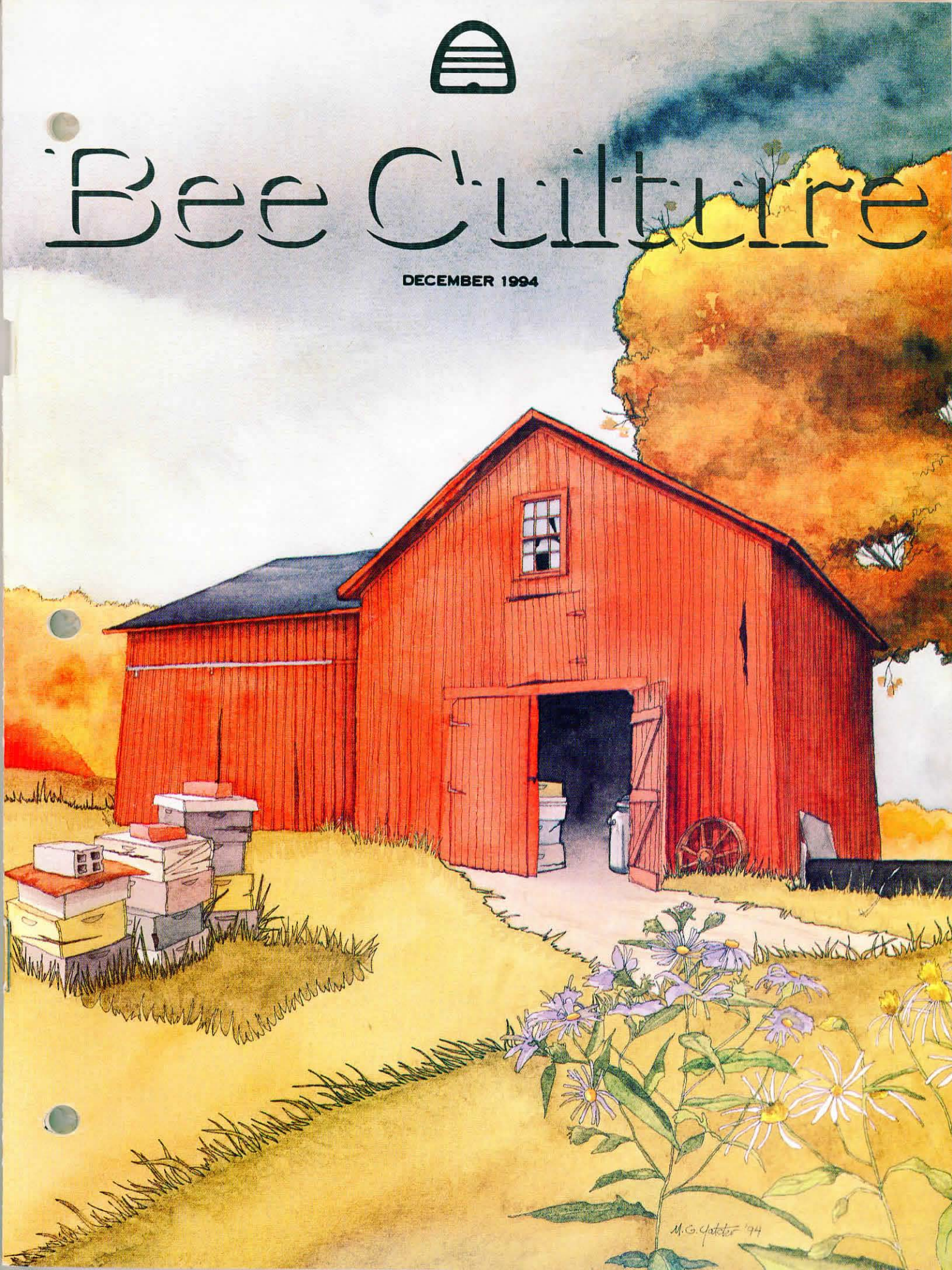
Bee Culture

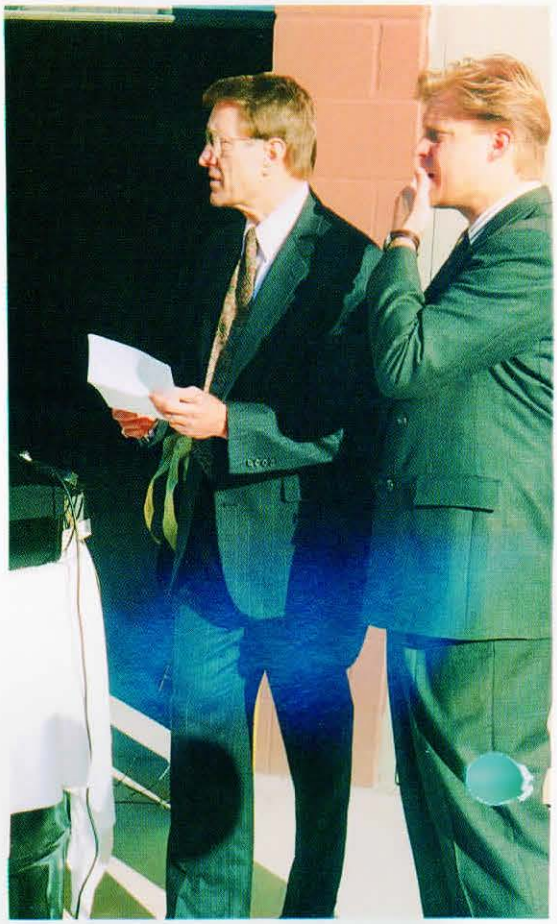
DECEMBER 1994



Concurrent with The Root Company's 125th Anniversary, was the opening of their Brand New Production Facility. Present to cut the opening ribbon were (L-R) Virginia Waltz (61 year employee), Medina Mayor James Roberts, County Commissioner Patricia Geissman, U.S. Representative Sherrod Brown, State Representative Wm. Batcheldor and State Senator Grace Drake.

125th Anniversary

It was in eighteen hundred and sixty-nine that Amos Ives Root formed this company which bears his name. And now, 125 years later, we have reached a milestone of which select few companies can boast. In an historical context, 1869 seems to be light years and generations away The Civil War had ended in 1865, and the tremendous advances in transportation and communication were still only a dreamer's idle thoughts. The world was truly a much larger place. But this business, even in its founding days, was not unlike one today The same issues which Amos faced then - cash flow, inventory levels, sales, capital improvements, employee relations, expansion .transcend time and culture. This celebration of 125 years has not been achieved through coincidence or luck, but by hard working men and women who gave of themselves. It is a celebration of the human spirit, and serves as a true testament to all of which Amos Ives aspired. On behalf of the Root family and all our team members, we say Thank You and offer our warm and sincere wishes for a bright and prosperous future.



President John Root (L) addressed the crowd of 75 invited guests at the Grand Opening Ceremony, Ribbon Cutting and Plant Tour. Vice President Brad Root (R) assisted in the Ceremony, Tours and Ribbon Cutting.

Decem

COLUMNS

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ber '94

FEATURES

Nucs, Pg. 682

1994 READER'S INDEX

Authors • Book & Video Reviews • Subjects • Titles • New Products • Obituaries

All by page and month

INNER COVER

I'm a news junkie. I can't get enough of what's happening here, there, anywhere in the world, what it means and how my life, or American agriculture, or specifically, American beekeeping will be affected. I regularly read a dozen or so news magazines – from *The Nation* to *Rolling Stone* to *Newsweek*. I watch (or listen to, actually) one local and two national news programs every night I'm home and absolutely revel in the three hours of hardcore stuff that's on every Sunday morning. No, I don't have cable, which is probably good, because CNN would easily become an addiction, to the detriment of my job and other important things in life – besides the news, that is.

I share this bit of background to lend credibility to a couple of conclusions I've reached. The first is the oft heard phrase, "The news is the same, it just happens to different people." In the short run, that seems all too true. Car accidents, crime, local and national corruptions, political upheavals . . "The more things change, the more they stay the same" seems the norm.

But the daily "news" isn't isolated. Cars run into each other until stoplights are installed at dangerous intersections; crimes are driven by social and cultural events that evolve over time, people keep trying to take what's not rightfully theirs in ever more ingenious ways, and the politics of cities, states and nations do not and will never remain static.

Which leads me to "Change with the times." This month there's a story about the A.I. Root Company opening a brand new factory for manufacturing candles. Not supplies for beekeepers, but candles for churches and homes.

Beekeeping has changed. Fewer people are keeping bees, there's an expanding global market for both supplies and honey, increased mechanization at the production level

The Root Company has changed its focus to keep the business a viable force in the community – for its employees and to meet a changing world.

They have gone, in 125 years, from manufacturer of beekeeping supplies, to huge honey packer, to specialists in beeswax candle production, to, now, the maker of top shelf home decorative candles.

You do what you do best or you don't survive, and The Root Company has done all of these well. They've met the challenge of a changing world and not only survived, but thrived. Though their focus is no longer on producing supplies for beekeepers, they have grown and prospered in this new industry. And in so doing remained an integral part of the community and the lives of the people who earn their livelihood working here.

And that's the news from Medina, Ohio, December 1, 1994.

Root Company Success; What Is "Local Honey," Really?

A good friend asked me recently what the definition of "Local" honey was, or is, actually. My first thought was, "Well, the answer is pretty obvious, and why is he asking me anyway? There really are more important things to worry about." I sometimes get too big for myself. It's a fault, I admit, and I didn't think about it much, or at all, really.

But he persisted. And persisted. He wanted an answer, and he wanted it soon. And that persistence on his part forced me to think about "Local" honey. (I'm not perfect, but I learn fast.)

So, what is "Local" honey? When you really think about it the definition can be pretty, well, sticky. I did some asking around and came up with several answers. The first is fundamentally artificial. Honey produced in your county is "Local," right? Maybe a three or four county area, as

Continued on Page 694

Reader Assistance

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Circle Appropriate Months: J F M A M J J A S O N D

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Circle Appropriate Months: J F M A M J J A S O N D

Bee Culture is available on microfilm from: University Microfilms, Inc., 300 N. Zeeb Rd., Ann Arbor, MI 48103

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.

Next Month

January begins not only a new year, but heralds the beginning of two ongoing series we are *very* excited about.

The first is our year-long look at observation hives – the how, when, where, why and all the things you can do with them, all year long. Dr. Dewey Caron, University of Delaware, and Dr. Tom Webster, Kentucky State University have done an outstanding job of scouring the country for absolutely every bit of information on observation hives. You will not be disappointed.

To follow up, a bit, on that first article, we have a great overview on bee space, and what it means and what you need to know so you don't violate that fundamental principle. And, with that, there's a practical article on building an "Observation Apiary." You can put one of these at your local nature center and give the public a perfect look at how a whole apiary works – safe, sound and easy to watch.

Parasitic Mite Syndrome. Something new that researchers are finding is detailed in a talk Dr. H. Simanuki gave at the Empire Honey Producer's meeting in November. We'll have all about what it is, what it looks like, and best of all, how to avoid it, in an easy to understand, down-to-earth article, next month, too.

There's more, of course. Bee Eggs. Making Your Own Success in Beekeeping. Feral Bees, and lots more. What a great way to start the new year. Right here in *Bee Culture*.

FLASH

The U.S. International Trade Commission (ITC) has ruled that U.S. honey producers are being harmed by imports of honey from China.

By a 6-0 vote on Nov. 14, the Commissioners returned their preliminary affirmative determination in the antidumping case the two U.S. national beekeeping organiations have filed against Chinese honey imports, saying the domestic industry is being injured or threatened with injury. More details in the Jan. issue.

We neglected to include the address of Really Raw Honey in our article in the September issue. It is: Really Raw Honey Co., 1301 S. Baylis St., Baltimore, MD 21224, (410) 675-SAFE (7233)

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

29¢

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

MAILBOX

Supports Kraft's Ads

Several Florida beekeepers have complained to me about honey products that contain little or no honey. They feel that these companies are practicing deceitful advertising. I did a brief survey of honey products where I shop and found that about half the honey products indeed contain little or no honey.

I understand that many beekeepers were incensed by the Kraft advertisement showing honey dripping from a hornet's nest and have communicated their anger to Kraft. Please reconsider your stand. At least Kraft is advertising honey and is using 100% honey as a sweetener in their Honey Dijon Dressing.

The artist's rendition of a hornet's nest dripping honey was not intended to mislead the consumer. The use of fructose and sucrose as primary sweeteners in a product which proclaims to be a honey product is misleading, however.

If you prefer artistic correctness, buy Wish Bone. It has a skep on the label, but it has high fructose corn syrup as the main sweetener. Or you may try Hidden Valley. It has less honey than salt. If you have written a critical letter to Kraft, please take the time to write another and tell them that you appreciate their use of 100% honey as a sweetener and thank them for supporting the beekeeping industry by advertising honey.

Read labels and advise everyone you can to read labels claiming honey use in their products. I have bought Hall's Honey Lemon cough drops since they came on the market and I am very upset to discover they contain absolutely no honey. These are the companies to direct your displeasure to.

You should also keep in mind that products that demand crispness, such as cereals, crackers and nuts, cannot use honey as the primary sweetener. Buy the brand that has honey listed nearest the front of the ingredient list.

The Florida Department of Agriculture and Consumer Services, Food Safety Division, is considering actions that may be taken to eliminate deceitful honey products from the market in Florida. I would encourage other states to consider similar action.

Support those companies that support the beekeeping industry. Kraft is at the top of the list.

Laurence P. Cutts
Apiary Inspect., FL

Don't Get Excited

I am responding to Mark Kellberg's letter in the September issue of your publication. This letter was regarding a shipment of bees (1 package) that was sent to Hawaii and confiscated by the Dept. of Agriculture. Mr. Kellberg embellished this story to portray the California queen breeders as trying to poison the Hawaiian bees with mites. He projects this to be because of ill feelings and an extremely aggressive stance toward those of us who raise queens in Hawaii.

It could be true but I don't believe it. It is hard enough for a queen breeder to keep track of all the regulations of all the places on a yearly basis. This was a package ordered by the wife of a hobbyist beekeeper who had moved here from the mainland. She ordered it for a birthday present. It could happen.

I say "hats off" to the State Dept. of Ag. for having to put up with all the first amendment rights of privacy and following this package from the Honolulu post office to the Maui post office (a 20 min. flight) and then following the local postman to the man's house to tell him it was not allowed. Thanks also to the gentleman who said he was not aware of the law and turned the bees over to be destroyed. It's a complex world.

