FEB 1997

Bee Culture

Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

FEBRUARY 1996 VOLUME 125 NUMBER 2

FEATURES

COVER

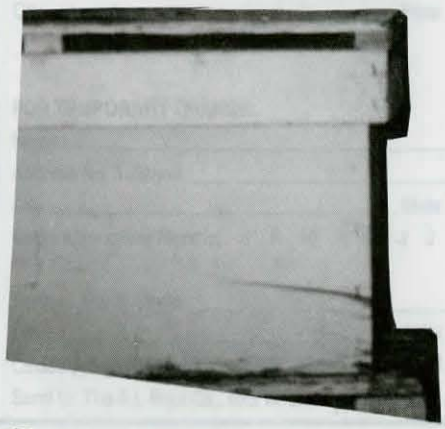
Almost anyone who has had to move bees in the Spring has seen this picture. The thought "Been there, done that," is too often heard. It is, however, one of the liabilities of moving colonies. And, if you are moving, and what should have been a two hour job turns into a two day job, are your costs covered? Keep it in mind when setting prices or discussing contracts this Spring.

This was taken in an almond orchard last year, but we'll bet it is a common sight again this year. The photo is Pat Heitkam's, whose story is on page 28, and who was, at the time, another beekeeper explained hub deep on a ferris wheel. Better luck this year, everybody.

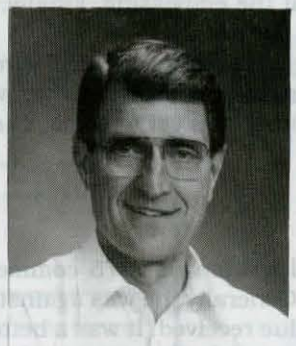
Queens, Pg. 22

DEPARTMENTS

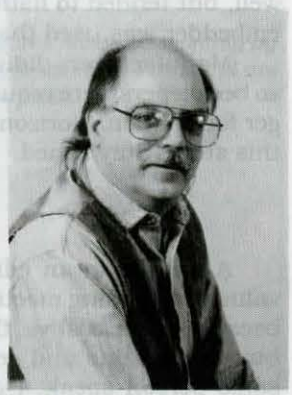
COLUMNS



Heitkam's, pg. 28



JOHN ROOT
Publisher



KIM FLOTTUM
Editor

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INSIDE COVER

I should've done this years ago. The history of beekeeping is a fascinating story, told in little bits and pieces, month by month, by month, in the journals that catered to those who wanted to know, by those who wanted to share.

To me it's the bits and pieces that are the most interesting. The big things, like moveable frames, smoker inventions and what size super to use are pretty well documented and understood. And, as history goes, it's the big things that get recorded. Small, insignificant details become distilled, diluted and eventually absorbed as contributions to what will be.

Small things. Like foundation. At least up to 1879.

Originally, moveable frames were, well, empty. The bees filled them up, more or less, without any direction. By 1875 or so, people were exploring ways to add direction to this situation. Sheets of wax, both "yellow" and "white" were added to the frames. The bees used these, kind of, but not well.

Then, A.I. Root, along with others, started looking at 'enhancing' the sheets of wax by providing a 'pattern' of cell bottoms for the bees to build upon. Round, square and, eventually correct-shaped cell bottoms were tried. And, various sizes were tried, all about right, but only a couple were close. Finally, 4½ and 5 cells per inch (how they were measured wasn't described very well) were 'standard.'

First, wax was poured on a plate and another plate was placed on top to emboss the wax on both sides. Various substances were applied to the plates to make them release – mineral oil, soapy water and the like.

The next step was to run the wax sheets between two rollers, each with 'pegs' to emboss each side of the wax sheet, reciprocating the embossed cell on the other side of the sheet. The engineering required to figure this out is pretty remarkable, really.

More remarkable is the material used to make, first the plates, then the rollers. Wood, plaster, metal (lead, copper, bronze, tin and steel) all had their turn.

The wax, too, had an evolution. Thick sheets were first used so they wouldn't sag in the frame, even when 'glued' top and bottom with wax or other material. Additives were tried to strengthen the wax, which didn't work and 'white' wax and 'yellow' wax were tried.

