's too much trouble.

We all know the philosophy: Why support large numbers of drones when only a few are needed? All they do is eat up profits. But to upset natural balances for the sake of maximizing profit can only maximize the likelihood of ultimate loss. As Alfred North Whitehead put it in 1933 in *Adventures of Ideas:* "The motive of success is not enough. It produces a short-sighted world which destroys the sources of its own prosperity. The cycles of trade depression which afflict the world warn us that business relations are infected through and through with the disease of short-sighted motives. The robber barons did not conduce to the prosperity of Europe in the Middle Ages, although many of them died prosperously in their beds."

And the great pioneers of modern beekeeping are not here to see some of the long-term effects of their genius.

The truth is not necessarily the way to maximum profit.

We should stop treating these insects like bugs, or worse, like cogs in a machine or factors in a factory. We need drones, and we should allow the natural balance of the colonies instead of our intelligence or lack of it to determine the numbers. And what about artificial insemination? Does the fact that trout produced by artificial insemination and placed in the streams do not survive past two or three generation tell anybody anything?

Beekeeping, as well as much of the rest of the world, is governed by concepts developed in a different time. If the corporate paradigm of *maximum* profit could be replaced with one of *reasonable* profit, the picture would change. But spirituality is not written into the bylaws of corporate structure. The truth is, as well as the reduced-drone situation contributing to the *Varroa* epidemic, the larger-than-natural cell-base embossing of foundation to produce the larger-than-natural bee according to the bigger-is-better philosophy of the dinosaur mentality is a mistake also. The artificially enlarged bee is kinetically and metabolically slower, disadvantaged thereby in its struggle against disease, predation, and parasites.

Feral bees become smaller and healthier – that they are being wiped out by *Varroa* too, notwithstanding. There used to be a top secret colony in our area, free-hanging from a convergence of branches on an avocado tree, that had been going strong for five years, living out in the open, Winter and Summer. The local beekeepers who had been watching and protecting it from being removed or tampered with believed that the *Varroa* were dropping off and disappearing, unlike in an enclosed cavity or a hive with a bottom where those that drop off would be caught and kept in the path of the bees, available to reattach. What about the possible negative side effects of beehive bottoms? Maybe during those times when the miticide is supposed to be applied and through the Summer, a hive could be run without a bottom, like on a rail-type stand or even on a short stack of empty supers with a paper or tray at the bottom to monitor mite activity. How do the mites act when they're off the bees? Bees have a tendency to crawl upward. How do mites crawl?

That colony died last Spring. Maybe the *Varroa* got them in the end, or perhaps there were other factors. Maybe some well-meaning neighbor sprayed them with Raid. Whatever the reason, I'm sure there's something to be learned there.

I received a phone call from that thinking beekeeper in Missouri. He told me that he and his colleagues out there are now questioning the standard of Langstroth comb spacing. Not that too? Yes, that too. They are suggesting that the depth of the cells might be as significant as their lateral dimensions. The 1-1/2" to 1-3/8" standard distance from center to center might be a smidge too much, and by reducing that measure to from 1-5/32" to 1-3/16" for worker comb, this reduction, combined with that of the lateral size of natural, unfoundationed comb would crowd the Varroa in the cell and thereby impede its activity. In addition, this would contribute to reducing the size of the bee, and a smaller bee would be a faster bee and could be reasonably assumed to spend less time in the cell, which would be another positive for the bee and negative for the parasite. The apparent relevant difference between the Asian bee, which is the original host of *Varroa,* and which is able to coexist with it, is the amount of time spent in the cell. It's not a long time, to be sure, from our point of view, just a matter of hours, but it makes a big difference.

Do those Missouri beekeepers sound crazy? To quote Albert Einstein: "For an idea that does not at first seem insane, there is no hope."

Things contain their opposites. There are trade-offs with everything. It takes skill to get a perfect product in any process. Your chances of getting crooked or wavy or cross comb seem to be increased without foundation, but not really. Foundation starts off straight, and you wire it in like Fort Knox, and it gives the impression that it's going to stay that way, but it doesn't. The prewired variety is never really straight to begin with. Combs wear and change. After some time in the hive, you can't tell the difference between foundation and

foundationless combs except by the wire and frame design. Plastic frames and combs which seem the most permanent, I have found, become warped and useless quicker even than wood, provided the wood is not part of one of those extra-cheap bargain frames to begin with.

It is not going to be easy to reverse a hundred years plus of certain practices. There is not going to be a pill. It's going to take a myriad of little changes and adjustments.

I am active in bee removal, even though it detracts from beekeeping. Wild swarms and feral colonies are not the way to go anymore for bees, as they are potential sources of infection and/or parasite infestation. The beekeeper should rather acquire top-notch, certified mite-free and treated bees from established, reputable breeders. But in my case, in addition to a naturalist's overwhelming curiosity, I needed to study bees outside the parameters of domestication as part of the R & D for my frame. It was my goal to incorporate as much as possible of the vitality of the feral into the structure of domestication. And one of the things I observed is that straight combs are extremely rare in nature. Now I don't know about you, but I don't mind crooked combs at all. I prefer a looser, non-factory-like operation anyway. If combs are straight enough, as most of them are when one is using frames, I extract them. Otherwise, I cut them into sections or crush them, and I like that just as well, if not better. Where I do insist on absolute precision, though, is in the product. I demand a pure, organic honey or no honey at all. And the more I think about it, the more it looks to me like the future is going to resemble the past. In fact, what good can prosperity be without health? Given the exigencies of organic definition, I think I will specialize in cut- and crush-comb and strained, not filtered honey. BC

Charles Simon is an author, beekeeper, swarm retriever and budding philosopher from Santa Cruz, CA.

Better Than A VIDEO GAME

Pam Wright

Stevie rounded the corner of the honey house and saw a terrible sight: Thousands of bees flying in and out. "I forgot to shut the door," he murmured to himself.

He ran to the door through the bees and slammed it shut. Inside, the air was full of bees. They hung in curtains from the windows and matching shelf edging from the windowsills. They buzzed up the windows, fell down, and started up again.

"How will I ever get them out of here," wondered Stevie, "before Dad sees this?"

Through the window, he could see that there were fewer bees dancing around the door. "If I wait, they may go away."

Soon he ventured outside. There were no bees there. "The bees by the window want to go home. Maybe if I open the door, they'll come out," he thought aloud.

With the door open, he watched hopefully as the bees flew out. Soon he noticed bees also going in. He slammed the door shut and saw the crowd of bees dancing around the door.

Resigned, Stevie thought, "I'll just have to tell Dad." And he went to search for his father. He found him in the house looking at his catalogs.

"I left the door open to the honey house and it's full of bees. I thought I could let them out, but more just come in."

"Sure, the ones that got out," said his father, "just went back to the hive and told the others where to go."

"How can we ever get them out?" asked Stevie in despair.

"There's a way," said Dad, "and since you let them in, you can get them out. Put on a bee suit; you'll be dealing with some angry bees. And get the shop vacuum."

Stevie vacuumed the great curtains of bees while his dad watched. Sometimes he felt the soft fan of bee wings by his hand.

"That's enough," said Dad. "Take them out and dump them. If you get too many in the vacuum, they'll suffocate. I'll open the door for you."

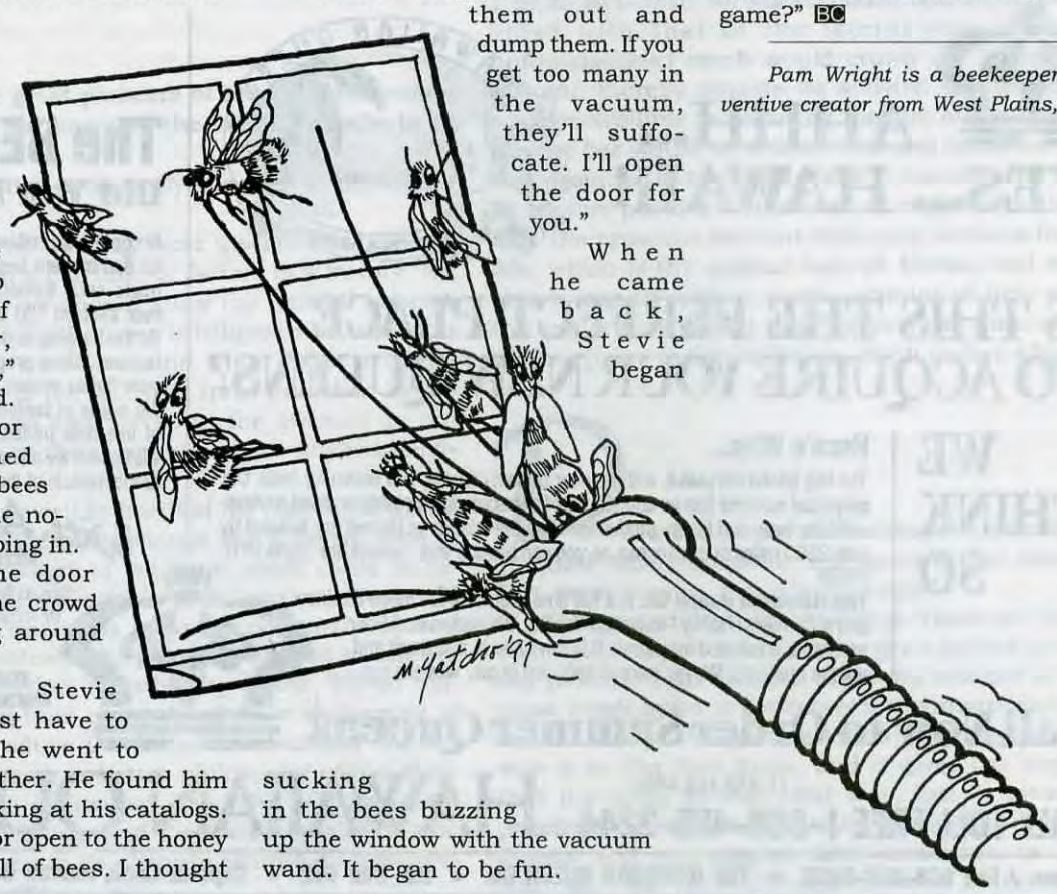
When he came back, Stevie began sucking in the bees buzzing up the window with the vacuum wand. It began to be fun.

"Look, Dad, at the way they keep coming up from the bottom. I have to catch them before they reach the top. There goes one. I got her! This would make a great video game."

He chased the bees with the wand, and they became fewer and fewer. Finally the bees were gone from the windows.

"There, Dad, that's all done."

"Not quite," said Dad. "See those yellow stains all over the walls and windows – bee feces. It all has to be washed off the walls. There's a sponge over there, and get a bucket." As he walked out the door, he asked over his shoulder, "Do you think that would make a good video game?" BC



Pam Wright is a beekeeper and inventive creator from West Plains, MO.

INNER... Cont. From Pg. 6

This may seem an odd time to talk about Associations, but there's some things afoot that make it seem appropriate, at least to me.