I must add it would be foolish for beekeepers to dream too much about keeping bees in a tourist area. Especially if it is in the state of Hawaii. You talk about mandated health care, we've had it for 17 years. We used to think California was bad for Workman's Comp. premiums. Think again. Next time you look at a check for pollination or package bees, enjoy it. You won't get one in this state. Do you want to live in a place where the cost of living is 40% higher than the mainland? One trip to the grocery store or the gas station will answer that. $1.80 per gal. for gas and $4.80 for milk! Have you ever tried to make a large sum of money $6 at a time. Go for it.

Mr. Kellberg may be right on the money but I'm not ready to throw in the towel on the people of this industry just yet. I have many friends in this industry and in the same business. I don't get to see them very much because it costs so much to get off this rock. It always looks greener on the other side, but in this business it's just a lot of work.

Aloha.

Gus Rouse
President & Owner,
Kona Queen Hawaii Inc.

Cyberspace Beekeeper

I knew that when I renewed my subscription to *Bee Culture*, I was signing up with pioneers. Now that you have established your presence

Continued on Next Page

MAILBOX

in Cyberspace, I am proud to be associated with your group and continue to read this in your periodical.

Beekeeping in agriculture has now been updated to include beekeeping infoculture.

I join you and other cyberspace beekeepers as we learn about creating a virtual beekeeping network on the Internet.

Paul Cronshaw DC
DRPABLO@aol.com
cronshaw@rain.org

Looking For Gold

Can you please help me locate Golden Bees. We have heard that they are very domestic and easy to get along with – not aggressive.

We would like to know if anyone has some so that we can get a start to raise them. Thank you.

Larry Waddelow
733 S. - 1100 E. Box 93
Greentown, IN 46936

Email Yellow Pages

My recent articles about the use of electronic mail and computer access for beekeepers has generated a lot of response from readers. Likewise, I have received numerous requests for email addresses and means of contacting individuals involved with beekeeping.

I am now posting on Bee-L and other beekeeping systems asking interested parties to provide information which will assist others in making contact with them. This project will be extensive and will take time to complete. Fortunately, Geary Wong, another cyberspace fan and beekeeper offered to assist. Together, we believe we can make a beekeeping "Yellow Pages" become a reality.

Geary and I want you to supply your particulars for the list. Whether you are a researcher, commercial beekeeper, hobbyist, supplier, writer, pollinator or just have an interest in bees, we want to hear from you. While we would like an email address to include, we do not include this as a requirement.

Please supply your details in the format shown below:

NAME:
POSTAL MAIL ADDRESS:
TELEPHONE/FAX NUMBERS:
EMAIL ADDRESS(ES):
STATE IF YOU ARE A RESEARCHER, COMMERCIAL, HOBBYIST, ETC.
-if researcher, what area of research interest
-if commercial, hobbyist or other, what is your interest(s)

We have heard from numerous people and want to hear from you. We want to make this list of worldwide importance in helping people with common interests. You can make it a success.

To be included, contact either myself or Geary Wong at the addresses below:

Stan Kain
P.O. Box 1599
Atascadero, CA 93423-1599
Email: stankain@delphi.com

Geary Wong, RPh
6141 D Thorton Ave.
Newark, CA 94560
Email: gewong@netcom.com

Regulations & Resistance

Debates, arguments, fights – wonderful! This is exactly what we need as there has been much too much agreement among beekeepers about most everything pertaining to bees.

Dr. Roger Morse, page 208 *Bee Culture*, April 94 suggests we drop all regulations, almost, more on that later. Bob Cox in July 94, page 387 says essentially this is about the most stupid suggestion he has ever heard. He doesn't say it that way, those are my words, he is much more polite. Well let's look at the problem of regulations and why they should be either changed or dropped.

Regulations, Federal and State, are usually formulated at beekeepers' requests. The beekeepers go to their state Dept. of Ag. with a request to formulate regulations to control a problem, say AFB. The Dept. of Ag. says we have no money so they both go to the state legislature and ask for an appropriation to implement the regulations. The Federal government's regulations are a bit more complicated but essentially they have to have the beekeeping community behind them when regulations or laws are passed concerning bees. What this is saying, which most of you already know, is that beekeepers determine whether you have regulations or not.

What the regulations SHOULD be doing is encouraging beekeepers to develop disease resistant stock, taking advantage of the genetic and behavioral information on bees which has been developed. But they don't.

When a colony shows one or two cells of disease, most likely the queen heading that colony is resistant to AFB and should be left alone except fed a bit of terra. Colonies with hundreds of cells of AFB spores should be fed terra and requeened. Regulators should assist all beekeepers in conducting the frozen brood test to determine those bees which have hygienic behavior because it has been shown that hygienic bees are resistant to AFB, EFB, chalkbrood and most recently the *Varroa* mite.

When I came to France four years ago I had all new equipment and no AFB. I contacted two commercial beekeepers asking them what they did with colonies which contracted the disease. They burned them as most beekeepers in America do. I asked would they give them to me, sure. I fed them terra, requeened them with hygienic stock and now have healthy colonies.

We encourage letters to the Editor about any subject or topic, whether appearing here previously or not. Our Mailbox is a sounding board for new ideas, a forum for discussion and a Billboard for opinions. Send your contributions by regular mail, Fax at 216-725-5624 or E-Mail at BCULTURE@AOL.COM.

MAILBOX

Developing total *Varroa* resistance will be more difficult than AFB resistance but it is certainly worth going after and resistance to *Varroa* will not develop unless high levels of the mite are maintained in colonies. It comes down to survival of the fittest.

Now Dr. Morse suggests that importation of new stock be limited to a select few persons. I think the import regulations should be removed altogether, why not? Other people in the world are developing bees resistant to bee diseases and pests. Why limit this advantage to a few government officials or University people?

Steve Taber
Goudous, France

Cleaning Solar-Wax Melter

In the July issue (p. 421), Pat Morris, Newfield, NY, asked: "How can you clean up a solar wax melter after melting dark combs in it? It is a real mess." My friend Richard Taylor advised: 'Scrape it out with a big spoon or stick on a summer day, when it is soft .

I doubt that Pat got his money's worth because I don't think Richard fools around with a solar wax melter on a regular basis.

I suggest the following: First, if used, discard the hardware cloth base – cited in the books – that goes over the resting pan – it's absolutely unnecessary. Second, put a sheet of freezer paper – or better yet, two sheets – waxed side up or down (makes no difference) over the base of the drip pan (the roll sold 18" wide, fits perfectly in the width of mine). Third, place the dark comb in recycled panty hose, either in the legs or the waist or both and close with a bread wrapper tie. Once the sun has done its job, discard everything: the melted wax is in the collector pan and the drip or resting pan is clean! Incidentally, don't forget to put a layer or two of three-inch milk filters over the mouth of the drip pan above freezer paper.

After my first mess in 1976 (following the books), I learned the hard way, developing the above method myself. I use this system for producing blue-ribbon wax which normally comes in first in any show I enter. But the whole process must be crystal clean and the collector pan should preferably be Teflon-coated and of heavy aluminum construction, like a one-pound loaf pan.

Incidentally, stretch the top of the pantyhose over a bucket for ease of filling.

John Iannuzzi
Ellicott City, MD

Carolina Winter Comment

I am writing about the article by Mike Hood and Stephen Bambara (Carolina Winter) concerning cough drops as a treatment for tracheal mites.

I have been raising bees since 1955 so am no newcomer. I was also a bee distributor for a bee raiser from down south for 10 years. Ten years ago I started raising my own bees and making crosses with different races and now I have a complete strain of my own.

About five years ago the local bee inspector came and took a sample of my bees and sent them to the state bee inspector for tracheal mite inspection. I got an answer in late January saying I had a bad case of mites. I couldn't believe it as I had a good honey year, so I called him and he said wait until March and then let me know. Come March I lost 50% of 65 colonies so that spring I started using Menthol. After two weeks the bees left all the frames above and below the menthol so I took it out and started using Halls Mentho-Lyptus Ice Blue cough drops. I check my bees on a weekly basis so every week I put a cough drop on the frame rest. I only run nine frames and they take one per week and in the fall I put in two cough drops. That fall when I wrapped my bees and left half with cough drops and half with Crisco patties, the following spring I came through the winter with 100% live colonies. After that I have only been using cough drops. I still have winter loss, but not from mites as when I lost my bees from mites in the spring. There were hardly any bees left in the hive. The ones I lose now are either from queens that are too old (three years) or from mice or starvation.

I live close to Lake Superior and our winters are long and cold. Our last predicted frost here is June 15 and our first frost is predicted for Aug. 15, not leaving much of a honey season.

My bees are confined to the hive from the first part of October to the last part of April before they can start gathering pollen from our willows and I feel this would really be an advantage for the mites.

It takes from 85 to 90 lbs. of honey to winter our colonies here. I take my honey by the end of August and some years in Sept. If there is good flying weather and the queen doesn't cut back on brood raising they will consume a lot of honey in this period and that's where the starvation comes in – in early spring.

I winter my bees all in brood boxes and leave three boxes on for winter. This year was a bad year but last summer I had a good year and my best hive gave me 35 lbs. (full depth frame) of honey and still leaving here about 85 lbs. for winter figuring the frames at six pounds. That would give me 210 lbs. Being I only run nine frames they are filled out a lot thicker than running 10 frames.

As I said I have my own cross of bees which winter a lot better.

I am a steady reader of *Bee Culture* and like the magazine. Thank you.

Gervase Bauer
Carlton, MN

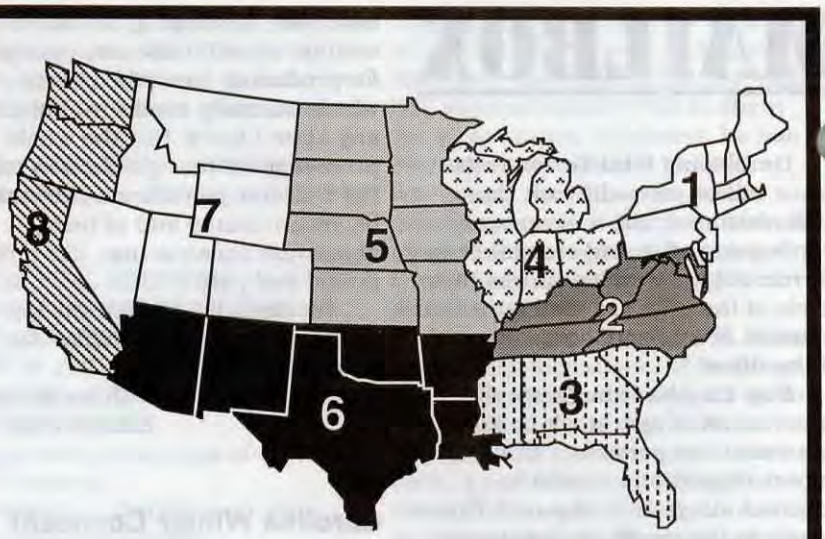
Editor's Note: Although there may be some truth to feeding bees cough drops in this case, the overwhelming amount of information to the contrary suggests, strongly, that there is not enough menthol in several hundred cough drops to effectively control mites. Rather, this reader's winter loss reduction could more typically be related to some level of resistance/tolerance, lack of reinfestation or luck; any of which is a gamble. To reduce that gamble we still recommend menthol (mite-a-thol) in areas warm enough to work, and grease patties everywhere.

DECEMBER Honey Report

December 1, 1994

REPORT FEATURES

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



	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Bulk												
60# Light	39.44	41.13	42.00	38.80	29.40	39.13	42.00	40.05	29.40-56.00	41.00	43.00	43.22
60# Amber	38.23	39.03	39.00	34.60	39.40	39.88	40.00	36.83	25.20-51.00	39.77	40.76	41.09
55 gal. Light	0.55	0.60	0.50	0.52	0.53	0.53	0.54	0.58	0.45-0.90	0.56	0.58	.560
55 gal. Amber	0.52	0.56	0.48	0.47	0.51	0.47	0.50	0.53	0.42-0.78	0.53	0.53	.512
Wholesale - Case Lots												
1/2# 24's	21.41	23.54	23.64	24.36	22.46	19.70	22.50	19.40	17.71-31.00	22.22	22.92	20.98
1# 24's	30.84	31.46	28.00	30.40	28.56	34.96	29.75	28.90	24.00-45.60	31.69	29.74	30.98
2# 12's	28.96	29.66	27.00	28.27	26.40	32.50	29.30	32.00	22.80-43.20	29.91	29.17	28.72
12 oz. Plas. 24's	27.24	29.43	29.66	25.28	22.46	27.44	27.50	24.34	22.46-38.40	28.11	28.13	27.18
5# 6's	28.62	30.38	30.50	31.02	23.00	27.15	28.50	29.15	18.00-38.00	30.11	31.27	29.59
Retail Honey Prices												
1/2#	1.39	1.87	2.00	1.09	1.08	1.28	1.15	1.21	0.99-3.00	1.40	1.45	1.21
12 oz. Plastic	1.58	1.76	2.00	1.56	1.38	1.68	1.65	1.45	1.19-2.00	1.64	1.70	1.60
1 lb. Glass	1.80	1.95	2.50	1.73	1.76	1.99	1.85	1.68	1.35-2.50	1.85	1.93	1.79
2 lb. Glass	3.17	3.38	3.50	3.23	2.97	3.20	2.98	3.93	2.09-4.25	3.30	3.36	3.16
3 lb. Glass	3.99	4.87	4.50	3.50	3.86	3.82	4.35	4.70	3.50-5.70	4.54	4.47	4.29
4 lb. Glass	4.96	5.87	5.50	3.82	4.44	5.46	5.15	6.25	0.45-7.40	5.46	5.75	5.77
5 lb. Glass	6.53	7.18	6.50	6.61	6.25	5.85	6.10	6.33	5.49-8.95	6.79	7.07	6.50
1# Cream	2.09	2.57	2.38	1.86	1.92	2.43	2.10	1.96	1.49-3.50	2.15	2.50	2.52
1# Comb	2.94	2.59	2.75	3.07	2.74	3.73	3.75	3.75	1.99-4.50	3.08	3.16	3.31
Round Plastic	2.83	2.75	2.91	2.91	3.50	3.53	2.91	3.36	1.70-4.00	3.04	3.04	2.78
Wax (Light)	1.74	1.54	1.65	1.50	2.33	1.85	1.35	1.43	1.25-4.00	1.74	1.65	1.61
Wax (Dark)	1.30	1.23	1.45	1.25	1.35	1.08	1.15	1.24	1.00-2.75	1.31	1.31	1.23
Poll. Fee/Col.	27.27	23.50	30.00	32.50	25.00	16.25	35.00	32.00	12.50-55.00	30.19	30.69	31.50

MARKET SHARE

Average prices are down a few percentage points across the board since last month. Atypical for this time of year, given increased seasonal sales. The amount of product that moves, both retail and wholesale continues to increase, though. Selling more for less is *not* the direction to go. Specialize, specialize, specialize.