Eventually vertical wires were added, to keep the wax from sagging. To embed the wires, the wire was laid on the wax and the sheet heated to 'melt the wires in.' This wasn't very successful. Next, a roller was used to push the wires into the wax, which worked well, but tended to flatten out the embossing. Finally, a spur-type embedder was used that did the job.

Manufacturers didn't begin embedding vertical wires until later, so beekeepers were required to do it themselves if they wanted stronger foundation. Horizontal wiring was yet to come. There's more to this story. Stay tuned.

•

A.I. Root, in an editorial written in 1875 commented on the value of attending meetings. Generally, he was against the practice because of the cost vs. the value received. It was a better bargain to buy a magazine and read an article than to travel and hear the same person speak. I can't argue with that, though his motives were fairly straight forward, his heart (and pocket book) were in the right place.

Today, however, things have changed, though not for the better, I believe.

I spent two weeks in January listening to great producers, and great scientists tell us what is new and important in the business, and science of beekeeping.

I'm not going to speak about the producers now, just the scientists. Consider this for a moment – governments (both Federal and state governments using *YOUR* tax dollar) are willing to spend hundreds, probably thousands of dollars to send their scientists to attend meetings and speak to beekeepers. And, at a big meeting like the Federation (or even EAS), you may get 250 people in a room. What's that come to in cost/person, I wonder?

At the two meetings I attended, I counted 27 Federal and 22 state scientists attending as speakers. Now I

Continued on Page 54

ROOTS & An Academic Challenge

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Bee Culture

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Advertising

For information on placing display advertisements, contact Dawn Feagan in our Advertising Dept. 1-800-289-7668. Ext. 3220

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

New Tools For 1997

BeeToolz, from Bismarck, ND has produced a baked-on Teflon coated 10" hive tool. The entire surface is coated. The Teflon makes inserting the tool between stuck-together hive bodies much easier, and wax and propolis don't build up on it during use.

Though the surface will scratch if abused, normal use will not wear or mar the coating for many years of use. Clean up is easy with soap and water or alcohol. High heat will not damage the coating, for those who stick the end in their smoker. Cost is $10.00 plus shipping.

Call BeeToolz, 1-800-4BEEMEN to order.

The wide end is ground for scraping top bars. The narrow end allows quick and *safe* removal of bridge combs.

Need to put in strips? Clean a spot between those frames, safely and quickly! With this tool, you can pry the bridge comb up and out of the way!

Brood frames should not be lifted without first removing the bridge combs to save rolling and killing a queen!

You can also use the narrow end to lift the frames by placing it between the end bar and the super wall, lifting the frame by the ear.

The narrow end is sharpened and can also be used to clean out the frame support ledge!

Like all Maxant Hive Tools, it's manufactured from heavy spring steel, hardened and ground to exacting measures.

It is called the HT-4-BC Bridge Comb Hive Tool!

Contact Maxant Industries, 28 Harvard Rd., Ayer, MA 01432 (508) 772-0576.

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MAILBOX

Snake Oil Rebuttal

"Me thinks the Doctor doth protest too much." I refer to the article "Beekeeping and Snake Oil" by Dr. Mark Winston, Dec. '96.

It is a long time since I have read an article with so much pessimistic negativity based on falsehoods and half truths. I for one question his hidden agenda! He describes the internet in terms which can only be described as ridiculous, antiquated and repressive. At no time has there been lots of information and discussion regarding the use of essential oils. I don't argue there is information on essential oil treatment but you have to look for it (http://www.wvu.edu/~agexten/varroa.hgm) but there has been little discussion. As for 'Neem,' nothing, at least not in the last 18 months.

Instead of looking to "old dusty books" for answers to a modern problem, I would suggest a modern medium might be more useful. The world has a major problem with both mites, and rather than condemning beekeepers who are desperately trying to keep their bees alive, help would be better than condemnation. I would suggest a better approach would be to evaluate all existing methods, publish the results, and work for the common good. But then we will be taking a page from the bee's book, each working for the good of all, and that will never do!