First, there are fewer beekeepers out there, which means less of a political voice in any quarter you choose – local, county, state or National. Even with the incredible attention bees have had lately, beekeepers still tend toward the invisible. Second, there's the ever present urban push that keeps closing bee pasture and limiting where bees can (or should) be kept. Third, even a two-colony backyard hobbyist has felt the pinch and the presence of honey as a global commodity, with availability, prices and quality tweaked by beekeepers, brokers, exporters and packers half a continent, and half a world from their back door. And finally, the old axiom of 'strength in numbers' still holds true.

There are some groups that are doing incredibly well. One, only a little way from Medina, near Cleveland, boasts 190 members in their county group. They have annual training schools, regular meetings with over 100 attending, and a dozen people on their Executive Committee.

Another I know of in Connecticut has nearly that many members, a financial statement better than some countries and attendance at meetings wall-to-wall.

Both of these, and many more I'm sure, have several things in common that have helped them reach this position of strength and diversity. Dedicated leadership, committee members that actually do committee work, a solid plan, both short and long term, for the group to follow, and a preponderance of members whose first thought isn't "Well, that's not how we did it back when," and an equally large contingent of members who don't know something can't be done, so they go ahead and do it.

Any successful group needs these factors, plus others we've addressed in the past, to grow. But I'm not speaking of the 'hows' at the moment, but the 'why you need to' grow now, more than ever.

This certainly applies to National groups that are going in the direction you want, whether the Federation or the Honey Producers (and yes, I still think they should be meeting at the same place and time). But more specifically state and local groups can, and should be working in a more orderly manner.

For instance, can a 25-member county group have as much influence on a zoning proposal as a 300-member State Association that has regular ties with the State Legislature? Perhaps, because it is a local issue. But with a state congressman or two in your corner, several University people backing you, and a couple State Association Officers to testify on your behalf your chances of dealing with that proposal in your favor are definitely better. But unless that local group has some ties with the larger organization, and vice versa, that connection won't occur.

On a different scale, an individual beekeeper facing the same problem can do better, probably much better if the same thing occurs and he or she goes to a local group for help . . . Strength in numbers, remember.

But let's look at a bigger picture. What can a State Association do for a local group? Can they do anything at all? Should they be doing something?

I think it is time for this question to be addressed. There are some State Associations that are intimately involved with their local groups, and some with no ties at all. In fact, some state groups don't even have provisions to accommodate local groups. No way for 'group' participation. No way a 'group' can contribute to the greater whole. The two are autonomous. In fact, in many cases there is almost a competitive spirit between them. "We don't need" is too often heard.

I contend that you do need each other. That, as time passes and beekeeping comes under more and more restrictions, as suppliers have fewer and fewer outlets, as insurance and other legal requirements begin to tighten a Local group will need a larger voice, and State groups will need Local voices, Local members and Local support.

If you are involved in a local association I urge you to explore ways to increase your group's interaction with your State Association. And, conversely, State Associations need to reach out and include more of their residents in ongoing and new programs.

We are no longer so big, so important, nor so independent that we can afford to not include anyone and everyone involved in our craft, our business, our Association. It is time to move towards each other, not away. It is time we began acting as an industry rather than independant, embattled and fortressed fiefdoms. It is time.

Kim Flottum

"GOOD, LOTS OF WAXY BUILDUP."

HEALTHY HONEY

Linda Batt

Egyptian writings dating from before 2000 B.C. mention a salve made with honey used to treat wounds. Medieval armies going into battle carried honey with them as a first-aid treatment on the field. Even your grandmother recommended a little honey and lemon juice for a sore throat. The sweet, golden product of honey bees has been used to cure everything from burns to general infections.

Now some recent research being conducted throughout the world gives scientific credence to medicinal uses of honey. Scientists all agree that honey is a natural germ killer. The high sugar content (about 78 percent sugars), the high acidity (3.9 pH), and the presence of hydrogen peroxide give honey its antibacterial properties. These three each help disrupt bacteria's synthesis, or combination of protein and folic acid. Bacteria must combine protein and folic acid in order to multiply.

"Recent research gives credance to the medicinal use of honey."

Keith Delaplane, professor of entomology at the University of Georgia, whose primary study is with honey bees, uses a mixture of honey and vinegar himself as a remedy for sinus problems, sore throats, and stomach disorders, and verifies the antibacterial properties of honey. Researchers in Calabar, Nigeria, found that unprocessed honey killed most germs in lab experiments, and recently a New Zealand team of scientists came to the same conclusion.

Dr. Forrest H. Nielsen, at the U.S. Department of Agriculture's Human Nutrition Research Center in North Dakota, and Richard Wood, a USDA nutritionist, have discovered a further benefit of honey. Their findings indicate that honey may help prevent calcium loss and weak bones in older women. According to Nielsen, boron, a trace mineral found in fruits, legumes, and honey, caused the most active form of estrogen (estradiol 17 B) to double. Estrogen prevents calcium loss which causes brittle bones. Post-menopausal women who got three milligrams of boron a day had significantly less calcium loss than a control group who did not receive boron, causing Nielsen to think of boron as a mild estrogen replacement therapy. While Nielsen was unable to say how much honey would provide three milligrams of boron, Richard Wood found that just a spoonful of honey taken with a calcium supplement could increase the body's intake of calcium by nearly 25 percent.

Athletes and trainers often use honey for its bone-building properties and for energy and staying power. The glucose, fructose, and water in honey are nonirritating and rapidly assimilated into the bloodstream. They can provide an energy lift during long hours of labor or short sprints of exertion.

"In time of stress, sweeten the tea," is a Chinese proverb and yet another medicinal recommendation for honey. Dr. Bonnie Spring, a professor of psychology at the Chicago Medical School, proved that subjects given high-glucose foods were more relaxed two hours later than subjects given high-protein foods. A home remedy to make you sleep better was a tablespoon of honey before bed. According to Dr. Spring, it will work.

It is important to note that all researchers found that the benefits of raw honey far outweighed those of processed honey. For the best health results, honey should be taken from your own hive or purchased from a local beekeeper or health food store. Honey in grocery stores has (usually) been heat-treated and filtered. According to Roland Moss of Sabal Palm Apiary in Lake Park, Florida, the treatment filters out some of the nutritional elements from the honey and improves only its shelf life.

Honey that is not treated may crystallize. It can be returned to its flowing form by setting the honey jar in warm water until it reliquefies. Every beekeeper will tell you that the best honey is the honey that crystallizes. Raw honey can be used in home remedies or in healthy recipes. Here are some long-standing uses for honey.

HOME REMEDIES

Cough and sore throat
Boil one lemon, squeeze out the juice, then add one cup strained honey. Take two tablespoons every four hours.

Burns and minor cuts
Apply a light layer of honey over the area.

General infection, sinus problems, and stomach problems
Mix one tablespoon of honey with one tablespoon of vinegar (white or cider) and take before bed. The honey and vinegar can be added to a cup of cold apple juice. The taste is like apple cider.

Relaxer to help induce sleep
Take one tablespoon of honey about an hour before going to bed.

Linda Batt is a free lance writer and part time beekeeper from New York.

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Additional Income

Bill Truesdell

No motor vehicles are allowed on Mackinac Island, which means you walk, bicycle, or use horse power. On a visit to the island, I noted the profusion of horse droppings and asked what the residents of the island did with them. Composting and removal to mainland Michigan was the answer. That seemed inefficient to me. My idea would be to package small amounts of it and sell it to the tourists. Call it "Mackinac Gold" or something similar. If zoos can sell elephant manure at a profit, why not the residents of Mackinac? This way, they have the tourists get it off the island, and they make money besides!

As I prided myself on this great insight, it struck me that we beekeepers seem to be limited in the number of products we derive from bees. Why not branch out? Like "Mackinac Gold," bee poop could also be an enlightened prospect for a budding entrepreneur. Packaging might be a bit difficult, but the return on investment would be spectacular since the bags would be so small. The bee manure could be specified for use on flowering plants, like baby's breath, but that might limit the market.

Since I was on a roll, I thought of other things that we might sell. One market that enjoys a fairly strong following is the commemorative spoon trade. How does this fit with beekeeping? When I tell people I needed to feed my bees, they generally reply, "How do you feed them?" I respond, "I have them line up in long rows and, with an itty-bitty spoon, I feed each one." Surprisingly, many accept that as gospel. So there is a market. You could even charge as much as others charge for large spoons. Unfortunately, one product which would not be available, because of drug laws, are the hypodermic needles I use to medicate the bees. Darn hard to hit that tiny arm, especially if they don't like shots.

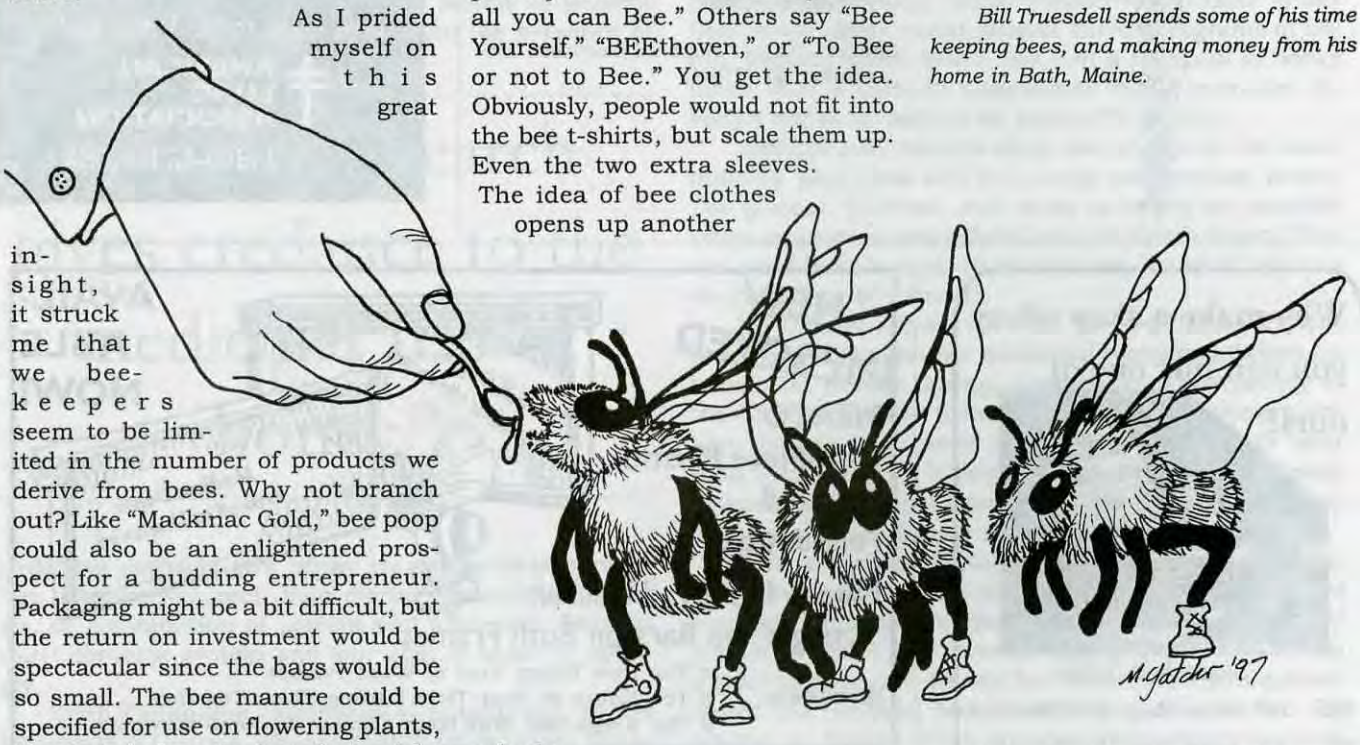
When I point out a bee in the field and note that it is one of my bees, I am asked, "How do you know it is one of yours?" T-shirts! All my bees have their own t-shirts. I especially like the one that says "Bee all you can Bee." Others say "Bee Yourself," "BEEthoven," or "To Bee or not to Bee." You get the idea. Obviously, people would not fit into the bee t-shirts, but scale them up. Even the two extra sleeves.

