Bee Culture

FEBRUARY 1995

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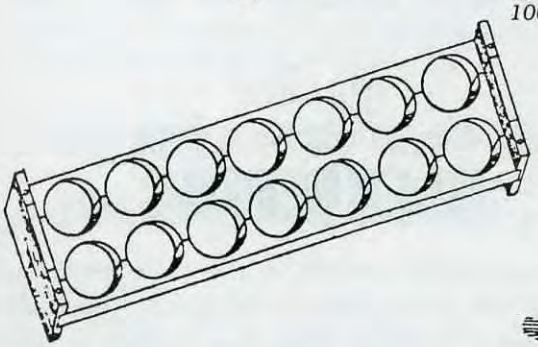
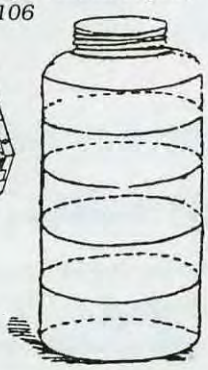
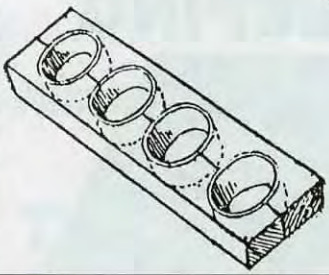
COLUMNS

DEPARTMENTS







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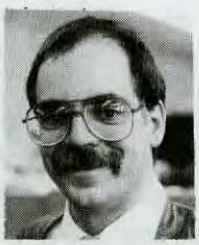

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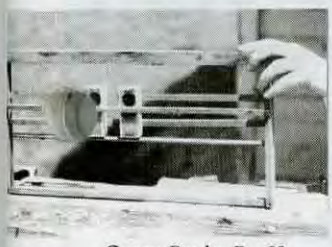
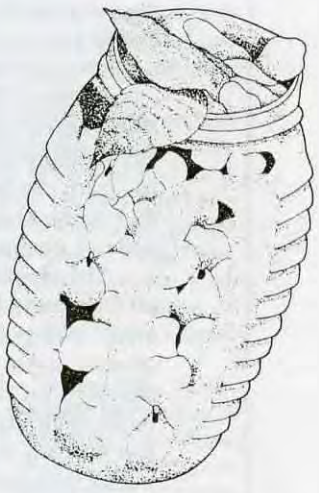
FEATURES



Queen Banks, Pg. 82

Craft Fairs, Pg. 85

Cover
One of the very first blooms to appear each year are those of the maple. Spectacular varieties appear, and those almost invisible appear – all sought after because of the pollen they have so badly needed this time of year.
Photo by Kim Flottum



Bouquet In A Jar, Pg. 89

INNER COVER

You and Your Insurance; Hawaii Vacation?

Do you have enough of the right kinds of insurance to cover what you do with your bees, your business and your product?

Most often, when I ask that question, the answer I get, especially from beekeepers who are only, by their description hobbyists, is, "My homeowners policy covers me. I know because I asked my agent."

If that is *really* the case you are in good shape. But my next question is, "Is that really the case?" The reason I ask is that all too often a claim is made against a homeowners policy, it gets paid, then the policy is cancelled. Way too often.

So the warning, if you will, is to check, double check and check again your policy. Read it. Every line, paragraph, addendum, clause and exception. *Then* talk to your agent again. Explain, exactly, the exposures you present to the company to make sure *he* (or she) understands exactly what's involved.

And what's involved? To find out I talked to an agent of an Independent Company that specializes in covering beekeepers and the troubles they encounter.

He gave me information dating back about seven years, when they started specializing. They carry about 800 policies, covering property damage and general liability. During that time they have had just over 350 property damage claims. There were three over $100,000, two over $250,000, one over a million dollars, and about 350 at less than $10,000 (about half of the $10,000-or-less claims resulted from a single storm).

As far as General Liability is concerned, they have had about 40 claims, and about half of those are still not settled. However, they did have one at about a half million dollars and another at just over $100,000. Some have been for as little as $50.00.

A stinging incident, if settled, will average about $6,000.00, half of which is attorney's fees, the rest to the person making the claim. You can count on that doubled figure anytime you have a medical claim I was told.

Average loss on auto claims is about $5,800, since the policy they promote includes your auto insurance. Accidents involving cargo – bees and boxes – have been relatively rare, only a dozen, and run about $2,000, which is under most deductible limits. An interesting side bar to cargo claims is the "Governmental Opportunities" clause. This states that if there is an accident with bees on board (an overturned truck, for instance), and the decision is made to "burn the bees (poison etc.)" by a Government employee to reduce stinging hazards or enhance cleanup, the bees are not covered.

This background is informative, but still doesn't list all the possible exposures you, as a beekeeper and honey seller and pollinator may have. Bees in the backyard are always open to suspicion and exposure. Travelling with colonies on the back of your truck, when you're involved in an accident, or even stopped in a traffic jam (and those few leakers cause harm) can also be hazardous. Even loading or unloading bees with a friend can be expensive.

Bees in someone's orchard gets fuzzy if damage or injury occurs, as does spotting on someone's car in the neighborhood. Know how those situations would be handled by your policy, exactly.

Selling honey also has its exposures. Driveway hazards, slippery sidewalks, biting dogs, broken jars, even contaminated products all can lead to an attorney looking for money.

I offer all these somber bits of information not to scare you out of bees, but to motivate you towards either making sure the insurance you have is adequate, or to get the protection you need to keep you, your family, and all your earthly possessions safe from a society that can't wait to try and take what it can, when-

Continued on Page 108

Reader Assistance

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

Coming Soon

There's more in store over the next few months than we can count, but we'll give you a taste of what's to be, in *Bee Culture*.

Spring management and swarms and swarming are always high priority on every beekeeper's list – and we have lots of information on both coming up over the next couple of months.

Gardens, growing and honey plants are always interesting and always changing, so to keep up with the garden side of beekeeping we've got some good work on pollination, growing plants and what plants to grow. These include the kind you eat, and the kind you grow that make your home a more beautiful place to live. Don't miss these if you've got – or want – a green thumb.

Speaking of plants, the relationship between honey bees and wildlife is always quoted as being special – because of the food necessary for the animals 'out there. But what do they eat, and how much? And what's the value? We'll explore these questions in two upcoming pieces to give some answers.

Summer work is never done, it seems, and part of that work is making sure your colonies are in the healthiest condition as possible. What to inspect for, and what to do when you find it are always good questions, with tough answers. Well we've got those answers from some one who does it for a living – don't miss the great how-to, so you know how-to, too!

Speaking of inspectors, one of the best known, at least out east, is Tony Jadczak, the Inspector from Maine. Thousands of colonies head north each spring, and how Tony handles this is a wonder to behold. Find out how he keeps his cool, and those colonies clean in *Bee Culture*.

More? Certainly. How about those skunks and possums that make life miserable for both you and your bees? What to do? I's easy, and it's here, this summer. Handling honey flows – especially those long, slow flows can be tricky, and you can miss a lot of crop if you aren't aware of what Steve Taber can tell you. Check this out.

Bee trees, removing bees, leafcutter bees, package bees, propolis, harvesting, marketing, the series on Observation Hives, pollination equipment There's more to come in *Bee Culture* in the next 10 months than you'll find anywhere. Don't miss a single issue!

A. Reader
530 W. Mill St.
Medina, OH 44256

29¢

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

MAILBOX

New To *Bee Culture*

I am new to *Bee Culture* (having just received my first issue, December, 1994) and was delighted to see that I could contact you through E-Mail. I'm a hobbyist at present with two hives this year and hoping for two more in 95 and someday I hope to have 25-50 hives. I'm not sure if I still would be a hobbyist then or not. I have a large young family (5 boys and 1 girl – so many drones, do you think I ought to requeen? Nah! She's a looker!) And I'd like to do a little more than feed this growing family. Maybe make a little money as well to help with growing food bill. I have a couple of questions for you, both stemming from my first issue.

First, how do I get back copies of this past years issues? Your '1994 Reader's Index' showed that I missed a bunch of articles that I really want to read. What is the cost per issue and do you have a bunch rate? Like for the entire?

Second, I have a question concerning the answer given under 'Do You Know' page 675, Question #20. Explain why feeding sugar candy is preferred over feeding sugar in mid-winter. What is Sugar Candy? And how do I make it?

Bill McLaughlin
Denver, CO

Editor's Note: We sell any available back issues for $2.00 each which includes postage. Note that not all issues are available.

Sugar candy is simply a *very* heavy sugar fondant frosting (see recipe books) spread on the top of an inner cover and set-aside to harden. It is then placed on a colony and the bees treat it as they would crystallized honey.

On-Line Beekeeping

First of all, *Bee Culture* is on target for my interests as a hobbyist beekeeper. I have made contact with other beekeepers that have listed on-line addresses in *Bee Culture* the last few months. Stan Kain has already been helpful, pointing out on-line resources for a novice to on-line use. Keep his articles coming. I find your aol mailbox to be an exciting possibility for two-way communication between you and your subscribers. Very much 21st Century!

Robert Marshall

Happy With Internet

Happy Holidays from the Escarosa Beekeeping Association. Escarosa Beekeeping Association is located in the Florida Panhandle.

I renewed my subscription to the *Bee Culture* because of your involvement with the Internet and the information in *Bee Culture*.

Bill Overman
Pensacola, FL

Collecting Wax

I would like to see some articles in *Bee Culture* on how to refine and collect wax from my hives and how to build a solar wax melter. I was interested in the letter from John Iannuzzi of Ellicott, MD in the Dec. 94 Mailbox section. The articles should be on a small scale for those of us who have only a few hives (I have 12). How to collect wax from old brood frames, etc.

Gerald Schleter
Fort Branch, IN

Veggie Shortening Follow-Up

Sometime ago, you printed in "Mailbox" the findings of my personal experience using "vegetable shortening" within my beehives (as an experiment) to keep down the Tracheal and *Varroa* mite populations. I am a hobby beekeeper, and run an average of 25 beehives using three strains of queens.

These are my follow-up findings since then.

I experimented this way, as I had no success using homemade or commercial vegetable shortening patties or menthol crystals. This area of TN doesn't suit the use of menthol crystals due to weather changes.

I applied the vegetable shortening with a heavy duty round dauber brush to the top bars of the brood nest frames, the bottom boards and top and bottom of inner covers. This was O.K., except when I applied Terramycin to the top bars, it soaked into the vegetable shortening. The bees wouldn't use or carry any of it to the outside. I had to scrape this mixture off the frames, then reapply vegetable shortening, then feed the "terra" on wax paper on top of these frames. Then the bees ate the terra (mixed with powdered sugar), cut up the paper and took it outside the hive. This left the top bars still 'greasy' to cause the bees and mites to get slicked up and slow the crawling mites speed.

You don't have to apply vegetable shortening so thick that the bees have to struggle in it, just enough, so it will get on their feet and legs and under body – so the mites can't crawl over the bees body. Too much vegetable shortening can melt down over the combs and brood.

I stopped using the vegetable on the top bars for a while. Well, I went back to it again. I noticed, I was losing more bees without this method (you see – mites crawling (speeding) out of the brood nest looking for more bees to attach to).

I also noticed along time ago that the top bars can be covered with so many bees, you can't see the top bars.

Bees also like to gather on top of the inner cover. Bees also come in contact with the bottom of the inner cover while crawling on the top bars of the top super. Bees come and go crawling on the bottom board floor. That's why I grease them, too. Painting vegetable shortening on the bottom board gives the returning outside bees a chance to slick the mites

Continued on Next Page

MAILBOX

that attached to them in the field.

I talk about *Varroa* mites getting on the bees; I know the major damage is their raising new mites by using bee larva as their food – I have seen plenty of this. They use the adult bee as transportation as well as sucking on the bees bloodlife.

Smoke the bees off the top bars while applying vegetable shortening. I've lost up to a dozen bees a super doing this. Grease up spare bottom board and inner cover to save time and bees.

Now, an application of vegetable shortening lasts about a week depending on the weather and bee population. I use vegetable as a head start on mite build-up population. As I've had mites in the hives so bad that it was too late to do any good. Sometimes, it might be helpful to use two or three treatments on some hives. I've done that, too. No matter – I use vegetable shortening in late winter and after the summer honey flows – immediately. Around here, waiting till after the fall honey flow has proved too late with the infestations that I've experienced. The goal is to keep viable bees and queens to get a new population of bees to overwinter and start the winter/spring build up. Queens normally start laying again sometime in January in this part of TN.

The bees clean up and ingest and walk and rub on this vegetable shortening. They are shiny, active and fly O.K. One three-pound can of vegetable shortening for 10-12 hives. It is a low price compared to other preparations but is costly in time and labor.

Most of the beekeepers in this part of TN that didn't treat lost all or most of their hives the past four to five years. We don't get anywhere near the swarm calls that we did, either.

So far, for me, the above methods have worked.

I don't know why the bees wouldn't take up the patties – maybe I left them plenty of honey and they didn't need anything else?

Voron Baughan
Chattanooga, TN

Bee Brain Capacity

I read with interest the paper on bee brains and bee learning by Mark Winston in the December *Bee Culture*, and the title reminded me of thoughts I should share with fellow beekeepers.

First, a bit of my own background: I grew up in a beekeeping family, but on graduating from high school decided I would try another field for a full time occupation. Ten years later I received a PhD in physics, while continuing to run the bees at the same time. Since that time, I've been a physicist at a small university in Minnesota – some research, but mostly teaching. Each summer, I "escape" to again work with the bees. It is sometimes profitable, but always therapeutic for the soul.

In the course of teaching physics for some 25 years, I came to realize that, despite my love for the subject, it was seldom shared by my students. Indeed, most feared the subject, and few learned physics well. I was disappointed in their failures but also determined that they could do better if I only knew more about teaching. I was led to explore the field of cognitive psychology, brain research, and the "whole ball of wax" that surrounds the learning process. Consequently, I now consider myself a physics "coach" or "guide" rather than a professor, but that's the subject of another story. With my also rather extensive background in beekeeping (25+ years with about 700 colonies), I have often pondered the same question Mark Winston seems to have touched upon: Is a bee's brain really large enough to contain all the information that it seems to contain?

Of course, it's "obvious" that the bee brain must be large enough to hold all that it "holds," but what if it isn't? It is possible to make at least a crude estimate of the capacity of a human brain – the mathematician John von Neumann once estimated its capacity at 2.8×10^{20} bits. (That's equivalent to the storage capacity of something like a thousand billion 3-1/2" computer disks, in case you're interested.) It would be interesting to make a similar crude estimate for the bee brain, and compare that to what a bee seems to "know" when it's mature. However, what happens if the "storage capacity" comes up short?

Allow me to pass along an alternate hypothesis: British biologist Rupert Sheldrake, writing in his book, *A New Science of Life* (1981, J.P. Tarcher), suggests that more than DNA may be involved in the development and function of an organism. Specifically, he postulates a "morphogenetic field," which he sees as a kind of information bank which connects all present and past members of that species. This field would be a kind of collective memory bank which assists both in the formation and in the function of an organism. If we apply this to honey bees as an example, then Sheldrake's theory would suggest that the bee's brain doesn't have to hold all that the bee "knows." Rather, the bee can access what other bees know, at least in a fuzzy, averaging way. Specifically, this may mean that the bee can directly benefit from what the other bees in her hive have learned, without having to learn it all by herself via pheromones or bee behavior. I seem to recall the comments of one bee researcher who remarked that, ". every bee in the hive always seems to know just what she ought to be doing at a particular time." Perhaps it's because they're all somehow tuned in on the same "network."

Personally, I find that Sheldrake has made a good case for this theory, and there is apparently some experimental support for it as well. Michael Talbot (*The Holographic Universe*, 1991, HarperCollins) addresses the human evidence for this interconnectedness or "direct knowing" among a species. The theory may lead us to a new way of looking at "instinctual" behavior and learning.

Charles P.M. Reinert, PhD
Marshall, MN

Beeyard Quandary

My quandary is apparently solved by Dr. Taylor's article (Bee Talk 12/94). My beeyard in W. Pennsylvania is adjacent to two acres of wild blackberries which totally froze out last winter. However, the goldenrod on the same piece was exceptional in quality of

MAILBOX

bloom given an abundance of rain. Much to my dismay given no blackberry nectar, I saw few honey bees on the goldenrod which normally is alive at that time. I must assume that either soil or weather conditions negated the availability of nectar on my goldenrod this past fall.

Robert S. Hough
Beaver Falls, PA

P.U.S.H.

The Iowa Honey Producers Association voted at our Annual State Meeting, November 11-12, 1994 in Marshalltown, Iowa to support the P.U.S.H. (Promote United States Honey) program.

Margaret Hala
Marshalltown, IA

Bee Books & Movable Frames

Richard Taylor's June "Bee Talk" was his reaction to an article of mine on the books and hives of L.L. Langstroth and T.B. Miner. I wish his characterization of me as happiest when poring over old books was true. On the contrary, I suffer frustration that not so obscure information wasn't included in American bee books long ago. My encyclopedic interest in apiculture began as a youngster when I searched for stimulating books to read in the adult section of the library. Halfway around I found Root's *ABC and XYZ of Bee Culture*, Langstroth's *Hive and the Honeybee*, and texts by F.C. Pellet and E.F. Phillips to devour from cover to cover. The 116 page book by A. Webb that replaced them years later was unlikely to have sufficient depth to engage a child's curiosity?

My interest continued even without the opportunity to have a hive of bees. I read bee journals and books for relaxation at the University of Wisconsin while teaching and pursuing a PhD in zoology and entomology. When I began collecting bee books, E. Bevan's *The honey bee* (1838) was by coincidence one of my first acquisitions; as it was for Langstroth in 1840. I discovered the footnote that referred to Abbé della Rocca's 1790 book describing Greek movable bar hives, and Bevan's specifications for R. Golding's bee-spaced bar hive on which Langstroth patterned his first hive. I did not have to uncover this information by searching "dusty archives," nor did Langstroth. Langstroth's copy of della Rocca is in the Dadant & Sons Library with his notations of details about the Grecian bar hives.

The question then is, why did Langstroth apply for a patent that caused him much grief? Surprisingly, it was *not* the movable-frame though he mentions the *use* of such in his patent as an option to bars. It was the space that he had provided between the 1/2" thick lid and the single box of frames. Glass containers were placed over holes in the lid in which the bees built honeycomb, and a hinged cover of 3/4" boards covered the jars. A statement by Langstroth when he and R.C. Otis challenged H.S. King's American beehive makes the case: It was allowed that when the tops of the frames forming the shallow chamber were close-fitting, or mortised, there was no infringement "much to the disgust of other owners under our patent . who falsely asserted that it covered all movable frames (1869)."

The 1920 *ABC and XYZ* credits F. Huber with inventing movable frames, but a footnote admits "this honor is usually ascribed to Langstroth but he did not invent the first movable frame (p. 401)." A.I. Root may have known of Jacob Shaw in Hinckley, OH and his "hanging bar-frame" hive published in *The Scientific American* in 1847.

The specifications for Langstroth's patent hive were modified, and the third edition of his book indicates Hives No. 2-5 were designed by Richard Colvin. He was a partner with Langstroth and Samuel Wagner in the Sunnyside Apiary in Baltimore, where Langstroth lived for several years. The firm manufactured beekeeping equipment and bred Italian queens. C.H. Lake acquired the firm upon Colvin's death, and his advertisement in the 1881 *Bee Culture* was for it's 28th year; having begun in 1853, the year Langstroth published his book.

The facts about Langstroth's hive are more complicated and fascinating than the simplistic legend. Since he was emphatic that there were movable frames besides those of Huber prior to his, we honor him best by telling the whole story.

Toge S.K. Johansson
East Berne, NY

Root's 125th Anniversary

I was pleased to see the article of A.I. Root Company 125th Anniversary. I feel in some ways I was part of the company as I ordered my first bee equipment in 1930 besides my subscription to *Gleanings in Bee Culture*. At one time I had a complete set of *Gleanings*. I gave the set to my college in CA.