David Eyre
Orillia, Ontario

EAS Nominations Sought

The James I. Hambleton memorial award was established by the Eastern Apicultural Society of North America to recognize research excellence in apiculture. The EAS Student Apiculture award was established to recognize students studying apiculture at the undergraduate or graduate level in a recognized college or university in the United States or Canada. The awards for 1997 will be presented at the annual meeting of the society in Newark, Delaware, August 11-15, 1997. Nominations are now being accepted for both awards.

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

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

Clarence Collison
Mississippi State, MS

Computer Program

I am an Indonesian beekeeper and I want to computerize the management of my beekeeping. So, if anybody could help me, please inform me to where I can get the software. I will appreciate it very much.

I am also eager to have some pen-friends with American beekeepers, so we can exchange experiences and knowledge in beekeeping.

Didi Hedianto
Jl. Anggur (Pandean) No. 239/747
Bangil 67153, Jawa Timur
Indonesia

Editor's Note: *The American Association of Professional Apiculturists has for sale a computerized economic plan for a beekeeping business developed by Dr. Lois Willet of Cornell. It is an excellent program, and, in my opinion, should be better advertised. Contact Dr. Marion Ellis, AAPA Sec., Univ. of NE, Dept. Ent., P.O. Box 830816, Lincoln, NE 68583-0816.*

Fixing Plastic Frames

I have been a beekeeper on and off for over 30 years. I like the question and answer section, as well as the mailbox.

Just in the last six or seven years, I have used the plastic foundation. Adin Ramer asked, "Is there any way of restoring those with bare plastic." Yes there is. You simply cut out the bare side, making sure not to cut through the wax on the other side. I would not use these for extracting, only in the brood chamber. This is a way of extending those frames a little longer. Eventually I would replace these plastic frames. I have used this and it has really worked well.

Rick Stausky
Spirit Lake, Iowa

Questions Accuracy

Your December 1996 issue has a letter from Jim Bach addressing mite control. The problem I have with this letter is Jim makes so many statements that are not true I am wondering, is this guy for real?

The first statement he makes about his "effort to facilitate" is hogwash. Not only did he not assist, he tried to keep Tuttle Apiaries from making any progress in getting the product (Mite Solution) on the market.

The mite control effort of Tuttle Apiaries should be applauded, not scorned. We are heading for disaster if we continue to use the present preventive control that we now have available as it won't be long before we get a strain of mites resistant to this product. At least we have someone who has taken time and effort to come up with an alternative.

Ted Wirch
Battle Ground, WA 98604

Planning A Serendipity?

Did you read the Chairman's View in the Summer 1996 issue of

Continued on Next Page

MAILBOX

the National Honey Board News? In the report, Chairman John Miller explains the reason for the big increase in the price of honey these past 12 months. Subject improvement he wrote, resulted from the good work of the National Honey Board. The antidumping suit was not mentioned. Strange indeed.

Miller begins his report with an excerpt from a NHB release in October 1991 . . .

"To increase U.S. honey industry profitability by increasing honey sales by 40 percent in five years, and the expectations of the Board is that such an increase should result in a price of at least 75 cents per pound paid to producers and importers for bulk honey in five years."

The following excerpt comes from the first paragraph of Miller's report. . .

"Back in 1991, no one believed the honey market would ever achieve the volume growth that would sustain a wholesale price of 75 cents per pound. (Not to mention that no one would have ever considered 90 cent honey a reality.) No one, that is, except the 1991-92 National Board."

It appears to me that Mr. Miller is using a good bit of journalistic imagination when he ignores the good work of U.S. producers in their successful efforts to curb cheap Chinese honey. Or, he may have access to unpublished economic information that would confirm his conclusions. I doubt the latter.

In my view, Mr. Miller is giving undeserved credit to the Honey Board.

An objective in 1991 no one believed (except 13 Honey Board members) had little to do with the economic forces that triggered the increase in honey prices in 1995-96. A number of Check-off buffs, COBs, seem to have a strong feeling that the Honey Board's promotion set the stage for increases. I haven't seen any figures that would support that view.

The 75 cent objective had about the same credibility as a promise to bet on winning horses. Or, an economist's prediction. Or, a politician's promise. If the supporters of an objective had little or nothing to do with a stroke of good fortune of whatever nature, credit should not be claimed.