The idea of bee clothes opens up another whole line of products.

BarBee dolls? The possibilities stagger the imagination. "Queen BarBee" magnificent! The only problem I see is having to shake Ken's image as a drone.

If you agree that, in life, there are no problems, only possibilities, then even the greatest of our problems, *Varroa,* lends itself to a profitable solution. After all, how many "Sea Monkeys" have been sold from ads on the backs of comic books? Millions. *Varroa* can be "Bee Dogs." Give or take a few legs, they could pass as brown bulldogs. And those little buggers are fast. You could have *Varroa* races at carnivals. *Varroa* could completely displace the flea circus. Again, the possibilities are endless.

We beekeepers can use good ideas like these. I pass them along to you freely. And to think, this inspiration came to me out of a load of horse manure. BC



Bill Truesdell spends some of his time keeping bees, and making money from his home in Bath, Maine.

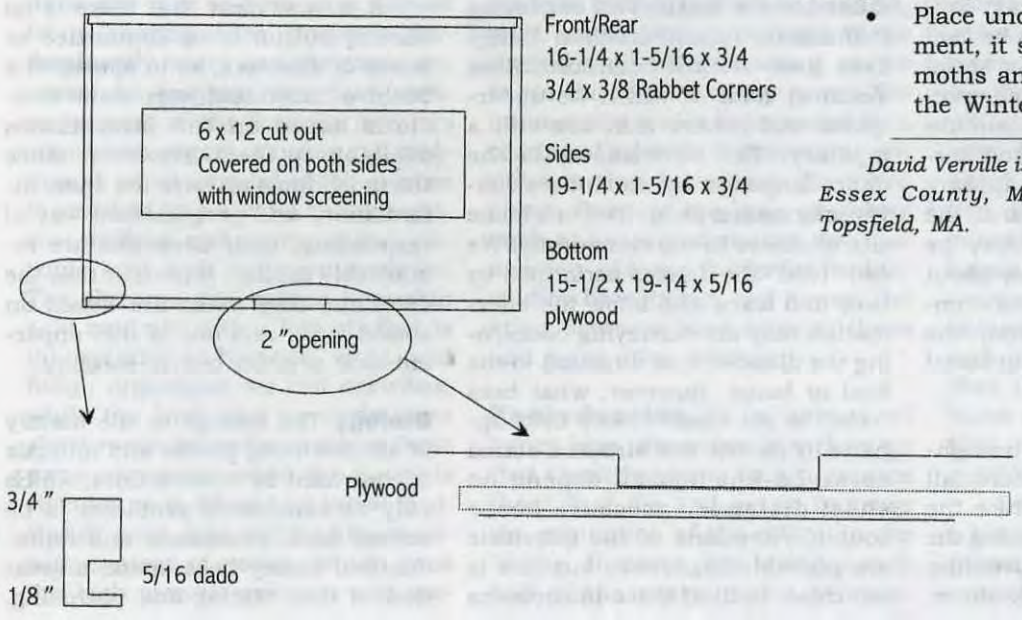
This Summer Try A
UNIVERSAL BOARD

David Verville

There is one piece of equipment I use in my operation that I have never seen offered for sale or even anything similar. I call it a universal board. See the drawing of the board and its dimensions. I started using this board to prevent swarming (a variation of Demareeing), but soon realized that it was truly universal for several routine operations in the beeyard. This board is a real lifesaver for me when working my hives. Below are some of the applications for this board.

1. To requeen colonies, the board is placed above the brood chamber that contains the old queen. Two or three frames of capped brood with adhering bees are placed in the upper, deep super. A new caged queen is then added to this upper super. The older, hostile field bees quickly fly out of this super and return to their original entrance. (Can't teach old bees new queens!) Heat from the bottom super rises through the screen and aids the upper, newly established colony. Once the new queen is laying well, the old queen is destroyed, and the two colonies are combined using newspaper. The upper colony could also be moved off the original hive and set up on its own to increase one's holdings.
2. When working large colonies in two deeps, I place the board over the deep not being worked, and it keeps the bees from boiling up and covering the top bars and the sides of the hive body. I just hate crushing bees as I put the hive back together again. It also prevents the robbing urge from developing by other nearby colonies.
3. Since it has the same dimensions as a standard hive body, the universal board can also be used as a bottom board. However, I've only used it as such during the Summer. I haven't tried using it to overwinter a colony.
4. When I am preparing to move a hive I place the board on top of the hive with the two other covers removed. The large, screened area affords plenty of ventilation and keeps the bees from overheating.
5. During the really hot, humid days of August, I use it as an inner cover with the top cover pushed back. I noticed that when I put it over the hive, I don't get the huge bee beards hanging from the bottom board. My theory is that if the bees are inside, they must be working – hopefully working the nectar into honey.

- Inverted, it can be used as an inner cover with an upper entrance.
- Placed over frames of honey just harvested, it will keep the bees from robbing it all back.
- I put the board under honey supers harvested to keep the drips to a minimum.
- Place under and over unused equipment, it seems to help keep the wax moths and mold under control until the Winter weather arrives. BC



David Verville is a sideline beekeeper, VP of the Essex County, MA Beekeeper's Assn., from Topsfield, MA.

FUNDAMENTALS

BASIC HONEY BEE BIOLOGY

Roger Morse

Honey bees are social, colony-forming insects. In the active season, a normal colony consists of a queen, about a thousand males (drones), and several thousand workers. Variations may occur in these numbers. A small number of colonies may have two queens, in which case one is the daughter of the other and the older of the two no longer produces the chemical substances by which a queen is recognized. One researcher told me he once found three queens in a colony, all marked so he knew their backgrounds – they spanned three generations.

The number of drones in a colony varies by season. Essentially drones are not present in the Winter, and the maximum number, about 3,000, is found in large, populous colonies when swarming (colony division) occurs. There must be at least 200 workers present for there to be food exchange, clustering, and for social order to exist. However, from a practical point of view, the minimum number needed for year-round survival is about 10,000. There appears to be an upper limit as regards the number of workers that may be present in a colony – probably about 50,000. When there is a greater number, the queen cannot supply the chemicals needed to maintain social order.

The cycle of the year Throughout the Northern Hemisphere, all colonies of honey bees produce the smallest amount of brood during the months of October and November and early December. Everywhere, even in cold climates, egg laying starts about mid-December. It is, of course, much reduced in the colder areas. Brood rearing starts at a time when the day length is no longer decreasing and/or is starting to increase, but there is no proof positive that it is controlled by day length. In the southern part of North America, the maximum population is reached in March, while in the North it is about July 1. Colony populations may remain at a high for two or more months, but this is controlled largely by the amount of food available. Populations drop in the Fall except where they are stimulated by late Fall nectar flows such as exist in southernmost Florida and parts of Mexico.

Communication Social animals must have a method of conveying information to one another. Honey bees have several communication systems, some of which we understand and others that are still a mystery. The best-known is the dance language, by which bees convey information about food or a home site to others in the community. We can "read" the dances performed by bees and learn and know the information they are conveying concerning the distance and direction to the food or home. However, what bees "read" is not clear. Honey bees apparently do not use airborne sound as we do but instead depend on short-distance, pressure-borne sound. Vibrations of the substrate are probably important, but how is not clear. Both of these phenomena may be active in the dance language.

The alarm odor, a pheromone that can summon hundreds or even thousands of workers to attack an enemy such as a bear or a human, or the sex attractant drones use to find airborne queens, are well-understood. Likewise, scent gland substances that are used to mark sources of food or water in the field, as well as a lost queen or a new home, have been identified. Synthetic compounds that may be used to imitate the alarm odor, sex attractant, or scent gland substance are all known and have been tested. However, mystery surrounds the pheromones by which bees convey the information that their queen is alive and well to others in the hive, or that inhibit ovary development in workers.

It is now clear that there is no central authority or committee or board of directors, so to speak, in a beehive. Individual bees make decisions based on the information available to them. However, since the individuals all have the same information, and programmed way of responding, their decisions are remarkably similar. It is clear that the decisions they make are based on sound logic, and out of this apparent lack of order comes stability.

Biology The biology or life history of all free-living plants and animals is controlled by three factors, which may be considered problems to be solved: food, protection, and reproduction. Honey bees spend a great deal of time resting and patrolling.

However, the important point is that they are always ready to work. In a minute, or even less, they may be called upon to defend their nest such as when a bear attacks or a sudden cold spell occurs. A warm spell, a rain, or just the season may bring nectar and pollen-producing plants into flower in a matter of hours, making a large foraging force necessary. This same warm spell, or a new food source, may stimulate egg laying and brood rearing and cause nurse bees to produce glandularly secreted food. It is important that the bees maximize their profits at all of these times, but since worker bees are always ready to respond to the needs of the colony, they can do so.

Things bees collect Honey bees gather four substances in the field: Nectar, pollen, water, and gums and resins that we call propolis. They live exclusively on pollen and honey. Honey is their source of carbohydrate, and pollen is their source of protein and the small amount of fat they may store. There is a fat body in worker bees in the Fall to aid in Winter survival. Honey bees gather water they use to dilute honey to be fed to larvae and to cool the hive. Propolis is used like varnish to protect the inside of their hive. Propolis also contains natural antibiotics, and these give the interior of a bee nest the same protection they give a tree wound.

About Honey Honey bees make honey from nectar that plants produce and give to bees as a reward for pollinating them. Nectar is predominately water and the sugar sucrose. An enzyme, invertase, converts most of the sucrose into two six-carbon sugars, glucose and fructose. A small amount of the glucose is attacked by a second enzyme, glucose oxidase, and converted into gluconic acid and hydrogen peroxide. The gluconic acid makes honey an acid medium with a low pH that is inhospitable to bacteria, mold, and fungi, organisms we call microbes, while the hydrogen peroxide gives short-range protection against these same organisms when the honey is ripening or is diluted for larval food. Honey bees also reduce the moisture content of nectar, which gives it a high osmotic pressure and protection against microbes. The high osmotic pressure causes water to pass out of any microbes accidentally introduced into honey, which causes them to die, another reason honey is such a safe food.