Region 1

Honey sales strong with reports of shortages in some areas. This is for both retail and wholesale sales. Prices strong and heading up. Colony crashes this fall ran occasional to often with from 5-40% losses recorded.

Region 2

Sales at retail level strong and increasing, mostly seasonal and new crop sales. Wholesale prices and sales steady. Colony crashes prevalent, but not to the degree in other parts of the country. Losses of 5-50% reported, but only rarely.

Region 3

Sales, and prices steady to strong in most areas with specialty crops leading the way – especially on price. Colony crashes so for not too devastating, but some reports coming in. These will increase as winter deepens and brood is reduced.

Region 4

Sales reported brisk at retail level in areas of small outlets (farm markets, craft fairs, etc.). Large retail and wholesale sales steady, but prices very competitive, mostly due to imports. Colony crashes *very* common here, especially in colonies not treated in spring.

Region 5

Retail sales strong now, but wholesale prices very, very competitive. Imports a factor, but surplus is to. Lots of concern over the fate of the China ordeal. Colony crashes common in most places with colonies not spring-treated. Migratory outfits almost completely free of problems because of timely treatments.

Region 6

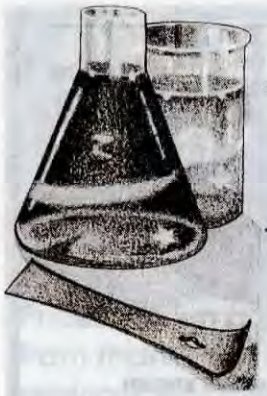
Sales and prices generally steady both at the retail level (fairly strong) and wholesale level (generally weak). Imports very obvious here, with some country-of-origin labeling problems. Colony crashes light early, but untreated colonies in trouble if not treated. Yellow jackets reportedly at epidemic numbers.

Region 7

Sales picking up as cooler weather moves in especially at retail level. Wholesale still strong because of shortages due to extreme pesticide losses in high producing areas. This has masked other problems.

Region 8

Sales a mixed bag at retail level. Tourist areas depressed, but much of the region steady to increasing over last year. Wholesale sales and prices weak, primarily due to import competition. Colony crashes reportedly lower than last year – beekeepers learned the hard way then.



RESEARCH REVIEW

roger morse cornell university ithaca ny

"Sound management, and predictable behavior may be developed to ensure maximum production from AHB."

Studies in Costa Rica using 20 colonies of mixed Africanized-European background showed that these bees have more laying workers than do European bees. There were great variations between these colonies, but in two there was a large number of active laying workers before queens matured from emergency cells. However, once the queens emerged, mated and started to lay eggs, the laying workers stopped producing eggs.

It has been reported earlier that laying workers develop much more rapidly in African honey bee colonies than they do in European colonies. Brood and developing queen cells inhibit the development of laying workers in colonies of European honey bees but not in African colonies.

It is much too early to draw any conclusions regarding how colony management will change in some parts of the Southern United States as Africanized bees and their hybrids occupy more territory. However, we see from the above that there will probably be small changes in behavior, such as finding more laying worker eggs in a colony, and realize that it is not a serious affair.

African Honey Bees

The same waggle dance that honey bee scouts use to indicate the direction and distance to a food source or home site may be used by African bees to signal a long distance migration. Colonies in Africa may migrate when there is little or no food available. The studies on migrating bees discussed here were done in Botswana using two frame observation hives. The experimental colonies were excavated from natural nests.

In the two colonies under observation, it was found that the migration dances, which indicated distances of six to 10 miles, could be seen nine and 10 days, respectively, before the bees absconded. Thus, migrating is a serious matter that involves days of preparation in much the same way that swarming does. Interestingly, individual bees performing the migration dances did not always indicate the same distance. This suggests to the authors that the dances were for the purpose of indicating a direction, not a distance.

It was not difficult to distinguish migration dances from those used to indicate food since they often occurred at times when bees were not foraging. Also, the dancers did not stop periodically to share food with recruits as do scouts giving information about a food source.

But how do the dancing bees know what direction to take? The authors pointed out that, in this instance, the dancers indicated the direction of the prevailing winds. This causes me to ask several questions. Could they smell something? It doesn't seem possible that scouts might search for food sources many miles away, but maybe they do. Is this a genetic thing, and do the bees have a built-in direction? Do European honey bees ever migrate long distances? As the amount of Africanized genetic material increases in the U.S., these will be interesting questions to ask. And ways of preventing migration may become important to beekeepers in this country.

Asian Honey Bees

Studies were made in Thailand concerning the migration of the giant honey bee in Asia, *Apis dorsata*. This bee is about twice the size of our honey bee, and colonies build only a single comb, usually outdoors under a large limb. In their concluding remarks, the authors state that the dance language plays an important role in the migration of this bee, too. This supports the conclusions made in the paper above to the effect that migration in honey bees is not a haphazard affair that happens without preparation. This, too, means there are signs that beekeepers may see.

The research on the giant Asian honey bee showed that migrating colonies, arriving at their destination, search among locations for that which appears best. In other words, they don't necessarily accept the first site where they land even though it may have been occupied by another swarm the year before (I should add parenthetically, and this is not mentioned in the above paper, that there are no data to suggest that swarms return to the same nesting site year after year as do some species of birds.) However, swarms that abscond leave empty comb behind, indicating that it may be a lack of food that stimulates migration.

From the point of view of practical beekeeping, we learn again from the giant Asian honey bee that migration is a planned, well-designed affair. This supports the thought that when African bees are well settled in the U.S. their management may be different from that which we use with the European honey bee, but they do act in a rational manner. In other words, sound management schemes may be developed to encourage maximum production from them. BC

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?DO YOU KNOW?

Winter Survival

clarence collison

In most areas of the country, winter is an extremely stressful time of the year for honey bee colonies. Fluctuating temperatures, long periods of confinement, moisture buildup within the hive, mites, Nosema and inadequate food stores are just a few of the conditions that impact colonies during the winter.

How familiar are you with these conditions that affect colony winter survival? Please take a few minutes and answer the following questions to determine how well you understand this important topic.

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

1. ___ Nosema is a bacterial disease that affects both larvae and adult honey bees.

2. ___ Queens infected with Nosema cease egg-laying and die within a few weeks of infection.

3. ___ Nosema disease is transmitted within the colony by spores being spread by bees.

4. ___ The highest levels of Nosema infection are found in late fall.

5. ___ Nosema-infected bees live approximately only half as long as non-infected bees.

6. ___ Newly-emerged adult bees are always free of Nosema infection but are as susceptible as older bees.

7. ___ A larva suffering from European foulbrood has an abnormal demand for food.

8. ___ Dysentery is most prevalent in late winter or after periods of long confinement and is caused by improper food.

9. ___ The vegetative stage of Nosema apis is not infective.

Multiple Choice Questions (1 point each)

10. ___ Nosema infection develops mainly within the:
    A. Rectum
    B. Epithelial cells that line the mid-gut
    C. Malpighian tubules
    D. Hypopharyngeal glands
    E. Hemolymph (blood)

11. ___ The only antibiotic that is effective and registered against Nosema disease is:
    A. Terramycin
    B. Fumidil-B (fumagillin)
    C. Sodium sulfathiazole
    D. Streptomycin
    E. Aureomycin

12. ___ The fastest killing brood disease associated with a honey bee colony is:
    A. American Foulbrood
    B. Stonebrood
    C. Sacbrood
    D. European Foulbrood
    E. Chalkbrood

13. ___ Sacbrood is a honey bee disease that is caused by a:
    A. Bacterium
    B. Fungus
    C. Protozoan
    D. Mite
    E. Virus

14. Dissection of adult honey bees is the most reliable method for the beekeeper to determine if a honey bee colony has Nosema disease. Describe the mid-gut of both a healthy and an infected honey bee. (2 points).

15. A colony will starve in mid-winter even though there is plenty of honey in the lower brood-food chamber(s). Explain why a colony will starve if there is little honey in the upper brood-food chamber and may also starve if the upper brood-food chamber is honey-bound. (2 points).

16. Explain why more colonies die in late winter/early spring than during the coldest part of the winter. (1 point).

17. Please explain why an upper entrance for a wintering colony is desirable. (1 point).

18. Explain where you would find tracheal mites and varroa mites within the hive during the winter. (2 points)

19. Within the winter cluster, heat production and heat conservation are two important functions related to survival. Describe how honey bees accomplish these two tasks. (2 points)

20. Explain why feeding sugar candy is preferred over feeding sugar syrup in mid-winter when a colony is found short of food stores. (2 points)

ANSWERS ON PAGE 698

THE SIZE OF A LARGE PINHEAD

Bee Brains

mark winston

Each of us has many identities, different aspects of our personalities that are expressed in different situations. We may be one person in church or synagogue, another at work, yet a third person tossing down a beer after work and still another person in the privacy of our home with our family. My colleagues at work may consider me an intellectual, academic type of person, interested in the pursuit of knowledge and study, and someone who behaves in a very "professional" way. They would be surprised to get in my car with me after work when I turn on one of my many country music tapes and listen to Tanya Tucker whine about heartbreak or sing along with Travis Tritt about how the whisky "ain't workin anymore."

I began thinking about this while flying back from Paris in August after attending a meeting of social insect biologists, at which one of the major topics was bee brains. The meeting was held at the Sorbonne, one of the oldest universities in the world. We were surrounded in those hallowed halls by intellectual history, the walls hung with huge oil paintings depicting the great thinkers of old making discoveries and teaching them to their handfuls of pupils. Our lectures were delivered in theatres hundreds of years old, where centuries ago, French scientists were presenting their work without the aid of slide projectors and pointers, with only their brains and their ability to think and speak as tools.

This meeting allowed me to express one of those personalities of mine that beekeepers might find odd, especially any of you who regularly read this column and have figured out that I think scientists should do at least some practical research and should be able to communicate what they do simply and clearly. At this meeting, I listened to talk after talk about basic bee biology with virtually no practical relevance to beekeepers and very little potential for ever leading to a commercially useful application. Even worse, I heard some of the most respected scientists in the world present talks that were so technical and convoluted that it took all of my concentration to even begin to understand them. Nevertheless, I enjoyed myself because I kept thinking about the world from a bee's point of view.

I learned enough at this meeting to know that calling someone a "bee brain" should be considered a major compliment rather than a mild insult. The brain of a worker bee is about the size of a large pinhead, yet bees are able to use their brains to behave differently in different contexts, much as my academic persona quickly shifts to my country music personality when I leave work. I already knew that bees could learn, that they have memories, and that individual bees can make decisions about what work to do depending on colony requirements. At these meetings, I learned that we are beginning to understand, not only what bees can do, but also how bee brains and hormonal systems provide simple mechanisms and rules that can lead to complex behavioral decisions.

One of the most complicated things that worker bees do is make their way to flowers, determine how to extract nectar or pollen and then find their way home. All this comes after the bees have spent their lives until then inside the nest, doing tasks such as brood rearing or comb building that provide little or no information about how to forage. A human analogy to the female worker bee would be to raise a girl inside her home without ever allowing her out of the yard, then suddenly send her out as a teenager to the supermarket a few miles away to find sugar on the shelf, figure out how to buy it and then make her way home.

Foraging requires all sorts of new information for a naive bee to survive outside, find food and successfully return to the nest. The young worker bee brain is fine inside the nest but is not physically adequate to accommodate these new skills. Rather, a worker bee's brain undergoes physical changes to accommodate the new information needed to forage. Recent work conducted here in North America by Susan Fahrbach, Gene Robinson and their student, Ginger Withers at the University of Illinois has shown that bee brains grow prior to foraging, thus providing new "gray matter" to store and process the information needed to forage. Further, the whole brain doesn't expand, but only certain regions enlarge – those

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"The brain of a worker bee is about the size of a large pinhead, yet bees are able to use their brains to behave differently in different contexts, much as my academic persona quickly shifts to my country music personality when I leave work."

BEE BRAINS ... Cont. From Pg. 677

that may be important for providing memory space to retain information about flight and foraging.

This research group and others also have determined that the change from hive duties to foraging is mediated by a hormone called juvenile hormone. This hormone is low in young bees, then rises prior to their becoming foragers. However, colony conditions can influence the secretion of this hormone within bees, so that a colony can regulate if and when hive workers change to foragers. For example, if you remove most of the older foraging workers from a colony, the level of juvenile hormone will increase in some of the remaining young workers and they will become foragers within a few days. The next step in this research will be to investigate whether the juvenile hormone is responsible for changes in brain configuration associated with foraging. If so, then we will have established a direct link between colony conditions, hormone secretion and brain structure that can explain the mechanism by which a bee not only "knows" when to become a forager, but also how it happens.

However, these types of functional linkages are only a small part of understanding what it means to be a bee. What a bee knows, and indeed if a bee can "know" things at all, was another major topic at these meetings. An entire day-long symposium was devoted to cognition in social insects, mostly bees, and the speakers each attempted in his or her own way to determine whether bees have knowledge and can think. Scientist after scientist got up and described how he or she recorded electrical potentials from bee nerves going to and from the brain, put worker bees into the bee equivalent of rat mazes and watched them try to reason their way out, trained tethered bees to extend their tongues following various signals and painstakingly dissected and mapped bee brains and nerves following applications of various dyes and labels that highlighted active parts of the brain.

My mind kept drifting away from the talks, connecting to the ghosts of scholars past whose histories filled the room, and I thought I heard the great philosopher Descartes deliver his famous line about whether we humans really exist: "I think, therefore I am." I imagined Descartes and his pupils centuries ago trying to determine whether bees "know" what they're doing, whether an individual bee or a colony has some understanding of thinking and existing. The work I was half listening to in my dreamy daze didn't seem to be providing any answers, nor did the research about bee brains and hormones tell me whether cognition in bees exists or not. Even my Descartian hallucinations failed me; the abstract and imagined ramblings of wigged and perfumed philosophers centuries ago didn't seem particularly relevant to bee thought.