In all the trade journals that have been published *Bee Culture* is tops. It is practical, it gives one a great opportunity to succeed in keeping bees and the entire set of volumes are valuable for future reference material.

I loved bees so well, so I went to Michigan State University in 1940 and studied under Prof. Kelty where at one time Dr. Cook was Professor in 1900. Then after the war, completed a course in California with Dr. John Eckert. After 74 years living with this beautiful insect the honey bee, I know very little about her.

I was so intensely interested in the honey bee that I helped acquire the first postage stamp. I went into commercial beekeeping in 1963 with 1500 colonies, but had to retire in 1979 as my health wasn't good. Now I am working with observation hives for the local community college and the Freeport Park Board. The last three years I have been collecting material and information on these hives. I noticed this month Dr. Dewey Caron and Dr. Tom Webster will be publishing articles on the observation hives. I wonder whether they intend to write a book? I had this in mind but I wanted to obtain more information before I started. There is a number of problems I have faced. One is better construction of a suitable hive that the bee does not build burr comb on the glass. The other is maintaining observation hive 12 months out of the year.

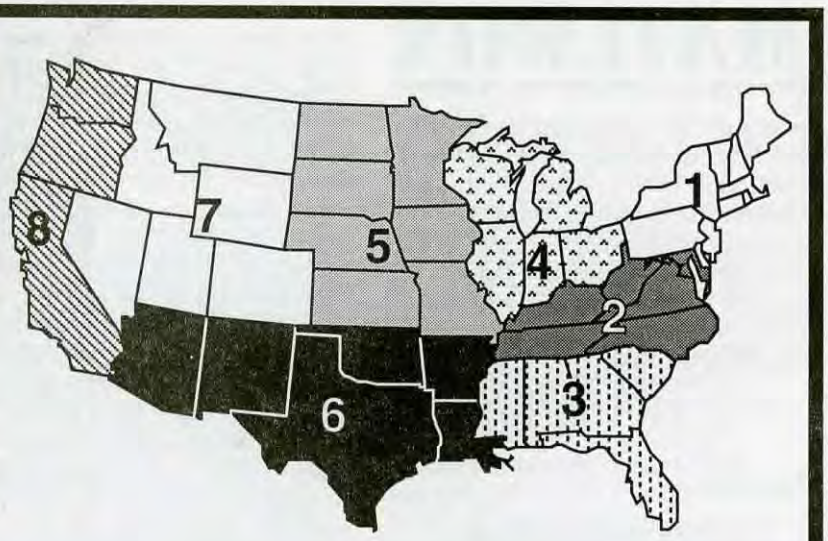
Continued on Page73

FEBRUARY Honey Report

FEBRUARY 1, 1995

REPORT FEATURES

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



	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Bulk												
60# Light	40.27	29.25	43.25	39.87	42.00	44.13	42.00	40.90	29.25-58.00	42.51	41.95	42.83
60# Amber	39.37	44.31	33.00	35.10	47.90	40.58	40.00	36.45	25.80-58.00	41.08	39.89	41.05
55 gal. Light	0.58	0.55	0.67	0.51	0.57	0.55	0.55	0.60	0.51-0.90	0.60	0.57	.560
55 gal. Amber	0.53	0.54	0.59	0.46	0.57	0.49	0.50	0.53	0.43-0.80	0.55	0.51	.511
Wholesale - Case Lots												
1/2# 24's	20.31	23.95	18.00	21.13	17.96	19.75	22.85	19.60	17.76-28.00	21.20	22.59	23.95
1# 24's	29.39	30.25	30.00	30.20	29.04	31.03	31.25	28.82	24.00-37.90	30.58	30.61	31.21
2# 12's	27.99	29.05	28.00	27.68	26.28	27.15	30.25	32.00	26.15-35.31	29.31	28.81	29.13
12 oz. Plas. 24's	25.28	27.65	25.70	19.18	24.38	25.00	28.75	24.10	12.60-37.90	26.61	26.65	27.91
5# 6's	27.72	23.75	33.00	30.93	25.34	27.15	29.20	29.52	18.00-38.00	29.53	30.55	28.41
Retail Honey Prices												
1/2#	1.34	1.90	2.00	0.99	1.02	1.49	1.18	1.24	0.80-3.50	1.33	1.53	1.12
12 oz. Plastic	1.54	1.63	2.00	1.49	1.45	1.52	1.70	1.51	1.19-2.00	1.61	1.65	1.60
1 lb. Glass	1.86	1.96	2.05	1.64	2.00	1.82	1.90	1.79	1.39-3.27	1.90	1.87	1.83
2 lb. Glass	3.13	3.18	3.25	3.07	3.02	3.19	3.15	3.93	2.75-3.93	3.27	3.26	3.18
3 lb. Glass	4.19	4.51	4.50	3.75	3.65	4.07	4.50	4.81	3.50-5.55	4.42	4.35	4.16
4 lb. Glass	5.28	4.77	5.50	5.81	5.81	5.15	5.25	6.25	4.30-7.40	5.74	5.60	5.29
5 lb. Glass	6.30	6.25	6.35	6.52	5.64	5.97	6.35	6.41	5.28-8.95	6.59	6.94	6.58
1# Cream	2.39	3.23	2.93	1.79	1.92	3.23	2.15	1.78	1.39-4.95	2.44	2.35	2.26
1# Comb	3.06	3.13	2.75	3.25	3.04	3.75	3.55	3.02	2.50-4.00	3.23	3.23	3.33
Round Plastic	2.85	3.50	3.09	3.09	3.09	3.55	3.09	3.43	1.70-4.50	3.08	3.05	2.81
Wax (Light)	1.72	1.38	1.68	1.60	2.20	1.60	1.45	1.49	1.20-4.00	1.71	1.57	1.47
Wax (Dark)	1.32	1.15	1.30	1.43	1.62	0.95	1.30	1.30	0.75-2.75	1.35	1.30	1.25
Poll. Fee/Col.	31.03	29.00	27.50	32.50	33.45	12.50	35.00	33.75	12.50-55.00	32.86	30.00	28.85

MARKET SHARE

Pollination business beginning to heat up already in those areas needing lots of bees, and not having them. Prices must go up, but quality of product must be measurable, and honest.

Honey prices inching up as import prices reflect more-real costs. Many U.S. beekeepers waiting for ITC ruling. Many not, and maintaining cash flow.

Region 1

The weather was great into January, lots of flight days, little or no snow. Honey prices not increasing much due to higher China prices, but this region wasn't greatly affected anyway. Pollination market *very* strong for spring. Prices, and demand soaring.

Region 2

Mild weather until January, when it started getting wet. Prices increasing some on the retail side, but wholesale prices not moving up much. *Varroa* losses this fall were high, increasing demand for bees for pollination. Prices will be up.

Region 3

Temps, and weather above normal until January, allowing lots of activity. Prices seem to be inching up, albeit slowly in response to higher China prices. Pollination on local level stable, but migratory operations seeing some increase from northern buyers.

Region 4

Fall and winter weather warmer, and easier than normal, with only short stretches of actual 'winter.' Lots of activity means lots of eating, though. Prices not increasing due to higher honey costs, but higher container costs. Pollination stable to increasing, mostly due to loss of feral population and grower realization of crop loss.

Region 5

Weather more typical here, but still hedging toward the warm side, allowing adequate flight days. Prices unchanged, or, if increasing mostly due to increased container costs. Pollination contracts about the same as last year, but will probably increase when winter losses finally tallied.

Region 6

Weather 'average' to a bit warmer this season so far, but the big changes usually come in January and February. Prices steady, and not rising, since China honey competition still strong. Pollination demand mixed – about average everywhere outside of AHB areas.

Region 7

Weather mostly typical for the region, but hedging toward warmer, allowing some flight days. Prices seem to be increasing a bit, both increased honey costs, and increased seasonal demand. Pollination about average, with prices only increasing a little.

Region 8

Noah may have the last word on the weather here. Floating boxes, vanished boxes and soggy beekeepers the main story. Should be great for spring flowers if it ever stops. Prices steady, container prices moving up, though. Pollination market very strong with fewer bees (see above) and more acres. $40.00/colony in almonds being rumored. Good rumor!

RESEARCH REVIEW

roger morse cornell university ithaca ny

"Strawberries and pesticides, and some thoughts on pollen tube growth."

The market for fresh strawberries is increasing in the United States with every indication that it will continue to expand. One great fact about strawberries is that they are adaptable, and in North America, they are grown from temperate Canada to warm regions such as Mexico. However, I hasten to point out that different varieties are selected for different climates. As fields grow larger and growers seek to increase production, there is more interest in pollination.

Strawberries produce flowers that are hermaphroditic, that is, they have both male and female parts. They can be self-fertile, that is, pollen from a flower may fertilize the female part of the same flower. However, in studies with one variety in Canada, it was shown that berries "resulting from cross-pollination of two different cultivars were significantly heavier" than when they were self-pollinated. This, of course, occurs commonly among plants and is why cross-pollination is encouraged by growers of many fruits, nuts and seeds.

Pollination of strawberries occurs in three ways: (1) The pollen may fall by gravity from the male to the female parts; (2) The pollen may be blown by the wind from one to the other; or (3) The pollen may be transported by insects. Cultivars vary, but in general it is thought that gravity is responsible for 70 to 80% of strawberry pollination, while insects bring about 20% or more and wind is the least effective involved only in three to eight percent of cases.

A large number of insects visit strawberry flowers, and the publication I cite below has a list of species that is two and a half pages long. For example, five different bumble bee species are found visiting strawberries in Quebec, where these studies were made. However, honey bees are known to be the major contributors to strawberry pollination. Some of the insects collected on strawberries "were seen to sit on a petal for several minutes, sucking the nectar without contacting either the stigma or the stamens."

But there is a villain in strawberry production and pollination, and that is the tarnished plant bug (TPB). The TPB is a common insect that feeds on over 300 different plants and is found throughout much of North America. TPB causes two types of damage. First, it may decrease production. Second, and more important for the fresh market, is that this insect may cause the berries to be deformed or to turn straw-yellow and not ripen properly. Several parasites of TPB have been identified, but none is sufficiently effective to give good control.

Young TPB may be found on strawberries when the flower buds are in the green and white stages. TPB populations grow "during the entire reproductive period of the strawberry plant." One of the chief conclusions reached over several years of research in Canada is that, in most instances, insecticide treatments for TPB are not needed during bloom. However, growers need to watch their plants closely prior to bloom to determine if and when a treatment is necessary.

Conclusion: The paper I review here is an excellent example of research that deals successfully with the conflicting problems of a pest insect and pollination. What is made clear is that growers must watch their fields carefully for pests and if an insecticide is a "must," then it should be applied at the right time and before pollinators are active.

Fertilization in Plants

Pollen is released from a plant's male part in a more-or-less dry state. It takes on water and grows, sending out a pollen tube that moves down to the plant's ovary only when stimulated by the proper chemical(s) on the stigma's (female part's) surface. However, pollen from many different plants may land on a plant's stigma, and it may be moved there by gravity, water, wind or an animal, especially an insect. The important point is that the sorting process includes stimulating, rather than inhibiting, a pollen grain to grow.

Seeds must be fertilized so as to grow and reproduce their own kind. Just as animals must have sperm from their own species, so plants must have pollen from their own species for the seeds to be fertilized. However, some species of plants have a little quirk to avoid inbreeding. For example, no apple variety is sufficiently self-fruitful that it can use its own pollen. As apple growers know very well, Macintosh pollen cannot be used to fertilize another Macintosh.

The pollen-sorting process is complex because a plant's stigma may receive pollen from many sources. For example, corn produces over 400 pounds of pollen per acre that is carried by the wind to the silk on the young, growing corncob where it germinates and grows. But with so much corn pollen in the air, it is obvious that some lands on the stigmas of many other plant species. For example, what happens when windblown corn pollen lands on an alfalfa stigma? The answer is that it does not grow because it is not stimulated to do so.

Research interest in this area has been renewed because the mecha-

nism by "which a plant controls the formation and growth of a pollen tube bears similarity to how it controls the growth" of disease organisms that seek to invade it. However, the mechanism of sorting pollen tube growth is easier to study than is that of other plant growth systems. At the same time, it is complicated by the fact that different plant families use different chemical and chemicals complexes. BC

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MAILBOX

I have had to replace the bees in spring with nucs. One must provide some place on the observation hive for feeding when necessary or place combs of honey.

Please give John Root and his family my warm regards on a great achievement in carrying on this great business of beekeeping. It is the greatest occupation and hobby in the world. I was happy to see Brad Root as Vice President of A.I. Root Company. I wish his company success as years go by.

William R. Koenig
Freeport, IL

? DO YOU KNOW ?

Biology and Chemistry

clarence collison

Effective honey bee management requires the beekeeper to understand basic bee biology and behavior.

How familiar are you with these the biology and chemistry of the honey bee. Please take a few minutes and answer the following questions to determine how well you understand these topics.

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

1. ___ Both queen and worker bees develop from fertilized eggs.
2. ___ A drone honey bee receives all of his hereditary factors from his mother.
3. ___ Adult bees can maintain themselves on honey or sugar syrup alone, but require pollen or a suitable substitute for the production of brood food.
4. ___ Nurse bees first initiate brood care when the egg hatches.
5. ___ Food transmission between worker honey bees in the colony is a form of communication.
6. ___ Adult drones are totally helpless and unable to feed themselves in the hive.
7 ___ Individual Africanized honey bees, unlike our European honey bee, can sting more than once.
8. ___ House bees handle nectar and pollen loads as they are brought into the hive.
9. ___ Adult bees have simple and compound eyes while larvae have only simple eyes.
10. ___ During the first two days of larval life, nurse bees furnish the larvae an excess supply of food.
11. ___ Queens and workers produce functional venom at the time of adult emergence.
12. ___ Queens produce more venom than workers.
13. ___ Nurse bees produce 10-hydroxy-2-decenoic acid in their mandibular glands.

Endocrine and exocrine glands are important in the development/behavior of individual bees and maintaining the structure of the insect society. Please match the following information with the correct honey bee glands.

A. Salivary (Labial) Glands
B. Mandibular Glands
C. Koschevnikov Gland
D. Hypopharyngeal Glands
E. Dufours Gland
F. Arnhart (Tarsal) Glands
G. Nasonov Gland
H. Wax Glands
I. Poison Gland

14. ___ Believed to produce the "footprint" pheromone.
15. ___ Produces the enzyme sucrase (invertase), a key compound in the conversion of nectars into honey.
16. ___ Involved in metabolizing sugars, cleaning the queen and processing wax scales.
17 ___ Produces chemicals that fortify the venom secreted through the sting.
18. ___ Found only in worker honey bees and are found on the ventral abdominal segments 4-7
19. ___ Tiny cluster of cells found in the sting chamber of both workers and queens, precise functions unknown at this time.
20. ___ Produces 2-heptanone when workers become guard bees or begin foraging.
21. ___ These glands are located in both the head and thorax of the adult worker bee.
22. ___ In the queen, these glands produce chemicals that attract drones during the mating flight, inhibit queen cell construction, and inhibition of swarming.
23. Worker, queen and drone larvae are fed a glandular secretion produced by the _____ and _____ glands of adult nurse bees. (2 points)
24. When a forager returns from the field to the hive and does either a round dance or wag-tail dance what information about the floral source is conveyed to the bees other than the location of the food source? (1 point)

ANSWERS ON PAGE 110

New Product • New Queen Cage Now Available

CALIFORNIA MINI QUEENCAGE

You're certain, at first, that this little gem has been around for decades. Why would a beekeeper use anything *else* to ship queens? But then, as you compare the *California Mini Queencage* (CMQ) with other cages currently in use, you realize that long experience, considerable thought, and careful craftsmanship are behind the design from C.F Koehnen & Sons, Inc., out of Glenn, CA.

The smaller screen mesh protects queens from overzealous workers. The large release hole can be fitted with candy tube *or* cork and makes for easier queen caging, transfer and introduction. *The tiny cage is easily inserted between frames without damaging the comb or disturbing the hive.* The natural substance from which the cage is manufactured (wood) means ready acceptance by bees.

Not to forget beekeeper and shipper, other special innovative features are incorporated. For example, with the screen pushed onto the cage and attached during manufacture, fewer finger nicks and cuts are in store for handlers. Versatility? CMQs come with tails and corks for package bees; or with candy release tubes for colony introduction; or finally with just corks for beekeepers wishing to use their own method. The one-inch candy tube is inserted after the queen is caged. This quick final step means relief to anyone shipping because great control on candy can be exercised while cages themselves have been made up well in advance. Queens, of course, are smoothly introduced when the candy has been consumed.

The California Mini Queencage is compatible with most banking and shipping systems. Three sizes of shipping boxes made expressly *for* the CMQ compactly contain 56,104 or 160 caged queens.

Some of the features focused on beekeeper and shipper relief have to do with business. Specifically, expense is less. The CMQ costs less per item than other wooden cages. Because of decreased weight over all, cost to ship also decreases.

The California Mini Queencage did not spring forth fully formed in a single day. C.F. Koehnen and Sons, Inc. has been making western style queen cages – originally to serve its own needs – for a quarter of a century. Senior partner Bob Koehnen says, "*Need* parents invention, and we've been *needing* a really good queen cage since the beginning." He went on to describe his decades-long search – by means of discussion with other beekeepers and shippers as well as research of pertinent literature. Problems were isolated and analyzed. Solutions were suggested and often discarded.

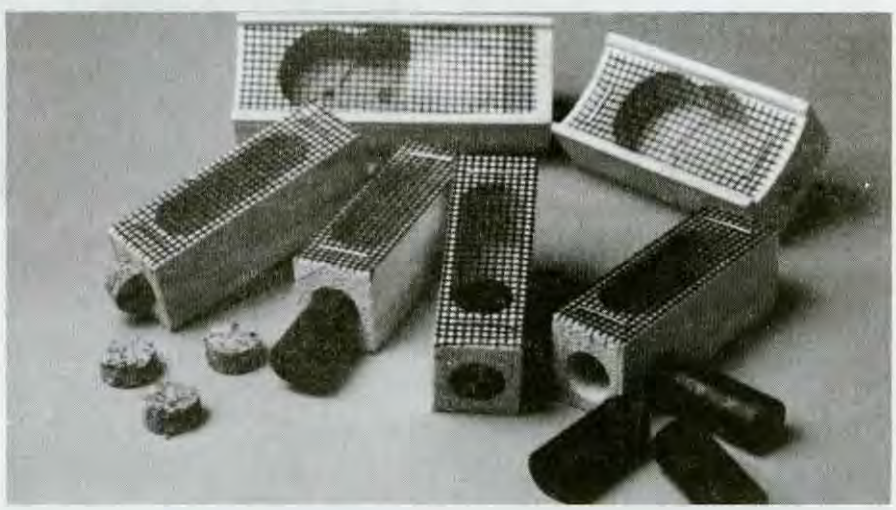
"The beekeeping industry deserved better queen cages," Bob explains, "and what we've come up with is based in part on ideas contributed by many people." For example, an article by J. Woyke in 1988 described in detail the same problems with queen banks that Koehnens had been observing for years. Worker bees often injure queens by being overly aggressive. When they can get their mandibles through the cage screen, they bite the *tarsi*, the antennae and often the wings of their queens. Actually, queens having chewed or otherwise damaged foot pads don't leave normal pheromone prints, and this fact may contribute to early supersedure.

Problem? Loss of honey production because worker bee mandibles get through caging screen. Solution: *far finer mesh on queen cages.* Much of the success for leaping this major hurdle, Koehnens insist, goes to a screen company which cooperated in testing various prototypes. The result was a 14/14 mesh that is 3/4-inch wide that comes in 500-foot rolls.

Koehnens were searching also for a better means to introduce queens. Koehnen personnel in cooperation with other beekeepers spent a year experimenting with various systems for queen release. The result involved a new cork as well as a closely fitted 3/8-inch plastic tube either one suitable for use in a standard one-hole structure. Success again! But a few details still remained before Koehnens were ready to create *the perfect queen cage.*

For example, the plastic tube must be cut without burrs. The wooden cage has to be cut clean or at least made sawdust free. If burrs remain, however minute, the queen refuses to walk out. To deal with this problem, the tumbler originally devised is now augmented by a vacuum system.