About Pollen Some of the pollen collected is consumed immediately or within a few weeks. However, some is stored for a long period of time, even months. A special system for the long-term storage and protection of pollen has evolved. When bees collect pollen, they add a small amount of honey or nectar to it. When the pollen is packed into a cell, this honey is consumed first by bacteria that use up the oxygen in the pollen balls. At this point a lactic acid-forming bacteria that can only live where there is no oxygen takes over, causing a fermentation that releases lactic acid that in turn protects the pollen. Cells containing pollen are filled to about 80 percent of their capacity, and the last 20 percent is filled with honey. Covering pollen with honey gives pollen further protection against any microbe that might otherwise attack it.

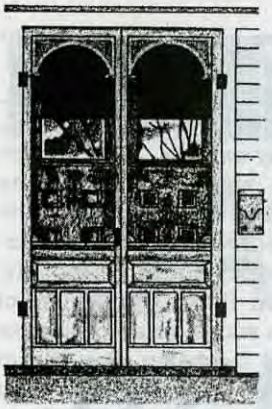
Pests & Problems All plants and animals are attacked by a great variety of living things including viruses, bacteria, mold, yeasts, fungi, worms, mites, and insects. Most of these pests, predators, and diseases are host specific, that is, they attack only certain other living things. The microbes found in a beehive usually attack only honey bees. The systems protecting honey and pollen have been described. In addition, good housekeeping, perhaps better termed good housecleaning, serves to rid the nest of many pests. The interior of the hive is protected by a coating of propolis that contains antibiotics that have been described above. Some of the large predators such as bears and skunks may use a variety of living things for food including bees, brood, and honey. The sting protects bees against these and many other animals.

Reproduction In a colony of honey bees, the queen lays the eggs that result in young bees to replace those that die and act to increase the population of the colony in the Spring. However, egg laying is only half of the reproductive process. Colonies have a life of only five or six years, and for the species to survive, there must be colony division, a process which we call swarming. When a colony swarms, 30 to 70 percent of the worker bees, some drones, and the old queen leave the nest and establish a new home elsewhere. If the old queen cannot fly, which is often the case because of old age, worn wings, or an otherwise poor physical condition, the swarm will fly away with the first virgin queen to emerge in the colony. Waiting for a young queen to emerge from her cell may delay swarming by two or three weeks but does not stop it.

The process of swarming is reasonably well-understood. Congestion of bees in the brood nest appears to lead to a breakdown in the distribution of queen substances through which bees know their queen is present and well. This, in turn, leads to physiological changes that affect the behavior of the worker bees. These changes can be seen and measured starting eight to 10 days before the swarm emerges. The swarm takes only three to 10 minutes to leave the hive.

The visible steps in swarming include the rearing of replacement queens, engorgement by up to 80 percent of the workers, wax gland development, queen weight loss, and some of the scouts searching for a new home rather than for food. Each of these phenomena has a special value. Rearing multiple queens better guarantees that one of them will survive to head the old colony, or the new colony if that is necessary. Bees about to swarm engorge so as to guarantee a food reserve should the swarm encounter inclement weather; an additional supply of food will also help build comb in the new nest. Engorgement stimulates wax gland development and the production of wax scales; wax, of course, is needed to build comb in the new home. A laying queen has enlarged ovaries and is too heavy to fly, so she must lose weight. A factor that certainly reduces colony numbers is that there is a shortage of good home sites in most areas. A swarm that can move into a new home quickly has a decided advantage.

Swarming in honey bees is not a haphazard affair. It is designed to perpetuate the species and does so remarkably well. BC



Ann Harman

Home Harmony

Picnic Time!

It's picnic time of year! Many beekeeper associations end the regular meeting year with a picnic. Since beekeepers are the best cooks anywhere, these events turn out to be real gourmet feasts.

Everyone expects the desserts to be made with honey, but you can create all sorts of other dishes using honey and not have the result be sweet or dominated by honey flavor. Let's look at some of these possibilities.

Several things should be kept in mind for successful picnic food. The food may sit outside in warm weather for several hours, so perishable items are not a good idea. Weather in many parts of the country will be humid, so baked goods, especially cookies, need to be protected against the damp air. Foods that have a nice honey aroma may well attract honey bees to your table. Fortunately, beekeepers understand what is going on and set a few extra places for the visiting bees.

The food should be reasonably easy to serve and to eat. If you have to cut something up in the serving bowl to get your portion, you'll probably spill everything on your plate. If you have a piece of chicken prepared with a thin sauce, you'll end up covered with that drippy sauce. Salads made with lettuce and vegetables should have everything bite-size. Ease of eating will be appreciated much more than attractive appearance. If you bake some bread, slice it before going to the picnic. Cakes, including sheet cakes, and pies are easier served if pre-sliced, too. Pay more attention to the serving and eating end of your chosen recipe.

Quantities are hard to determine. However, if your favorite recipe serves four and the picnic is expected to have 25 people, only a very few will get a chance to taste your goodies. Many recipes can be doubled, some even tripled, to give everyone a chance for at least a spoonful.

Some foods, such as breads and rolls, can be made ahead of time and frozen until the day of the picnic. If you are bringing a tossed salad, add the dressing just before serving to keep the lettuce and vegetables crisp. Instead of a whole pie, which is difficult to cut and serve, consider making your not-to-be-missed pie as little tarts, using muffin tins. Crumb crusts can be made in the little muffin papers so each tart is easy to pick up.

You might suggest that everyone comes with a honey recipe to share, especially if the picnic contribution is made with honey. Make enough copies for everyone to have one. You can get five recipes, 3x5-inches on one piece of 8-1/2x11-inch paper. If you are puzzled about doing this, let me know and I'll be happy to explain. With a recipe exchange, everyone will go home with practically a book!

This first recipe is an easy way to take meat to a picnic. However, instead of cutting the turkey breast into large slices, cut the slices so that they can be served easily and eaten without too much trouble. Cutting the slices into strips would work. Another advantage to this recipe is that it must be made in advance, even the day before, and served cold.

COLD TURKEY ORIENTAL

This first recipe is an easy way to take meat to a picnic. However, instead of cutting the turkey breast into large slices, cut the slices so that they can be served easily and eaten without too much trouble. Cutting the slices into strips would work. Another advantage to this recipe is that it must be made in advance, even the day before, and served cold.

1/4 cup soy sauce
1/4 cup honey
1/4 cup sherry
1 large clove garlic, crushed
1 teaspoon ginger
1 tablespoon flour
1 5-pound frozen turkey breast, thawed

Stir together soy sauce, honey, sherry, garlic, and ginger in a small bowl. Set aside. Place flour in 16x10-inch plastic oven-roasting bag and shake to coat sides of bag. Place turkey in bag in shallow baking dish. Pour soy sauce mixture over turkey. Follow bag instructions for sealing and piercing bag. Bake in 375° oven for 1 hour and 20 minutes or until turkey is tender and juices run clear when turkey is pierced with a fork. Remove turkey and gravy from bag. Cool separately. Slice turkey thin. (It will slice nicely when cold.) Remove fat from cold gravy and strain. The gravy can be served separately to be put over the cold turkey slices.

Nature's Golden Treasure Honey Cookbook
Joe M. Parkhill

ICICLE RADISH SALAD WITH HONEY SESAME DRESSING

Vegetables and salads are easy to take to picnics. Sometimes it seems there are too many. But the next two recipes probably won't seem like other salads.

3 cups washed and torn fresh spinach
1 cup julienne icicle radishes
1 cup julienne carrots
1 cup fresh bean sprouts (optional)
Honey Sesame Dressing

Arrange vegetables (mix thoroughly for a picnic) and spoon on desired amount of Honey Sesame Dressing. Makes 6 servings.

HONEY SESAME DRESSING

1/2 cup vegetable oil
1/2 cup rice vinegar
1/4 cup honey
3 tablespoons toasted sesame seeds
1 to 2 tablespoons grated fresh ginger root
1 small clove garlic, minced
3/4 teaspoon sesame oil
1/8 teaspoon crushed dried red pepper
salt to taste

Whisk together oil, vinegar, and honey in small bowl. Add sesame seeds, ginger root, garlic, sesame oil, red pepper, and salt to taste; mix thoroughly. Dressing may be stored in refrigerator, tightly covered, for up to 1 week. Makes 1-1/3 cups.

Sweetened With Honey
National Honey Board

WHITE BEAN SALAD

Instead of three-bean salad or baked beans, try this colorful salad.

3 tablespoons balsamic or red wine vinegar
1 tablespoon olive oil
1/2 tablespoon honey
1 can (19 ounces) white kidney beans
1/4 cup chopped red onion
1/2 cup chopped green bell pepper
1/4 cup chopped fresh parsley

In medium bowl, whisk together first 3 ingredients. Rinse beans and drain well. Add to dressing along with remaining ingredients. Stir gently. Add salt and pepper to taste. Serves 4.

Golden Blossom Honey

FRESH HERB BREAD

One nice thing about breads is that they freeze extremely well. So you can make these loaves in advance, freeze, then be ready for the picnic in no time at all. You can use fresh herbs or dried; just watch the measurements.

1 cup milk
1/2 cup sweet butter
1 cup warm mashed potatoes
3 tablespoons honey
1-1/2 tablespoons dry yeast
1/2 cup warm water in which potatoes were cooked
1/2 teaspoon honey
1/4 teaspoon ginger
2 eggs
1 tablespoon salt
6-7 cups unbleached white flour
1/4 cup wheat germ (optional)
8-10 tablespoons soft butter
1-2 cups chopped fresh herbs (if dried, use only 1/4 to 1/3 cup)
herb suggestions: a combination of dill, parsley, and chives; or fresh parsley, freeze-dried chives, and dried basil; or just use fresh parsley

In a large saucepan, bring the milk just to a boil. Remove from heat; add butter, mashed potatoes, and honey. Stir with wire whisk to blend. Cool to lukewarm.

In a large mixing bowl, dissolve the yeast in the warm potato water with the 1/2 teaspoon honey. When bubbly, add potato mixture, ginger, eggs, and salt. Beat well. Add 2-1/2 cups flour and beat 2 minutes with an electric mixer. Stir in wheat germ. Gradually add more flour to make a dough that leaves the sides of the bowl. Turn the dough out onto a lightly floured board and knead until smooth and elastic. Add a little more flour as necessary. Put the dough in a buttered bowl; turn to coat all sides. Cover with a towel and let rise until doubled in size.

Punch dough down, turn it out onto a lightly floured board, knead a few times to press out air bubbles, cut in half, cover with the towel, and let rest about 10 minutes. Roll each half into a rectangle about 1/2-inch thick. It may be so elastic that it is hard to roll, but persist. Spread each half with 4-5 tablespoons soft butter and sprinkle with 1/2 to 1 cup chopped fresh herbs. Now, start at the short end and roll dough up tightly, like a jelly roll. Place it in a buttered loaf pan, seam side down. The ends of the roll should touch the ends of the pan, but the roll should not fill the pan much more than halfway. Repeat with the other half of the dough.

Brush the tops of the loaves with melted butter, cover, and let rise in a warm place untilalmost doubled in size. Preheat oven to 375°F. Bake about 40 minutes or until bottom of loaves sound hollow when tapped. Cool on a rack. Makes 2 loaves.