Individuals, or groups, who benefit from the labors of others without putting out any effort can be identified as serendippers. The good fortune or luck is called a "serendipity." Random House dictionary, 1986 defines serendipity: 1. an aptitude for making desirable discoveries by accident. 2. good fortune; luck. It's not a crime to be a serendipper, but it is a bit questionable for a serendipper to imply the good fortune was a part of his original plan.

In my view, Mr. Miller has written about a "planned serendipity." Leading journalists call this an oxymoron (contradiction of terms – like: cruel kindness; to make haste slowly).

Glenn Gibson
Minco, OK

Dance Language Controversy

Shame on Frank Eichen (*Bee Culture*, Dec., 1996)! Even 28 years ago Dawkins' shallow attempt at humor shouldn't have been taken seriously. His scenario required that bees be distracted from their intended goal to a downwind odor source (see Wenner and Wells, *Anatomy of a Controversy*, Columbia U. Press, 1990, pp 275-278). Can any animal detect an odor source that is downwind of it? Eichen should be embarrassed for preferring cuteness to rationality.

Patrick Wells
Los Angeles, CA

Editor's Note: *Patrick Wells is co-author of* Anatomy of a Controversy, *with Adrian Wenner.*

Observation Hive Observations

A couple of years ago I tried to overwinter my observation hive. It didn't work but it did cause me to notice a curious behavior pattern. In late Fall, the bees began to spread bits of nectar or ripening honey throughout the brood chamber. This was in stark contrast to their pattern in Spring and early Summer. Then, when I would swap in an emptyish frame from an outside hive, they would set right to work on the nectar spread throughout the comb. They would move it tightly into a honey arch.

I expected that because they were obviously making room for the queen to lay. So might the opposite pattern in the Fall be a deliberate move to restrict the number of cells available for the queen to lay? Might it be the bees rather than the queen which were responsible for the reduced rate of laying as Fall turned into Winter? Or at least a trigger for the queen to do that?

Dan Hendricks
Mercer Island, WA

Better Way To Melt Honey

In your November issue I find two honey warmers for 60# pails by Walt Dahlgren and Richard Taylor. I agree all beekeepers need one.

I started beekeeping as a hobby 20 years ago, then it got out of hand. Went as high as 90 swarms but am now down to 30 due to mites and age. I'm now 80 years young but still like it.

I took an old refrigerator, stripped the refrigeration unit out and put a 75 watt bulb in bottom and grated shelf about 4" above the light. This will hold 2 60# pails. It takes approximately 24 to 30 hours to liquefy, costs the light bulb. You can pick up old refrigerators for nothing. I've been using this method for about 15 years.

Melvin Freier
Gladwin, MI

Package Problems?

I am an old beekeeper and in all of my years of beekeeping I never had the misfortune of not either receiving my package bees ordered or receiving a refund of my money for packages not shipped.

Until the Spring of 1995. I ordered four packages of mite resistant bees (in 94) and never received them or a refund. All I got was a letter telling me his package bee troubles in the Summer and he would ship them the following year.

So early in 1996 I ordered several packages from Glorybee in Eugene. I got them April 12th, on time in excellent condition. The

MAILBOX

mite resistant Carniolans were supposed to be shipped April 1st but they never showed up. So that is two years and this Summer I got another letter stating all his misfortunes and he would ship them next Spring. I don't need them now, all I need is my money back. Any suggestions?

Now I'm leery of ordering packages from anyone even though their ad says they are reliable package bee producers.

Now I'm getting up in years, I'll take life a little easier, run just a few colonies for a hobby. Get a nice crop each year from the wild abundant blackberries. After that there are other flowers that yield, including wild fireweed in the Fall.

Now if you have read this far, I'll tell you the name of the package bee producer that's trying to keep my package bee money. He is Huck Babcock of Blue Ridge Apiaries.

I don't know if he advertised in *Bee Culture* in '94 or not as I haven't looked back. But in his letter he says he runs several thousand hives for honey production so he should have been able to ship four packages even if they were a little late. I think he is a fraud and he's waiting for the statue of limitations to run out.