I did, though, begin thinking about an experience that all of you have had but may be hesitant to talk about because it might seem flaky. That is, I'm sure you have all felt "tuned in" to your bees as if you were inside the colony, feeling for yourself what it was like to be a bee. Close your eyes and imagine a bright, sunny day in mid-summer. You're not rushed, and you have the time and inclination to go through a colony purely to see what the bees are doing. Now relax, take a few deep breaths and begin to feel the hum of a properly working nest, the bees walking over your bare hands as if they were comb, the sticky feel and smell of honey and propolis and the underlying feeling that all is right with the hive, that you and the bees know your jobs and are focused on what needs to be done, in harmony with the other bees.

Now, come to and think about what you've just experienced. Think about bee brains and bee knowledge. To me, it's a no-brainer; yes, bees "know" things and understand them from a bee's point of view. The incredibly technical research being conducted today on bee brains and hormones is fascinating because it provides some mechanisms by which we can take bee behavior apart and learn how an individual bee determines what needs to be done and how to go about it. It does not, however, and never will, take us that final step to understanding what it is to be a bee and what a bee knows and feels. Science is enormously interesting because it tells us how things work, but the underlying meaning of things does not present well at a scientific meeting. Rather, life as a bee sees it can best be felt after a few hours in the beeyard on a sunny day, going through hives. It is ironic that cognition, the most intellectual of topics, is most easily understood by a non-intellectual approach, by feel and touch, by drifting away from details and techniques that make up science and tuning in to the world from the bee's perspective, a world we are only beginning to understand. BC

"Life as a bee sees it can best be felt after a few hours in the beeyard on a sunny day, going through hives. It is ironic that cognition, the most intellectual of topics, is most easily understood by a non-intellectual approach, by feel and touch, by drifting away from the details and techniques that make up science and tuning in to the world from the bee's perspective, a world we are only beginning to understand."

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

HIGH DESERT HONEY SUCCESS STORY

julie weinberg

Earning a decent living in rural New Mexico is no easy trick. Many residents of New Mexico's picturesque countryside are compelled to leave in search of employment in the cities. But Gary and Barbara Edwards were determined to stay in Questa, their adopted country town of 20 years. Questa is a traditional farming and on-again, off-again mining community in the heart of one of New Mexico's poorest regions. Set in a valley on the western slopes of the Sangre de Cristo range of the southern Rocky Mountains, Questa is safe, clean, quiet and stunningly beautiful, a place where the Edwards wanted to raise their children.

After years of making ends meet with Gary's carpentry skills, the Edwards turned to the land for support, a common option for area residents who grow alfalfa, cut firewood and raise cattle. But unlike their neighbors, the Edwards chose beekeeping. In 1986, with two young children to support, the Edwards thought beekeeping would provide a steadier living. They bought out a local beekeeper who had decided to get out of the business, and they haven't looked back since.

"We just trusted our intuition and borrowed a lot of money, which was maybe a foolhardy thing to do – borrowing on a whim," Gary said during my visit to the Edwards' foothills home and honey operation on a bright and windy spring afternoon.

The investment wasn't a completely blind leap of faith. The Edwards had been keeping some colonies as a hobby for about five years when they purchased the business, so they had some idea of what they were getting into. Today, their honey business is a prime example of how careful beekeeping, combined with hard work and clever marketing, can support and sustain a rural family.

The Edwards don't keep hives on their wooded property, although they'd like to just because they enjoy having the bees around. Honey-crazed bears are one deterrent, but the honey produced by the foothills hives is of inferior quality. The Edwards need very large areas of preferred nectar sources for their product.

"We like to see at least a square mile of clover if we want to put any hives in a spot," Gary said. Alfalfa, grown for hay, is the most common "clover" in the area. The Edwards have registered every potential commercial honey-producing site in their county (Taos), but due to the arid climate of the high desert and the large forested areas within Taos County, there aren't that many sites that meet the Edwards' requirements. To solve this problem, they also place hives by alfalfa fields in nearby Southern Colorado.

The drought-plagued climate limits the number of plants and flowers that grow wild in the fields surrounding lush acres of irrigated alfalfa. This scarcity reduces the bees' access to non-clover nectar sources and virtually guarantees the unusually light color and fine flavor

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Gary Edwards checks for brood and hive vigor in early spring. The Edwards winter over all their hives in the harsh northern New Mexico winters. Gary said they lose 15-20% of the bees each winter.

Gary tries to get the smoker going on a windy day. Gary figures he drives 40,000 miles annually in the old white pickup next to him.

Gary takes a look at a pile of supers the Edwards purchased from a retiring Colorado apiarist. All needed cleaning and painting.

Gary surveys the scene in the quiet of the extracting room in early spring.

SUCCESS STORY ... Cont. From Pg. 679

that distinguish the Edwards' honey.

"We do have our favorite locations," Gary said. "One of them is way out in the middle of nowhere, called Sunshine Valley, and it's so dry the wildflowers can't grow at all. They raise alfalfa there, and along the irrigation ditches, sweet clover grows, so the honey is so light it's almost like water."

Questa's altitude and low relative humidity also add to the honey's unique character, Gary said.

"There are not many people who produce honey at this altitude," he said. "We're up above most of the pollution, and to New Age nutrition people, high altitude has the connotation of being pure. High altitude whatever – milk, eggs, pollen and honey – it all has the same connotation."

The dry air produces honey with a 15 to 16% moisture content. This makes the Edwards' "virgin" Questa Honey a dense, smooth-textured, natural product. The unfiltered honey crystallizes in about three weeks to a pale, milky white color with a rich bee aroma, subtle flavor and a smooth, spreadable consistency. The Edwards warm the virgin honey in their solar-heated heat room only enough so it can be packed into jars and tubs.

The Edwards' other main product, raw honey, is sold in the more familiar liquid form under their business's original name, Blue Mountain Honey of Questa (After they purchased their business, another local apiary Questa Honey closed down, and the Edwards bought the name.). The raw honey which is quite light in color, is unfiltered and is warmed to no more than 100°F for packing purposes.

Gary Edwards lifts a frame as son, Mark, 11, and daughter, Sonya, 13, watch. Mark has taken a keen interest in the apiary.

Having a thriving apiary and an excellent product is one thing and being a successful business is another.

"When we bought the business from this fellow in Questa, he was selling the honey to two stores, and the rest he retailed out of his home," Gary said. "We realized that not too many people were going to come up here (to the house) to buy, so we started marketing. We now service about 75 stores."

The combination of an unusual location, well-controlled nectar sources, minimal handling and exceptional honey gave the Edwards an angle they

could use to carve their own niche in the local markets, which already had plenty of honey available. Gary said he and Barbara did a lot of brainstorming to come up with ways to make the honey attractive to potential buyers, but they didn't have a hard-and-fast marketing blueprint.

"It was called 'flying by the seat of your pants marketing'," Gary said with a laugh. "We had a lot of ideas that had a potential for working and a lot that didn't."

One idea was to enter the honeys in the New Mexico State Fair and win some blue ribbons, something the Edwards were confident the honey could do. The awards, they thought, would lend credibility to their claims of producing the best quality honey in the state. The idea proved to be a winner when the Blue Mountain raw honey garnered a firstplace award.

The next step was to identify likely outlets and sell the product to them. The Edwards focused on some special characteristics of Northern New Mexico, one being the large and steady flow of tourists into the area. Taos, which is just 20 miles south of Questa, and Santa Fe, a full 100 miles south, are perennially popular tourist destinations. The Edwards targeted what they thought to be the best stores in both markets and managed to place their honey in those shops.

The bulk of their summer sales is now generated by tourists in the Taos area, Gary said. However, the Edwards warn against selling to strictly souvenir-oriented, tourist gift shops that sell the honey for three or four times what they paid for it. At that price, the honey barely sells but when it does, the stores make out like bandits.

But the Taos tourist market shrinks substantially when winter rolls around. This is when the Edwards' attention to another special demographic characteristic of Northern New Mexico pays off. The region has long attracted counter-culture, alternative lifestyle and "New Age" types, along with a large artistic community. Concentrated in Santa Fe (population 60,000), this health conscious and trendy population supports three large, natural food stores, an upscale, gourmet-oriented grocery store and numerous specialty food shops. Santa Fe sales now account for about 50% of the Edwards' income from Thanksgiving through May.

To market the honey, the Edwards took it directly to their targeted outlets. They gave samples to the stores' buyers and guaranteed the honey unconditionally. If it didn't sell or if it was returned for any reason, the honey would be bought back or they would find another way to satisfy the store.

"With that kind of service and product, we didn't get turned down," Gary said.

The Edwards instinctively knew that careful follow-up and customer service were essential to keeping their honey on customers' shelves, so they have paid close attention to this aspect of the business. Gary makes the run to Santa Fe every two weeks to re-supply customers, and he has made special deliveries on occasion. Not only has the reliable schedule been good for business, Gary said he enjoys visiting with the customers and personally cultivating valuable business relationships. To manage their Albuquerque customers 170 miles away, the Edwards pay a friend a small fee for distributing there, saving time and money.

The consistent quality of the product is a vitally important selling point, Gary said. If the bees get into too many strong-flavored wildflowers, or if the honey is overheated, the Edwards simply won't sell it.

"We have a non-compromising approach to quality," Gary said. "Just because we make a mistake, we don't pass it on to customers because WE need the money – and that hurts us sometimes."

However, "change" has been an effective marketing strategy. Only it's the packaging that varies, not the quality of the product inside.

"Never stay put with what you have," Gary said. He suggested changing the wording on the label from time to time or changing the size or shape of the packaging. Slight changes mean consumers see something on the shelf that is both familiar and new, making it that much more attractive. Continuing to sell two different products under two different brand names is part of this approach.

Gary believes a "pivotal" aspect of honey marketing is to highlight the local nature of the product. Emphasize the advantages of buying from people you know rather than from a "nameless, faceless" corporation, he said.

"Beekeepers across the country should stress that people should buy from their neighbors because money spent in the community stays in the community," Gary said.

"Local production of food should be supported above all else. We are lucky in New Mexico because New Mexicans are very good about that."

A unique product, coupled with aggressive marketing and excellent customer service, has paid off for the Edwards, as they have been able to remain in Questa and support their family solely with the honey business (Pollen and beeswax sales make up just a tiny percentage of total sales). For the past few years, the Edwards have sold all 40,000 pounds of honey their 250 colonies produced each season.

In fact, demand now exceeds supply. This happy dilemma prompted the Edwards to double their hives in the spring of '94 when they bought out a retiring Colorado beekeeper. At the end of the '94 production season, with extra product in hand, the Edwards' plan is to find a distributor to move the honey into the Colorado market, where they already have a loyal following. They also expect to further expand into the New Mexico market with its thirst for things local.

It's no surprise to readers of this publication that beekeeping for a living is more than a nine-to-five occupation. In the heart of winter, Gary enjoys a standard 40-hour week, but during the extracting season, he puts in 60 or 70 hours per week, with Barbara also putting in full days. Recently, the Edwards' 11-year-old son Mark has been enjoying helping Gary in the field, while his 13-year-old sister, Sonya, helps with sales at the house. For the Edwards, the more than full-time effort is well worth the trouble.

"What a great way to make a living," Gary said. "You're not polluting anything, you're helping all the flowers, you're out in nature, you're your own boss and you're producing a product that makes people happy. You can't do any better." BC

Julie Weinberg is a free lance writer based in Santa Fe, NM, who is now enthused with keeping bees and selling honey.

1001 Uses

N·U·C·S

richard bonney

One of my early conversations about nucs was with a four-year-old boy named Kyle. His father was interested in getting started with bees, and while we were talking about how to go about it, Kyle was nearby, playing with our cat. The father and I discussed equipment needs first and then started talking about the bees themselves. I mentioned packages and nucs as possible starter units. Kyle, seemingly disinterested until that point, jumped up and came over to me to explain that he and his family didn't like nukes and further explained why — radiation, cancer, birth defects and all. It was something to hear, coming from a four year old, and left no question about how his family felt about nukes. Nucs, though, were another matter, and I was able to explain to his satisfaction that nucs are okay.

Actually, nucs are more than okay. Nucs are practically a necessity. Perhaps not every beekeeper should have one, but perhaps every beekeeper should at least consider having one (or more). When I was talking with Kyle's father, I was thinking in terms of a starter unit. Nucs have several other uses. Before getting into that, though, we should have a common understanding of what a nuc is.

A nuc is a nucleus colony—a small colony that has the potential to grow into full size. Depending on how it is to be used, it may never reach that potential, but they all start in about the same way. One may be started by capturing a small swarm, but there is no certainty to this method. Usually, a nuc is taken from a strong, over-wintered colony during the early season. Common sizes are three, four or five frames. I usually keep a couple of four-frame nucs on hand throughout the active season, and I will describe how I make them up. The first requirement, of course, is a nuc box. Mine are made for the purpose and are basically the same as single story hives, but only four frames wide instead of ten.

After selecting the donor hive, I select at least two frames (three if I happen to be working with a five frame box) with substantial amounts of brood and one frame with a substantial amount of both honey and pollen. Whatever adult bees are on these frames go along, too. The fourth (or fifth) frame may be all, or some combination of, brood, honey, pollen or empty cells, depending on the subsequent use to be made of the nuc. Then I shake extra adult bees into the nuc from the parent colony.

This 4-frame nuc box is a handy size and weight for moving. It is easily closed with the rotating 4-position entrance disk which may be open, closed, closed with ventilation and opened with queen excluder.

A standard hive body has been modified to hold two 4-frame nucs. The inner covers are masonite, and the right hand unit has its entrance at the other end.

These are shaken from brood frames to insure that they are house bees. This is especially important if the nuc is to be set up in the same yard as the parent colony, since any field bees will go home to the parent colony after their first flight.

In selecting the frames for the nuc, it is important to first isolate the queen in the parent colony so she is not inadvertently transferred. A nuc needs a queen, of course, so something must be done to provide one. Depending on the planned use of this nuc, there are several choices. The bees may be left to raise their own queen from existing brood, although this is not usually a good move. By its nature, a nuc is small and relatively weak. It does not have the resources to assure a queen of good quality. Further, there will be a substantial time delay until the new queen starts laying. A second choice is to let the bees raise a queen from a capped queen cell, installed as a part of the initial set-up. This is a better method because it shortens the time delay and eliminates some of the uncertainties of rearing, but it is still not the best solution. I prefer to introduce a young, mated queen of good breeding. The new colony then is ready for its new life quickly, and we are assured of a quality queen.

Even though the nuc as set up is given ample stores, I feed right from the start. This is a small colony, and it is automatically under stress. The feeding helps relieve this.

Now, why set up a nuc? We have many reasons. For instance, it is a saleable unit. In these times of mites and Africanized bees, many beekeepers are looking for locally raised bees as starter units. There is a ready market for good nucs. For that matter, perhaps you wish to make increase yourself. Here is a starter unit for you.