C.F Koehnen and Sons, Inc., is excited about the success of their 1994 season with the new CMQ. The shipping cages were also received with enthusiasm across the United States. For brochure and information on the **California Mini Queencage**, write to the company at 3131 Hwy. 45, Glenn, CA 95943. Telephone at (916) 891-5216 or FAX (916) 934-2613.



MAYBE JUST AS IMPORTANT

Feral Bees II

mark winston

Last month, I wrote about feral honey bees, but there is another type of feral bee out there that is becoming the object of increasingly nervous attention by the beekeeping community. I'm referring, of course, to the lowly bumble bee and its wild bee relatives. These bees have cohabited in nature with honey bees for many millions of years, and here in North America, for a few hundred years, ever since honey bees were imported from the Old World. Until recently, their existence and health had not been of any interest or concern to any but the most dedicated of bee aficionados. Wild bees have always been interesting to scientists and collectors as something to put into museums, collections or to study. But today feral bees are becoming a hot topic because of their potential to replace honey bees as managed pollinators in some commercial pollination situations.

It's surprising that it took us so long to realize that other bees have good potential to serve as commercial pollinators. There are over 20,000 species of bees world-wide, many of them well-adapted to pollinate particular crops because they evolved to visit a narrow spectrum of food plants. Because of this specialization, they can often do a better job of pollinating than honey bees, which visit a broad range of plants but don't do a particularly good job of pollinating many of them. Many wild bee species are also socially inclined, or at least they nest in aggregations, so that they can be grouped together to provide the high number of bees necessary to perform a commercial pollinating service.

Besides the honey bee, there have been three successful domestications of wild bees as managed pollinators to date. The alfalfa leaf cutter bee has been the most successful field crop pollinator, and is used routinely in the alfalfa seed production industry. These bees are better pollinators of alfalfa than are honey bees, because alfalfa flowers "trip" when visited by a bee, and this action seems to prevent honey bees from effectively transferring pollen on these flowers. The leaf cutter bee, however, has no difficulty dealing with a tripping flower, and so does a more effective job of pollinating. These bees are easily managed, can be kept indoors and cool during the winter and warmed up and set out in the millions the next season when the alfalfa is blooming. The liberated adult females return to the nesting straws set out for them, and they provision cells and lay eggs so that the leaf cutter beekeeper can repeat the cycle.

A second managed pollinating insect is the orchard bee, although its success has been limited to Japan. These bees also make cells in straws that can be collected and stored over the winter and set out in apple orchards during the spring. Commercial apple pollination in Japan is done almost exclusively by orchard bees rather than by honey bees, but these bees have not been adopted in North America, in spite of intensive research here that suggests they would be commercially viable. However, management systems for orchard bees may be too labor-intensive for the broader scale of North American mechanized agriculture, although they are well-suited to the more labor-oriented Japanese agricultural systems. Also, there seem to be problems with the orchard bees staying on the apple crop when released and returning to nest in the beekeeper-provided boxes. Whatever the reasons, these bees remain a potential, but not yet realized, managed pollinator in North America.

The third and most recent managed pollinators are bumble bees, which have become the major pollinator for some greenhouse crops, especially tomatoes. The methods to rear bumble bees were developed by Chris Plowright and Cam Jay in Manitoba during the 1960s, but were not applied commercially until the mid-1980s, when a number of Dutch companies began producing bumble bees in large quantities. The techniques for mass-rearing bumble bees have now been well-defined, although the methodology is a closely guarded trade secret, not readily available to beekeepers. The initial cost of a single bumble bee colony for rent to a greenhouse grower was as high as $600 per colony, and even at that was viewed as commercially viable in an industry where pollination had been accomplished by hand. However, the price has dropped dramatically with increases in colony production, so that the current price is under $200 per colony. Numerous studies have shown that bumble bees are highly cost-effective under glass and do a superb job of pollinating some greenhouse crops. This industry has taken off, and a number of bumble bee-rearing companies have amassed considerable profits through the sale of bumble bee colonies to greenhouse growers.

Continued on Next Page

"I think that our beekeeping community needs to develop a different perspective about alternative pollinators."

FERAL BEES II ... Cont. From Pg. 77

I think it is unfortunate that beekeepers are not the ones making money from these alternative pollinators. We, after all, have the skills and background to rear bees. But beekeepers seem curiously reluctant to support research into alternative pollinators, viewing these "other bees" as competitors for their pollinating income rather than as an opportunity to diversify and make more income. I think that our beekeeping community needs to develop a different perspective about alternative pollinators. We need to realize that they will never replace the honey bee as the most significant, broad-spectrum managed pollinator, and so our income from pollination is not in any great danger of being supplanted by these alternative bees. Nevertheless, we need to embrace these bees as supplemental or even replacement pollinators in a few crops, and for those crops, we should be the ones at the forefront of research and management, so that these opportunities for niche pollinators do not continue to be exploited by astute business people rather than by astute beekeepers.

It is important to remember that the honey bee will continue to dominate the pollination industry and that commercial-level domestication of wild bees does not have the potential to take over the important role that honey bees play in the contemporary agricultural community Honey bee colonies have the overwhelming advantage that they can be nurtured to grow to high populations, and these populous hives can be moved to crops during bloom. While feral bees might provide tens or hundreds of bees per acre, and these bees might do a better job pollinating a crop's flowers as individuals, a single honey bee colony can provide thousands or even tens of thousands of foraging workers, each of which does at least an adequate job of pollinating. Further, honey bee colonies can easily be transported thousands of miles from one flowering crop to another, so that the same colony can be used three or even four times a season to pollinate different crops. Thus, we should remain confident in our continued income from honey bee pollination, but we should use that confidence as the basis to explore new pollinating opportunities.

The domestication of wild bee species does have good potential to provide enhanced pollination services in a few markets. I'll stick my neck out here and make a prediction: Bumble bees and leaf cutter bees will make up about 10 to 20% of the berry pollination business in the Northeastern and northwest United States, and the equivalent regions in Southern Canada, within 10 years. These regions have experienced shortages of honey bee colonies in recent years because of tracheal and *Varroa* mites, and the expected supply-and-demand rules have come into play. There have not been enough colonies to pollinate crops such as blueberry and cranberry, the price paid per colony has risen dramatically, and so the use of expensive alternative pollinators has become more viable. In my region, for example, we experienced a 60% colony loss last winter, and berry growers imported honey bee colonies from distant regions, and paying twice the price per colony that they had paid the previous year. In this economic environment, bumble bee colonies have become almost equivalent to honey bee colonies in cost-effectiveness, and the additional sales volume that might result in this situation will drive the price of bumble bee colonies down even further. Some berry growers are now purchasing bumble bee colonies as insurance against continued shortages of honey bees, and the use of bumble bees will continue to increase. Although bumble bees will not replace honey bees in this system, there seems to be good potential for these alternative pollinators to have an increasingly important role in commercial berry pollination. Experiments have also begun with leaf cutter bees on cranberry with some success.

"Rather than fearing the onset of alternative pollinators, or taking the other extreme view that they will replace honey bees, we should look on other pollinators as opportunities for diversification and supplemental income."

My model for tomorrow's commercial pollinating beekeeper is a fellow I met in New Zealand last summer, who made most of his income from renting his thousand or so honey bee colonies to kiwifruit growers for pollination. Kiwifruit is not very attractive to honey bees, so alternative pollinators have some potential in this market. He proudly showed me a small incubating room he had built in his warehouse that he was filling with bumble bee nests. He had been experimenting with bumble bees for many years, and now he was ready to begin renting bumble bee colonies to some very interested growers. I looked around his warehouse at the stacks of honey bee boxes that went from floor to ceiling in rows stretching the length of his warehouse and then looked at this small walk-in incubator. After some quick calculations, I concluded that his potential income from the bumble bees in this small incubator was almost the same as his honey bee income from all the colonies represented by the hives stacked in his warehouse. Yet, once he learned the bumble bee-rearing system, the physical labor involved in managing the bumble bees could easily be done by a child, while management of a thousand-hive honey bee operation took the full attention and hard labor of he and his sons throughout the year. The most gratifying part of

this warehouse vision was not that he and the other New Zealand beekeepers would be abandoning honey bees, because I don't think that will happen. Rather, his diversification might result in additional income by providing a more effective, multi-species pollinating service to the kiwifruit growers, and, most importantly, the income from this service will be staying in the beekeeping community.

Rather than fearing the onset of alternative pollinators, or taking the other extreme view that they will replace honey bees, we should look on other pollinators as opportunities for diversification and supplemental income. If we beekeepers don't, someone else will, and I'm sure that you, like me, would like to see beekeepers making money, no matter what bee species they are managing. BC

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

9th International Congress of Acarology

A Honey Bee Mite Round Table

evan a sugden • kristina r williams • diana sammataro

The Ninth International Congress of Acarology was held in Columbus, OH this past summer on July 18-20. About 400 mite scientists from around the world attended. Their interests were nearly as diverse as mites, of which tens of thousands of species exist. But among the mite experts was a specialized group, members of which deal specifically with honey bee mites and the problems they cause. At one of the early meeting sessions, it was decided that an impromptu "round-table" discussion should be convened so that this group could interactively discuss the problems of parasitic honey bee mites in North America. Attending the round table were about 15 scientists, representing England, Germany, Israel, Denmark, Italy, Canada and the United States. The discussions focused on the nature of the current mite crisis, especially in North America, how it compares to the experience of European apiculturists with tracheal and *Varroa* mites, remedies now in use in Europe and possible courses of action.

The tracheal mite, *Acarapis woodi*, and the *Varroa* mite, *Varroa jacobsoni*, are now present throughout the world. In most countries, the tracheal mite appeared first. However, Dr. Boris Yakobson reported that in Israel, *Varroa* mites have been present for several years and tracheal mites have been detected only recently. Tracheal mites are thought to have caused the "Isle of Wight Disease" in England in the 1920s. Although there is some controversy over their actual role in the disease, tracheal mites were present in England after that time. According to Dr. Brenda Ball and Dr. Donald Griffiths, mite parasitization was a serious economic problem for about 10 years. Then, the effects of the mites seemed to diminish suddenly. Today, *Acarapis woodi* is not considered a significant problem, although bees infested with the mites occasionally appear in samples collected for other reasons. The best explanation is that British bees, relatively isolated from other populations, rapidly developed resistance to the mites through natural selection. British beekeepers undoubtedly underwent some selection, too, with the poorer ones giving up. The question put to the round table was, "Will the same thing happen in North America?" The English scientists suggested that resistance would also develop in North America, probably sooner than later. However, they were reminded by their American counterparts that tracheal mites have been present in the U.S. for at least 10 years, and the problem is still serious, especially in Northern regions and no general trend of improved survival by natural means has been seen. There is no doubt that many North American beekeepers have gone out of business in the past decade due in part to the economics of mite problems.

If resistance is taking longer to develop naturally, what might be the causes? Several ideas were suggested. North America is a huge land mass, containing many varieties of bees, both feral and domestic, due to hundreds of stock introductions from many parts of the world. Therefore, there are undoubtedly different levels of susceptibility and potential resistance among the different subpopulations of both feral and domestic bees. Also, there are many geographical and cultural enclaves where susceptibility can persist and where resistance may be slow to develop. Chemical treatments such as Amitraz and menthol, unavailable to British beekeepers decades ago, may be slowing the effects of natural selection. Queen breeders, the source of most of the domestic bee stock in North America, have had to become diligent in their prophylactic use of miticides to protect their bees. Regular application of miticides probably lessens the effect of natural selection. (In the mid-1980s, several large American beekeepers purposely refused to use mite control in their operations. Within three to four years, their bees

"The discussions focused on the nature of the current mite crisis, especially in North America, how it compares to the experience of European apiculturists with tracheal and Varroa mites, remedies now in use in Europe and possible courses of action."

had acceptably low levels of infestation, indicating that natural resistance to the mites can be easily selected for. But this performance has not continued on a large scale.) Management techniques unique to North American beekeeping may slow the development of mite resistance due to increased stress placed on colonies. Bee businesses run many more hives and use factory-like management techniques. A large proportion of hives are managed for pollination, including long distance transportation and placement in crops of low forage value to bees. A further stress factor recently placed on these hives is the *Varroa* mite. Finally, an important hypothesis is that North America may be suffering the ravages of more than a single type of tracheal mite or at least one different from England's. This problem is being approached through genetic studies recently begun at Ohio State University by Diana Sammataro.

The tracheal mite discussion ended with the sobering realization that problems with the mites in this country will probably take longer to diminish than in Europe. The recent release of stock imported from Europe should accelerate the process, but it will take some time for breeders to optimize resistance with other desirable characteristics and for beekeepers to incorporate the new stock types into their programs.

Amitraz (until recently available in the U.S. as "Miticur strips") is an effective treatment against both tracheal and *Varroa* mites when applied as an aerosol or in hot smoke. Although now unavailable in North America, it is currently in use in Europe as a fumigant. Fluvalinate impregnated strips ("Apistan" in the U.S.) are also used in some countries against *Varroa*. In Denmark, however, there are restrictions on the use of artificial pesticides in hives, including a ban on the above chemicals along with menthol, formic acid and terramycin. Danish beekeepers are using oil or grease patties against tracheal mites and are using drone comb for trapping *Varroa* mites. Drs. Camilla Brødsgaard and Henrik Hansen report that these cultural methods are succeeding under the intensive management programs used in that country.

Another miticide in wide use in Europe is formic acid. It is effective against both tracheal and *Varroa* mites. It is applied in saturated pads, which are placed on the bottom board, although in Canada, beekeepers legally apply it by squirting it directly onto the bottom board as a liquid. According to Dr. Wolfgang Ritter, German beekeepers are using an insert which consists of a plastic tray containing a pre-saturated pad. The pad has a peel-off cover, and the whole assembly is inserted on the bottom board. *Varroa* mites are not actually killed by the fumes, but they die when they fall off the bees and contact the exposed saturated pad. Tracheal mites are apparently susceptible to the fumes. Formic acid has the advantage of being a naturally occurring substance, so slight residues in honey pose less of a problem than toxic artificial compounds. Also, because it is such a simple compound, there is less opportunity for mites to develop resistance to it. It is also inexpensive. Formic acid has been under investigation in the U.S. for several years by Dr. William Wilson of the USDA Agricultural Research Service. Although it shows great promise as a mite control tool in the U.S., its highly caustic nature has made it difficult to register for legal use here. Formic acid can cause losses of queens and significant numbers of workers, even when applied as recommended. Dr. Ritter emphasized the need to continue with efforts to develop a safe and foolproof formic acid application method and that registration should proceed as quickly as possible.

In general, the European scientists felt that the best way to slow development of resistance in the mites is to have at least two types of treatment which could be applied alternately. Many countries currently have three treatments available for each mite species. Apistan, formic acid, and Amitraz are all in use in some countries for *Varroa* control, although in the U.S., only Apistan is currently available. Menthol, formic acid and Amitraz are likewise available for tracheal mite control in other countries, but only menthol is approved for use in the U.S. American beekeepers are apparently at a "3-to-1" disadvantage in this regard.

"The most ominous report came from Dr. Roberto Nannelli of Italy. He has found areas where Varroa *mites are over 90% fluvalinate-resistant, and his claims have been confirmed by German scientists. It may not be a question of 'if' but only 'when and where' the first* super-Varroa *mites will show up in North America."*

The most ominous report came from Dr. Roberto Nannelli of Italy. He has found areas where *Varroa* mites are over 90% fluvalinate-resistant, and his claims have been confirmed by German scientists. According to his investigations, beekeepers in those areas of Italy have been treating their hives with an illegal high-concentration liquid formulation of fluvalinate, spraying it directly on the combs. Such heavy doses of the compound probably caused the rapid appearance of resistance. This is particularly disturbing, as in North America, similar abuses of fluvalinate are being reported. It may not be a question of "if" but only "when and where" the first super-*Varroa* mites will show up in North America. This should serve as a warning to all beekeepers to use control methods only as directed on their labels.

The round-table discussions pointed out the long road ahead for beekeepers in dealing with parasitic mites. They also emphasized the need for beekeepers to stay informed about new developments in the field, to support vigorous research and development programs, to organize in support of new methods of control and to make the most of existing technology. BC

This Year Make A QUEEN BANK

richard bonney

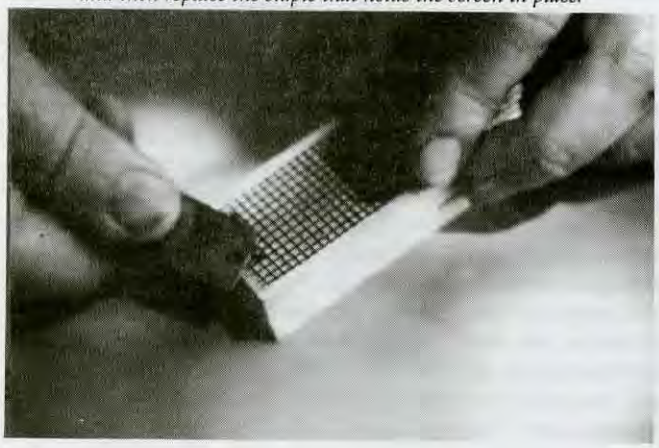
How many times have you ordered a new queen and, for one reason or another, weren't ready to install her on the day she arrived? Perhaps the weather kept you out of the bee yard for a while, or the queen came sooner than expected and you weren't ready to make up that new split or nuc yet. What's the thing to do?

A few days delay usually isn't critical. If you ordered from a reliable source, and especially during the busy season, the queen has probably been in her traveling cage for only two or three days. It is always best to get her into her new home quickly, but a few days' delay probably isn't going to do any harm. Look her over carefully, though. Is she active, moving around deliberately, seemingly anxious to get out? How about the attendants – are they in good shape as well, or have some of them died? Look at the candy. Is there plenty left, or have the bees been in there long enough to eat away a large amount of it, suggesting that they have been confined more than just a few days?

If the bees look okay and there is plenty of food, then tuck the cage away in a cool, dark, quiet spot where they will not be disturbed. First, though, give them a little water. Carefully smear a drop or so on the screen, but don't use so much that it drips onto the bees. Continue to give them a small amount of water once a day until you install them.

Occasionally, your new queen and her attendants will need additional assistance when they arrive. In spite of the best efforts of the producer and the post office, it is possible that they have been in their cage too long, and depending on the weather and other conditions, their trip may have been difficult. If the bees look or act as though they have had a difficult time, a little extra attention is in order. Consider replacing the attendants, especially if some of them have died. Even if they are all alive, an infusion of new young bees will help the queen to thrive. They will lavish attention on her, whereas the existing workers are aging and perhaps less attentive or capable.

To remove attendants or refill the candy plug, carefully remove, and then replace the staple that holds the screen in place.



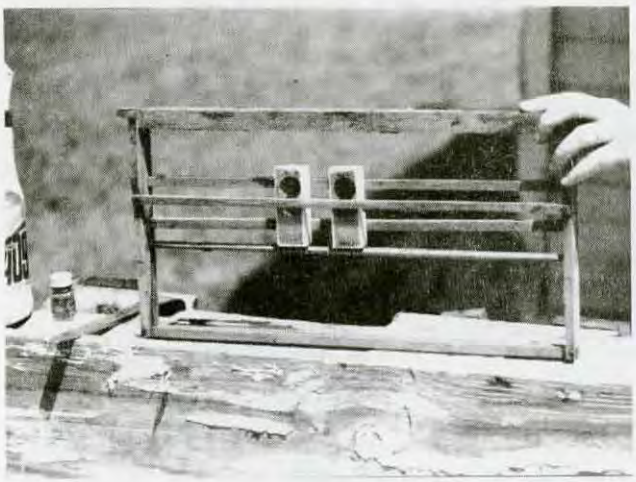
Of course, to do this replacement you must have access to a colony of bees. That being so, let's proceed. First, remove the existing workers from the queen cage. The simplest way is to take the cage into a room with an accessible bright window and release all of the bees onto the glass. They will stay there, trying to escape to the outside. Then, remove any dead bees remaining in the cage and replenish the candy if the supply is low. Not many of us have a supply of queen candy on hand, but a marshmallow will do in the absence of the real thing.