The Garden Way Bread Book
Ellen Foscue Johnson

Now all you need is a warm, sunny Summer afternoon, a big tree, a picnic table, and all the beekeepers. Don't forget the Frisbees (they have nothing to do with bees).

THE STATUS OF BEEKEEPING

One Hundred Forty Years Ago

Dana Stahlman

Once in awhile our thoughts about beekeeping slip back to the days of Langstroth, and we wonder about those who kept bees in the pioneer days of beekeeping. Most new beekeepers find information very confusing when they first begin. First, there is a new vocabulary to learn. A new beekeeper said to me recently, "I know what a box of bees is, but what is a super?" New beekeepers need to study and learn the lingo and then acquire some basic knowledge of bee biology. The vast array of information available and the various opinions on how to keep bees keep the beginner busy. However, one thing the new beekeeper doesn't really have to worry about is what constitutes a standard hive. That was worked out by A.I. Root and Charles Dadant on the principle laid down by L.L. Langstroth. Modern beekeepers may use hives of eight, 10 or 11 frames and opinions concerning nine or 10 frames in the brood chamber may come up at bee schools or bee meetings. The size of bee boxes has not been a topic of any bee school I have attended. It has been taken for granted that there is one standard size with a choice of frame depth size. We don't see many Jumbo Dadant hives in Ohio, or eight-frame hives for that matter. The teachers of these schools are more interested in the what to do and the whys of beekeeping.

Langstroth is forever known as the discoverer of the bee space. However, we may have forgotten that he uncovered and observed this magic space somewhat Indirectly. Florence Naile's book, America's Master of Bee Culture reveals an interesting story of Langstroth's attempt to use the Bevan hive that had bars arranged in the hive for bees to attach comb. The problem was that the bees also glued the cover, which fit tight over the bars, with propolis, thus making it very difficult to remove. He solved that problem by cutting a rabbet deeper by 3/8 inch in order to prevent the bars from getting stuck to the top cover. The bees respected that space and thus, Naile wrote, "When he had noted and considered the fact that the bees were leaving open that shallow space at the top of the hive, and when he was pondering another problem – how to get the combs out uncut – his mind leaped to a solution. The date recorded in his journal was October 30, 1851."

His movable frame hive respecting the 3/8-inch bee space was patented on October 5, 1852. It was Patent No. 9300. Details were included in his book, *The Hive and the Honey Bee* published In 1853. New editions were issued in 1857 and again in 1859. The first U.S. publication of a bee periodical came in 1861 with Samuel Wagner's the *American Bee Journal.* Word was rapidly spreading about the benefits of a hive with movable frames. However, the idea did not take off immediately. Many beekeepers were located in rural areas which seem to be very conservative, and like today, beekeepers tended to be individualistic. They didn't like the idea of having to pay to use an idea. Anyone with a concept of a hanging bar frame within a box could copy the idea if the bee space was respected. Thus, a number of new hives with movable frames came into existence. These were known as hanging bar frames or standing frames. Box dimensions were by no means standard as they are today.

Quinby's New Beekeeping, published by L.C. Root In 1883, was still including a chapter on keeping bees in boxes. He explains, "Notwithstanding the fact that most writers think it unnecessary to make mention of box hives, the fact that a large number of our beekeepers still pursue the old method and use them seems to me a sufficient reason for recognizing them, at least so far as to call their attention to the deficiencies in their system ..."

Beekeepers have always been Influenced by written material and what beekeepers have to say about the "art of beekeeping." And I would suppose that was also true in 1858. Both Langstroth and Quinby had published books on beekeeping in 1853, and one would believe that information contained in these books reached the general beekeeping population. To get a good picture of beekeeping practices in 1858, I have turned to the "Thirteenth Annual Report of the Ohio State Board of Agriculture with an Abstract of the Proceedings of the County Agricultural Societies: to the General Assembly of Ohio," for 1858. Contained in this historical document is a 10-page report on "Bee

Culture in Ohio" by John Kirkpatrick of Cleveland.

To set the stage, one must get a frame of reference for 1858. From the document we learn that it was a time when one could earn one dollar per day by the sweat of the brow working In a stone quarry or earn 40 cents per hundred for split rails (Isn't that what Abe Lincoln did?). Pork was selling for $1.75 per hundred pounds, and sheep farmers were concerned with the ravages of dogs, which killed an estimated 100,000 head of sheep during the year.

If one went to a sale, one would find a large display of wagons, carriages, buggies and farming implements. Horses at one sale brought an average of $69.67 per head, and mules averaged $120 per head. Buggies and carriages brought an average of $63 each. Hogs brought an average of $5.62 per head and a yoke of oxen $150.

Well then, having some appreciation for the value of a dollar and no cars, trucks or tractors, let's look at bees. The Langstroth hive could be purchased for farm rights for $5. This would entitle the purchaser to use and construct as many hives as he wanted so long as it was for his individual use and on his own premises. Honey was in demand on local markets, and the honey bee was recognized as important to small farm management. Most farmers had a hive or two kept in gums, or a patent hive. How quickly would beekeepers rush to buy this new hive? We are lucky to have an answer. The Ohio Board of Agriculture asked for data on the value of beekeeping. In the process they provided us with valuable Information on the history of beekeeping as it applied to the average beekeeper in Ohio. I would assume that the answers to their inquiry would reflect what was happening in other states at the same time. It may explain why Langstroth did not become wealthy with his new patent.

The State Board of Agriculture directed their secretary to ask the various agricultural societies of Ohio for data on the status of beekeeping for 1858. The secretary asked each county to provide the following information: 1) Has any attention been paid to bees in your county? 2) What kind of hives are found to be the best? 3) What is the average amount of honey produced by a swarm in a season? 4) What is the price of honey at the nearest market? And 5) Are bees considered profitable?

He received no response from 35 counties; however, the report says, "This must not be ascribed to a want of interest in the matter in all cases, for in several of these counties bees receive a large share of attention, and considerable honey is secured."

From the remaining counties (Ohio has 88 in all) we have a remarkable county by county record. Some answered some of the questions, and some answers are almost like non-answers. For example, Butler County's answer was a brief yes. One yes for all six questions. Not much information to go on from Butler County, but other county responses give us a good inside look at what was going on in Ohio. Some of the reports, such as the one of John C. Winans of Troy, Miami County, contains considerable information of interest.

Generally, the information from the report can be summarized as follows: Bees were considered profitable, and prices of honey ranged from 12-1/2 cents per pound to 25 cents per pound. Kirkpatrick added, "High prices are always obtained for good, white, surplus honey, entirely free from beebread or brood; but a large share of the honey brought to market Is absolutely disgusting, being obtained from the interior of the hive after killing the bees, and contains numbers of dead bees, brood and black comb; such honey should always be strained." Adulterated honey was a problem as well.

From Licking County the following comment is made: "It is thought by some that sorghum syrup could be produced and fed to bees with profit. It is to be hoped that the syrup, after it has been manufactured by the bees, will be improved in flavor." And that is not all. The buying public was wary of strained honey "as some make a business of manufacturing an artificial article with little claim to the name, and composed of a heterogeneous mixture of sweets." And to this Kirkpatrick adds, "Some of these people are not very cleanly in their persons, and in this are unlike the insects whose ambrosia they imitate."

When the subject turned to hives, a number of answers were given by counties. Some mention is made of the Langstroth patent hive and the report concludes with, "I have mentioned several times the movable comb hive of Langstroth, and have done so from the conviction that it enables the aplarian to control his bees in various ways both to his and their profit, and to an extent which the construction of no other hive will allow; but unless these frames are used, this hive Is no better than any other." Even today we have the ocassional beekeeper who plops another empty super (without frames) on top of a hive of bees, and the bees do what comes natural.

From county reports we find: "The kind of hives considered best are boxes 14-1/2 inches square, 8 inches high; six slats across the top; a glass window 4 by 6 inches." "The best hives are the simplest ones – straw and "gums" – and in such the bees Winter the best." "The kind of hives that have succeeded best are those made of 1-1/4 inch boards, one foot square on the inside, from 22 to 24 inches long, with a honey chamber in the upper part of the hive 6 inches deep..." And from other counties, "The 'Week's Hive is in general use and is found to be the best." Or, "All kinds; Eddy's patent preferred." Or, "Warren's patent hive preferred; Langstroth's lately introduced, not fully tested."

Of course, many counties reported that the common box hive and bee "gum" were in common use. It is obvious from this report that the state of beekeeping in Ohio was anything but modern with the few exceptions of Langstroth's hive being mentioned and the endorsement of it by John Kirkpatrick. Bees were still being killed to gather honey; box hives were the norm; many farmers had a few of the old-fashioned hives and got a little honey for their own use; and some were able to sell surplus for a profit. The report indicated that beekeeping could be profitable if kept on a large scale.

Honey crops of 20 to 25 pounds or less per hive were reported, and it was indicated that about one-half of the swarms withstand the first Winter. It is interesting to note that in those counties reporting the use of Langstroth hives – honey production was reported at

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Richard Taylor

Bee Talk

"Perhaps, with so many newcomers joining our craft, a few words of advice from this old-timer might be of some use."

There seems to be a new epidemic of bee fever, at least here in the Northeast and as far west as Ohio. This malady seems to come in cycles, every few years, and it is no respecter of persons. It strikes the rich and the poor, the young and the old.

The mark of bee fever is that the victim finds himself, or herself, hardly able to think of anything except bees. Everything is seen in the context of bees. If you see an unfamiliar flower, your first thought is whether or not it is a bee plant. You survey yard sales to see if there might be things useful in your honey house or apiary. You are apt to sit next to a beehive half the day, just watching the bees come and go. Your friends have learned, if they encounter you at a social gathering, not to ask questions about bees, for if they do, they are likely to get a long and tiresome discourse on bees and beekeeping. The bees just consume your thoughts and feelings. I have seen people, stricken with this fever, abandon promising careers in order to take up the smoker and hive tool. I think there is no branch of agriculture that can so consume the energy of someone with a severe case of this fever. And if you get two people together, hitherto strangers, who have caught this fever, then they will talk and talk and talk, endlessly, about their bees and their discoveries. An avid beekeeper is, at once, a friend of every other beekeeper in the world. There are few activities about which this can be said.

This is, however, a deliriously wonderful condition to be in. It adds zest to every moment in the Spring, when you are out in your beeyard puttering and listening to the busy hum, and in Winter, too, when you dream of getting back out there.

I picked up a severe case of bee fever when I was a kid, and it has continued through these many decades unabated. The prospect of retirement was never a problem for me, and while I'm sure that I have, over the years, tended to neglect matters which the world might deem more important than my bees, I have not regretted it. The symptoms have been especially severe lately, as when I discovered, in my barn, several long-forgotten cartons of wooden comb honey equipment – section boxes, section holders, all kinds of stuff that I picked up somewhere. So this Spring, I'll produce a few supers of the old-fashioned square comb honey sections, something I have not done since I was a boy. I remember that back then I sold those for 15 cents each! And the fever hit me hard again when I went to another barn sale and found, strewn around outside and discarded, piles and piles of old burlap, for my smoker. The smell of burlap in my smoker always produces in me a severe onset of bee fever. It is what I used as smoker fuel when I was a boy, and it is not easy to find any more.