Further, a nuc is a resource. Set one up at the beginning of the season and have it available as the source of an emergency queen if you suddenly find a regular colony to be queenless, or use the nuc as the source of a frame or two of brood to strengthen a weak colony. Use it for bolstering a small swarm you pick up. Use a nuc as a source of bees to stock an observation hive. Use it as a queen bank.

Almost any use you make of a nuc will deplete its strength somehow. Removing a queen causes a break in the brood-rearing cycle while the bees wait for their own new queen to start laying. Removing frames of brood and bees obviously reduces population. Using the nuc as a queen bank for multiple queens eliminates brood rearing because the queens are by necessity caged. A nuc will rejuvenate quickly, though, if it is basically sound and healthy.

The Boardman feeder fits into an opening at the rear of the nuc box. When the bees aren't feeding, the feeder can be removed and the opening closed. This arrangement helps to prevent robbing.

If you take the queen in an emergency, you can requeen the nuc at your leisure, or even let the bees requeen themselves, although with the same reservations as stated earlier. If you take a frame or two of brood, they will replace that quickly. A good queen has no trouble keeping a nuc full. In fact, a danger of keeping a nuc on hand without drawing on its resources is that the bees may build up and swarm. In the early season especially, they build population very rapidly. Whatever happens to the nuc, though, all is well if you keep in mind that it is an expendable resource. It may be used and then its population rebuilt during the active season, but in the normal course of events nucs are not wintered over.

If you still have a viable nuc on hand as the end of the season approaches, use it to requeen your weakest colony. Alternatively, distribute the frames in more than one colony. Then store the empty equipment away for next year.

Speaking of empty equipment, nuc boxes are available in several of the beekeeping catalogs in different materials and configurations. The five frame size seems to be the most common, and frames usually are not included. Covers may be telescoping or migratory. Two- and three-frame boxes have been available in the past but they are too small for anything except specialized or very temporary use.

I have always made my own boxes, usually four-frame, but sometimes five, and usually with a permanently-attached bottom and a telescoping cover with inner cover. I have also modified a standard ten-frame hive body to be a double nuc box. This latter has advantages and disadvantages.

First, though, the four- (or five) frame box. If you make your own, and if you choose to attach a board as a permanent bottom instead of making a regular bottom board, be sure to leave plenty of space for queen cells to hang from the bottom bars of the frames. This assures that you can, if you choose, introduce a frame with capped queen cells into the nuc without damaging them. The style of cover is optional but if you will be using your nuc as a queen bank the telescoping style is better. You can place

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Swarming is always a danger if a nuc is left on its own too long. It's a good feeling to have all these extra bees, though.

1001 USES NUCS ... Cont. From Pg. 683

queen cages on the top bars and though the covers may be a little ajar, they will still do their job.

If you choose to use a standard ten frame box to make a double nuc, keep in mind a basic disadvantage. If you are going to move a nuc, say to an outyard, you must take the second nuc also, because its in the other side of the same box. If you are taking the box somewhere to capture a swarm, you may have a similar problem. However, if you expect to keep the nuc box permanently in one place, you have a strong advantage if you are building your own box. You can be in business quickly with some simple modifications to basic equipment.

First, place a divider down the center of a standard hive body. If you use a very thin divider, say 1/4" plywood, you can probably still fit five frames on either side. If you use a thicker divider, slightly off-center, then you can have four frames on one side, five on the other, or thicker yet and have two four-frame units. As you build, have the divider go all the way to the bottom board. Rebuild the inner cover by cutting it in half or make two new ones so that each side can be kept isolated. Staple the bottom board in place and use a standard outer cover. In my double nuc, I chose to block off the front entrance on one side and make a new entrance in the rear to reduce confusion and drifting between the two colonies as they come and go.

Earlier, I mentioned feeding. One method is with division board feeders, but they have disadvantages. For instance, they replace a frame in an already limited colony. I use Boardman feeders instead. Boardman feeders have disadvantages also, one of which stems from being outside the hive where it may attract robbers. Nucs are prime candidates for being robbed since they are small and consequently weak. To reduce this problem, I make an opening in the rear of my single nuc boxes where the feeders can be plugged in. When they are not in use, they are removed and the openings closed off. Bees cannot enter the hives at the rear at any time, and the front entrances are kept small so as to be more easily defended.

One final use of nucs—swarm control. As swarm season approaches and a colony is obviously building up, take a nuc from it—even two nucs if it's really strong. If this is done before the swarming urge actually sets in, it is a long step towards preventing that colony from swarming. And if you really don't want that nuc, then add it back to the parent colony after the swarming urge is well settled.

I don't know how anyone could not want a nuc, though. BC

Richard Bonney is the Extension Apiculturist for the state of Massachusetts and the author of two books on beekeeping.

WHERE THERE'S SMOKE

There's A Happy Beekeeper . . .

jim & derek anderson

When we finally worked up the courage to see how things were going with our very first hive of honey bees, we were filled with anticipation. All of the equipment that we thought we would need had been gathered and was carefully arranged on the ground near the hive stand (we had a single hive at our home in Louisiana at the time). We had even reviewed the appropriate chapters of some of the "How To" books so that our game plan would be fresh in our minds. We *were ready* for this!

When all was set, our bright, shiny new smoker was stuffed with a couple of shreds of old newspaper which were carefully brought to life by a single kitchen match, and we watched as a sparkling flame began to grow deep in the smoker's steel belly. Some very dry pine needles were then crumpled "just right" and pushed in, directly on top of the burning paper tinder. With a few puffs of the bellows and a blessing from Derek that all was in order, the smoker was closed, and pleasant streams of cool, dense, white smoke greeted our eager eyes.

Quickly our veils went on, gloves were secured, and with feelings akin to those of Indiana Jones upon entering an ancient temple containing priceless treasures, the hive was opened. The setting was absolutely perfect, like right off the cover of an old issue of *Gleanings in Bee Culture*.

Perhaps it was because it was the middle of July in coastal Louisiana, or possibly the fact that there was a dearth of nectar in the immediate area had something to do with it, but for whatever reason, the bees didn't take too kindly to the intrusion and began to boil out of every opening in the hive. Having just begun our work with (and study of) honey bees with this first mail order package, we interpreted their energetic activity as a welcoming committee. Wrong! Seemingly in the blink of an eye, honey bees were everywhere! Through the sound of bees rebounding off screen wire very near our faces, Derek said something about how well he thought the veils were performing.

Not daunted in the least, dad reasoned that the thing to do was to show the "girls" just who was in control, and so he decided to fetch the smoker and "calm" the bees with a little of that pine needle smoke. Imagine his surprise to find a shiny, new, totally smokeless smoker sitting on the ground near the other tools. Derek still laughs about it – his rocket scientist dad couldn't even keep a simple smoker lit!

Newcomers to beekeeping as well as the most seasoned, veteran beekeepers – we all have made this rite of passage into beekeeping – watching in dumbfounded amazement as a perfectly lit smoker has gone out at the worst possible time. And like so many others before us, we have tried all sorts of fuels in our smoker – pine needles, pine cones, burlap, rolled-up newspaper, husks from various nuts – and the list goes on. All of this in an attempt to find the "perfect smoker feed" for us, since next to the hive tool, a smoker is arguably a beekeeper's most important tool.

But for a long time, a satisfactory solution to our personal quest eluded us, and nothing we tried seemed to work the way we thought it should. Then, one day while cleaning the house in preparation for our 50-mile move into rural Mississippi, we came across an article published some time ago by the United States Forest Service, describing what they called a "double 55-gallon drum sawdust stove." Their contraption was fueled by very dry sawdust that had been compressed into a tight "plug" inside the stove, and as described, the "plug" burned from the bottom to the top.

A light blinked on. If a "plug" of compressed sawdust worked in a 55-gallon drum, why not in a smoker? As he is a scientist (see the February 1991 issue), Derek reasoned that some experimentation was in order. And so, over time (and between packing boxes for our move), various methods were tried to scale down the U.S. Forest Service's 55-gallon drum technique to apply to our smoker-sized problem, some with reasonable results, others we wished we hadn't attempted.

The trial and error process that took place over the next several months resulted in what we refer to as a

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To light the insert, place it over the opening while below, already-lit newspaper does its thing.

A partially burned insert can be reused, but be sure it's out before you put it away.

WHERE THERE'S SMOKE ... Cont. From Pg. 685

"compressed sawdust smoker insert" – or just "insert" for short. It is easy to make using commonly-available materials, cheap (very little material cost), straightforward to use and burns very well, producing a dense cloud of cool, white smoke that continues to billow out for quite a long time, even when we're ignoring it! For example, using an average-sized smoker fitted with an insert, we have achieved continuous, untended "burns" of up to one hour and 45 minutes on a routine basis.

Sound too good to be true? Do you expect a "gotcha"? Think that you have to order some special "doodad" from us? Got you interested anyway? Well then, if you have about 30 minutes of spare time this month, live near a hardware store and have the most basic of skills, you can make a smoker insert for less than a buck. Here's how.

Begin by opening your smoker and cleaning it out – remove all the old burlap, paper and whatever else you find in there. Brush off any soot that has accumulated. While you're at it, inspect it to make sure it's in good working condition – see that the bellows works well, there are no rust holes and the bottom grate is not ruined (replace or repair it if it is).

Next, measure the size of the fire chamber. The two dimensions that you need to have are the inside diameter and the depth from the top of the fire chamber to the perforated grating (make sure that the grating is all the way down in the fire chamber). The measurements don't have to be exact, but should be made to the nearest eighth of an inch. If you're in doubt, read both measurements to the next lower (smaller) eighth inch value to give yourself some extra margin.

Once you have the two measurements, construct a cylindrical insert that will fit into the fire chamber with an eighth to a quarter inch air space all the way around it. Pay particular attention to the fact that the bottom of the insert is also covered by the material used in construction, so that if you think about it, you're simply making a "drinking glass" fuel holder, open only at the top so that you can fill it with sawdust.

An easy way to begin construction is to use heavy paper to make a working model and transfer the measurements to the material you choose for your insert. Since you'll be making a rolled cylinder out of a flat rectangle, the dimensions you'll need to use to make a "first try" model are:

Height of the rectangle = Depth of the fire chamber
Width of the rectangle = Diameter of the fire chamber multiplied by three.

When it is rolled to make a tube, the cylinder should fit easily into the smoker, again with an air space all the way around it.

You could also simply roll a large piece of heavy paper into a tube, and by using paper clips to secure it and prevent it from unrolling, adjust the size of the paper tube to produce an acceptable fit. Run a pencil line around the tube at the top of the fire chamber, remove it and run another pencil line along the outside of the tube where the edge of the paper lies. Unroll the tube and cut along your marks, and you should have a model that will produce a good fit (try it to be sure and make any adjustments now).

Whatever material you select for making your insert, it must let air in to permit burning, let smoke out (the desired result) and all the while hold the fuel together (and, as Derek points out, not burn up or melt in the process). The obvious choice (and the one we recommend) is quarter inch or smaller hardware cloth, available at almost any hardware, garden or "Feed 'n Seed" store. The smaller mesh does a really great job, and although we have tried to use larger mesh, things really didn't seem to hold together as well, and we would sometimes blow out unburned sawdust along with the smoke!

Once you have a good fit with the model, you'll use it as a pattern to cut out the two pieces of the material you're actually using to make the insert. Use the paper tube to mark out a circular end piece to fit in the bottom of the insert. Carefully use "tin snips" or metal shears to do the cutting. The photos give some idea of what we are trying to describe. As you can see, it doesn't have to be a work of art just as long as it does the job. "Seams" on our model were stitched together using some old bare copper wire we found in the garage, and we're sure that you can think of other methods to put the pieces together. But be careful when making your insert – cut hardware cloth is very sharp.

To fill the insert, begin by adding a couple of handfuls of dry sawdust to it (don't use sawdust from treated lumber of any sort, as it contains nasty chemicals like chromated copper arsenate that we're sure you don't want around your hives), and tamp the sawdust down using whatever you have on hand that will work. We use a piece of wooden handle salvaged from a discarded broom. Pack the sawdust down really hard since the more that you get in, the longer it will burn.

Continue adding sawdust and packing it down as you go until you have nearly filled the insert. Then, give it one final packing just to be sure it's really tight, wedge a piece of METAL door screen on top of the insert to help

prevent loose sawdust from blowing out and you're ready to go. That's all there is to it, really.

To use the insert is simplicity itself. Place a wad of crumpled-up newspaper in the bottom of the smoker, light it and set the insert across the opening of the fire chamber but not down into it. This will give the flames from the newspaper a chance to flow around the base of the insert and really get it going well. You may have to give the bellows a squeeze or two to perk things up, but we find that giving the newspaper some time works in most cases.

After the newspaper has burned out, give the insert a good exam to make sure it's smoldering well, and if it is, carefully lower it into the fire chamber (it's likely to be hot), close the smoker lid, and you should enjoy a long, slow, even burn of cool, dense smoke with which you can work the bees. If the insert needs to be coaxed into life before closing the lid, a few gentle puffs of the bellows will get it going. Once it's lit, it will continue to burn with no attention (until it runs out of fuel, of course).

The proof is in the pudding though, and so we subjected various inserts to actual timed burn tests, using the fireplace in our living room as a convenient test chamber. The insert made from quarter inch mesh did best, faithfully producing smoke for up to one hour and 57 minutes, untended! We have even tried puffing on the bellows periodically to simulate working a hive but detected no substantial reduction in smoke production or overall burning time.

One nice thing about inserts is that you can make several and pack them beforehand, storing them in a dry place (like an old coffee can with a tight fitting plastic lid) until they're needed. Then, if you're in the field and your smoker quits doing its job, just go to the truck, get another insert, light it up and you're back in business. We keep an insert in each of our smokers so that we're ready to go at any time.

Since they burn for so long, you may want to make a wooden plug to close off the smoke exit hole in the lid. Then, if you're done for the day, or traveling between apiaries, you can actually snuff out the insert and save fuel. We learned how important this is the hard way, discovering that you can't use the windshield mounted rear view mirror when the back of the pickup truck (enclosed by a cap) is filled with dense, white smoke. The procedure for lighting a partially-burned insert is the same as for a new one.

Since adapting the original U.S. Forest Service 55-gallon "monster" to a more appropriately-sized smoker version, beekeeping has become noticeably more enjoyable for us. Gone are the "good old days" of worrying about having smoke ready for use or of having to hurriedly relight a dead smoker while honey bees by the thousands tried to pay us an unwanted visit. Yes, since that time, not once have we been without our wonderful smoke, and our quest is finally at an end.