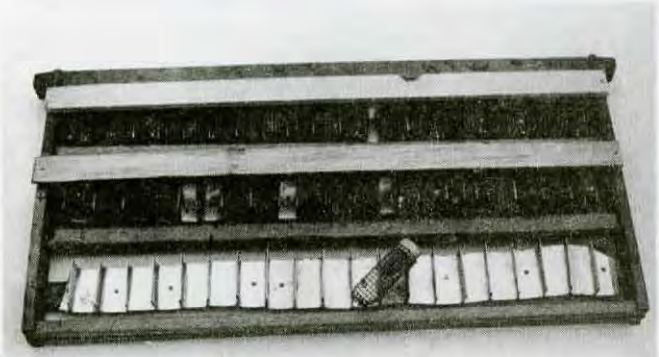
To replace the candy, you may find it necessary to remove the screen cover from the cage, but it can be replaced and re-stapled easily. I find that I can usually save the staples and push them back into the original holes with my fingers. Just be sure that any new staples you may put in do not get in the way of the exit hole. With the screen in place, replace the queen through the little round hole and then cork it up. Capture the queen by picking her up by the thorax and wings (don't touch the abdomen) and gently push her into the hole head first. If you are hesitant about picking up bees, practice ahead of time with some drones. Then, with the queen safely in her cage, either open the window and release the workers or capture them in a jar and release them in the bee yard where they will almost certainly find a new home for themselves.

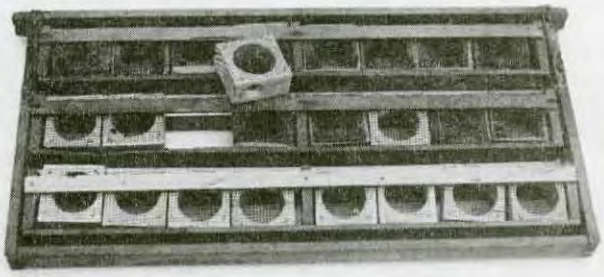
With the queen re-caged and corked, go to the bee yard and open a hive. Pull a frame from the brood area and take some of the younger bees who are tending the brood. Nurse bees are natural queen attendants. Pick up a half-dozen or so of these young workers in the same way that you picked up the queen, by the wings and thorax, and push them through the hole. Of course, you will have to uncork the cage again, first. Keep in mind that young bees are unlikely to sting. In fact, very young bees have not yet started secreting venom.

Now, back in the house, the rejuvenated queen with her new attendants can be stored away on that quiet shelf. As before, water them regularly and watch for dying workers and a depleted food supply. She can be kept there for a week or two, but if you are forced to keep her for a prolonged time, you may need to replace the attendants once more.

All of this puts the onus on you, of course, to watch







There are many ways to bank more than 1 or 2 queens, but they all take up the space of a frame. Upper L. standard cage holder. Upper R. made from plastic queen excluder. Lower L. made to hold all-wire cages. Lower R. made to hold custom sized cages.

the queen and worry about her care and feeding. There is another way, especially if you are dealing with several or many queens. Make up a queen bank in which you can deposit and withdraw queens as you need them with a minimum of fuss. Done properly, the bees in the bank will care for many queens simultaneously, keeping all in good condition until you need them.

A queen bank is simply a queenless colony, one with lots of young bees and brood, in which are deposited from one to many queens in their cages. Properly done, the colony will tend all of these queens equally and keep them in good shape. I normally use a four-frame nucleus hive (a nuc) as the bank, although I have on occasion used a regular ten-frame colony. Keeping it small, though, makes everything simpler. Of course, the number of queens being banked must relate to the size of the colony you use. Such a nuc can tend to 8-10 queens if the population is good. If you have more than that, perhaps you need more than one bank, especially if you expect to keep them for a while.

To set up the queen bank, I find it preferable to make up a new four-frame nuc with two or three frames containing brood of all ages and plenty of young bees. Give them honey and pollen as well, and as with any new colony, consider feeding them. Do not give them a queen of their own. If this colony has a laying queen, it will not do a proper job of tending your banked queens. (Some beekeepers have had success with a bank containing a resident laying queen, but it is chancy.)

Have this nuc set up at least a day or two in advance of adding the queens so that the bees have had time to settle in and become established as a colony. If you set up the nuc and add queens at the same time, the queens may be ignored in the initial confusion. If the colony is established, though, the bees will have had time to know they are queenless and will almost certainly accept the banked queens.

If you already have a queen-right nuc or other colony that you wish to use as your queen bank, remove the queen. If you have no other immediate use for that queen, cage her with food and some attendants and set her aside for a few days. Add the queens you with to bank to this colony one or two days after removing the original queen. In another day or two you can add the original queen to the bank, but leave her in her cage. If you put her in too soon, the bees may tend her exclusively, ignoring all the other queens. When as you add the new queens be sure *both* end holes in the queen cages are securely corked. If any of these queens should be released by mistake, the colony might then ignore the others.

Continued on Next Page

"To set up the queen bank, I find it preferable to make up a new four-frame nuc with two or three frames containing brood of all ages and plenty of young bees. Give them honey and pollen as well, and as with any new colony, consider feeding them."

QUEEN BANK ... Cont. From Pg. 83

When placing queens in a bank, the attendants can be left in the queen cages. However, I prefer to remove them. I believe that each cage should contain only the queen. This ensures that the banked queens will be dealing directly with the hive bees and will receive continuing care from them right from the start. Leaving attendants in the cages introduces an element of uncertainty. If you leave attendants in a cage, they may act as a buffer between the hive bees and the queen. When the attendants age and die off, the hive bees might not pick up the responsibility.

Queens in a bank as described will survive for a long time. It is not desirable to keep mated queens from laying, but two to three weeks of such confinement does not seem to harm them, and beekeepers have kept them for longer periods. However, to ensure continuing good care, you must be concerned with the nurse bees of your bank colony. It is these young bees who normally take care of the queen, and nurse bees do mature and go on to other duties. If you start with a good balance of young bees and both capped and uncapped brood, you will have nurse bees present naturally for about a month. During this time, as those original young bees mature, brood will be emerging as replacements. To ensure a continuing population of nurse bees, add one or more frames of brood to your bank hive every three weeks. This is necessary also to maintain hive population. With no laying queen, the total population will slowly without your help.

Now let's consider actually placing the queens in the bank. As novices, we are instructed to stuff the cage down between the frames when introducing a queen to a new colony. This relates to the need to keep the queen warm and well-tended in cooler weather of spring, in a colony as yet lacing a brood cluster. This thinking tends to carry over into our later introductions. However, it can be difficult to fit cages between frames with drawn comb in a busy colony, and it usually isn't necessary. It is acceptable to lay queen cages on top of the brood frames in an established colony, especially as the season warms up.

I place the queen cages face-down on the top bars, lengthwise along the space between the frames. There is ample room for the nurse bees to come up between the frames and communicate with the queens in their cages, and there is also ample heat if the weather turns cool. I then invert the inner cover, flat side up, to give room for the cages. The inner cover usually will not fit down tightly even when inverted because the queen cages are slightly too fat. I usually ignore this, but you could make a special inner cover with a deeper rim to correct this problem. There's another winter project for you.

Winter is moving along, but there is still plenty of time. If you anticipate ordering any queens this season, now is the time to get that queen bank equipment ready. If you don't anticipate ordering queens, order at least one anyhow, just for the experience of setting up and maintaining a queen bank. Then when your beekeeping buddy down the road mentions one day that he has a queenless hive and is on the verge of having laying workers, you can come to his rescue. BC

Richard Bonney is the Extension Apiculturist for the state of Massachusetts and the author of two books on beekeeping. He is a regular contributor to Bee Culture.

Plan Now For A
CRAFT FAIR

john peter

Imagine a situation where thousands of people come to you asking about bees, beeswax, keeping bees and wanting to buy your honey!

In 1982, at the suggestion of a wise old master beekeeper, I began exhibiting at craft fairs. In no time I was invited to more fairs than it was humanly possible to attend, and only four of them were further than an hour away.

With an observation hive and a carefully planned display table it soon became necessary to whittle my participation down to about 30 fairs a year. These occur generally from May to December.

Lions, Kiwanis and other fraternal groups stage fundraising affairs; schools, churches and agricultural societies put on others. Huge county and state fairs and other commercial opportunities also exist. Exhibit at one, and you will soon be asked to others.

Most promoters of these events ask fees ranging from $50.00 to $450.00, while some are actually free. Still others will exchange a demonstration of your craft as all or part of your fee. And all of this includes extensive media coverage on the sponsors' part from which the exhibitor benefits.

The display table I use is a four by eight sheet of treated plywood that rides on my roof rack. For outdoor fairs, I always insist on shade to protect the bees in the observation hive. I also have a 10' by 12' tent fly in the event of rainy weather or scanty shade.

Reading the exhibit from left to right, a customer would see: a three-shelf stand about 40" wide that holds the honey display – from little 6 oz. mugs to five pounders, as well as comb. Signs indicate prices as well as identifying the honey as being local, raw and a product of _____ state.

There are two books displayed – a honey recipe book and one on beginning beekeeping, both extremely popular and marketable.

Dipped beeswax candles are attractively displayed on the center third of the table on a bright red tablecloth. Several enlarged, appropriate photos catch the shopper's eyes while other signs extol the merits of beeswax or suggest that honey and candles make excellent gifts. A collection of a dozen bottles of pollen produces lots of interest and talk. Post card-sized handouts that illustrate different aspects of pollen or beeswax are very inexpensive sales helpers.

The right side of the table is dominated by the observation hive, which rests on a piece of black velvet. On this are also several other crafted beeswax items and a basket of beeswax cubes that were made in ice cube trays, along with a handout mentioning uses for beeswax in sewing, sail whipping, lubricating stuck drawers, windows, and the like.

Honey sticks go like wildfire with both kids and adults.

On a wall at the rear of the booth are selected "study prints" showing a queen, a swarm, a pollen-covered bee and others. A suspended hornet's nest to help explain the habits of honey bees in contrast to other species of bees and smoker and a veil to see and touch are conversation starters. A basket of fruit and nuts illustrates a bit of the real importance of the honey bee.

All signs are short, to the point and easy to read. They answer a lot of questions before they are asked. More importantly, they create openings for talk and a possible sale. There is never a need to expand on the truth when chatting about bees. The facts, as we know them, are staggering enough: 60,000 bees, one queen, 2,000 eggs a day, 100 lbs. of honey a year, ad nauseum. One sign on the observation hive states: "Sorry, no information on birds."

There is always an open squeeze bear of honey to pass out samples to buyers and the curious. "Yes. It's

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CRAFT FAIRS ... Cont. From Page 85

raw and untreated or heated, local, perhaps from the flowers in your own backyard."

My prices are high – top dollar and no middle-man! An active mail order business in honey beeswax, pollen and related products has flourished because the public likes these things, and they can't get them elsewhere! Your beekeeping friends aside, try to find some beeswax or local raw honey. It's worthy of mention that at over 300 fairs, I have never had any serious competition. It seems to be a self-perpetuating monopoly.

However, I would be less than candid if I failed to touch on some downers. It is exhausting being "on stage" for hours at a time. It is wise to bring along a helper and take breaks. There are times when I have one fair on Saturday and another, somewhere else on Sunday. I find it helpful to load my car once with enough product for both occasions.

The observation hive bees take a beating. The larger fairs set up on Thursday, necessitating their being locked up on Wednesday night. By Sunday night, when I bring them home, they've been in for four days. My hive has been somewhat customized to provide more adequate cooling and better feeding. Still, it has crashed a time or two. I'm always ready to work it over and restock it.

Every state you vend in requires a tax number and that it be displayed. Also, applications to different events will ask for it. These tax numbers are easy to get and have never cost me anything. Honey, a food, is not taxable, but wax and books are.

By early December, the season runs out. I must confess that not having to respond to "worn out" questions and comments is a relief. "Where is the queen? How do I get the honey out of this comb? Don't they bite you? I'm allergic. Honey is really bee poop. Are those yellow jackets in that hive?"

Soon, however, I'm gearing up for yet another year.

An hour to load the car, an hour to set up, another hour to tear down; many weekends in other towns makes for many new friends and a lot of fun. I won't mention money. Being so visible leads to invitations to give talks, programs and the like. It also gives me a unique opportunity to teach about this industry in a way that cannot be duplicated. BC

John Peter keeps bees, and attends craft fairs from his home in North Salem, NY

PROSPECTING

rt edwards

If you want to sell more honey, you've got to do a little gold digging. So, we're going prospecting.

Finding Prospects

While it appears at first that the entire population within your area could conceivably qualify as a prospect (or customer), the truth is, specific groups of potential prospects are best-suited as markets for your honey. These markets or pockets of potential buyers tend to shop at specific stores and businesses throughout your town.

The following is a list of possibilities you may want to consider:

1. Your local courthouse
2. Farmer's markets
3. Mom and pop grocery stores
4. Gourmet stores
5. Banks
6. Gift shops
7 Tourist commissions
8. Golf shops
9. College bookstores
10. Coffee shops
11. YMCAs, gyms and health spas
12. Candy stores
13. Radio stations
14. Independent pharmacies
15. Military commissaries
16. Sports stores
17 Gift basket shops
18. Independent health food stores
19. Beauty supply stores
20. Independent truck stops

Each one of the business owners in these groups needs to be addressed differently. Like gold prospecting, you're not going to discover gold without having the proper equipment. You also have to know when, where and how to look.

Up Close and Personal

You have to create an up close and personalized search for prospects. To continue the analogy of gold prospecting, those gold nuggets aren't going to magically appear, you have to go after them, do the physical work necessary to find them and go one-on-one to get them.

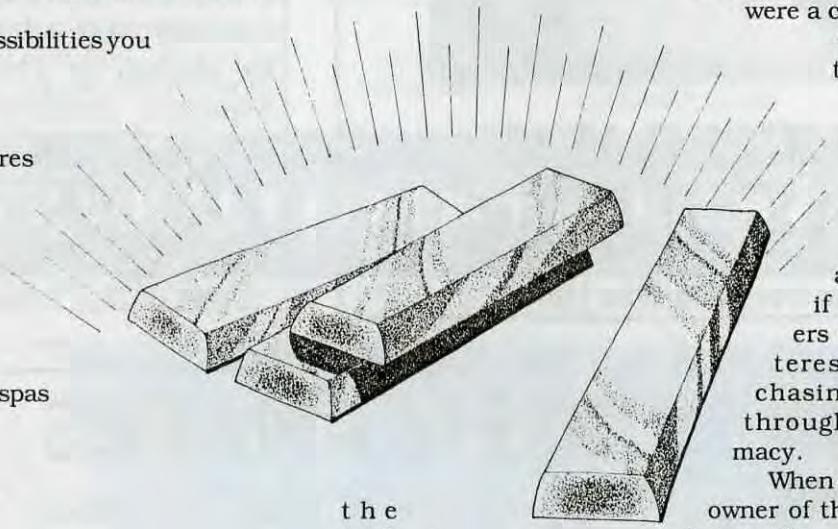
So, if you were to tackle all 20 groups, you would wind up devoting from two to three days each month to new business product displays. If only one additional business owner was added to your growing list of product displays every time you searched, you would see from 24 to 36 new outlets for your product each year. If the average annual sales are $100, you stand to make from $14,400 to $21,600 in annual sales, splitting profits 50/50.

A lot of "ifs." Why?

Because you have to take the initiative and make it happen for your business.

Tools Of The Trade

Let's suppose you decide to try local independent pharmacies. When you go to one, look around as though you were a customer. Get a feel for the place. Talk with some of the customers, see what's available. See if the customers would be interested in purchasing honey through the pharmacy.



When you talk with the owner of the pharmacy, you're going to discover that you will need to answer the question: "What's in it for me?" That's the bottom line. If you can show the pharmacist how what you have to offer is going to benefit both him or her and you, you will acquire your product space.

Question to be answered: How is what you're offering me going to improve or enhance opportunities for increased sales and traffic through my pharmacy?

Your response: Mr. Roberts, if you are like me, there's a good chance, you're looking for ways to improve your overall sales. I believe my local honey products will do just that. It is handsomely packaged, and, its a healthy, natural product that possesses a quality taste. Once your customers try it, they're going to tell their neighbors. Both are going to come to your store to buy more of it. Higher traffic through your pharmacy equates to potential sales throughout your store.

Question: Why am I doing this?

Answer: Because I want to introduce you to my honey products.

Question: What's in it for me?

Answer: As a local pharmacist, you strive to "make money" when you open your doors to the public each day by increasing customers levels. You do this by add-

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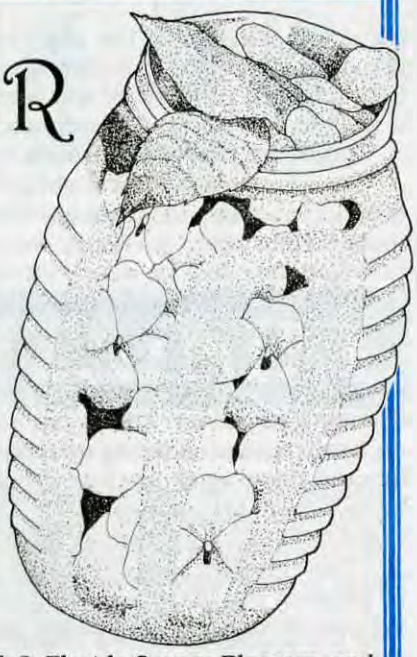
A BOUQUET IN A JAR

Promoting Honey As Gifts

by
david green



My Sweetie is the best of all;
The sweetest thing on earth.
I'll never underestimate,
How much, to me, she's worth.

But second best, this Pot 'o Gold;
A bouquet within a jar
A zillion blossoms honor you
A treasure without par.

Most of us would like a little more romance in our lives. You can help give your customers more romance (and maybe even attract some new customers), if you have a computer with a publishing program, a few craft supplies, and a modicum of imagination.

It all started with some gifts I made up for some special people. I guess I am the sentimental type, and I wrote up poems like the ones above, which I placed on cards for them. Then I began thinking of marketing possibilities. So we've been experimenting with gift packs of varietal honeys, decorated bears, and fancy comb honey with cards attached, and the Christmas market has been much better than we expected. Now we've got to get set up for Valentine's day, normally a dead time in the honey market here, and see if we can transform it.

I have a 486 DX2 computer with a Microsoft Publisher™ program, that will make a nice card out of ordinary index paper stock. I think most publishing programs will do this. An ordinary desk jet printer does a beautiful job, though I imagine a laser printer would be even nicer.

The computer allows you to bypass commercial printers, and without much expense, you can customize the card sets. You can make small runs and try out ideas, until you settle on the ones that work for you.

On the first page of the card I put "A Bouquet For You." The second page has a cut of a flower. The third has the poem, and on the back is our regular honey label. These are folded, punched and attached with a rubber band to the jar, or jar set.

One set we did was a varietal pack using the little canning jar type mug with salt and pepper shaker caps. These go six ounces each, and I put a light honey in one and a dark one in the other, with an explanation on the label of the type and area where made.

We had South Carolina Berry Blossom, South Carolina Mystery Purple? Florida Orange Blossom, and New York Clover. I even packed a few with a chunk of one kind of comb, and another kind of liquid. I made three dozen sets which we tied together with ribbons and bows. The first shop where I showed them, took all I had and ordered as many more.

A second item was the Santa Bear, with a red felt hat and a row of cotton pom-pom buttons. These went out as fast as we could make them. For Valentine's day we make up a Cupid Bear with a green felt hat, a big heart, and a bow and arrow.

I have experimented with gluing buttons and other things on bears before. Besides the time involved to hold them while the glue sets, they don't hold up to handling. And hot melt glue guns are too hot for the plastic. But I recently discovered a cooler version of hot melt glue in our local discount department store, with the gun priced at just under four dollars. So far, we haven't damaged a single bear with the gun, and the decorations stick fairly well. The hats go a lot faster with this kind of glue also, rather than trying to sew and staple.