Most people, I have discovered, are immune to bee fever. It took me a long time to discover this. I thought it was instantly contagious, and that any person, once introduced to the wonderful world of the honey bee, would be unable to resist the lure. Not so. Indeed, there are even professional bee scientists who have an immunity to this disease. I know a man who, having completed the requirements for a university degree in mathematics, signed up for a free elective in beekeeping, and even went on to get a doctoral degree in that subject. But then, when he finally set up his own apiary, he soon lost interest, and I have been unable to rekindle it. And there was once a well-known author of books on beekeeping, who held a professorship in apiculture, who took no delight at all in keeping bees, leaving all that to his students. He did not even want to go into the apiary if he could help it; his bee veil was seldom used, as he kept to his office and his books. Others, with similar histories, come to mind – people who have a kind of intellectual interest in honey bees, but no passion whatsoever for the beekeeper's craft. We beekeepers are scattered all over the world, but we will always be a tiny minority of the population. Most of the rest of the population are quite immune to our bee fever.

Bee fever, as I noted, seems to come and go in cycles, and why it should be on the rise now is a mystery. Bee supply people tell me they can hardly keep up with the demand, and new people, many of them young keep coming to bee meetings. Quite a change from a few years ago, when all the faces there seemed old and familiar, and in ever declining numbers. I say this is a mystery because this upsurge comes just when the publicity about honey bees has been uniformly discouraging – mites and all that. A friend of mine advertised in the local shopping guide for help with his bees, stating that it would be hard work and low pay, and he got 19 responses, all but two of them from women. I was reminded of how,

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Questions?

Evodia Update

Q **I planted some of the Evodia seeds you sent me during the Winter, so they would chill correctly, and the rest I put in the refrigerator, alternating between the freezer and the refrigerator to simulate Winter conditions. The ones planted outside did not come up, so I planted the ones from the refrigerator in peat pots with seed-starting mix under lights for warmth, and they still did not come up. Have others had similar problems?**

Frank Chamberlin
Ashebore, NC

A Your letter is postmarked May 14, so it is possible you did not give the seeds enough time. I saw my very first tiny seedlings, from seeds sown outside last Fall, on May 21. I can imagine no reason why the seeds should not be viable, but I do not know what luck others have had, apart from several reports of failure.

I sent out several hundred packets of these seeds, beginning last November. I stopped counting when the number exceeded 500. Now it is very important to me, and to readers generally, to know what the result has been. Most of all, I need to hear from those who were successful with these seeds, with some indication of how and when they were planted. If I get a significant number of reports of success, and of conditions of success, then I shall offer these seeds again, to be sent free of charge above actual cost of packing and mailing. The *Evodia* tree is a wonderful honey plant which can, if plantings are successful, considerably enrich the beekeeping craft. So please, dear readers, let me know what happened with your seeds!

When To Requeen?

Q **I want to requeen my colonies every other year. What is the best time to do that – Spring, Summer, or Fall? And do I introduce the new queen immediately after removing the old one? In the past, I have had only mediocre success at requeening. Is there a foolproof method?**

Aubrey Goulding
Paradise NF, Canada

A Opinions differ, but I recommend requeening in the early Spring, for two reasons: (1) It is much easier finding the old queen then, when the population of the hive is low and the bees are very gentle; and (2) if the new queen does not get accepted, then all is not lost, for the bees have plenty of time to raise a new one before the honey flows begin. Yes, there is a nearly foolproof method, which is, to introduce the queen to a three-comb nuc first, and then, after she is accepted, combine the nuc with the colony to be requeened, first removing the old queen. A freshly made up nuc accepts a new queen very readily because all the older bees will have returned to the colony from which the nuc was taken.

Used Equipment

Q **I bought some used hives and frames that had been cleaned by soaking them in lye water. Can I assume that this equipment is free of disease?**

Casper Blecha
St. Louis, MO

A If this equipment was treated with *hot* lye water, then it should be perfectly safe to use, and is probably quite safe in any case.

Reasonable Prices?

Q **What are reasonable prices to ask for honey in circular sections? Strained honey? And beeswax?**

William Rooney
W. Buxton, ME

A Prevailing prices for all these, as well as standard pollination fees, for the different areas of the country, are given each month in *Bee Culture* magazine.

Triangular Escapes

Q **When making triangular bee escapes, how high should the rim be, and how large should the hole be?**

John Beilhart
Leetonia, OH

A These measurements are not critical, but the strips should be about a quarter to a half-inch thick, and the hole about the size of a quarter.

Menthol and/or Patties

Q **I have been using Apistan strips for *Varroa* mites and both grease patties and menthol for tracheal mites. Is it necessary to treat with menthol if I use grease patties?**

Jimmie Tindle
Golbertown, AL

A Beekeepers have found menthol difficult to use in our northern climate because of temperature requirements, but I am told that it can be used effectively in your southern climate. Grease patties by themselves are quite effective, however, and in my view there is no need to use menthol in addition to these.

To Spray Or Not?

Q **When I open my hives for inspection, would it be a good idea to lightly spray the bees with canola oil?**

Norman Bantz
Tuckahoe, NY

A It does not harm, but any benefit is temporary. As soon as the residual oil wears off, the bees are again vulnerable to tracheal mites. The point of grease patties is to make the adult bees unattractive day in and day out, rather than for just a short time.

Questions are eagerly solicited. Send them to Dr. Richard Taylor, Box 352, Interlaken, New York 14847 (not Medina) and enclose a stamped envelope for direct response.

Richard Taylor
Answers!

This Month's Honey Plant Is

C·H·I·C·O·R·Y

B.A. Stringer

The plant appears as a green scaffold, highlighted by those beautiful sky-blue flowers. There's no other plant like it this time of year.

Described as one of the most attractive plants to bees, Chicory is a perennial in the Daisy family, which has milky juice and a long taproot. Chicory's sky-blue, starry flowers appear in midsummer and are freely visited by honey bees for both their nectar and their near-white pollen. The flowers appear singly or in clusters of two or three in the axils of much-reduced upper leaves, on branched stems. The plant appears as a green scaffold, highlighted by the sky-blue flowers. The flowers, which may also be purple or white on some plants sometimes close up in the early afternoon, and thus yield nectar and pollen only in the morning.

Chicory has been grown on a field scale for roots and for seed in parts of England and Michigan, where the flowers have been a source of surplus. The honey obtained has been described as a "peculiar yellow color, slightly greenish even when granulated, and with a flavor reminiscent of Chicory when fresh."

A native of the Mediterranean region, Chicory has long been grown for its roots, which were dried and ground for a coffee substitute or added to coffee to extend it. This is still a common practice in France. As a garden vegetable bred from the wild form, the young green leaves are variously called Chicory, endive or curly endive, and are good salad ingredients. The blanched tops are also edible, and may be sold as Belgian or French endive, endive hearts or *witloof* ("white leaf"). Additionally, Chicory has been grown as a forage crop for livestock, particularly sheep. Since its introduction from Holland to Massachusetts in 1785, Chicory has naturalized widely and is now a common weed along roadsides and in waste areas, where it thrives in light, gravelly soils. In some provinces of Canada, it is regarded as a noxious weed.

Such extensive distribution has led to an abundance of common names for Chicory. It has been called Blue Dandelion, Blue Daisy, Coffee-weed, Blue Sailors and sometimes even Bachelor's Buttons. Another name is Wild Succory. In legend, Succory was a beautiful maiden whom the sun wanted to wed. Because she spurned his advances, he changed her into a plant which always has its face turned to the sun from morning until evening. In view of the flower's response to the sun, lore further maintained that water distilled from the flowers would aid failing eyesight. Other superstitions abounded. It was held that one who carried the plant would become invisible, and also that a leaf, placed against a lock, would open a locked door. Moreover, the plant was once grown as an aphrodisiac, with the stipulation that it be dug with a piece of gold or a stag's horn! Herbalists used Chicory to treat jaundice and dropsy.

The botanical name for Chicory is *Cichorium intybus*, derived from the Green *kichore*, meaning a salad or root vegetable. Seeds are available from specialty catalogues such as Nichols Garden Nursery, herbs and Rare Seeds, 1190 North Pacific Highway, Albany, OR 97321 or Johnny's Selected Seeds, Foss Hill Road, Albion, ME 04910. BC

B.A. Stringer grows bees, and bee plants near her home in Blodgett, Oregon.

Gleanings

JULY, 1997 • ALL THE NEWS THAT FITS

USDA NEWS

FACILITIES TASK FORCE HOLDS MEETING – The U.S.D.A.'s Strategic Planning Task Force began review of the nation's federally-funded agricultural research facilities at its initial meeting May 28-30 in Ames, IA. The 15-member task force, appointed in March by Agriculture Secretary Dan Glickman met at the Holiday Inn-Gateway Center to discuss its mission, U.S. research infrastructure status and future working group assignments. Created under the 1996 Federal Agricultural Improvement and Reform (FAIR) Act, the task force will have two years to provide a 10-year strategic plan, which will recommend to the secretary of agriculture and Congress priorities for "development, modernization, construction, consolidation and closure" of existing and proposed agricultural research facilities whose construction is in-whole or part federally-financed.

GLICKMAN SPEAKS TO COUNCIL ON FOREIGN RELATIONS – In a speech before the Council on Foreign Relations (April 2), Agriculture Secretary Dan Glickman said, "Last year, U.S. agricultural exports hit nearly $60 billion making agriculture, for the second year in a row, the leading positive contributor to the U.S. trade balance. Agriculture's trade surplus more than covers every Honda, Toyota, you name it, that was imported last year with $7 billion to spare for Mercedes and BMWs. As trade relations replace military relations as our primary means of dealing with each other, few questions are more pivotal than how the world's largest market engages the new global economy. Fundamentally, China must agree to free and fair market reforms. They are fast becoming our biggest trade deficit nation. We have got to close the trade gap. All America needs to do that is a level playing field for agriculture, as well as CDS and stereos."

CHINA AND WTO MEMBERSHIP – In comments made before the Council on Foreign Relations (April 2), Agriculture Secretary Dan Glickman said, "We cannot forget China is a net agricultural exporter with steady, record increases in grain production with plentiful grain stocks and ample ability to further increase yields. As long as China remains single-mindedly focused on growing grain, it can put off the inevitable for some time. But I think a wiser route for them would be to engage the world. A positive accession to the World Trade Organization (WTO) would be a win all around. For the U.S., the benefit is obvious, a more level playing field in the world's largest market. Finally, the biggest benefactor of a positive WTO accession is China. As a leading exporter of agricultural products, China benefits from a rules-based trading system.

COMMENTS ON MFN STATUS – "Today, the heavyweight trade issue is whether we continue to grant China Most Favored Nation (MFN) trading status. If you look at it strictly from the economic point of view, it's a question of whether or not we continue normal trade relations with China, or slap up a wall of across-the-board tariffs that effectively shuts down U.S.-China trade. This would be a catastrophe for American agriculture. China is our #1 cotton market. And, as they shift more of their own land into food production, we expect they'll become increasingly dependent on world markets for their fibers. We need to engage China. We need to encourage them to play a positive role in the world."