We sincerely hope you can use inserts in your beekeeping, and as always we welcome comments, suggestions and questions. "May the smoke be with you!" BC

Jim and Derek Anderson keep bees, and experiment with equipment in Carriere, MS.

AUT

There's a peculiar relationship between generations when it comes to keeping bees. Unlike every other agricultural practice, this one has remained essentially unchanged since moveable frame hives first hit the catalogs.

The rest of the food production industry has progressed pretty much in line with the industrial revolution – bigger tractors, bigger farms, vertical marketing, less labor, integrated pest management – while the art and science of keeping bees has remained pretty much the same as when L.L. Langstroth practiced the craft.

That continuity, that sameness, that connection ties every beekeeper who is to the past, and every beekeeper who was to the present

It's autumn, and I'm in my home apiary on a warm afternoon taking old beehives apart. These old hives aren't the familiar Langstroth, but rather a type my grandfather favored during his many years of beekeeping. They are more or less cubical, the front, 17½" wide, the sides, 14½" long and the depth also being 14½" These old, squarish hives were thought by many early American beekeepers to have certain advantages over the Langstroth hives. My grandfather, for example, was certain that his bees wintered better in the deep hives than they did in Langstroths. He may have been right, particularly since he wintered his bees in a single box.

But those old deep hives of granddad's had their drawbacks. I know this from personal experience because I used them when I first started keeping bees. For one thing, a square hive with two supers on it is too high to work easily. Add another super and you need a stepladder to reach the lid. For another thing, the bee space in those early hives was seldom exact, with the result that the frames were often tacked to the hive with burr comb. This made for some real adventures, especially when dealing with the occasional ill-tempered colony. Nonetheless, my granddad swore by those quaint deep hives. I typically swore at them.

Those interested in early American hives and their rationales will find a good account of them in the 1923 edition of the *ABC & XYZ of Bee Culture* and early editions of the various bee journals. For a number of reasons, the Langstroth hive has become the standard American beehive and is common in many other parts of the world. It is, all in all, a good hive. Not perfect, perhaps, but then there is no perfect hive, nor perfect frame, nor perfect bee. What is perfect to one beekeeper in one area may not be perfect to another.

Which brings me back to those old deep hives piled in the corner of my apiary. My grandfather made them all, made all his own equipment – hives, frames, lids, bottom boards. The works. And it amazes me how well those old hives, beeless now for years, have lasted. With the paint weathered away, the wood has taken on an appealing gray patina. Some of the boards in these antiques are well over a foot wide, a dimension no longer available at the typical lumber store. Granddad bought his lumber direct from a sawmill. Split open those old boards for firewood and you can still smell the tangy scent of resin in the wood. Modern lumber hardly seems as good. I've had Langstroth lids that have rotted away in a few years. Some of granddad's old lids are still usable. Perhaps the wood came from fabled old-growth timber.

Behind me, as I pull nails and split wood, the bees are flying avidly, bringing in large loads of pollen. I have never known them to gather pollen so late in the year. But it's been far from a typical year. Hives that went into winter chock-full of honey were near starvation come spring, the result of a warm winter. June, always the reliable honey month in this area, brought no nectar. Summer turned hot and dry. No rain. Morning glories turned brown and withered in the heat of

U M N

July.

I actually debated whether I should bother to super my hives. No point, I supposed, in doing it, but then I did it anyway, just so the bees could clean up last year's wet comb, getting a bit of needed honey in the process. The weather remained hot and dry. An alfalfa plant near a hive appeared to have dried out in the heat.

And yet, miracle of miracles, when I hefted some of my stronger hives near the end of July, they are heavy with honey, and some surplus begins to appear in the supers. A modest honey flow continued on into August, typically not a good honey month in this area. I put another super on each of my best hives. The slow flow continued on into September, much to my delight and amazement.

A "freak year" That's what my grandfather would have called this past season. A freak year. Anything out of the ordinary in terms of weather conditions he would attribute to it being a freak year. The term certainly applies to last season. Yet, here are the bees, already laying in provisions for next spring. The freak year hardly seemed to faze them. Now, here it is late autumn, and the honey crop is in the can, and it turned out to be a fairly good year after all. I still don't know just how the bees managed to find the nectar they found, but find it they did. And now I think of how stupid it would have been of me not to put supers on my hives. I should know by now that it doesn't pay to try to outguess my bees. It's a lesson I've learned before. The bees have made a fool of me before and probably will again. It's all part of their appeal.

Another part of their appeal is the excuse it gives me to be out and about in the natural world. Out under an autumn sky, a pristine blue sky, I'm taking old hives apart and remembering a line from an old poem, something about "autumn's bright blue weather." At such times, I get a valued sense of connection to the wonder and beauty of nature, including bees and their own fascinating selves.

As the afternoon wanes, the air takes on that familiar autumn chill. I put my tools away, load my wood and return to the apiary to watch bees winging home as shadows lengthen. Some hives have stopped flying, but bees still return to others. One hive is driving out its drones despite the good weather. Such behavior suggests to me that a storm is in the offing. I have found bees to be excellent weather forecasters.

Sure enough, a storm blows in the next day, and it rains and rains and rains. Rain falls off and on again for a week, as though to atone for summer's drought. Then the rain changes to snow. Two days later it is still snowing. Autumn's bright blue weather seems a distant dream. But the bees are well-provisioned for winter, and the rain and snow mean the drought is over. And next year, like all years with the bees, will bring its own rewards.

. . But probably the strongest link between then and now is, ironically, when people who keep bees encounter those who don't. And very often it seems, those who have never experienced the sights, sounds and feel of an open colony on a warm afternoon, know somebody who has.

And those colonies in that collective memory always are recalled to be just a tad on the well-used side . . . use it up, wear it out, make it do or do without was the philosophy back then. Maybe it should be more so today.

For those who have never had the chance to visit those few colonies out back, but are the beneficiaries of their owner, or for those who would like to visit them again, one more time, take a breath of Autumn. And make a connection, again, with the roots of beekeeping. BC

Richard Dalby makes the connection between then, and now, and with his bees from his home in Levan, UT. He is a regular contributor to these pages.

HOME HARMONY

ann harman

Holiday Breads

The holiday season is definitely a time for sweets – candy canes, fruitcakes, cookies by the zillions, boxes of candy when somebody can't think of another gift, more fruitcakes and the occasional box of nuts covered with chocolate. Remember all your good New Year's resolutions when you said – "next year it's gonna be different?" Whatever "different" meant then, it's "gonna be different" now. Why? We're going to give breads this Christmas.

Why breads? Well, breads can be made weeks ahead of time and frozen until needed. Not everyone bakes fancy breads these days, so the gift will be welcome. And breads are something different. And breads use honey. And you can give a jar or bear of honey WITH the bread, even if the bread is so fancy it doesn't need additional honey.

First, go straighten up your freezer so you will have room for the breads you need to bake. Make a list of everyone who will receive your bread. Add your name to the list because, after baking all these wonderful breads, you won't want to give them away. And go get your big jar of honey and put it with your baking things. Ready? O.K., let's go!

Bourbon Bread

A celebratory loaf for a season of celebrations. It keeps well, it's nice to have on hand to serve drop-in guests and it makes a jolly gift with its slight whiff of sinfulness (only an illusion since the alcohol has evaporated). Bake it in a mold or bundt pan and stick a sprig of holly with a plaid bow in the middle.

1 cup unsweetened dates, chopped
1/3 cup bourbon
3 eggs
1/2 cup honey
1/4 cup melted sweet butter
1/4 cup heavy cream (or evaporated milk, half and half, or milk)
1 teaspoon vanilla
3 tablespoons brandy or cognac
1/2 cup raisins
1 cup chopped pecans
2 cups unbleached white flour
2-1/2 teaspoons baking powder
1/2 teaspoon baking soda
1/2 teaspoon salt
1/2 teaspoon nutmeg
1/4 teaspoon ground cloves

In a small bowl, marinate the dates in the bourbon for an hour or several hours. In a large mixing bowl, beat the eggs until light and thick. Add the honey and beat. Beat in the butter, cream, vanilla and brandy. Stir in the raisins, pecans and dates with the bourbon (scrape out the bourbon bowl with a rubber spatula so you won't waste any). Mix to distribute evenly. Sift together the dry ingredients and spices. Add to the liquids and fold in gently until just incorporated. Pour the batter into a buttered mold, small Bundt or Kuglehopf pan or large loaf pan. Bake at 325°F for 50 minutes or until the top feels springy and the edges are beginning to brown and shrink away from the pan. Don't overcook. Let rest in the pan for about 10 minutes before unmolding onto a rack to cool. Store, wrapped in plastic wrap, in a cool dry place (not the refrigerator). It will keep for about 5 days. Or store in the freezer. Makes 1 loaf.

The Garden Way Bread Book
Ellen Foscue Johnson

Fancy Christmas Rye Bread

2 cups warm potato water or water
2 tablespoons honey (dark is preferable)
1 package dry yeast
1/4 cup unsalted butter, melted
2 teaspoons salt
1-3/4 teaspoons grated orange peel
1 teaspoon ground ginger
1 teaspoon ground cloves
2 cups rye flour
4 cups unbleached all-purpose flour

To make potato water, boil potatoes in sufficient water until tender, then strain. Combine potato water or water and honey in large bowl. Add yeast and stir to dissolve. Let stand until foamy, about 5 minutes. Mix in butter, salt, orange peel, ginger, cloves, and then rye flour. Beat until very smooth. Beat in enough bread flour, 1 cup at a time, to form stiff dough, scraping down sides of bowl from time to time. Cover bowl and let stand 15 minutes. Turn dough out onto lightly floured surface and knead until smooth and elastic, kneading in additional bread flour if sticky, about 10 minutes. Lightly oil large bowl. Add dough, turning to coat entire surface. Cover bowl and let dough rise in warm area until doubled in volume, about 1-1/2 hours. Lightly grease 10-inch round springform pan. Punch dough down. Turn out onto lightly floured surface and knead until smooth, about 2 minutes. If you wish to decorate top, cut off 1/8 of dough and set aside. Shape remaining dough into 9-inch round. Transfer rounded side up to prepared pan. Flatten to 1-1/2 inches. Let rise in warm area for 20 minutes. Meanwhile, divide reserved dough into 3 pieces. Roll each piece out between palms and lightly floured surface into 10-inch ropes. Lightly brush top of dough with water. Arrange dough ropes atop loaf in spoke pattern, crossing them in center. Curl ends over. Let loaf rise until almost doubled, about 25 minutes. Bake bread at 375°F about 50 minutes or until top is deep golden brown. Invert onto rack. Cool completely before wrapping to store in freezer. Serve warm.

Bon Apetit magazine

St. Lucia Buns

"St. Lucia buns take their name from the holiday for which they're traditionally baked. Lucia's Day, celebrated December 13, is the beginning of the Christmas season in Sweden. The holiday is named for a young Sicilian woman, Lucia, who was a devout Christian. When Sweden suffered

Continued on Next Page

HOME ... Cont. From Pg. 691

from famine one frigid winter, Lucia, wearing a white robe and a crown of candles, appeared with food. She became known as the Queen of Light. Today, she is honored during the dark Northern winter by young girls all over Sweden. On Lucia's Day, in households with girls, the eldest daughter dons a white robe and a crown of candles and awakens her parents with the St. Lucia buns and coffee."

5-1/4 to 5-3/4 cups all-purpose flour
2 packages dry yeast
1-1/2 cups milk
1/2 cup honey
1/2 cup margarine or butter
1 teaspoon salt
1/8 teaspoon ground saffron or 3/4 teaspoon ground cardamom
2 eggs
1/2 cup blanched almonds, ground
1 tablespoon finely shredded lemon peel
raisins
1 slightly beaten egg white
sugar

In a large mixing bowl, stir together 2 cups of the flour and the yeast. Set aside. In a saucepan heat and stir the milk, sugar, butter, salt and saffron or cardamom just until warm (120-130°F) and butter is almost melted. Add to the flour mixture. Then add the 2 eggs. Beat with electric mixer on low to medium speed for 30 seconds, scraping bowl. Then beat on high speed for 3 minutes. Stir in the ground almonds, lemon peel and as much of the remaining flour as you can. Turn dough out onto a lightly floured surface. Knead in enough of the remaining flour to make a moderately soft dough that is smooth and elastic (3 to 5 minutes total). Shape into a ball. Place dough in a lightly-greased bowl, turning once to grease the entire surface. Cover and let rise till double, 1 to 1-1/4 hours. Punch dough down. Turn dough out onto a lightly floured surface. Divide dough into quarters. Cover and let rest 10 minutes. Grease baking sheets. To shape buns, divide *each* quarter of dough into 12 equal pieces. Roll *each* piece of dough into a 10-inch long rope. Form each rope into an S-shape, coiling ends in a snail fashion. Place 3 inches apart on prepared baking sheets. Press *one* raisin into center of each coil (2 per bun). Cover and let rise until nearly double, 30 to 40 minutes. Stir together the slightly beaten egg white and the 1 tablespoon water. Lightly brush mixture over buns. Sprinkle with sugar. Bake in 375°F oven about 10 minutes or until golden brown. Remove from baking sheets. Serve warm or cool. Makes 48 buns.

Better Homes and Gardens Old-Fashioned Home Baking

Houska

This next recipe is from Czechoslovakia and is traditionally served during the Christmas season. It is slightly less sweet than many Christmas breads.

1 package dry yeast
1/4 cup warm water (about 110°F)
1/3 cup warm milk (about 110°F)
1/4 cup butter or margarine, melted and cooled
2 eggs
1/3 cup honey
1/2 teaspoon salt
1 teaspoon grated lemon peel
1/4 teaspoon ground nutmeg
3 to 3-1/2 cups all-purpose flour, unsifted
2/3 cup raisins
1 egg white beaten with 1 tablespoon water
1 teaspoon poppy, sesame or caraway seeds

In a large bowl dissolve yeast in water. Blend in milk, butter, eggs, honey, salt, lemon peel, nutmeg and 1-1/2 cups of the flour. Beat very well for about 5 minutes, then stir in about 1-1/4 cups of the remaining flour and the raisins to form a stiff dough. Turn dough over in a greased bowl; cover and let rise until doubled, about 1-1/2 hours. Punch dough down and divide into 4 equal portions. Roll each to form a rope about 21 inches long. Place ropes side by side diagonally across a greased baking sheet. Pinch tops together and braid loosely as follows: pick up rope on right, bring it over next one, under the third and over the fourth. Repeat, always starting with rope on right, until braid is complete. Tuck ends under, and pinch to seal. Cover lightly, and let rise until almost doubled in bulk, about 1 hour. Brush braid with egg white mixture; sprinkle with seeds. Bake at 350°F for about 30 minutes or until braid is golden brown and sounds hollow when tapped. Cool on rack.