Our third item is so pretty by itself that it doesn't need much decoration – a jar of liquid honey with comb. We just use some ribbon and a bow.

You are welcome to use the poem and ideas if you think they may be of value. Or maybe they will help trigger other creative ideas. Anyone who would like a few samples of our cards can have them for a SASE. (If you want a custom layout with your own business info, I can do that too, but would have to charge a nominal fee.)

I'd love to hear from anyone trying things like this. Maybe, if we hang together, we can survive after all!

Online by e-mail at: Pollinator@aol.com or Dave Green, P.O. Box 1215, Hemingway, SC 29554.

David Green sells honey, and runs a commercial pollination business from Hemingway, SC.

PROSPECTING – Cont. From pg. 88

ing new merchandise. The idea is to stimulate by word-of-mouth advertising. I'm offering you a product you don't have to invest time, effort and money into in hopes that it will increase customer levels and cash flow.

Question: How will this work for both of us?

Answer: Because you're going to offer a high-quality product in a sharp-looking container and because I need more outlets where my honey will sell, we'll both be able to create the effect we want – increases in customer levels and cash flow. My concern is that you don't get the wrong impression and feel as though I'm trying to turn a profit at your expense. For example, because you allow me to sell my honey at your pharmacy, you are endorsing my honey. That is not my intention. My interest lies in both of us seeing merchandise move. With that in mind, if you agree, I will go all out to let my customers know – there are approximately 100 on my list – about where they can purchase my honey.

There is a very good chance the pharmacist will agree. By allowing you to use his or her pharmacy as a place to sell your honey, the pharmacist, becomes an endorser of your product.

This fact, coupled with your efforts to reach as many potential honey-buying customers as possible, assures that anyone you've contacted who drives by the pharmacy will make the association between your honey and the pharmacy.

You may, as well, offer to be at the pharmacy to provide samples and to talk about local honey and local honey processing. You can use the cost of having to be at the pharmacy promoting your honey as a tax write-off.

Now let's work with a group of small business owners. You've been invited to talk to members of your local SBA. Your purpose is to enhance their possibilities for increased customer levels and cash flow.

Since actions speak louder than words, you might wish to show how your honey is useful as a food flavoring and sweetener.

While you are talking with the members about why they should allow you to sell your honey product at their individual businesses, another person is creating a complete meal using your honey, which the members may then be invited to sample.

Obtain a list of the names and addresses of all the members. Send a letter with a YOU SHOULD HAVE BEEN THERE message to each member who was not at your presentation and a THANKS FOR BEING THERE message to those who did attend.

Invite your local press to the meeting. You should acquire your fair share of press coverage on this one.

These efforts should help you to see a definite increase in product display space and sales of your honey.

Remember, it is important to address each situation differently. Define what's in it for the owner of the potential product display area. Show him how the sales of your product will enhance customer level and cash flow and improve "in house" sales.

Leave each owner with the impression that he should have been allowing you to sell your honey at his place of business *yesterday*. Do all of this; you will be prospecting for gold – the kind that's green. BC

R.T. Edwards is a free lance marketing specialist from Westlake, LA.

OBSERVATION HIVES

thomas webster — dewey caron

Part II

STOCKING & MAINTAINING

Observation bee colonies* are smaller versions of standard colonies. They are more difficult to manage than regular colonies. If you plan to maintain them for the season, it will require a commitment of time and attention. We recommend that you have one standard colony as a backup for each observation unit in your care. In this article we will discuss options on stocking an observation beehive and care of the colony.

You can buy honey bees and a queen to install in your observation beehive or you can take bees and brood, with or without a queen, from an established colony to begin your observation hive. Start the hive once the daytime temperatures go above 60°F (15°C) and flowering plants are available.

Transferring Bees from a Standard Colony

The most practical and easiest method of establishing an observation hive is by transferring frames with bees from a standard colony. You can transfer bees and brood and permit them to raise a queen of their own, or you can search for the queen in the standard colony and transfer her along with the worker bees. The frame (or frames) you transfer should have a mixture of brood of all ages, especially sealed brood. Some honey, capped or uncapped, will be needed, and frames with cells of pollen should be included also.

Transferring bees from the standard colony to the observational unit should be done towards evening. After transferring clinging bees with the frame (or frames) you take from the standard hive, you will need to shake adult bees from one or two additional frames into the observation hive to ensure an adequate observation hive population. If the observation hive's location is less than two miles (3.2 km) from the original colony, some of the older bees will fly back to their original hive. If you transfer the queen, she doesn't need to be caged. If you do not transfer a queen, the bees will raise several queens from young larvae, and one will become the new queen mother.

If your observation hive is three or more frames in size, transfer two frames of brood that should include capped brood as well as a mixture of larvae and eggs. Some honey in the upper corners and cells of pollen among or above the brood area will also help the new observation hive. Transfer two brood frames and then add a frame of ripening nectar/capped honey. This will help stimulate normal arrangement of brood below and honey above as occurs in the standard colony.

Another way to stock an observation beehive is with package bees. You can purchase a one or two-pound (.45 or .9 kg) package of honey bees and a queen from package bee and queen supply dealers. They can be shipped to you through the mail. You can schedule delivery at your convenience between April 1 and mid-September.

When the package(s) you have ordered arrives, hold in a cool, dark place. Feed the bees sugar syrup (made by mixing one part sugar [ordinary sucrose table sugar] to one part warm water) by spraying, misting or dripping it on the package screen. This will cause the bees to fill themselves, and they will be less inclined to sting or fly away when you open the package to install them.

As with transferring bees from a standard colony, it is best to install the bees in observation beehive toward evening. Move the hive outdoors, open the shipping package and shake all the bees into your hive. Leaving the queen in her cage, remove the cork from the candy end of the cage and place the cage inside the observation hive with the screen side exposed. You will need to remove the empty cage later.

It will be a bit tricky getting all the bees from the package into the observation beehive. Make a funnel of stiff paper (or metal) to help the bees slide into the narrow opening of the observation hive. If you do not have access to frames of drawn beeswax comb or frames of brood, honey and pollen, you will need to assemble foundation into the frames before you add the bees to the observation hive. These should be prepared prior to the arrival of the package bees.

Provide a sugar syrup feeder after the observation hive is in its permanent location. The bees need this food since, initially, they will lack comb to store the syrup already in their stomachs. The syrup helps to initiate wax production so the bees can quickly draw comb from the foundation you have provided in the

In this series, observation hive, observation colony and observation bee colony are used interchangeably. They all refer to a colony of honey bees living in what is normally referred to as an observation hive. That is, a clear glass or plastic sided unit containing 1, 2 or more frames, generally one frame thick.

frames. Package bees are generally an excellent means of establishing your colony and the best option if you do not have a colony of bees to use to stock the hive.

Capturing A Swarm of Honey Bees

Another method of obtaining bees for an observation hive is to capture a swarm. Bees in a swarm are usually quite gentle, and if you can get the queen into your hive, the workers will follow. Extension agents and local police or fire officials can notify you when they receive calls from people who have a swarm on their property. Shake, scrape or force the bees into your hive and then close it, allowing only an entrance – if the queen stays, the workers will join her. If not, they will re-cluster, and you can try again.

Do not attempt to transfer bees from a tree hollow, or bees nesting in the side of a building, into an observation hive. These may be called a swarm by some, but it is very difficult to transfer bees from such locations. Large swarms may be too large for an observation hive and should be left for beekeepers with standard hives. Swarm capture is not always easy, and you should have someone experienced with bees help you if you plan to start your observation hive by capturing a swarm.

Once the bees are inside the observation hive, close the hive to keep them inside. Then brush off the hangers-on with a bee brush. When the hive is installed, most of the bees will find the entrance and move on in.

Setting Up the Hive

Once you have bees in your observation hive, set it up on a platform or table. Adjust its position so that the runway goes out the window and securely attach the hive and runway to each other. Then open the hive door. The bees will soon find their way out and begin to orient to their new location. Watch them circle around near the exit to the hive. As they circle, they are memorizing landmarks. In a day or so, they will be coming and going without hesitation – it's their new home!

When you need to remove the bees, exchange frames or perform some other operation, close the hive door first. This keeps the bees inside the hive until you can move the unit outdoors. You will need to close off the runway, too, so the bees coming home don't end up inside the room! Move the observation unit outside near the entrance and perform your management. When you have finished, re-connect the hive to the runway and open the doors. The bees will quickly return to their normal activities. Use a veil and smoker when opening an observation colony just as you would with a standard colony.

Some Management Basics

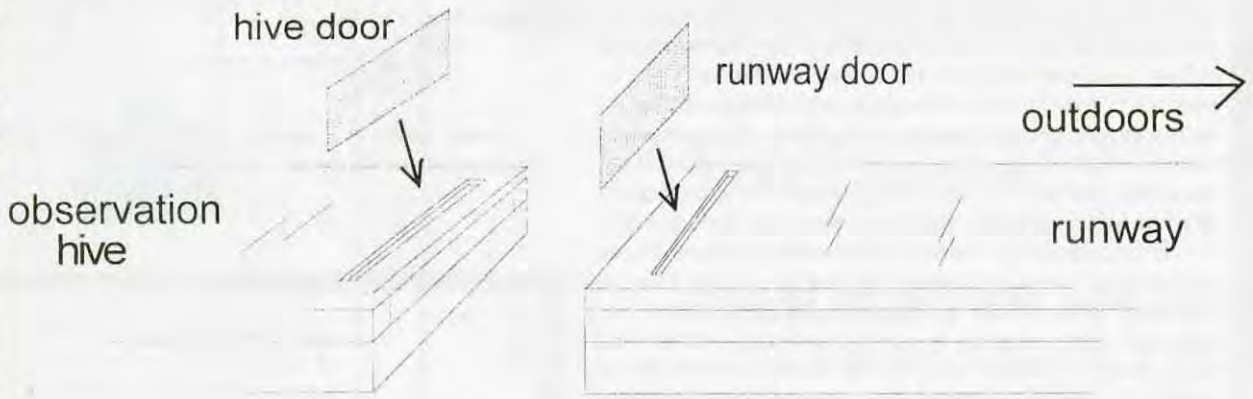
Observation beehives are more difficult to manipulate or manage than are standard colonies. They cannot store sufficient food reserves nor rear an adequate population to overwinter, except in the

John Lindner, retired Maryland apiary inspector, showing the observation hive queen to another type of queen.

MANAGEMENT BASICS

- Have a standard hive as backup for your observation hive. This colony should be managed normally. If problems develop, it is usually easier to remove and replace the observation beehive frames than it is to attempt to manage it back to the desired condition.
- Examine the observation hive weekly for food supply and population. Populations can be too large as well as too weak.
- Proper hive design can assist the bees in the observation hive in the cleaning of debris and dead bee bodies. If you get a buildup, you may need to remove the debris yourself.
- Be prepared to feed the colony when nectar/pollen sources are not adequate or the population is too low to provision itself adequately. You need to feed sugar water much of the year.
- Observation beehives are easier to establish and maintain during the active bee foraging season. Outside temperatures above 60°F and flowering plant availability are the minimum conditions needed.
- Do not over-manage your observation unit. A design that allows for quick removal and permits easy disassembly and reassembly will make your manipulations much easier and reduce the time you need to devote to management. It is best to have the observation hive open to do your manipulations for as short a time period as possible.
- Always have a marked queen in the observation hive. Viewers will be "disappointed" if they don't see the queen. Viewers generally don't want to spend much time searching.
- Supplement the observation hive with additional display materials. This should include drawings/prints that include visual material but not much text.

A RUNWAY WAY



The runway is made to match the dimensions of the observation hive exit, so that they can join together neatly. Make a narrow slit in the top of the plastic or glass near the exit of the hive. This allows a small rectangle of metal or plastic, the "hive door," to slip down and stop the bees from leaving when you need to move the hive. Likewise, make a slit in the runway top, near where it will join to the hive exit. Another rectangular "runway door" can close the runway to prevent bees from coming into the room when the hive has been moved away from the runway.

warmer climates of the Southern states.

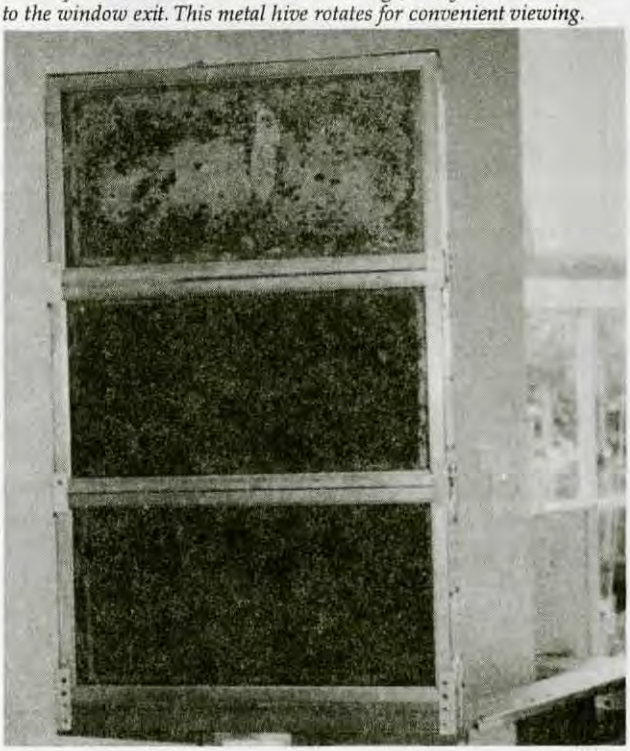
Generally, observation hives experience the same seasonal population fluctuations as standard colonies. In spring, when nectar and pollen become available, the population builds rapidly, and the colony may become crowded with bees. You can remove excess bees or exchange full frames of brood for empty drawn comb or foundation to reduce the population. Some observation colonies may swarm, especially if they become crowded. You could capture such a swarm to start new colonies plus use the opportunity to observe the changes happening in observation hives that swarm.

If your colony becomes too weak and is losing population, you can bolster its numbers with bees from another hive. You need to isolate the new bees from the existing population with a screen placed so the two groups of bees are not in direct contact inside your hive. Allow two or three days of interaction between the new bees and the bees in your hive before removing the screen barrier. Another method of bolstering a weak hive is by adding frames of sealed brood from another colony. As the adult bees emerge, they will be readily accepted by the existing adults of the observation colony. If you need to requeen, you can do so by removing the old queen (if present) and then adding the new queen in a screened cage. Allow the observation hive bees to release the queen from the cage or do so yourself after three or four days.

In late spring or summer, the beeswax combs of your observation hive should contain many cells with honey. You can remove frames filled with capped honey and substitute empty frames or foundation. Do this outside, using veil and smoker. In a good year, it is possible to secure sections of comb honey from populous observation colonies in this manner.

You should plan to feed sugar syrup to your observation hive. It is best to have the syrup feeder at the top of the hive (and the observation hive should be constructed to accommodate a feeder). Feeders are available commercially, but any glass or plastic container will suffice. Punch the point of a nail through the lid 6-20 times. Then fill the feeder with a dilute sugar syrup (one part sugar to one part water) and invert it on top of the observation hive, permitting the bees access to the holes. Make the holes small enough that, when the jar is inverted, liquid does not

A three-frame observation hive. Note the large, easily viewed tunnel to the window exit. This metal hive rotates for convenient viewing.



readily leak out, but will do so when the jar is shaken. Bees will stick their "tongues" into the holes to withdraw the syrup. If you feed protein materials, such as pollen or pollen substitutes, do so inside the hive where bees have ready access to them.

Handling special problems like disease control is difficult with an observation hive. We recommend that you do mite and foulbrood control on the standard colony you use to stock your observation unit, or to restock it from another disease or mite-free colony. If mites or chalkboard become a problem, it is probably better to discontinue your observation unit. Most state laws will not permit you to maintain a colony, standard or observational, with American foulbrood (AFB).

If the glass observation sides break inside or if bees consistently escape inside the building, you have a problem. Bees inside will fly to light – therefore, reduce all light sources to a single one and catch the bees there or allow them to fly outside through an opening. Special one-way bee escapes are available commercially. Avoid touching or swatting bees, as you may get stung. In an emergency, close the entrance, put a plastic trash bag over the unit and take it outside as quickly as possible. Do all repairs outside during nice weather.

You can clean beeswax from the observational glass walls with a razor blade and hot water with a detergent. Sometimes, a solvent such as liquid wrench works well, but test in a small area first. Avoid using razor blades or other materials that will scratch if you use plexiglas for the walls. Do this and all other maintenance outside near the entry/exit after closing both ends of the tunnel.

Thomas Webster is Extension Specialist in Apiculture, KY State University.

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Dewey Caron is Professor and Extension Specialist in Apiculture at the University of Delaware.

NEXT:
Clustering and Other Typical Bee Behavior

USE THIS SPACE FOR NOTES, DRAWINGS AND RECORD KEEPING.

Swarm Catcher

bill truesdell

I believe in KISS – Keep It Simple, Stupid! This swarm catcher is just that, with the added feature of being cheap. It consists of two sticks, a plastic bag and some tape.

I came up with the idea after I totally botched my first attempt at catching a swarm. I followed the book and ended up with bees half in and half out of my hive box, which I had placed below the swarm. I thought I had captured the queen, but after arriving home, the property owner called and asked if it was "normal for the remaining bees to be in a clump on the trunk of a tree." Obviously, I had not gotten the queen. I returned and found the bees in a mass on the tree trunk. I had no idea how to get them into my hive body without totally disrupting them by scraping them off the tree trunk. Since it was late, I returned home, hoping they would be there in the morning.

The idea of the swarm catcher came to me that night. I needed something to match the contour of the trunk so I could scrape the bees from the tree. Obviously, a bag of some sort would do, but how could I keep the bag open and scrape the bees off without help? Keep the bag open with poles! I built the swarm catcher the next morning.

Capturing the swarm was simple and quick. I held the two poles apart, which opened the bag, then pushed the bag opening against the tree and under the swarm. I worked the bag slowly up the trunk, "cutting" the bees from the trunk. As large clumps were detached from the swarm, they fell to the bottom of the bag until I had the whole swarm including the queen. I brought the two poles together, rolled them and closed the top of the bag. Since the bag I used was clear plastic, I could inspect the bees and even identify the queen. As a bonus, the bag was inflated with the trapped air, so I could put it in the trunk of my car and drive home. To join the bees in the bag with the rest in the hive, I rested the bag of bees on the edge of the hive, put the poles on top of the hive, unrolled them and pulled them apart, opening the bag as it faced down into the open hive. I shook the bag over the hive, and the bees were reunited. I inspected the few that were left in the bag to insure the queen was out, then inverted the bag to free them. Easy.

I could have spread the poles apart and, instead of shaking the bees out, slowly inverted the bag over top of the hive, which would have accomplished the same thing.

The swarm catcher can be used anywhere. It can be used to dislodge swarms on fence posts, tree trunks, sides of buildings and even tree branches. Just bring the bag around the swarm by using the poles, then either shake the swarm into the bag or use the poles to scrape it off.

One nice thing about the swarm catcher is that you can also transport the bees in it, so you can leave hive bodies and other equipment at home. And if you only take a bag and some tape into the woods, you can cut your own poles. The bag I use is a 33-gallon "Glad" handle-tie clear bag.BC

One plastic bag and two poles are all that's needed.

To use, simply push the bag against the pole and slide it up, keeping the edge of the bag tight against the pole.

When you've got all the bees inside, roll the poles together so the top closes, and take those free bees home.

Bill Truesdale keeps bees, and captures swarms around his home in Bath, Maine. His swarm catcher won first place in its category at the 1993 EAS Conference in Maine.

REMOVAL UPDATE

charles simon

n the July '94 issue of *Bee Culture*, there is an article by Mr. Howard Scott, titled "BEE REMOVAL as a part-time Business." Being a remover myself, I read avidly and found some noteworthy differences from the way I do things.