OBITUARY

Walter D. Sundberg, 96, a well-known beekeeper of rural Fergus Falls, MN, died Wednesday, May 28, 1997, at his home.

He was born September 24, 1900, in Worthington, the son of Frank and Carrie (Paulson) Sundberg and moved to Fergus Falls township in 1901. He graduated from Fergus Falls High School in 1920.

On June 21, 1920, he married Hazel Carter of Aldrich at the Balsam Lund Lutheran Church in Aldrich. In 1909, Mr. Sundberg, along with his father and his brothers, began keeping bees, and eventually, it became a full-time beekeeping operation.

In 1937, he joined Sioux Honey Association and received the Pioneer Award in 1981. The Minnesota Beekeepers awarded him Beekeeper of the Year in 1973. Mr. Sundberg was a member of the American Beekeeping Federation since 1945. He sold the business to his son, David, in 1973, but continued to be actively involved in beekeeping activities up until the Winter of 1996.

He was a faithful member of Augustana Lutheran Church, serving on various boards and committees in the local church and synod. He was a member of the Gideons for more than 50 years and served on the Board of the World Mission Prayer League for 27 years and was on the Board of Directors of Knollwood Memorial Gardens. He also served for 28 years as clerk of the Fergus Falls Township board. He greatly enjoyed the activities of the "Golden K" Club and spending the Winter months in Florida with his daughter.

Mr. Sundberg was preceded in death by his wife, Hazel; his parents; four brothers; three sisters; and an infant granddaughter.

He is survived by his son, David (Ellen) Sundberg of Fergus Falls; three daughters, Lois (David) Smedstad of Moorhead, Mary (Dale) Larson of Shoreview and Shirley (Larry) Lokken of Winter Park, FL; nine grandchildren and four great-grandchildren.

HELP WANTED

Thomas Edison had a unique way of hiring engineers. He'd give the applicant a light bulb and ask, "How much water will it hold?"

There were two ways to find the answer. The first choice was to use gauges to measure all the angles of the bulb. Then with the measurements, the engineer would calculate the surface area. This approach could take as long as 20 minutes.

The second choice was to fill the bulb with water and then pour the contents into a measuring cup. Total elapsed time: about a minute.

Engineers who took the first route, and performed their measurements by book, were thanked politely and sent on their way. If you took the second route, you heard Edison say, "You're hired."

Looking to hire creative people? Develop an "Edison test" of your own. – *Managing By Storying Around*

LEAFCUTTERS TO AUSTRALIA

The first leafcutter bees imported from New Zealand have been released in Australia to help pollinate alfalfa crops.

The 10,000 bees were imported by the Pioneer Hi-Bred Seed Co. as prepupae in cocoons. These were incubated for 21 says at the Commonwealth scientific and Industrial Research Organization's Division of Entomology quarantine insectary at Black Mountain, Canberra.

They were then checked for the presence of parasites and fungal pathogens by Dr. Ron Bitner, a specialist consultant from the U.S.

Australian farmers produce an annual alfalfa crop worth an estimated $225 million a year in sustainable cropping systems and to counter environmental problems caused by soil degradation, salinity and erosion.

Absence of an efficient pollinator has been the major limiting factor to development of a competitive Australian alfalfa seed industry.

Typical levels of pollination efficiency in Australian alfalfa fields are 40-60%, while pollination efficiency of leafcutting bees in North American fields is better than 90%.

The New Zealand bees were released on a 100-acre crop of alfalfa at Mathoura in southwestern New South Wales under supervision of Bitner and Dr. Glynn Maynard of the Australian Quarantine Inspection Service (AQIS).

The bees began feeding and pollinating immediately relase. Nesting boxes were provided at release sites to encourage bees to congregate and establish colonies, which it is hoped may form a breeding nucleus.

"The trial has already been highly productive in developing handling techniques that satisfy quarantine requirements, as well as methods of processing large numbers of bees," Maynard said.

A proposal to import leafcutting bees from Canada is currently being assessed by AQIS.

Canada has a larger base population of leafcutters than New Zealand and access to Canadian stock would enable importers to obtain greater numbers of bees to establish a significant population in Australia.

Canada has a larger range of leafcutter parasites and fungal pathogens than New Zealand and these concerns will need to be adequately addressed before AQIS decides on importations from Canada.

Mutant Pollen?
BRITISH HONEY LABEL WARNING

Britain commercial honey packaging now has a printed warning that babies under 12 months should not be given honey because of concerns that pollen from genetically-engineered crops could endanger people's health.

The commercial honey producers and the government said the warning was being issued as a precaution against infant botulism.

"There has been a number of cases overseas – though none in Britain can be pinned down to eating honey," said British Honey Importers' and Packers' Association secretary Walter Anzer. "The risk is small and it is purely a precautionary measure," he said.

An unpublished Agriculture Ministry-funded study said botanists at Leicester University found bees could gather mutant pollen from genetically altered crops with potentially serious effects on human health..

The crops have their genes shuffled to boost yields or increase resistance to insects and disease.

Some added genes have been found to be toxic to humans as well as insects while others can result in allergic reactions.

"As ever-increasing numbers of genetically-engineered crop plants are being approved for release experiments, it is vital that the potential problems associated with the expression of transgenic products in pollen are addressed," the study said.

It said transgenic pollen proteins could remain active in honey for several weeks. *–Alan Harman*

4-H ESSAY WINNERS

With an assignment to develop an essay on a "news event" in the honey bee colony, the results were predictably diverse. Headlines included "Homicides Haunt the Hive!"; "Hundreds Hunt for Hive: Colony Conditions Crowded"; "New Hive Colonized"; "Wild Dance Leads for Sweet Rewards"; and "Night Attacker Skunks Bees." One creative writer even formatted her essay as a publication, "The Bee observer." With the headline, "Nursery Workers Seen Building Queen Cells.

The creativity made the judges' task more difficult, but they finally chose three of the 24 entries for top honors. First place went to Samuel Voss of Gadsden, AL; Caleb Layton of Starkville, MS, placed second; and third was Kathryn Lessels of Ellicott City, MD.

Under a headline of "Family Survives multiple Attacks – Bee Colony Defies All Odds," Samuel writes of the hazards facing honey bees – wax moths ("They nearly ate us out of house and home! a worker bee reported"), bears, ants, skunks, and even humans (injudicious spraying of pesticides). For his efforts, Samuel, 14, will receive a cash award of $250.

Caleb, 12, wrote a straight-forward account of the ravages of tracheal and *Varroa* mites to the honey bees, both managed and feral, in Mississippi. His essay, "Crisis in the Hive," earned him a $100 prize. His sources included farmers, loggers, and professional apiculturists.

"The Colony Caper," a tale of a swarm leaving one beekeeper's hive, settling in a condo hallway, and being retrieved and claimed by a second beekeeper, won $50 for Kathryn. She had a reporter for *Bee News* interviewing the bees involved for a first-hand account of the event.

The three top writers and all the other state winners will receive a copy of *Guide To Bees and Honey,* by Ted Hooper.

For the 1998 Essay Contest, 4-H'ers will be asked to report on the beekeeping activities in their community and/or state. The report should cover as many aspects of the beekeeping and honey industry as can be identified in the writer's area. They are warned not to overlook the less obvious portions of the industry – for example, pollination of crops, honey processing, manufacturers of bee supplies, beekeeping research facilities, etc.

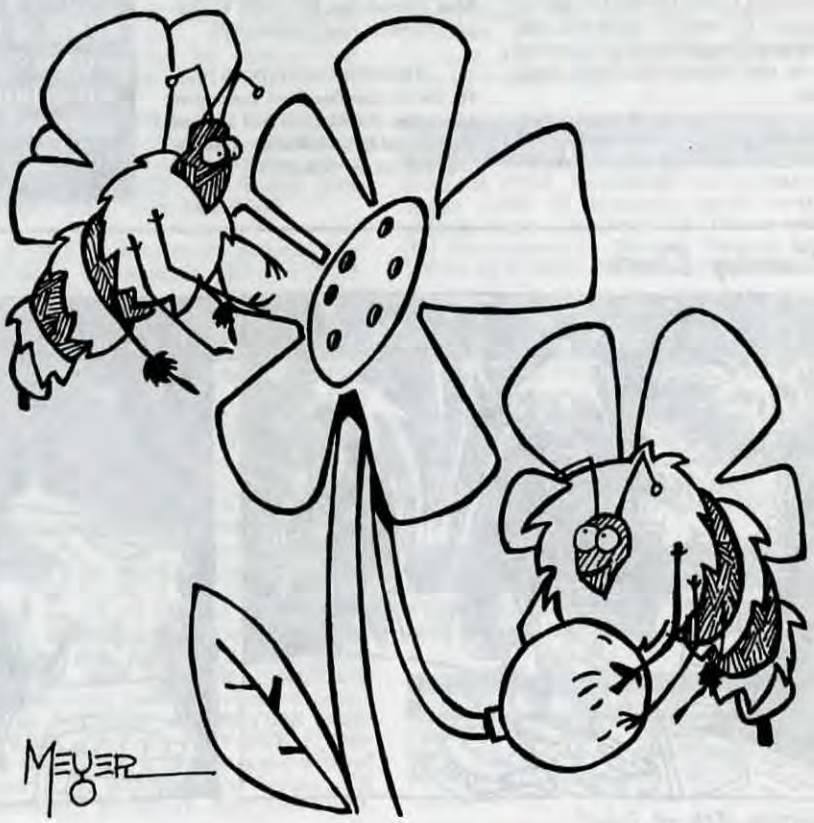
Complete rules and details on entering the essay contest are available from local 4-H agents.