Sunset Cookbook Of Breads

For presentation of your breads, cover appropriately shaped and sized cardboard with aluminum foil. Cover the bread smoothly with plastic wrap, taping it on the underside of the cardboard. Place your fancy Christmas ribbon bow so that the beauty of the bread is not hidden. Attach a tag giving the name of the bread, and in the case of the St. Lucia buns, include their history.

By doing all your frantic baking at the beginning of the month, all you have to do is open the freezer door when Christmas week comes. Have a nice holiday season! BC

INNER COVER ... Cont. From Pg. 666

long as they are adjacent. That's still "Local", O.K.? After all, some metropolitan areas encompass three or four or even six counties, and they're all still the same city, all still "Local". So maybe "Local" means the same area code, or zip code, or something determined by man-made boundaries.

There's another definition though that's more or less a horticultural distinction. There are "hardiness zones" defined essentially by temperature boundaries. This means that plants of a given species generally don't grow north or south of a given area because of temperature extremes. You generally don't find citrus in Ohio, after all. So maybe "Local" means the entire area in which a particular group of plants grow. But what does that mean about dandelions or goldenrod?

Another definition is even more specific. It not only deals with where plants grow, but also with the soil type they are growing in. It's commonly known that some plants produce barrels of honey in my backyard, but a mile or two away the same plant never sees a bee. The weather's the same, the growing season and hardiness zone are the same, and they're even in the same county. So how do you define "Local" using this technique?

There's another philosophy here, though. And that is not where the honey is produced so much, but where it is sold. If I produce *and* sell honey in Ohio (where I live) is it *more* local than honey produced who-knows-where-else and sold in Ohio? Of course it is. But if my honey is produced in the extreme northeastern section of the state (say Cleveland) and sold in the extreme southwestern part of the state (say Cincinnati), is it still local? Especially when right across the river from Cincinnati (in Kentucky), some excellent soybean honey is produced, which you'll hardly ever get a drop of in Cleveland. I said this was sticky.

The big packers don't have this problem. In fact, the law says they only have to worry about what country the stuff comes from. And that's the advantage smaller outfits have because we *can* say "Local" honey, or "Produced Locally", or whatever.

So, to answer my friend's question, I don't think there is a true definition of "Local Honey", but rather the unique definition used on the label will spell it out.

For instance, awhile back we had an article about selling "Local" honey, but the term was described right on the label. The honey was produced in Perrysburg, OH, along the banks of the "Great Maumee" (a river). That's near Toledo, OH, in the northwest corner of the state. That river crosses maybe two or three hardiness zones, probably passes through a dozen soil types, several counties, a bunch of area codes and a whole slew of zip codes. But everybody who knows the Maumee River, who lives by or near it, knows where it is and feels a part of it. Thus, "anywhere" along the Maumee is "right here" along the Maumee. That's as local as you can get.

Of course you can get specific on your label, and I think you should. Specific as to geography (Central Ohio's Finest), or a nearby landmark (see the river, above), or perhaps another well recognized thing, place or even person (From the Land of Lincoln?).

Local is, I think, what you make it, not a set distance (but that helps), not a set region (but that helps, too). Like all of advertising, perception is reality – as long as you explain it.

Kim Flottum

BEE TALK

richard taylor

"I've still got a lot to learn about this tree . . . what's the honey like . . . where does it grow."

I was talking about honey plants last time, and I'm going to continue with that this month, although I have to confess that it is not a subject that I know an awful lot about. Books on this subject, though they are valuable to have and interesting to read, can often be misleading. Many honey plants, for example, produce nice honey flows in some areas but none at all in others, the difference being in the soil, and the books do not always make this clear. Goldenrod blooms just about everywhere, but does not make nectar everywhere. I have even seen buckwheat produce a great honey crop in one area and none at all 20 miles away where the soil was different.

You have to also remember that, just as not all that glitters is gold, so also, not all that blooms makes nectar. Even plants that bloom in profusion are sometimes worthless as honey plants. One thinks of forsythia, for example. I have never seen a bee on one of these blooms nor heard of anyone getting honey from them. Some of the most bountifully-blooming trees make no nectar. I believe this is true of the chestnuts. A horse chestnut in bloom is lovely to see, and you do wonder why all this bloom if not to attract bees, yet I never see bees on them. Catalpa trees, similarly, bloom beautifully, and in fact I have seen these seeds advertised for sale to beekeepers as producing a wonderful nectar source; yet I have never heard of bees getting nectar from catalpas, at least not around here.

The reverse of all this is that, just as some things that do not glitter are more precious than gold, so also some blooms that go unnoticed by people are great treasures to the bees. Many of the sumacs produce good flows, yet some people hardly notice them or know that the familiar sumac bob, is in fact, a cluster of tiny flowers. Another example is the basswood tree, or linden, surely one of the most valuable honey plants on this continent. A beekeeper knows when one is in bloom, but most other people do not because the bloom is a pale green, or seems so from a distance.

What an observant beekeeper does is learn, from season to season, more or less what to expect. The honey flows remain about the same from year to year, although you may get more honey from a particular flow one year and less another year. But my point is, there are few surprises. You almost never find honey in your hives that is unlike anything you ever got before. I have learned when to expect the basswood flow, when the alfalfa, when the goldenrod and the pattern remains much the same year after year, even though the size of the harvest varies.

Now there is one honey plant that, for years, has captivated me, and that is the so-called Bee Bee tree, or Chinese evodia. I believe the botanical name is *Evodia daniellii*. It comes from China, as implied by the name, and is found on this continent only as an ornamental, and a very *un*common one at that. I have even read that it is difficult, though not impossible, to find a source for this plant. It is known to grow in the Morris Arboretum of the University of Pennsylvania in Philadelphia.

It was nearly 40 years ago that someone gave me some seeds of this tree. I was living in Rhode Island then, and I planted the seeds in tiny pots, which I set out together in the ground for the winter and brought in when spring came. As I recall, just about every one germinated, and I had a whole lot of little Chinese evodia trees. I planted them out along the edge of my property, and for a couple of years they grew just fine. But then I had to move away, and I guess my trees just all disappeared – doubtless the new owner got rid of them. They were probably not more than a couple of feet high. So that was too bad.

Then a few years ago, someone sent me, through the mail, a bag of these seeds. I planted them, one at a time, in little dixie cups, and carefully tended them. Not a single one even sprouted.

And this led me to wonder. Perhaps this tree is not self-fertilizing. There is no reason to suppose it is, and if a seed-producing tree does not get pollinated, then of course the seeds will not sprout.

I would certainly like to get some more seeds from a reliable source and I would also like to get in contact with anyone who is knowledgeable about this plant from first-hand experience.

Meanwhile, I do have a Chinese evodia, or Bee Bee tree, growing in my back yard. I read in a horticultural encyclopedia that it is not winter hardy, and will not stand a winter temperature below -14°F, but that does not seem to be accurate. It gets colder than that here, and my evodia tree is thriving. Though it is, to be sure, somewhat sheltered by a nearby woods and by my house.

One of the beekeepers in our bee club gave me this tree several years ago. He gave me two, each only about a foot high, the roots in a tar paper planter. I planted them both but killed

Continued on Next Page

BEE TALK ... Cont. From Pg. 695

one of them by acidulating the soil. That seemed to me to be what it needed, but I was wrong. Anyway, the other tree thrived and now is higher than my house! It made a few blooms summer-before-last, but this past summer, it really bloomed and was covered with greedy bees all the time. I cannot help thinking it was making lots of nectar. And now it is covered with fresh, ripening seeds, but I have no idea whether they are worth anything. There is not a chance in the world that they could have been pollinated by another tree around here.

So I've got a lot to learn about this tree, as I have about so many things. I have no idea what the honey is like. I picked up no fragrance from the tree, but it wouldn't have told me much about the honey even if I had.

I'll be very glad to learn, and to give due credit, if any readers can instruct me in this. BC

Questions?

Reused Rounds

Q **I had some unfinished round comb sections left over at the end of the season, uncapped but with honey in them. I set them outside, and the bees cleaned them out. Can I just give those supers back to the bees in the spring, the same as I would if they contained only foundation?**

Robert Hunting
Orono, ME

A When bees leave round sections unfinished, there is often a ring of propolis around the inner edge. This, though harmless, is unsightly. But if that is not a problem then yes, you can just use those supers, with foundation drawn out, next year. I should add, however, that this is apt to be a recurring problem, because you are not, I think, in a good territory for getting quality comb honey.

Cleaning Cappings

Q **How do you get the honey out of wax cappings and render the wax so it is suitable for trading in on foundation?**

Paul Fredrickson
Holland, MI

A Get a tub and fill it maybe about a quarter full of water. An old 60-lb. can with the top cut off is perfect, but any large metal vessel will work. Put this over a burner and get the water boiling. Now, start ladling the cappings in, slowly. Turn the flame down low as more cappings are added. As the cappings melt, you will end up with a fairly deep layer of wax floating on hot water. The honey all ends up in the water below. When the wax is all melted you can ladle it off into milk cartons or whatever. Caution: Go slowly. Do not let the water boil and make steam under the layer of melted wax, as this can make the wax suddenly overflow, creating a mess and the danger of fire.

Apistan How-To

Q **The directions for the Apistan strips say to use two per hive and leave them there for 28 days but not more than 45 days. Why should they be removed in 28 days? And why can they not be wrapped in plastic and used again the next year?**

Steve Moritz
Dayton, OH

A By law, any pesticide should be used only in accordance with directions, but also, by law, a pesticide can be used in lesser amounts or for shorter periods than prescribed. There are beekeepers who leave Apistan strips in the hives all winter, without apparent damage to bees and certainly without any environmental or other danger, and there are also beekeepers who save the strips, individually wrapped, for use the following year.

Editor's Note: 28 days is the minimum amount of time the strips need to be present to affect all mites in a hive. Mites in capped cells are not affected until they move out and look for new hosts.

A strip that has been used for the alloted time has had most of the active ingredient migrate out of the strip. REusing is not only illegal, but ineffective and hastens the buildup of resistence in the population. DO NOT REUSE STRIPS.

Rounds Markets

Q **Is there a market for circular section comb honey that would justify producing several thousand sections each year?**

Noah Schrock
Middlebury, IN

A Yes, but it is a specialty market. I have customers who have, for years, bought anywhere from 50 to 100 sections every year for their own use, and I'm sure there are many such people. Most people do not know what comb honey is, but others are constantly in search of it. The one basic requirement, however, is that it be of the highest quality, which means that it must be produced in a primary beekeeping area.

AHB Outlook

Q **Do you still thank that Africanized bees will eventually become genetically mixed with our bees so that their aggressiveness will be reduced? And what is the outlook for hobby beekeepers with respect to this?**

Andy Moore
Sweetwater, TX

A Africanized bees seem to have overwhelmed native strains in every area into which they have spread, so the outlook for hobby beekeepers and back lot beekeepers does not seem good in the short run. And since queens and packages traditionally come from southern states, the outlook for these is not good either. On the brighter side, there is very strong evidence to indicate that Africanized bees will not spread into the colder northern states, but can be expected to stop at about the latitude of the Carolinas. And I still believe that *eventually* the aggressiveness of these bees will become reduced, just in the natural course of things, but I have no idea how soon.

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

Answers!

Richard Taylor

?Do You Know? Answers

1. **False** Nosema disease is an adult bee disease that is caused by a spore-forming protozoan (*Nosema apis*) that invades the digestive tracts of workers, queens and drones. It does not affect larvae or pupae.
2. **True** When queens become infected with Nosema disease, egg production and life span are reduced, leading to supersedure. Some queens cease egg-laying and die within a few weeks of infection.
3. **True** Spores of Nosema disease are ingested with food or water by the adult bee. Infected bees are unable to defecate outside the hive during the winter, and they contaminate combs and frames by voiding fecal matter in the hive. Wintering bees, cleaning and polishing cells to expand the active brood area during late winter and early spring, become infected as they pick up spore-laden fecal matter. The level of infection and percentage of infected bees increase while the adult population is confined during the winter.
4. **False** Nosema infection peaks in the spring of the year, because infected bees, unable to defecate outside the hive during late fall and early winter, contaminate combs and frames by voiding fecal matter in the hive.
5. **True** Nosema infection affects individual honey bee workers in many ways. The life span of infected honey bees is reduced, particularly under the stress of rearing brood. Often the life span of infected workers is less than half that of healthy individuals.
6. **True** Since Nosema disease affects only adult honey bees, and spores must be ingested for the bes to become infected, newly-emerged adults are free of the disease. No differences in the susceptibility of different-aged adults has been found.
7 **True** European foulbrood disease is readily transmitted by nurse bees that inadvertently infect the larvae while feeding them. The bacterium multiplies in the midgut, destroys the peritrophic membrane and as the disease progresses, invades the intestinal epithelium. The larvae must compete for food with the rapidly multiplying bacteria, creating an abnormal demand for larval food. The nurse bees reject those larvae requiring more than the usual amount of food.
8. **True** Dysentery is manifested chiefly in late winter or after periods of long confinement and is caused by improper diet. Food which contains an unusual amount of indigestible material, such as honeydew, or too much water, will cause the problem.
9. **True** The vegetative stage of *Nosema apis* is not infective. Spores must be swallowed by a honey bee for infection to be initiated.
10. B)Epithelial cells that line the mid-gut
11. B)Fumidil-B (fumagillin)
12. D)European Foulbrood
13. E)Virus
14. The honey bee midgut is normal (healthy) when it is straw-brown in color and the circular constrictions are clearly seen. In a severely Nosema infected adult, the midgut is white in color, soft in consistency, and swollen, obscuring the constrictions.
15. Distribution of food in the hive is an important fall management consideration since the cluster moves upward during the winter. Even if a colony is starving in late winter, it will not move down to get food. If the uppermost brood-food chamber lacks food the bees will starve to death. A colony may also starve if the upper brood-food chamber is honey-bound since the cluster often fails to move up and remains in the lower chamber(s). In this case, the lack of open cells in the upper hive body prevents the cluster from moving.
16. Late winter and early spring are critical periods for over-wintering honey bee colonies. Consumption of food reserves increases dramatically to satisfy the needs of an expanding brood nest. Prior to extensive brood rearing, food consumption is relatively minimal.
17 An upper entrance is extremely important to successful colony wintering. While an upper entrance serves as an emergency exit when the lower entrance becomes blocked, an upper entrance is most important for reducing moisture buildup (condensation) within the hive.
18. During the winter tracheal mites are found within the respiratory systems (tracheae and air sacs) of adult worker bees and adult female varroa mites are attached to the exterior surface of adult bees. In areas where active brood rearing occurs during the winter, some varroa mites may also be found in capped brood cells.
19. The winter cluster plays a role in regulating the temperature of the brood nest as temperatures fall below 57°F. When forming a cluster, honey bees on the surface establish an insulating shell which varies in thickness from 1 to 3 inches. The colder the temperature, the more compact the cluster becomes, reducing the surface area from which heat energy is radiated. The honey bees within the cluster are much less compact and generate heat through metabolic processes. The heat generated within the cluster is conducted to the surface of the cluster.
20. Sugar syrup is the most common feed for bees when the weather permits easy movement of the cluster, occasional flights or when the outside temperature is above 40°F. Feeding heavy sugar syrup in the winter is not normally recommended, since it places additional stress on the clustered bees. Inversion of the sucrose and handling excess water causes problems (dysentery) for honey bees. Therefore, sugar candy is recommended for emergency feeding in the winter.