Mr. Scott wrote about a carpenter who prefers removal from the inside. I avoid it if at all possible. He says the strays will congregate on the window and be easily removed with a whisk broom, and that is true (It is very much easier with a bee vacuum.) — but they go hysterical and get diarrhea, leaving a mess that is not all that easy to clean. Also, there will be squished, honey-soaked bees and honey in the rug, if there's a rug. And under certain less-than-ideal (in other words — normal) conditions it's going to take longer than the half hour he indicates for them to cluster up, sometimes considerably longer. And bees left behind on the outside can persist for days, trying to get in every door and window and harassing people. I've had them start building comb on the outside where their hole used to be — and then had a new swarm move onto that bit of comb and start up right there. So I often run the job into a second day and go back early in the morning to try to get every bee. A half-dozen or so left behind might not be a problem, but a few hundred can be.

The remover in the article guarantees that no colony will ever again set up housekeeping in the same place. But we have earthquakes around here, and one little tremor can spoil everything. No matter how well you clean it out, the cavity will always smell of bees, and even if you could eliminate that, the site will be known to the other bees in the neighborhood. There is one thing you could do, though, that would make an unconditional guarantee valid, but he doesn't mention it, so I don't know if he does it or not. Perhaps it's a trade secret. Fill the cavity (with insulation).

I removed bees three years in a row from one particular Victorian mansion in my area. The structure and crack patterns after the big quake made it practically impossible to seal. The only way to know there was an opening was when the bees started using it. By the way, they were so used to and so insistent upon using that site that when it was finally closed properly, a new swarm came along and built a full set of combs right out in the open against the wall under the roof overhang.

I found the technique of giving estimates over the phone compelling. I have always gone to the location and never charged for it, although sometimes I didn't get the job after all that. So when the next call came, I followed his lead.

The woman told me there were bees going into a hole in the wall. I asked if she was sure, and she assured me she knew what a bee was — and also what a hole was. The family could not afford a removal, so they had to be killed. I hate killing them, but if it's got to be done, I'd rather be the one to do it.

It was great! I love it when I learn something. This was going to be easy: Squirt 'em and plug 'em up, collect the money and I'm outta there....

The woman was in a big hurry and handed me a check before I even got the chance to take a look. She told me where to go around back, got in her car and drove away.

You already know: They weren't bees, and it wasn't a hole in the wall. They were yellows, and they were going in under the wooden shakes of the roof, in three places. So there I was, and nobody to reevaluate with.

Because of the angle and the fragility of the shakes, I couldn't go up onto the roof. By stretching and otherwise contorting on the top of the ladder, above where it says "Do not stand on or above this rung on this or any ladder," I could get the nozzle close to the holes. But that wasn't good enough, and due to the wind, more poison (or) insecticide blew down onto me than went where it was supposed to go. I did as much as I could, feeling like a fool, and then went home to shower, feeling sick. It was 20 miles one way, and I was going to have to do it again the next day.

I went to that house four days in a row, each time diminishing the population a little, but not able to really get to them. And as the insecticide rained down on me, I had to wonder: Was I killing them, or were they killing me?

I kept hoping someone would be there to talk to, but no one was. I kept calling on the phone, but there was no answer.

Then on the fifth day, the woman's son was there. He didn't know anything about anything, but he gave me the landlord's number — long-distance of course. I got an answering machine and left a message. And nobody ever got back to me, so I had to let it go. I couldn't start taking the roof apart without an agreement.

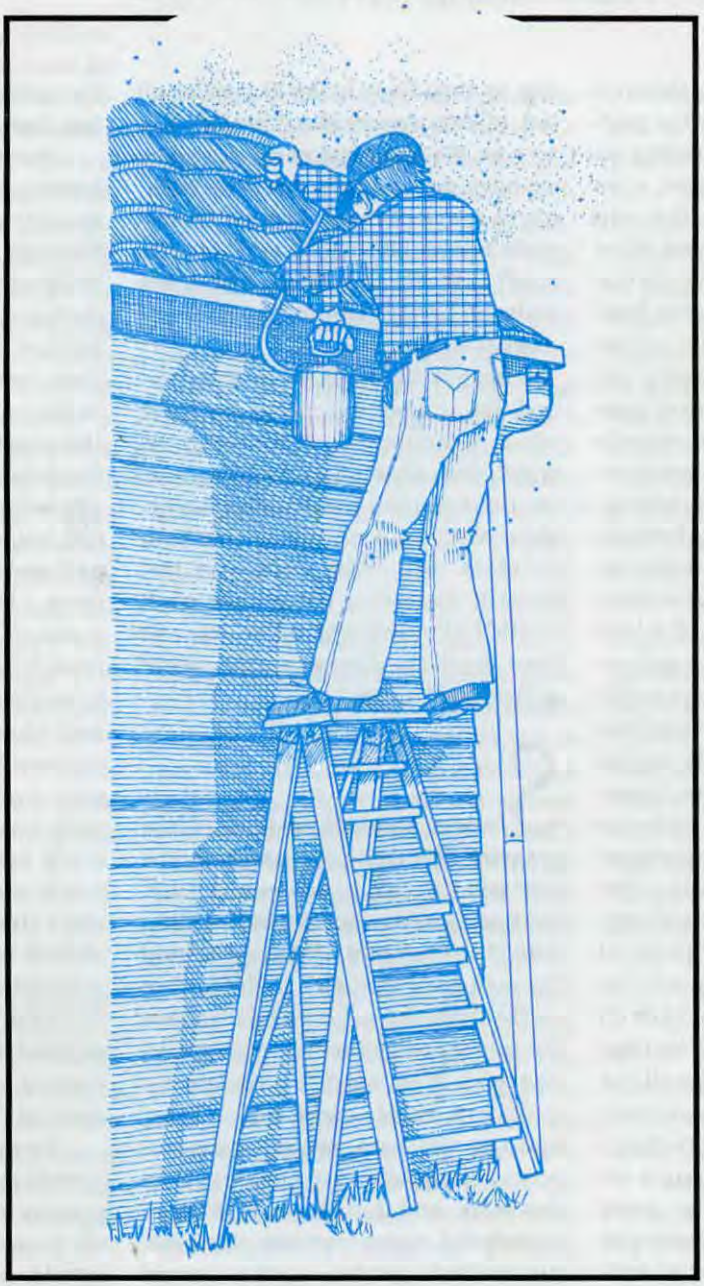
There are too many variables in this business. You could tell a prospective customer, this is the price for that, but...if any conditions turn out different than described, or there are unforeseen difficulties, the terms will change. But I don't like the flavor of that, so I will continue to go to the location for evaluation before I give the price.

I quote from his article: "He has heard of carpenters trying to coax bees out by traps by putting a hive nearby...." The syntax is garbled, but I know what he's trying to say. He's referring to, disparaging and dismissing the technique I like best.

When the structure can't be taken apart, but the bees must be removed, a hive baited with a frame of brood is positioned close to the bees' opening. A fly-screen cone is affixed over the opening to let them out, but not

back in. They will find the brood in the receiver hive and start housekeeping there, and every day more will transfer until it's done. This is a process of elegance and finesse, but there are problems and pitfalls that can turn it into the opposite.

The bees can be reluctant to accept the receiver hive's bait. It can take hours of frustration before they finally venture in. And sometimes they refuse completely. Possibly the alien smell of the hive is greater than the attractant of the brood. Coercion is useless — smoking, brushing, dumping — a waste of time. Then they cluster up on the outside of the building, usually all over the cone, and the brood dies the first night. So more brood is required the next day. And if this pattern gets established, it's going to be difficult, even to killing the donor hive or more.



The solution: As soon as the one-way entrance and receiver are in position, and the bees are flying around in chaos, remove the frame of brood from the hive, shake off adhering bees and position it against the building, right out in the open as close as possible to, but not touching, the cone. The bees will start landing on it right away and cover it. Then put it in the hive. Now the bees have no decision to make and therefore cannot make the wrong one – nothing to resist, no option to refuse. They're already in, and so they start the nasanof maneuver immediately.

When the foragers stop coming back with supplies, the colony will go into distress, and the queen will stop laying. The nurse and house bees will stay in the nest, emerging as they turn into foragers or come out for their maiden flight. It will take approximately 24 days for the last-laid eggs to emerge as bees and maybe another two weeks after that before those young bees will venture forth. During this time, the honey will be eaten, the young raised, and what will be left will be some dry wax which, with the building sealed properly, will be no problem.

Traditional bee escapes are not to be used. If dead bees clog the mechanism, the process will be stalled, and the appliance can't be accessed easily to be cleaned out.

The window screen cone is made with the hole just large enough for one bee to get through. Drones have to squeeze. Sometimes a bee dies in the hole or two bees try to get out at the same time and get stuck. This is readily seen and easily remedied.

A more serious problem occurs when the bees learn how to get back into the original nest by going the wrong way through the small hole in the cone. This can be hard to detect because it is often masked by other bees milling around. The key is to watch closely for several minutes every day, paying particular attention to the pollen-bearers. If you observe this happening, the bees will win, unless you take action. Fine-tuning the hole is not the answer if a bee can squeeze out, she can squeeze in. A mechanical apparatus could be devised, but the effort would not be justified, especially since there is a simple and effective solution already available. Position larger cone over the initial cone, fastening it minimally so as to leave openings at the base, so when a bee gets in and crawls down, she finds herself back out again. She will go 'round and round' until she eventually gives it up and gets with the program. I have not yet had a single bee outsmart two cones.

It usually takes about six weeks. At first the bees come boiling out; then their departure slows down to a few a day; and finally, the remaining bunch, usually with the queen, will abscond into your receiver. This is the typical pattern, but be aware that the atypical can and does occur. Sometimes the queen will leave sooner, rather than later. And sometimes there will be little or no brood and/or little honey in the nest and possibly no queen. The colony will surprise you by transferring completely right away. BC

Charles Simon removes bees from buildings, sometimes several times, around his home in Santa Cruz, CA. He has written several articles about this subject for Bee Culture.

ELBOW ROOM

the old timer

"Thirty miles from home, we pause at a sharp bend, where the trees fall away, exposing the region we have just left, a vast panorama stretching to the distant mountains."

Picking a convenient day (when it becomes necessary) to make the journey to town is a lot like making an appointment with the dentist – we keep putting it off. You see, this trip isn't really that important since we're not going for foodstuffs. We grow our own eatables (have to) or procure from the surrounding countryside, all we (including the animals) can ever use – and more. In fact, hundreds of tons of berries and mushrooms recycle themselves back into the environment every year for want of picking. Acres of wild hayfield grasses become compost as well. Legions of squirrels and birds avail themselves of at least some of the vast quantity of edible wild mushrooms herabouts – gathering and storing these delicacies in the trees to munch on at will. Even the garden, according to my wife, seems such a simple and effortless operation as time goes on. And with our daughters "visiting" with uncanny accuracy as the harvest matures – the canning and storing of fruits and vegetables turns out to be a "piece of cake." I never cease to be amazed at my wife's energy – for along with all these other things, she still finds time – in fact she insists – to make all but certain items of clothing. I have more wool sweaters and down quilts than I could ever use. Anyway – since we don't need food, what are we going for, as we always find it depressing in town? Well, for one thing I need truck tires (they really take a beating on mountainous and back-country roads) and nails, and perhaps the missus has a small list. The hay is in, the honey extracted and the two or three rows of spuds and turnips left in the garden, will wait for another day or two. So it looks like we're all out of excuses as the "fateful" day arrives. We breakfast early and since we have no chores besides the milking to speak of these days as the animals forage the fields we "hit the road" just after daybreak with a few pails of honey, which has a ready market in town.

Isn't it funny that, on any normal day, our activity about the yard, which sometimes includes using the truck, does absolutely nothing to alter the routine of munching – playing – sleeping – of any of the farm animals. But, when me and the missus, dressed in other than work clothes, climb aboard the vehicle and start down the driveway, they sense something "amiss."

Slowing and looking back before entering the trees, we perceive the cow and the calf, heads raised, looking quizzically in our direction. Likewise the three goats, lined up behind the split-rail fence with their forefeet on the lower bar and their heads above the upper pole, followed our exit with concern. Also watching us leave – looking puzzled – were the old dog and the two cats, sitting incongruously bolt upright in the center of the driveway. And though you'll grimace in disbelief, to me even the chickens, just visible beyond the stable, seemed strangely quiescent. Animals fall in love with people and in most cases, the reverse is true, so although we feel a pang too, at leaving we know it's only for a few hours.

Three saucy blue jays accompany us for several minutes, flying round the vehicle and scolding us for deserting them.

For the first few miles, what we traverse isn't really a road – it's merely a wide, grassy opening through the trees which soon flows illusively into a dirt one – The Elder Jackson Road, named after the first settler in these parts. Back when there were several families living here in the valley and on the way to town, the road was plowed in the winter and fixed up during summer months (usually before and after busy farm activity), but with only us, the Whitworths and another family on the way to town – the road has deteriorated to more of an obstacle course. From time to time, branches or rocks have to be cleared out of our way, and now and then we ford rushing watercourses. We're confronted with washouts, corduroy sections, logs spanning creeks and of course potholes every few feet. Having said all that, you'll find it strange that we still consider this dusty, primitive "road," a HAPPY experience – with its quiet, meandering way – dappled sunlight – colored leaves drifting down in wooded sections – wild mallards cavorting in the sloughs – partridges dusting themselves on the roadside.

Then, where the forest thins out to wide open spaces, tall sun-bleached grasses move wave-like in the slightest breeze, like a golden tide. Here, there is none of the hurly-burly bustle of modern town life, just an old trace on the ground, almost forgotten as its "sands of time" run out. Thirty miles from home, we pause at a sharp bend, where the trees fall away, exposing the region we have just left, a vast panorama stretching to the dis-

tant mountains. From here they appear even more aloof, serene, eternal, than at home, where their ever-changing faces fill our kitchen window. Rousing from her reverie after a few minutes, my wife murmurs, "Now, how's that for elbow room?"

I'll skip the rest of the journey to town in order to deal with the following incident (the essence of this narrative) without which, there probably would have been no story.

Our little bit of shopping finished, we drove over to my sister's place for tea, where a friend of hers was simply horrified at the amount of honey my wife put in her drink, and exclaimed, "Joan, all that honey must affect your health!" My wife gave one of her quick little laughs and replied, "Yes, I'm sure it does – it keeps me out of the doctor's office. Anyway, you think that's a lot, look at John there (I was in the act of plopping two heaping teaspoons of granulated honey in my cup, and a smidgen for good measure), and you should see what he eats every day. For instance, he thinks nothing of putting nearly half a cup of honey on his breakfast porridge, and at various times throughout the day it's comb honey honey and wholemeal-bread sandwiches with and between meals and again, porridge for supper. He never goes to bed without first having a cup of warm milk, half honey. It keeps him going in all kinds of weather, lifting and toting."

As you can see porridge liberally laced with honey and butter is our staple "filling food." Our children grew up on it, had plump, red cheeks and played outside, whatever the weather. Even our animals, including the chickens, are given honey now and again. There was more dialogue on the merits of honey. However, we had to leave at the height of this discussion with the excuse that the cow and the goats must be milked on time, not when it's convenient, so.

About halfway home, we stopped again, since we'd made good time, for a few minutes at the intriguing little meadow of spearmint plants, where we'd had a drink from the spring on the way down. We pick and dry quite a lot of this valuable herb for tea and cooking. As we sat there, each holding a few leaves and breathing their wonderful aroma, my wife said, "That conversation with Marg's friend is still on my mind – especially that bit about too much of a good thing might be harmful. However, I don't think it will dissuade me to change the amount of honey I use. I am of the same opinion as you, that honey and the plants from which it is derived were created by God for our benefit. And as your Dad says: "Honey is both a food and a medicine if it comes from a variety of plants on uncontaminated soil." Knowing my wife, I anticipated more, so I shifted my behind to a more comfortable spot on the mossy old log as she went on to say, "Look here in this little plot, as it is in all the inmost recesses of the back country – what a wealth of wild blooms – mint, heal all, dandelions, clover, salal and over there in the corner, what is that? Oh yes, burdock and cornflower and towards the alders, blackberries and blueberries along with ferns, grasses and seedlings. In fact, as you can see, it's so thick with growing things, I've most likely missed half of them. And they're all thriving on the same soil, using the same air, wind, rain, sunbeams. All in the same environment, yet each variety is different – a unique species. Each plant germ does something to its own bit of soil – no one knows what – but without this food, the seed could not germinate. Now if this isn't divine intelligence, I don't know what is. Another of nature's secrets, like the manufacture of honey and *life itself.*

"Look here in this little plot, as it is in all the inmost recesses of the back country – what a wealth of wild blooms – mint, heal all, dandelions, clover, salal and over there in the corner, what is that? Oh yes, burdock and cornflower and towards the alders, blackberries and blueberries along with ferns, grasses and seedlings."

"Honey that comes from a variety of plants such as these and ingested into the human system, must have the opportunity to pick and choose from this astonishing storehouse of nutrients, the constituents it needs to repair and heal. Most of these flora are tasteless to us in their natural state, but when their little dab of liquid is processed by the honey bee it becomes 'Nectar of the Gods' – a gift of health and energy from nature. A miracle. I think you were onto something when you said, 'The honey bee could be a link bridging mankind and nature.

"Does the man in the street ever realize that ALL life on Earth is dependent on these green plants? They are the *only* means of transforming the sun's life-giving properties for our use. Isn't it sad that man sometimes treats plants as though they were an evil, destroying as many as he can one way or another without thought of the consequences? Oh, we'll pay for this ecological blunder – nature is very unforgiving. In a war with nature, you cannot win."

Looking down at the leaves in her hand my wife gave a deep sigh, brought them to her lips, then tucked them carefully, reverently, into her shirt pocket.

As we rose to go she finished with, "These frequently despised plants were created by God not just for our benefit – but so that we can *exist.* There is no other way."

My wife – like Elder Jackson Road – really is *Something Else.* BC

The 'Old Timer' spends most of his time in the wilds of British Columbia, taking care of animals, gardens and bees.

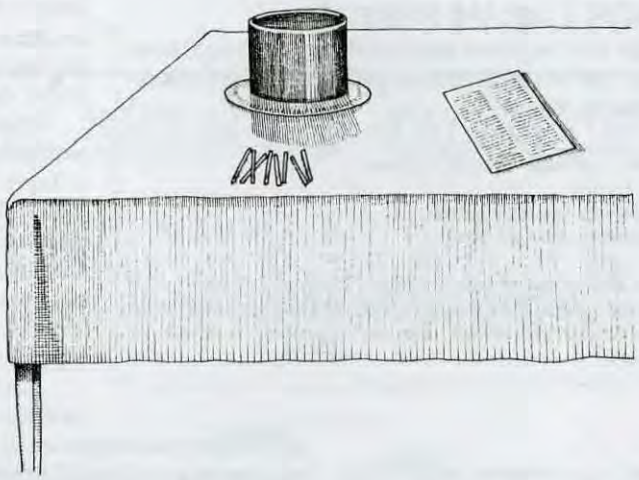
A TASTE OF HONEY

ann harman

There's a world of honey out there to be tasted. Sometimes even beekeepers, used to different honeys, are pleasantly surprised when they sample an unfamiliar honey for the first time. What about the people, unfortunately in the majority, who think all honey is golden in color and tastes like ... well, honey? Have a honey tasting – here's where education can be fun and delicious!

Call up the program chairman of your local Lions – or Rotary, Ruritan or Kiwanis or gourmet cooks or garden club – and offer to do a program for them. A Honey Tasting. Yes, you can do this for beekeeping organizations, too.

First of all, you need a catchy title. Just calling the evening a Honey Tasting will not work. Non-honey people won't be able to figure it out (Taste Honey? It all tastes the same, doesn't it?). Beekeepers will think that they really like their own honey thank you very much, and not bother to attend the meeting. Think up a title that doesn't even mention honey – "Nature's Bounty" or "A Flight Across the U.S." or "A Taste of Summer" Come on, you can think up better names than these. The main thing is to spark a bit of interest. The participants won't be disappointed at all when they find out what you really have in mind.