Lloyd Kreklan
Cottage Grove, OR

Editor's Note: *There is no doubt this producer belongs in A.I. Root's Humbugs and Swindles Dept. When we receive a complaint we* 'urge' *the company at fault to make good, and, in extreme cases refuse further advertising.*

A Suggestion for Mite Control

The *Encyclopedia Americana* states mint is a natural source of menthol. Every beekeeper should grow a patch. Spring, Summer, or Fall place a clump of mint above the brood chamber. If there are supers on place a three-quarter inch shim above the brood chamber to make room for the mint. This should take care of tracheal mites. If you don't want mint flavored honey this would best be done before or after the honey flow.

Grease controls tracheal mites so warm some Crisco to a consistency that can be applied with a paint brush. Now take a one inch paint brush and apply a thin coat to the tops of the top bars of the frames in the brood chamber. Also it would be a good thing to use the oil soaked paper towel in the brood chamber once or twice a year.

The above treatments are nontoxic and may be applied before, after, or during the honey flow. The cost should not involve more than nickels and dimes.

Paul Jubb
Cottonwood, AZ

Honey Report Comment

I have used your Honey Report for some time, periodically updating my honey prices based on about your average reported prices.

Thanks for all your efforts at providing this market information each month, and also for your interest in making improvements (although in my estimation it's been quite good already!). As a hobbyist/sideliner I figure it provides a basis for my pricing.

Basically, I establish a base price scale for the average of the more economical containers, and offset this according to container cost, more expensive containers being priced higher and cheaper or recycled containers priced lower. I try to provide a variety of packaging, from economical to fine gift quality containers; as customers and their desires vary widely.

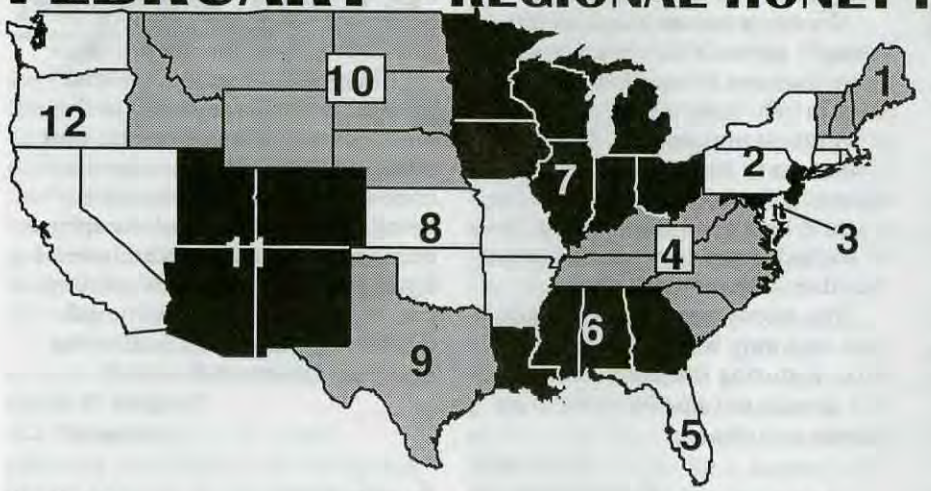
Gregory D. Price
Lancaster, CA

Better Tool

Pick up on the handle with one hand and break super loose with hive tool, walk handle back and super moves back on bottom super. Raise with one hand and install strips or grease patties, lower super and slide in place. Real easy on the back and my new hip replacement.

Charles Leitner
Troy, IL

FEBRUARY – REGIONAL HONEY PRICE REPORT



Region 1

Prices steady to a bit higher, especially in wholesale bulk range. Retail prices steady. Pollination prices inching up, with apples, blueberries, squash, pumpkins main crops. Winter weather on the wet and mild side, at least until mid January.

Region 2

Wholesale prices still rising, but retail prices steady, along with wholesale case prices. Pollination prices steady so far, in the mid to upper 30s. Apples, vine crops, some vegetables, blueberries and cranberries main crops pollinated.

Region 3

Prices generally steady throughout, but peaks and valleys in some places. Winter "average" so far, with enough flight days. Apples and vine crops for pollination, with prices rising.