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

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

Gleanings

DECEMBER, 1994 • ALL THE NEWS THAT FITS

AHPA IN RENO, NV

The 1995 convention of the AHPA, will be January 9-13 in Reno, Nevada. The program will be held at the Eldorado Hotel Casino, P.O. Box 3399, Reno, NV 89505. The toll free reservation number is 800-648-5966. Participation at the convention is open to all beekeepers, supply dealers and other parties interested in beekeeping, pollination and honey production. For further information, write or phone for registration kit at: AHPA 1995 Convention, P.O. Box 584, Cheshire, CT 06410-0584; phone/FAX 203-250-7271.

The week's schedule will be arranged as follows:

Monday, January 9

Meetings of the executive committee (a.m.) and the 1994 directors (p.m.). Exhibit set up. Possible ski or sightseeing tour of the Reno/Tahoe areas. Committee meetings in the evening.

Tuesday, January 10

Call to order, exhibits open (a.m.), reports of officers and committees and general sessions, Economics of Beekeeping. Welcome reception (evening).

Wednesday, January 11

Research Update; National Honey Board; Pollination.

Thursday, January 12

Workshops, annual general membership meeting and 1995 directors meeting (p.m.), annual banquet (evening).

Friday, January 13

Executive committee meeting (a.m.) Exhibit removal. Possible workshop sessions (a.m.).

HONEY BOARD IS MOVING

In an effort to keep down costs and improve staff efficiency, the National Honey Board office is moving to a new location. Effective December 1, the new address is: National Honey Board, 390 Lashley Street, Longmont, CO 80501-6010. The phone numbers and fax numbers for the Honey Board will be the same: Phone (inside U.S.): 1-800-553-7162; Phone (outside U.S.) 1-303-776-2337; Fax: 1-303-776-2337.

Honey Board Makes It Easy

TRACKING SOFTWARE AVAILABLE

Honey producer-packers can now automate tracking honey purchases and generating reports for the National Honey Board. The Honey Board announces PackTrack – IBM compatible software that maintains records of honey transactions and business contacts.

Rapid data entry into the system is possible with easy to follow menus and "pop-up" selection boxes. Eighteen analytical reports can be customized for user needs, on-line help at the touch of a key and eight ways to search for specific records are some of the features of PackTrack. An illustrated user's manual accompanies the installation diskette.

The software program creates a diskette containing transaction records for the National Honey Board, eliminating the need for transaction reports to be individually prepared by the handler. This also saves resources for the National Honey Board since the diskette can be loaded directly into its computer system.

PackTrack requires a 386 or better processor, DOS 3.3 or higher and approximately five Megabytes free hard disk space. It can be installed on stand-alone PCs or on a network. The software sells for $8.95. Write or call the National Honey Board for an information package.

BEES ON PEST CONTROL

A typical worker honey bee flies 500 miles and can search thousands of flowers for pollen and nectar that it carries back to the beehive. Now U.S. Dept. of Ag. scientists are using these bees to drop something off during their travels – an environmentally friendly virus that kills crop pests.

Scientists with USDA's ARS have patented a device that dusts honey bees with a virus-talc powder mixture when they leave the hive. As they buzz from flower to flower, the virus and powder rub off their feet and legs onto the blossoms.

The virus is harmless to honey bees, but knocks down populations of corn earworms that cause millions of dollars in damage to crops, said John Hamm, Insect Biology and Population Mgmt. Research Lab. in Tifton, GA.

The virus-dusting device was developed by the late agency entomologist Harry Gross, agency technician Raydene Johnson and beekeeper J.C. Walters. The patent, number 5,348,511, was issued on Sept. 20.

"Studies show bees do a great job of carrying the virus from one flower to another," Hamm said. "They're ideal carriers because they work hard and visit so many plants." A bee has a foraging life among flowers of 15 to 20 days – until wings wear out.

Hamm, who worked with Gross and cooperators on the biocontrol field studies, said the virus killed from 74 to 87% of corn earworm larvae in crimson clover fields where the bees carried the virus, called a nuclear polyhedrosis virus (NPV). That's compared to only 11 to 14% mortality in fields where bees were not used.

"Studies were done only with NPV and corn earworms, but the hive device can be used with any biocontrol agent that doesn't harm the bees," he said. That's the case with NPV, which attacks corn earworms and tobacco budworms and does not hurt bees or other beneficial insects. ARS scientists at Beltsville, MD, have tested NPV in mice and rats and found no evidence of toxicity, Hamm said.

The dusting device fits on the bottom of a standard hive. It allows the bees to enter unobstructed. But when they leave, they walk over a pan as they exit. Scientists put a mixture of NPV and talc powder in the pan, so the bees' legs and feet are covered.

Eric Erickson, who heads the ARS Honey Bee Research Lab in Tucson, AZ, said the new device is timely and "should be pursued. It should be appealing to beekeepers who rent their bees for pollinating crops."

Continued on Next Page

NEW BEE POSITION OPENS

An Apiculture Research and Extension position has opened at Clemson University, Clemson, SC. Responsibilities include 75% extension and 25% research which can be appointed at the Assistant or Associate Professor level. The successful candidate will be expected to conduct aggressive extension and research programs in Apiculture with emphasis on colony management for pollination, honey production, and protection of bees from diseases, parasites and other pests. This position interacts directly with faculty in other disciplines, county extension personnel, and members of various county and state honey bee associations.

Candidates must have an earned Ph.D. in Entomology, have experience with honey bee management and applied research in Apiculture. Experience in molecular biology and/or genetics is desirable. Ability and willingness to interact with other scientists are essential. Successful candidate should have demonstrated success in attracting competitive extramural funding.

For information inquiries may be directed to Prof. Randall P. Griffin, Chair, Search Committee, Dept. of Entomology, Clemson Univ., Box 340365, Clemson, SC 29634-0365.

ALMOND HANDLERS SUED

The U.S. has filed its second legal action in two weeks against six almond handlers for nonpayment of assessments in violation of the Almond Marketing Order.

In brief filed with federal courts in Sacramento and Fresno, the Dept. of Justice asked summary judgement be granted because "The defendants' refusal to pay assessments is causing harm to the Almond Board's ability to fund and implement industry-wide advertising and promotion."

The government's action follows its Sept. 28 filing of a motion for permanent injunction against the same six handlers. A ruling on that motion is still pending in federal court. A summary judgement is a legal tool that allows a judge to expedite court cases when there is clear evidence the potential for harm exists if relief is not granted in a timely manner.

Dept. of Justice asked if a summary judgement could not be entered promptly, that the "Court issue a mandatory preliminary injunction requiring defendants to pay delinquent assessments, plus interest."

The brief supports the immediacy of a summary judgement by noting "The defendants' refusal to pay their assessments is disruptive to the industry. Other handlers who have been timely paying their assessments are required to unfairly shoulder the burden of funding promotion for the entire industry and have expressed frustration to the Board and their inclination to forego their own future assessments if defendants' delinquencies continue unchecked."

Defendants are: Cal-Almond, Inc., Hughson; Dole Dried Fruit & Nut Co., Fresno; Gold Hills Nut Co., Snelling; Del Rio Nut Co., Livingston; Monte Vista Farming, Denair; and Rotteveel Orch., Dixon.

The delinquent assessments, exclusive of requested interest, are for the 1993-94 crop year and total $1,190,569.

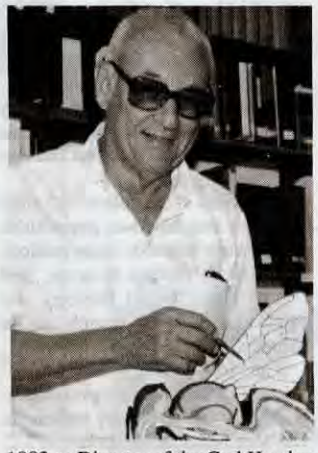
OBITUARY

M.D. Levin

Dr. Marshall D. Levin died on October 22, 1994 following cancer surgery. Marshall was born May 18, 1922 in Brownwood, TX but spent most of his youth in Connecticut.

After serving in the armed forces, Dr. Levin joined the U.S. Department of Agriculture. In his 36-year career, he became world-renowned for his research on bee pollination. Over his career, he worked in Logan, UT; Tucson, AZ; and Beltsville, MD in many capacities. He was transferred to Maryland in 1969 as the branch chief of the Apiculture Research Branch. Later, he became the National Program Leader for Crop Pollination. In subsequent years, he served as Deputy Assistant Administrator for Plant and Entomological Sciences and Chief of Crop Protection and Crop Sciences Staff.

Dr. Levin returned to Tucson in



1983 as Director of the Carl Hayden Bee Research Laboratory. He retired in 1986 after 36 years of Federal service. He is survived by his wife, Sylvia (5464 N. Arroyo Vista Drive, Tucson, AZ 85718) two sons, Joel and David; four grandchildren; three sisters and a brother.

U.S. HONEY IMPORTS JAN. - JUNE, 1994

Country	Pounds Imported
Canada	664,268
Argentina	5,010,791
Mainland China	6,491,565
Australia	222,849
New Zealand	3,150
Mexico	719,002
Dominican Rep.	26,269
All Others	72,035
Total	**13,210,020**

Source: U.S. Dept. Commerce, Bureau of Census

The U.S. continued its high demand for imported honey during early 1994, with just over 13 million pounds brought from ashore. Mainland China and Argentina are still the two big players, with Mexico and Canada a distant third and fourth. In fact, China and Argentina make up 88% of total imports.

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Giving Honey

howard scott

Our gift of choice for Christmas is honey. Our gifts come in recycled jars, filled with fall's harvest, with our own label. The three lines of copy on the label say, "Dancing Hill Honey" (the name of our property), "From the Scotts," and the year harvested. We make up new labels annually. One year, my wife drew a bee border around an oval. Another year, my daughter made a rough-line hexagonal design. Last year, I made up a triangle-shaped label with a picture of a step hive in the center. We make black and white copies of the drawings, cut them out and paste them on the jars. We give these golden bottles to all our friends.

Honey – the perfect holiday gift. Its golden hue shimmers against winter's white backdrop. Bedecked with red ribbon, the jars have a festive glow. Pulled out of a box, they offer a pleasant surprise. With over 15 years of harvest, our friends have gotten used to subtle differences in taste. Our amateur artwork shows an attempt at creativity, which is always remarked on. In short, no other gift – and a homemade gift at that gives us such steady pleasure.

Why is honey the perfect Christmas gift? A gift of honey represents a collaboration of man and nature so intricate, so enmeshed in the natural world, so ancient, that its existence is remarkable. Even its appearance offers much to marvel at. The thick fluid makes slow-motion tilts and swirls and eddies. The movement makes the top surface look like the iris of an eye. Background light creates dense hues of orange and yellow and brown. If one is given to crystal ball-gazing, it seems to me that honey-filled spheres would offer more food for thought.

A gift of honey is a simple offering, and that's as it should be. It's just a jar containing a basic foodstuff. No extravagant bauble, no useless trinket, no complex assembly, no glitzy, chrome-edged surface, no electronic bells and whistles special-feature, high-octane model. In addition, the gift does not come with a rambling story of how the purchaser searched high and low for the perfect choice. No, thank you. Thoreau suggested giving a bundle of apples. Like apples, honey expresses simple good intentions. And like apple-giving, there is no obligation to respond.

"Give of yourself," said Emerson. What better giving of yourself than honey, the fruit of a year-long effort of managing the hive, observing behavior, making judgments, providing timely expansions, treating for disease and harvesting the excess only if the hive is well-stocked to make it through the winter. Plus, in the process, the honey harvester endures back strain, skin punctures, failure of nerves (sometimes), smoke inhalation and other occupational hazards. Not that he's looking for sympathy, but that jar of gold represents a lot of serious effort that must be given its due.

The gift of honey is useful. It sits in the cupboard for a long period of time. Whenever the user sweetens his tea with honey, or spreads honey over toast, or experiments with honey glaze over chicken, or creates a honey and whipped cream dessert, he or she will appreciate the offering and remember the giver. When the user sits down for a tea break with a neighbor, and the two twirl the honey stick in the jar and twist-ladle it into their cups, the gathering will be more pleasurable. For there is something civilizing about dispensing honey. It's user-friendly, as they say. The ritual helps one to slow down one's life, to ponder the subtleties, to grasp what is important and what is chaff in our existence.

When we hand the gift to a friend, we say, "Here's some honey." The person looks at the jar, then reads the homemade label, then looks at us. "We harvested it from our hives," we say. She asks if we are beekeepers, and after we respond, she follows with a flurry of questions – How do we harvest? How many pounds do we get? How many bees do we have? And we are launched into a discussion of our part time pastime. So giving honey is also informative. We're spreading information, giving understanding, feeding curiosity. So far, two of my friends have become beekeepers from these discussions.

After 15 years, our honey gift has become a tradition. When I gave Linda and her family a jar last Christmas, she showed me their last year's almost-empty container in the cupboard and said, "We count on your honey every December. It kind of marks the season and our friendship. That one year your bees died, and you collected no honey was a downer for us."

Lastly – and I like this one the best – giving honey marks you as someone who does something out of the ordinary, who follows his curiosities, who is a back-yard scientist, who appreciates Mother Nature. I see people's faces, and there's a brightening expression, a widening of eyes, as if to say, "So you're a beekeeper. You're your own person."

Giving honey for Christmas shows that you value gift-giving in its true light: showing that you care rather than showing that you can spend.