?Do You Know? Answers

1. **True** European foulbrood is world wide in distribution and in some areas, considered to be as serious a problem as American foulbrood, which is found on every continent. Unfortunately, the names of the two diseases are not associated with their geographical distribution.
2. **False** There is no obvious seasonal outbreak of American foulbrood. This disease occurs at any time of the year when brood is present. European foulbrood, however, strikes primarily in mid to late spring, the time when colonies should be building up to maximum populations. It also can be found in the fall, but it is not as common as it is in the spring.
3. **True** Larvae infected with European foulbrood usually die while still in the coiled stage when they are four to five days old. In comparison, larvae with American foulbrood are almost always killed after they have spun their cocoons and stretched out on their backs with their heads toward the cell cappings. Death normally occurs during the prepupal stage but some pupae die as well.
4. **False** As the names imply, American and European foulbrood are diseases that affect honey bee brood but have no effect on adults.
5. **False** Prior to the introduction of parasitic mites, the primary function of apiary inspection personnel was the detection and control of American foulbrood. Since American foulbrood spores are very resistant to heat, chemical disinfectants and desiccation, the best control once the combs become infected with scale and spores is to burn them.
6. **False** Larvae suffering from European foulbrood appear to be undernourished. The sick larvae first become displaced in their cells, just as they do when they are deprived of sufficient numbers of adult bees to feed them adequately. The bacterium multiplies in the midgut as the disease progresses. The larva must compete for food with the rapidly multiplying bacteria creating an abnormal demand for larval food. The infected larvae that survive produce pupae of subnormal weight, because the bacteria have assimilated much of their food.
7. **False** Larvae are susceptible to European foulbrood infection at any stage of their unsealed life but the older they are the less they are affected. Larvae are susceptible to American foulbrood for up to three days following egg hatch. The susceptibility of larvae decreases with increasing age and they become immune 53 hours after egg hatch.
8. **False** *Melissococcus pluton* is the causative agent of European foulbrood not American foulbrood. *Bacillus larvae* is the causative agent of American foulbrood.
9. **False** American foulbrood and European foulbrood are associated with the western honey bee, *Apis mellifera.* In addition, American foulbrood and European foulbrood have also been reported in *Apis cerana* in India.
10. A) European foulbrood
11. B) American foulbrood
12. B) American foulbrood
13. B) American foulbrood
14. B) American foulbrood
15. A) European foulbrood
16. A) European foulbrood
17. A) European foulbrood
18. A) European foulbrood
19. B) American foulbrood
20. A) European foulbrood
21. B) American foulbrood
22. B) American foulbrood
23. Robbing Bees
    Drifting Bees
    Exchanging combs between a diseased and a healthy colony.
    Feeding honey or pollen contaminated with AFB spores.
    Using a hive tool or gloves contaminated with AFB spores.

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



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THE SCOTTISH BEEKEEPER. Magazine of The Scottish Beekeepers' Assoc. Rates from D.B.N. Blair, 44 Dalhousie Rd., Kilbarchan, Renfrewshire, PA 10 2AT, Scotland, U.K. Sample $1.

DIE NEUE BIENENZUCHT Monthly magazine for beekeepers interested in German beekeeping. Hamburger Str. 109, D-2360 Bad Segeberg, West Germ.

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SCOTTISH BEE JOURNAL. Monthly magazine. Sample copy from Robert NH Skilling, FRSA, 34 Rennie St., Kilmarnock, Scotland. $4. per annum.

BEE CRAFT – Monthly journal of the British Beekeepers Association. Subscription, including postage is £13.68 surface mail to L. Connor, P.O. 817, Cheshire, CT 06410.

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IRISH BEEKEEPING. Read An Beachaire (The Irish Beekeeper) Published monthly. Subscription $15./year, post free. Mr. Seamns Reddy, 8 Tower View Park, Kildare.

THE AUSTRALASIAN BEEKEEPER. Published monthly by Pender Beekeeping Supplies Pty. Ltd. Send request to: The Australasian Beekeeper, PMB 19, Maitland NSW 2320, Australia. Sub. $US 27. per annum, Surface Mail (in advance). Payment by Bank Draft. Sample free on request.

RARE BREEDS JOURNAL. Bi-monthly about exotic, minor & rare breeds of domesticated animals & owners. $18. U.S./yr, $24. For.; $2.50 for sample. Rare Breeds Jour., Dept. Bee, HCR 1, Box 45, Hebron, ND 58638 701-878-4970.

BRITISH BEE JOURNAL. Monthly single copies 33p p+ postage. $15./yr. U.S. Subscription post paid. Sub-agent: 46 Queen St., Geddington, NR Kettering, Northants, NN14 1AZ, Eng. Bee interested. For beekeeping information read the AMER. BEE JOUR. New editorial emphasis on practical down-to-earth material, including question & answer section. For information or free copy, write to: AMERICAN BEE JOUR., Hamilton, IL 62341.

THE AUSTRALIAN BEE JOUR. Monthly, SeaMail $35.00 (Aus.), AirMail $50.00 (Aus.). Write to: Victorian Apiarists' Association Inc., Editor, Ms. Eileen McDonald, R.S.D. McKenzies Hill, Castlemaine, Victoria, 3450 Australia. Sample on request.

HE NEW ZEALAND BEEKEEPER. Published 11 times a year Feb - Dec. by the National Beekeeper's Association of NZ. Write for rates & indicate whether airmail or surface mail. NZ BEEKEEPER, Farming House, 211-213 Market Street South, P.O. Box 307, Hastings, NZ.

SOUTH AFRICAN BEE JOURNAL. Subscriptions including postage (six copies). 1995 all subscribers outside of South Africa R100-00 surface mail, payment to be made in S.A. Rands. NB. Sample copies only available on receipt of a donation. P.O. Box 41 Modderfontein, 1645, South Africa.

INDIAN BEE JOURNAL: Annual Subscription (foreign; including surface mail): U.S. $20 for individuals and U.S. $40 for institutions, by Bank Draft payable in Pune (India) drawn in favour of *Indian Bee Journal, Pune* and sent to Dr. K.K. Kshirsagar, Editor, 1294 Shukrawar Peth, Pune 411 002, India.

BEE TALK ... Cont. From Pg. 54

uged with responses, all of them from men. Two were from Russia and one from China. These readers were so blinded by their bee fever that all they saw in my ad was the word "beekeeper."

Beekeeping has always had romantic associations in people's minds, and that is part of its attraction. Often beekeepers themselves come to be possessed of a certain mystique. I have sometimes approached customers at my honey stand to be greeted with a kind of awe as they asked: "Are you the beekeeper?" Once, at an international gathering of beekeepers, I heard someone exclaim "All the greats in the world are here!" I cannot think of any other branch of agriculture where that kind of reaction would make sense.

Perhaps, with so many newcomers joining our craft, a few words of advice from this old-timer might be of some use. Here they are: First, don't be tempted to invent a new and better beehive. Second, have as your immediate goal, strong colonies. These are what will resist disease, get through the Winter, and most important, make lots of honey. Third, get your supers on before they are needed. A honey flow can start with great suddenness. And finally, keep things simple. Do not go in for fancy "systems of management" involving frequent opening of hives and manipulation of combs. Just be sure there are empty combs in the brood chamber during swarming season, and let it go at that. BC

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

STATUS ... Cont. From Pg. 53

50 pounds per hive. And, "If none but strong and healthy bees are kept, the loss would not be more than one in 20." Yet losses were high, and the blame was placed on the bee moth and Winter killing.

When reading this old account of bee culture in Ohio, I found it amusing to learn of some of the attitudes and ideas of that day. Some believed that the removal of the honey from the nectaries of flowers was injurious to the plant! And the author of this piece tells the General Assembly, "Many persons who are unfit for any hard labor will make good beekeepers. Such as the aged and lame or deformed of both sexes; who can also obtain from this pursuit a good, independent living – and to all such we say, 'Keep bees.'"

To conclude, John Kirkpatrick of Cleveland was well aware of the advantages of the Langstroth hive and anyone reading this report would conclude that one could make a living In Ohio with bees with the introduction of movable comb frames to the hives. The word was spreading that the movable frame hive was superior to other hives, but not all county reports indicated that in 1858. It would not be until Root and Dadant began manufacturing hives that the standard would be set and accepted by the buying public. In the one hundred plus years since the manufacture of standard hive bodies, the argument over hive bodies has almost disappeared. BC

Dana Stahlman is a sideline beekeeper, author and retired school administrator from Blacklick, Ohio.

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Display Index

Since the Home of the honey bees has become an incorporated company, I have thought that many of our readers would like to be introduced to our Secretary and Treasurer, Mr. J.T. Calvert, who, although he transacts a very considerable part of the business, is not generally known to our readers, though very many of them have read letters from here dictated by him.

Mr. Calvert was born December 7, 1862, in Victoria Co., Ontario. His grandparents on both sides came from old England. He was raised on a farm at Reaboro, his old home, and educated at a country school about two miles distant; and numerous were the times when paths had to be cut through the snow across the fields. This was a good school, and Mr. Calvert made the best possible use of the privileges afforded him. Indeed, if there is anything that will clear up a youth's head and make him do the best work, it is to walk two miles to and from school. He was soon proficient enough to pass the examination for what is known in Canada as the third-class teachers' certificate; and this means a good deal more than the ordinary certificate, so called, in this country. Later on he took a course in the Ontario Business College at Belleville, doing the work of a 16-week course in 11. After this he spent six weeks in Toronto in a wholesale house; and from there he came to Medina in 1881.

The year before, at home, he had become interested in bees. He obtained some queens of W.G. Russell, now of Millbrook, Canada, and at about the same time a few stray copies of *Gleanings* fell into his hands. As a result of this a correspondence began, resulting in Mr. Calvert's coming here to work.

We had previously (as we do now) received a great many applicants from outside parties; and as a general thing we had told all of them that it was no use for them to apply so long as so many applicants were living at Medina. But there was *something* in John's letter that impressed A.I. R. with the fact that he was a boy of the "right sort" of stamp, stamina, and character, and so he was induced to break over his custom.

John was willing to work for small pay, that he might have the privilege of learning the business, after which he expected to go back to Canada to establish a supply-house with his brother Albert, who was then living. But John developed such a proficiency at the Home of the Honey-bees, and seemed to fit so well in the harness, that several things conspired to change his plans.

He first began work in what we call the sample-room, "tying up sticks." The following Summer he took charge of the apiary while the writer was at school in Oberlin. We had a heavy queen and bee trade that year, and so our new man was pretty well initiated.

In order that he might make himself more useful he decided to take a course of studies at Oberlin, working his way along, and paying his own expenses as he could. He therefore attended school at this institution, with the writer, off and on, for four years, when ill health on the part of A.I. Root, brought on by the heavy responsibilities of the rapidly growing business, made it necessary for one of "the boys" to come home – at least for a time. I came first and began on the journal in the Summer of 1885, doing what I could to lift the load here; and during the following Spring John came, and in his turn began to lift the burden in the commercial department. I have said that several things conspired to change his plans. I don't know which was the most potent in inducing him to become an American citizen. I need not go into details, but in September of 1885, shortly after leaving school, he married my oldest sister, Maude.

A naturally good memory for figures and names, his general aptitude for business, that seemed to be born in him, enabled him to be a proficient clerk. First he took charge of the estimates and of the buying of the goods; and later on he assumed, practically, control of the whole commercial department, including bookkeeping, buying and selling, etc. Under his management branch houses were established, and other depots for the sale of our apicultural supplies were stationed all over the United States; and while we had a very good foreign trade it continued to increase, so that the business changed from what was to a large extent local and retail to what you might call trans-continental and wholesale, although the retail business and local features of it were preserved.

Mr. Calvert makes a liberal use of both the phonograph and stenographer in his general correspondence; and right here I might say that nearly all letters relating to the commercial department come under his general supervision. He is an indefatigable worker; and his general good health, owing to his regular habits of eating and sleeping, enables him to do more business than most men.

He is not less active in his religious life. He has been intimately connected with nearly all phases of the Christian Endeavor movement. He has been president a number of times of our local church organization, and two years of the county organization, and is now president of the Medina County Sunday-school Union. He is also active as a Sunday-school teacher, and greatly interested in all work of missions.

Physically he is of medium height, rather stoutly built, of light complexion, and of pleasant face and manner.

John Thorne Calvert
Business Manager,
The A.I. Root Company

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