Be ambitious in your search for honeys. Have people in Indiana ever tasted Fireweed from the Pacific Northwest? Have Texans ever tasted Blueberry Honey from Maine? Have people from British Columbia tasted honey from the Maritimes? Even Wildflower – that wonderful catch-all name – has a different taste in different parts of the country. Don't overlook some of the honey flavors that might be found in your local supermarket. You might even wish to include a jar of "generic honey" so the tasters can make a comparison between that and the more interesting varieties you offer.

One word of caution – it takes time to round up the honeys, so make plans and start obtaining the honeys about three months before the actual meeting date. Do you beg or barter? Frankly, barter is preferable. Compose a nice letter stating what you are doing (planning a Honey Tasting for the local Rotary Club) and that you would appreciate a one-pound jar of honey typical of that region. In return, you will send a jar of your own honey labeled as to floral source, so that beekeepers of that region can sample a different flavor of honey. This barter has an advantage which I will explain later. Where do you get the names and addresses of people who have honey? Simple – use the April issue of *Bee Culture* with the list of beekeeping organizations. Now you can select areas totally different from your own and obtain wonderful samples. The best time for requesting samples is at the end of summer, after honey harvest. Your program can then be scheduled for a winter or early spring meeting, before you get busy with bees again. Or if you wish, you can store the jars of honey in a freezer until an appropriate meeting time. When the honey arrives, check the label to see if the beekeeper's name, address and phone number are on it, in case a taster wants to order some. Check to make sure a floral source is named, even if it is "wildflower"

Now for that advantage in bartering. Select a jar of your nice honey, complete with label, of course, and prepare it for mailing. First, wrap once around with "bubble wrap" Tape it firmly once around the middle, then fold over each end and tape it down. Select a box of appropriate size and nestle your jar in some plastic popcorn (or even better, the biodegradable stuff made from corn stench). Send off your request letter which will arrive slightly before your package. Inform the recipient that the jar of honey is on its way and — (now we come to that barter advantage) his or her jar of honey can be mailed back to you in the same wrapping and box. Perhaps you are puzzled as to why this exchange of boxes and wrapping is important. Well, I have had some interesting experiences having honey mailed to me. I have received a box full of loose honey, lots of glass crumbs and a lid. Not once, but several times. At one time I had the cleanest rural mailbox in the neighborhood. I am sure passers-by who saw me scrubbing it out thought I was totally daft. Anyway, barter is fun, and this practice introduces others to your local honey.

Continued on Next Page

A TASTE OF HONEY ... Cont. From Pg. 103

While you are awaiting the honey samples, you can plan your presentation. If you are addressing a non-beekeeping group (citizens) you definitely need to inform the audience that the flavor and color of honey comes from the plant source. Most people seem to believe that "bees make honey." Some people recognize some sort of connection between flowers and honey, but when confronted with a jar of dark honey people will ask what you put in it to make it dark. So your honey tasting is an excellent way to introduce citizens to the role of honey bees. Of course, a few words about pollination can accompany information on honey. After all, nectar collecting and pollination are linked.

If you decide to add some food prepared with different honeys, here are two recipes that work well when made with a selection of honeys.

HONEY MARSHMALLOWS

Make two batches using two different flavors of honey.

1 envelope unflavored gelatin (1 tablespoon)
1/4 cup cold water
1 cup honey
pecan or almond meal or finely shredded coconut

Soak gelatin in cold water. Warm honey in top of double boiler to about 120°F Add gelatin and stir until dissolved. Remove mixture from heat. Beat with hand mixer on high speed for 10 minutes, until mixture is light and fluffy, but thick. Put into buttered pan: 9 x 9 inches for thick marshmallows, 9 x 13 inches for thinner ones. Let stand at room temperature for 24 to 48 hours. Dip knife in cold water and cut marshmallows into squares. Roll or shake in nut meal or coconut. Do NOT roll or shake with powdered sugar – it makes very sticky marshmallows.

Kitchen Creations With Honey
Ann Harman and Ernest Miner, Jr.

ORANGE CREAM SPREAD

Make two batches each with a different flavor of honey. Serve to tasters on plain, unsalted crackers or Melba Toast.

1 8-ounce package cream cheese
1/4 cup honey
2 tablespoons orange juice
1/2 teaspoon orange peel

Combine softened cream cheese, honey, orange juice and orange peel. Blend well. Refrigerate at least one hour – overnight is better. Spread on rolls, muffins, or croissants.

Now that your introduction and presentation have been planned, on to the logistics of the honey tasting. You will need one or two tables, depending on the number of people attending and the number of samples you have collected. Leave plenty of room between samples because although most people tend to dawdle at the samples, a few always wish to gallop ahead. If the table top is in reasonable condition, leave it bare. However, if it is battered and stained, a plastic tablecloth will make the layout more presentable. Ask yourself, "Would I want to eat at this table?"

The next essential items are paper plates to set the jars of honey on. Keep a few plates in reserve in case of extreme messes. Honey tasting is a bit drippy and sticky, so try to keep the inevitable mess to a minimum. You can write the floral source and state or region on the plate – "Tupelo, Florida" – which makes identification easy.

We will take some clues from professional tasters of such things as coffee, tea and wine. Keep the quantity to be tasted very small and provide something to keep the taste buds fresh. The best way to keep the quantity small is to use plastic coffee stirrers. You can obtain a box of 1,000 (you needs lots!) very reasonably at shops that carry party supplies. Some beekeepers use toothpicks, but often there are people who find that toothpicks have a "wood" taste, not very appetizing. Spoons, even the smallest plastic ones, are totally unsuitable. The quantity delivered on a spoon will quickly overwhelm the taste buds, and after a few samples, everyone will be totally sick of tasting mouthfuls of "sweet." Put a number of paper plates around the table and label them "used sticks." You can provide a selection of palate fresheners: small wedges of lemon, small cups of water (not too icy cold) and some tiny plain crackers. With such a selection the tasters can make a choice. Encourage a leisurely pace and lots of conversation to give those taste buds a rest. You may wish to arrange the honeys from mild to strong and suggest that the tasters progress in that order, just as wine is tasted from dry to sweet.

One last thing, and this is essential whenever honey is involved – have a small bucket of water, a washcloth of some sort and a roll of paper towels handy. Spills and sticky fingers can be gracefully cleaned up. (Why is it that whenever I get near a jar of honey I get sticky fingers?)

That's the basic layout. However, a few additional touches can make the tasting more attractive and interesting. Do you have an old road atlas with a page for each state? Now is the time to cut it up and put it to use. Display the appropriate state's page with each jar of honey. If the state is a big one, add a dot or an arrow indicating the area where the honey is found within the particular state. A bit of geography never hurt anybody. If you wish, you can cook something using honey from different areas. True, you may have to request two one-pound jars from some beekeepers if you plan to do any cooking, but it is very interesting to taste the differences honey can make in a recipe. Honey marshmallows or a dip or spread for bread are good choices. Such foods are quick and simple to make and can be a fitting end to a honey tasting. Even if you don't cook something, a handout of recipes is always appropriate. For citizens, a handout could certainly include a description of natural granulation, how best to store honey and how to return crystallized honey to its liquid state. (You'd be surprised at how many

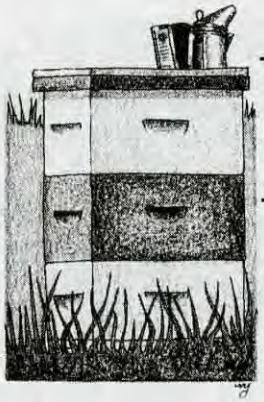
people throw out naturally crystallized honey as being "spoiled.") Everyone might not be familiar with the various floral sources. What does fireweed look like? Sage from the west? Gallberry? A handout giving a short description and a few important and interesting facts about each plant would be a valuable addition to the honey tasting. If you are fortunate enough to find some pictures, so much the better!

Now for some variations on a honey tasting. If you are making the presentation to a beekeeping group, you may wish to make all or part of the tasting a "guessing game." Select a few honeys that your area beekeepers might have tasted before and cover up the labels. Hand out a scorecard that lists the unknowns, possibly with a few clues. You can even give a choice of floral sources. The person with the best score can receive a prize how about a jar of honey?

Citizens can vote for their favorites. Here, everyone is a winner. If the organization is looking for funds, and you are not planning another honey tasting, you can auction or raffle off the jars of honey at the end of the meeting. If you do plan another tasting presentation, clean up the jars and store them in a freezer to prevent crystallization. Sometimes labels pop off in the freezer, so put each jar in a small plastic bag. You can re-stick the labels when the jars thaw out.

The evening's presentation is over. What are your plans for tomorrow morning? Of course. You will sit down and write nice thank-you letters to your contributors. Include some of the highlights of the tasting and comments about the different honeys. Perhaps your success and fun will encourage those beekeepers to organize a honey tasting. In this way, honey will become wonderful and special, not just another spread for toast. BC

Ann Harman has been writing about cooking with honey on these pages for several years, and has been giving cooking demos with honey for even longer.



BEE TALK

richard taylor

"What kind of location do you need? What's the best pattern for supering? How do you clean up equipment? These are some of the questions still to be answered."

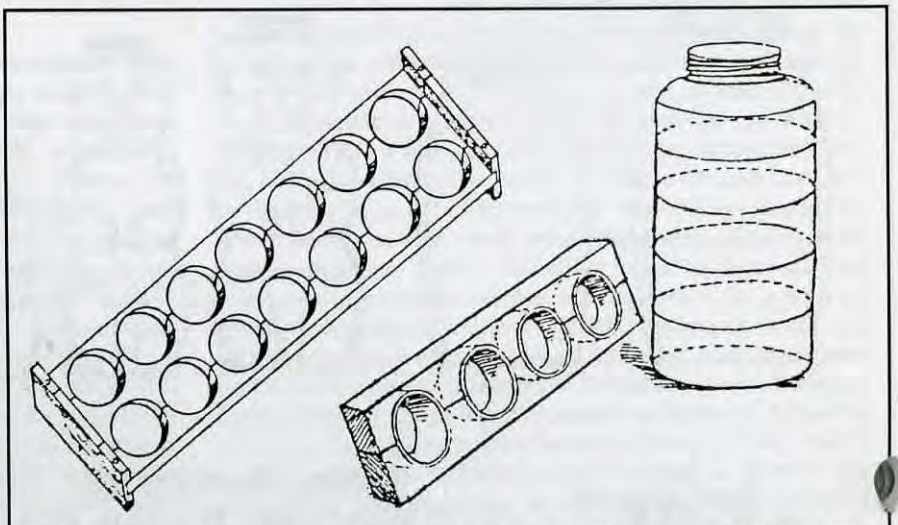
Last time, I began a discussion about comb honey, and once I get started on this topic, it is hard to stop. So I'm going to continue on, first with a bit more of the background of modern comb honey production, and then to the basics, aiming all this primarily at the back lot beekeeper who wants to make some money from his bees without becoming a full-time commercial beekeeper. This description seems to fit a lot of people.

I wrote last time of the introduction of the circular plastic section. This has so totally revolutionized comb honey beekeeping that I think just a bit more needs to be said. It was my good luck to be, mostly by accident, where I could witness this development from the start, and the way it came about needs to be more widely known.

The circular section was first suggested in an article in *Gleanings In Bee Culture* in 1888 by an obscure beekeeper known only as "The Rambler." His idea was to drill auger holes in a board, line the holes with wood shavings and let the bees build their little combs in them. This idea obviously has no merit whatever. But the following year, there appeared in the same magazine, in an article by Mr. T Bonner Chambers, what seems to have been a precursor of the modern round section. He suggested getting round glass sections by somehow slicing up glass jars and inserting these "slices" in wooden frames, four per frame. His drawing for this idea bears such a striking resemblance to the modern circular section one wonders whether that might be where the modern invention really came from. No one will ever know, but I doubt it, based this on my personal acquaintance with the modern inventor.

In any case, it was a retired physician and hobby beekeeper, Dr. Wladyslaw Zbikowski, who invented the modern circular section. He lived in Dearborn, MI, and ran small ads in the bee journals suggesting that beekeepers could get 25¢ a pound for their honey, and inviting inquiries. The ads carried no hint of what lay behind this suggestion, namely, the circular section, and even the editor of *Gleanings*, I learned, did not know what the doctor was advertising. Anyway, in 1956, I happened to be in Detroit for a couple of days, so I got in touch with this beekeeper, in nearby Dearborn, to see what was going on. He showed me his invention, and I was thunderstruck. Something told me this might be important. So I took enough of the equipment home to Rhode Island with me, to make up several supers – supers which, incidentally, I still use – and tried them out. This system proved instantly successful, and for the next 20 years I went about proclaiming the merits of these still relatively unknown circular sections. Dr. Zbikowski had revolutionized comb honey production, but he was not a good businessman, and his invention was years – indeed, almost two decades – getting off the ground. He had turned his attention to other inventions, none of which ever proved of any value, and largely lost interest in this one. I, meanwhile, struggled to keep the circular sections before the eyes of beekeepers, but it was slow going.

Sometime in the mid-70s, I'm not sure which year, I spoke to a large



Early forerunners of round sections. Drawing on left, from 1888 Gleanings *(pg. 798) shows "The Rambler's" crude wooden frame. On right is Mr. Chambers' more ingenious wooden frame, into which he inserted glass rings cut from a jar, from the 1889* Gleanings *(pg. 42).*

audience of beekeepers in Ohio, and I passed a circular section, beautifully filled, through the audience. Most of them had never seen one. But in that audience was an amiable gentleman by the name of Tom Ross, an architect and sideline beekeeper, who expressed keen interest in this round section. That turned out to be the beginning of another chapter in the story of the round section, and a very interesting one. It will suffice to say that Mr. Ross undertook the mass production and sale of circular section equipment soon after and today, under the name Ross Rounds, his company manufactures virtually all – indeed, I believe all – of the plastic equipment used in producing circular sections – rings, frames and covers – plus a few ancillary items such as labels. It has been a most gratifying thing to watch, and my friendship with Mr. Ross, meanwhile, has enriched my own life immeasurably.

That is a bit of history that should, I think, be on record. Some of it has been told before, but some has not.

So now let's turn to the basics of producing comb honey. What kind of location do you need? How large can your apiary be? What is the best cycle and pattern for supering? How do you clean up equipment after use? What do you do with unfinished sections? How do you market comb honey? How do you control swarming? These are some of the questions that need to be answered.

First of all, it needs to be reiterated that you must not try to produce comb honey in a marginal area. If you are producing extracted honey, then it does not matter if the flows are slow and overlapping, or if the combs are travel-stained and not completely filled, but comb honey sections must be filed quickly and completely. A round section should be filled, not just to the sides, but right up to the very edges of the rings, and it should not be seriously darkened by travel stain. The sale of inferior comb honey is a tremendous disservice to beekeeping generally, because anyone trying comb honey for the first time, and not liking it, will probably never try it again. And there are still lots of people who have yet to try it for the first time.

Most of the Midwestern states and Canadian provinces are good comb honey areas. In the East and in the South, such areas are harder to find. One rule is that beekeeping can flourish where dairy farming flourishes because the soil there supports the many clovers, but of course there are other good areas, too.

So, being located in a primary area, how many colonies can a given apiary site contain before reaching the limits of efficient production? There is no clear answer to this one. It seems to me that, in a heavy flow, you can have a very large number of hives, 50 or more, in the same spot without the colonies competing for nectar, but I, for no reason that I can give, like to keep my apiary size down to about 25, more or less. I have three apiaries of about this size, some a little smaller.

Hive size is critical. The two-story hive has become almost standard among commercial beekeepers where winters are severe, the idea being that lots of room is needed for the winter stores necessary to get through to spring. Actually, hive size is not nearly as important as hive weight. Often, in the spring, a two-story hive will be found to have almost no honey in the bottom story, so that is, in effect, space and equipment largely wasted. It is in the spring that the winter stores are most needed, for the brood rearing that gets going then, in the period known as spring buildup, puts a heavy demand on these stores. Bees do not need an enormous amount of honey just to get through the winter. They need it to build up strength in early and mid-spring.

A two-story hive is, in any case, too big for comb honey production. The best honey all ends up in the hive instead of in the supers. It is one of the commonest complaints of beginning beekeepers that they cannot get the bees to work in the supers. The explanation for this is always either (1) the hive is too large, (2) the honey flows are too weak, or (3), the colony itself is not strong.

Most of my comb honey is produced over one-and-a-half-story hives, that is, a deep hive body plus an extracting super, the latter being on the *bottom*, for reasons to be made clear later. I have about concluded, however, that a single-story hive may be better, *provided it is managed correctly*, which means, provided it is very heavy *with honey* before winter begins. I get just as good crops from these small hives, and they seem to winter over just as well as the larger ones, even without any winter wrapping. My hives are never wrapped for winter, as I consider this a time-wasting error which often causes more harm than good.

There is lots more to be said, so readers of this page will be reading about comb honey for some time. BC

Richard Taylor raises bees, produces comb honey and writes boks about beekeeping from his home near Interlaken, NY.

INNER ... Cont. From Pg. 64

ever the opportunity arises. Insurance is a pessimistic topic, and having it is an expensive necessity of modern life, and modern beekeeping.

Be prepared.

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Beekeepers in New Zealand have a problem. Well, not all of them. Just those who sell queens and bees. And not even all of them.

A good number of bees and queens are produced in New Zealand and sent to distant points. For real distant points, like Canada or Korea, the planes that carry them need to stop for fuel. They do that in Hawaii. That's where the problem comes in.

The beekeepers in Hawaii are concerned that when one of those planes are on the ground, some of those New Zealand bees will take a short vacation, and bring with them some exotic New Zealand bug.

When New Zealand first asked if it was O.K. to refuel in Hawaii, those in the U.S. who were responsible for the decision honestly didn't see any danger – either financial (competition), or health (see below). The beekeepers on Hawaii were a bit more involved and thus a bit more concerned. Basically, as I understand it, to do this requires a change in the Honey Bee Act of 1922, allowing bees into the U.S., a pretty sound rule, in my opinion.

The beekeepers on Hawaii are, indeed, very concerned. At least some of them. Not because, as you may first think, out of fear of the competition for expanding markets. Rather, they have a more fundamental belief. It is felt, by those most involved that the possibility of contamination is great enough to stop altogether those planes from even landing. Their argument is that Hawaii, which does not have either mite, nor, at least as is known now, some of the other nasties that affect bees, should remain a repository for U.S. bees free of all these nasties, plus genetic contamination from African honey bee stock. That seems to make a good deal of common sense. At least to me.

But of course it isn't quite as simple as that. First, there is some difference of opinion on whether New Zealand's bees are free of those things Hawaiian beekeepers want to keep in New Zealand. And, it seems, there are all manner of these in question – a mite, several viruses and a couple of diseases. Enough, I suspect, to require a second look.

The other side of this debate, certainly, is are the bees in Hawaii indeed free of those nasties? And, if they are, are they tough enough to withstand the onslaught once they reach the shores of the U.S.? Both questions do need to be answered.

Then there's the political issue of free trade which seems to be muddling things up even more. Canada and other places think they should be able to buy these bees, and they are probably right. It's just that landing-in-Hawaii thing in the way.

Maybe you feel this is important, too. If so, write your Congress and Senate people and let them know you want Hawaii kept clean or, at least, free of the chance of contamination. Or, perhaps you think transit should be allowed, in the interests of free trade, another source of bees, or, just because.

But I'm not so sure. In this case I think that 1922 law makes sense. There are too few places that have the seemingly uncontaminated resources those islands offer. My vote goes to those who wish to keep those vacationing New Zealand bees at home.

Kim Flottum

Detach or Photo Copy & Return

BEE CULTURE SURVEY - February, 1995

Tell Us What You Think

1. How long have you been a subscriber? _____

2. How many of the past six issues have you read? (Circle one)
   1 2 3 4 5 6

3. Do you like the cover of this magazine?
   ☐Yes ☐ Somewhat ☐ No

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	Extremely	very	somewhat	not at all
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Mailbox - Readers	☐	☐	☐	☐
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Craft Fairs - Peter	☐	☐	☐	☐
Prospecting - Edwards	☐	☐	☐	☐
A Bouquet In A Jar - Green	☐	☐	☐	☐
Observation Hives - Caron, Webster	☐	☐	☐	☐
Swarm Catcher - Truesdale	☐	☐	☐	☐
Removal Update - Simon	☐	☐	☐	☐
Elbow Room Old Timer	☐	☐	☐	☐
A Taste Of Honey - Harman	☐	☐	☐	☐
Bee Talk - Taylor	☐	☐	☐	☐
Gleanings	☐	☐	☐	☐
Calendar	☐	☐	☐	☐
Classified Corner	☐	☐	☐	☐
Bottom Board - Scott	☐	☐	☐	☐

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

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

?Do You Know Answers?

1. **True** A fertilized egg can develop into either a worker or queen honey bee. Female differentiation depends on the type of food the developing larva is fed during the first three days of its life. Larvae that receive a constant diet of royal jelly during larval life will develop into queens, and those whose diet, after the second day of larval life is switched from royal jelly to worker jelly, honey and pollen will become workers.
2. **True** Since a drone honey bee develops from an unfertilized egg, all of its hereditary traits come directly from the queen. It is often stated drones do not have a father but have a grandfather.
3. **True** Adult bees can maintain themselves over an extended period of time on a carbohydrate source (honey or sugar) but the development of body tissue, muscles, and glands such as the brood food glands depends upon adequate amounts of protein (pollen or a suitable substitute).
4. **False** Nurse bees begin to visit cells as soon as eggs are laid and continue at frequent intervals throughout the duration of the egg and larval stages.
5. **True** Food transmission between worker honey bees is a form of communication concerning the availability of food and water. In addition to functioning as a distribution system for nutrients in the colony, the behavior also serves as a medium for transmitting pheromones important for the cohesion of the colony.
6. **False** While drones have the reputation of being helpless, they are capable of feeding themselves from open cells of honey. When they first emerge, however, they are primarily fed by workers, apparently beginning with brood food and gradually changing to honey by the time they are seven days old, at which time they feed themselves.
7. **False** Both Africanized and European honey bees have barbed stingers and can sting only once.
8. **False** House bees handle the forager's nectar load as they return to the hive from the field and initiate the ripening process, whereas, a pollen forager selects a cell and deposits her load directly into it.
9. **False** Adult honey bees have two types of eyes, compound and simple eyes, but the honey bee larva does not have any eyes.
10. **True** During the first two days after hatching, nurse bees continuously supply the tiny larvae with far more food than can be consumed, so the larvae appear to float in the milky-white food.
11. **False** Queens but not workers produce functional venom at the time of adult emergence. Since virgin queens frequently kill their sisters by stinging shortly after they emerge in the broodnest, the immediate availability of toxic venom is essential.
12. **True** The venom sac of the queen contains about three times more venom than that of the worker.
13. **True** In younger workers that are producing larval food, the mandibular glands are involved in brood food production, particularly 10-hydroxy-2-decenoic acid, which is the main lipid (fat) component of larval food.
14. F) Arnhart (Tarsal) Glands
15. D) Hypopharyngeal Glands
16. A) Salivary (Labial) Glands
17. I) Poison Gland
18. H) Wax Glands
19. C) Koschevnikov Gland
20. B) Mandibular Glands
21. A) Salivary (Labial) Glands
22. B) Mandibular Glands
23. Mandibular and Hypopharyngeal Glands
24. Bees coming in contact with the dancing forager will become familiar with the odor of the floral source she was working and possibly receive a taste of the nectar from her.

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

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

Gleanings

FEBRUARY, 1995 • ALL THE NEWS THAT FITS

Nominations Wanted
EAS AWARDS

The James I. Hambleton memorial award was established by the Eastern Apicultural Society of North America to recognize research excellence in apiculture. The EAS Student Apiculture award was established to recognize students studying apiculture at the undergraduate or graduate level in a recognized college or university in the United States or Canada. The awards for 1995 will be presented at the annual meeting of the society in Wooster, Ohio.

Nominations are now being accepted for both awards. This is an excellent opportunity for the beekeeping industry to recognize the research excellence of its members. Undoubtedly, many deserving researchers are bypassed for this recognition for lack of a sponsor.

Each award nomination must include a biographical sketch of the nominee, a list of his/her publications, specific identification of the research work on which the nomination is based and an evaluation and appraisal of the accomplishment of the nominee, especially of work in the last five-year period for Hambleton award nominees (or a shorter period for Student nominees). Two letters of recommendation supporting the nomination are also required.

Nomination and letters of recommendation should be sent to Clarence H. Collison, Box 9775, Mississippi State, MS 39762 and received as soon as possible.

News From E. Europe
NEW VARROA BOOK AVAILABLE

Here in North America we've 'enjoyed' the presence of *Varroa* for only a few years. But of course in Europe beekeepers have much more experience with the mite, in varied conditions and using a number of different control measures.

In eastern Europe, the former Soviet-bloc countries, *Varroa* has been a fact of beekeeping life for more than 25 years. The barriers which kept us from sharing in this experience have now gone, and now we can learn from them much more easily.

An important step was taken recently in pooling knowledge on *Varroa* in Europe. The International Bee Research Assn. organized a specialist workshop for scientists from both eastern and western Europe, where researchers gave presentations on their work and held discussion groups to plan future collaboration.

The results are now out. *New perspectives on Varroa* will bring readers up to date with what's happening in European *Varroa* research and beekeeping practice, with contributions from 18 countries. Four review papers look at interactions between *Varroa* and pathogens, breeding honey bees tolerant of *Varroa*, control methods and the impact of this parasite on beekeeping. Twenty-five technical articles are organized into five sections on *Varroa* biology, honey bee susceptibility, chemical control, other control methods and the issues that *Varroa* poses for beekeeping. There are also reports from discussion groups on current concerns and plans for future research.

Many topics important for the future are under discussion in Europe. Breeding resistant bees; using non-chemical control, plant oils and heat treatment; problems with fluvalinate resistance; developing new chemical controls – are covered in this volume.

New perspectives on Varroa, edited by Andrew Matheson. Available from International Bee Research Association, 18 North Road, Cardiff CF1 3DY, UK. Fax (011) 44-1222-665522. Price $US26.00 including postage.

ROYAL QUEEN COMPANY RECEIVES TRAINING GRANT

Maryland's Governor William Donald Schaefer visits with John Klapac (right) of the Royal Queen Co. and Hoss Parks, beekeeper apprentice, at Smith Island. The company has just received a substantial grant to train administrative assistants and queen breeders in order to maximize the potential of the ARS-Y-C-1 mite resistant stock that is being propagated on the island. The 1994 queen breeding season was challenging and started off with an unusually severe April. John feels that with the increased staff and equipment, along with the experience gained this season, next year will go more smoothly. The biggest challenge was to show that queens could be produced in the lower Chesapeake Bay region. Now that it has been done, I will concentrate on reaching economies of scale and a trained staff is where it has to begin. Assistance in obtaining the grant was provided by Tom Laidlaw, Somerset County Office of Economic Dev., Dr. Tom Handwerker, Univ. of MD, Eastern Shore, and Dr. Mark Wasserman, MD, Dept. of Ec. & Employ. Dev.

Sarah Sherman, a junior at Kittatinny High School, was crowned Sussex County, New Jersey, Honey Queen at the Sussex County Farm and Horse Show.

Save The Hedgerows!

BEE FORAGE THREATENED IN IRELAND

A European Union scheme which will pay farmers to operate in an environmentally friendly way poses a threat to the survival of Ireland's 23,000 apiaries.

And after protests from the 2,000-member Federation of Irish Beekeepers, a spokesman for Teagasc – the government agricultural and food development advisory service – said the regulations will have to be reviewed.

Under the Rural Environmental Protection Scheme, Irish farmers who want to qualify for the environmental grants will have to render all hedges on their land stockproof. That means trimming down mature hawthorne hedges and briars which are a prime source of nectar.

Federation secretary Peter O'Reilly said destruction of the mature hedgerows will cause even more hardship for beekeepers after three straight years of poor yields caused by exceptionally wet summers.

Beekeeper Sean Tracy of Athleague, County Roscommon, said the only way to makes hedges qualify for the payments was to trim them to allow growth at the base. That would remove blossoms.

"The hedgerow clause will mean the destruction of hedges vital for honey collection, hedges that are sometimes 150 years old and a thing of beauty," Tracy said.

The alternative would be to string the hedges with unsightly barbed wire or electric fence and that was expensive and unlikely to be chosen by farmers.

Teagasc environmental specialist Joe Hall said the hedgerow clause as currently outlined created a dilemma.

"The clause was never intended to damage any wildlife, nor do we want a manicured landscape like they have in England," Hall said. "I think it is something that will probably be reviewed."

To make sure the review is conducted the association said it will ask the ministry of agriculture to change the regulations to allow the hedgerows to survive intact and continue their role in the country's beekeeping industry.

The Fort Bend County Beekeepers Association recently presented Mr. Sid Talley with a hand-scrolled, framed, proclamation for his long service to local beekeeping and this Association.

There were 34 members and guests at the Bar-B-Que dinner to honor Mr. Talley. The presentation was made by Association President, Elton Reynolds, left, along with Bouche Mickey, right, the Fort Bend County Agricultural Extension Agent and Beekeeper Association sponsor. Also pictured is Mr. Talley's wife, Grace.

In late October, the Kansas Honey producers crowned an Easton, Kansas woman to serve as the 31st Kansas Honey Queen.

Amy Sachse, daughter of Richard and Sue Sachse was crowned at the Kansas Honey Producers fall convention held in McPherson, Kansas.

Strength In Numbers

COMMODITY GROUPS GROWING

Watermelon producers, handlers and importers voted in a November referendum to amend the Watermelon Research and Promotion Plan, according to the Department of Agriculture (December 7). The amendments will eliminate the refund of assessments provision, assess watermelon imports and add importer members to the National Watermelon Promotion Board. Lon Hatamiya, Administrator of USDA's Agricultural Marketing Service said, "Of those voting, 61% favored eliminating refund of assessments and 81% favored assessing watermelon imports and the addition of watermelon importers to the board." The plan is authorized by the Watermelon Research and Promotion Act, and the referendum was conducted by USDA. The Act requires a simple majority of votes to approve such changes.

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USDA will increase the assessment rate paid by egg producers to the American Egg Board by amending the Egg Research and Promotion Order. The new assessment will be 10¢ per 30-dozen case of commercial eggs, double the current assessment of five cents per case. The new rate goes into effect February 1, 1995. The increase was approved by egg producers who voted in a national referendum during the fall of 1994. The increase follows a 1993 amendment to the Egg Research and Consumer Information Act, which authorized an increase. The Act authorizes the Egg Research and Promotion Order.

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Agriculture Secretary Mike Espy has named 18 members and three alternates to the United Soybean Board. All appointees will serve three-year terms beginning in December. The 60-member board is authorized by the 1990 Soybean Promotion, Research, and Consumer Information Act. There are also three temporary members whose terms expire in December. The order provides for an alternate member for each state or region with only one member on the board. Alternates will serve terms that coincide with the terms of members from the state or region which they will represent. The Secretary selected the appointees from soybean producers who were nominated by Qualified State Soybean Boards.

Free Booklet From ADF

GROW TREES THIS YEAR

Now is the time to plan ahead for spring tree planting, and a free booklet is available from The National Arbor Day Foundation to assist.

Called "Conservation Trees For Your Farm, Family & Future," the booklet uses colorful photos and illustrations and easy-to-understand descriptions to guide tree planting and care.

"This new booklet is part of a multi-organization effort to help farmers and ranchers make trees an integral part of sustainable agriculture," John Rosenow, the Foundation's president, said.

The Conservation Trees booklet includes features outlining 12 productive uses of trees:

• Riparian Filter Strips • Alley Cropping •Tree Plantations • Wildlife Habitat • Living Snow Fences • Trees for Livestock • Farmstead Windbreaks • Woodlot Management • Field Windbreaks • Specialty Crops • Trees for Recreation Areas • Multi-Purpose Plantings

Conservation Trees For Your Farm, Family & Future is a cooperative program of The National Arbor Day Foundation, the National Association of Conservation Districts, the National Association of State Foresters, and the United States Department of Agriculture: Agriculture Research Service, Agricultural Stabilization and Conservation Service, Extension Service, Forest Service, and Soil Conservation Service.

For your free booklet, send your name and address to: Conservation Trees, The National Arbor Day Foundation, Nebraska City, NE 68410.

SUGAR MARKETING ALLOTMENTS REVISED

The second quarter revision of sugar marketing allotments and allocations for fiscal year 1995 have been announced (Dec. 30). In accordance with provisions of the Agr. Adjustment Act of 1938, as amended, the Secretary of Agr. has re-estimated U.S. sugar consumption, stocks, production, and imports, and determined that sugar marketing allotments should continue for fiscal year 1995. Based on the current supply-demand-price situation, reasonable ending stocks are estimated to total 1,172 thousand short tons, down 106,000 tons from the Sept. estimate. This results in the overall allotment quantity continuing unchanged at 7,889.

Obituary

MARGARET SWAN ARNOTT

Margaret Swan Arnott passed away at Scarborough General, Sunday, December 3rd after a lengthy battle with leukemia.

She was the wife of the late Jack Arnott, Original Editor and Publisher of *Canadian Beekeeping*.

She will be sadly missed by her son, William, current *Canadian Beekeeping*, editor, his wife Terri, daughter Anne Bartlett and her husband, John and grandchildren.

A memorial scholarship has been established to acknowledge Jack and Margaret's combined interests in education and life-long learning, in young people and in beekeeping. Donations may be made to: The University of Guelph, Jack and Margaret Arnott Memorial Scholarship, Development Office, Alumni house, Guelph, Ontario N1G 2W1.

Miss Julie Batton, American Honey Princess, 1994 attended the Kentucky State Fair this past summer.

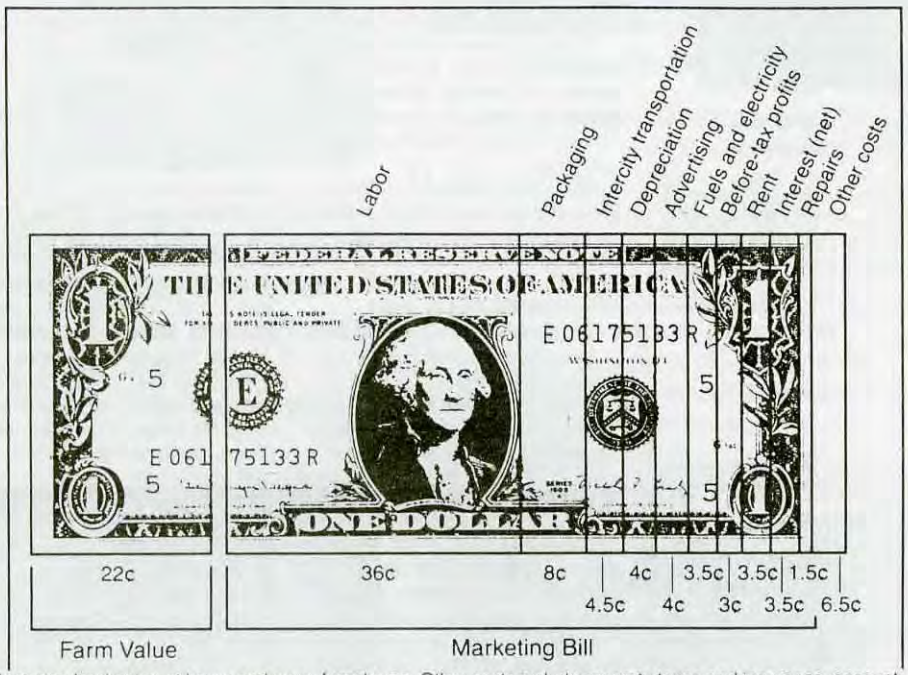
During her stay in KY, Mr. Robert Horn took Julie to the Water T. Kelley Co.

Julie is standing in an outer room with a statue of a man holding a skep. Beside them is a picture of the "Kelley" Co. Logo.

The people at the Kelley Co. were most hospitable to Julie.

The OK Beekeepers Assn. held their fall meeting in OK City where Mr. Jim Grayson of Grayson Three Bees presented the beekeeper of the year award to Mr. Doug Bemo who is a member of the Indian Nation Beekeepers Assn.

What a dollar spent on food paid for in 1993



Includes food eaten at home and away from home. Other costs include property taxes and insurance, accounting and professional services, promotion, bad debts, and many miscellaneous items.

I made up that quotation. It's my submission to *Bartlett's*, however one does that. It expresses one of the dominant ideas that run through my life. It's my mantra. I like its decisiveness. I like how it seems wrong at first blush, but upon clear inspection, makes sense. Finally, I like its enigmatic quality.

Just what does this statement, or quotation if I may, have to do with beekeeping? If my hunch is right, it expresses an important philosophical underpinning of why we do bees. You see, doing bees is, to some extent, our way of thumbing our noses at the materialistic culture we live in. It says we don't care about that hectic race of life – the pursuit of money, power, status and the trappings of the good life. It's our way of being out of step with the great, hulking, conventional-minded, ritual-bound majority. It's our badge of independence.

Now, I know that doing bees is not just this. There are all kinds of motivations for doing bees – from the love of science to the demand for pollination to the desire for a sideline income (which goes against my anti-materialist idea at first glance). But, frankly, most beekeepers I know – and I've met hundreds of them in my 14 years of active hobbying – are what I would call bedrock people. People who feel that getting and spending is not what existence is about. People who are curious rather than avaricious. To use Oliver Wendall Holmes' metaphor, people who see life as painting a picture, not adding a sum. Such people think it more sensible to cut down spending to pay for the unnecessary, rather than to work so hard that there is no downtime. Of course, these people know how to be resourceful, by using it up, making it do or doing without.

Beekeeping is a labor-intensive work for which the payoff comes in dribs and drabs. Even the process of harvesting honey – spinning all the drops out of two frames at a time – demands infinite patience. The activity is also humbling in that we are often fooled and made to look foolish. Nothing is more distressing than watching a swarm depart and being unable to do a thing about it. And certainly, there is no glamour in dealing with these insects; it's a down and sticky business. With such parameters, the sort of persons who get involved are not "fat cats."

Even those who do it for a sideline income aren't really hustling for the buck. Listen to my friend David Hunter, of Santa Barbara, CA, who earns $1,000 a year from his 10 to 15 hives: "To me, it's a good utilization of my land. If I didn't keep bees, I'd feel I'm not doing my part. The money is kind of bribe money to my family, showing it's not a complete waste. For sure, there are easier ways to make $1,000 a year."

To test my thesis is not easy. You could survey a random selection of beekeepers. Give them a list of 10 things in life – money being one of them, a nice car being another, an important job being a third, and have them arrange the list in order of importance. Then do the same with a random group of non-beekeepers (citizens), and compare responses. My guess is that many more beekeepers would place the material things on the bottom than would non-beekeepers.

On a more informal level, I have never met a yuppie beekeeper. I have never had a power lunch with another beekeeper. I have never known a beekeeper who is a member of a country club. I have never heard a beekeeper speak with that callow ring of know-it-all authority. Have you? I have never met a beekeeper who drives a prestige car. Scratch that – one beekeeper I know drives a stretch limo, but that's out of pure eccentricity, not pretentiousness. That's it – to be a beekeeper and to be pretentious are incompatible. And pretentiousness is one quality I link to upward-strivers, who believe money is the key to the good life.

Not that there aren't successful people who are beekeepers. I know a well-to-do surgeon who has been keeping several hives for years. Dr. M. lives in a nice house near the coast, and no one would say he's denied his family anything. Yet, you only have to know the man to see that materialistic concerns are not what moves him. Dr. M. operates by the beat of his own iconoclastic drummer.

"Only the impoverished need to be wealthy." We beekeepers understand that sentiment and have deliberately chosen an alternate path. To an extent, the above quotation defines our being.

Now how about sending those recommendation letters to *Bartletts*.

"Only The Impoverished Need To Be Wealthy."

howard scott