Region 4

Bulk prices increasing, but wholesale and retail about the same as last month. Weather normal to wet until January, then tended to cool off a bit(!). Pollination prices increasing, apples, vine crops, seed clover, common crops.

Region 5

Prices up a bit for most commodities. Winter, such as it is has been mild, but a couple of cold snaps have occurred. Vegetable crops pollinated, prices steady.

Region 6

Bulk prices steady, wholesale up, retail all over the map. Go figure. Winter warm and wet, so far, with a few cold snaps. Pollination prices up a bit, with vine crops, peaches, vegetables, cotton and blackberries listed as served.

Region 7

Prices generally steady, for a change. Winter was mild and pleasant early, cold and nasty later. Lots of snow in the north. Flight days challenged. Pollination prices rising fast because of significant colony shortages. Apples, vegetables, blueberries, vine crops and some seed crops pollinated.

Region 8

Prices steady to a bit lower. Winter mild until January when the season changed to more normal temps and moisture. Pollination prices steady, with apples, strawberries, vegetables, vine crops and even soybeans listed.

Region 9

Prices rising for bulk, but pretty steady elsewhere. Winter warm dry and traditional, so far. Pollination cost increasing, especially in the valley, with vine crops dominating.

Region 10

Prices pretty steady across the board, with producers either sold out, committed, or waiting-to-see. Lots of honey waits-to-see up here. Winter has been, well, winter here. Cold, snow, cold snow. Pollination primarily seed crops locally, and almonds for those who move.

Region 11

Prices pretty steady for most commodities. Winter a bit colder than usual, with some really cold snaps in mid January. Pollination for seed crops and irrigated vegetables primarily, with cotton and citrus mentioned, along with fruit trees.

Region 12

Bulk and wholesale prices up, retail steady. Winter has been wet, wet, wet. Flooding in many areas, but generally a bit warmer. Lots of pollinated crops here – almonds, seed crops, meadowfoam, pears, apples, cherries, berries, vine crops, sunflowers, vegetables and more.

	Reporting Regions												Summary		History	
	1	2	3	4	5	6	7	8	9	10	11	12			Last	Last
Extracted honey sold bulk to Packers or Processors													Range	Avg.	Month	Yr.
Wholesale Bulk																
60# Light	68.86	74.00	76.45	70.00	76.45	67.00	68.67	69.00	76.45	76.45	78.20	64.25	60.00-99.00	68.23	64.84	47.98
60# Amber	64.19	68.46	68.54	62.40	60.00	60.75	67.40	62.75	68.54	68.54	69.00	64.33	50.00-90.00	65.61	61.85	45.61
55 gal. Light	0.93	1.23	0.98	0.95	0.98	0.94	1.03	1.00	0.98	0.98	0.93	0.94	0.75-1.23	0.97	0.93	0.67
55 gal. Amber	0.88	1.08	0.90	0.82	0.92	0.87	1.00	0.97	0.92	0.92	0.88	0.91	0.70-1.15	0.91	0.87	0.62
Wholesale - Case Lots																
1/2# 24's	29.43	27.98	32.07	31.68	23.30	32.74	28.17	28.00	32.07	32.07	35.17	25.87	18.00-48.00	30.22	30.99	22.50
1# 24's	40.77	37.50	46.28	40.83	38.40	38.67	41.33	39.63	46.28	46.28	45.43	42.46	32.40-65.00	41.45	41.41	32.57
2# 12's	37.81	34.78	42.68	43.50	35.30	36.93	36.53	37.33	42.68	42.68	40.10	42.00	29.40-60.00	38.64	36.85	30.89
12 oz. Plas. 24's	34.61	33.68	36.59	35.57	36.59	32.80	32.92	34.92	36.59	36.59	43.98	31.73	26.40-48.00	35.36	34.93	29.02
5# 6's	36.79	34.86	36.94	45.75	36.94	36.83	39.04	38.87	36.94	36.94	32.63	37.23	20.00-52.50	38.31	40.77	31.78
Retail Honey Prices																
1/2#	1.90	1.98	2.83	2.17	1.39	1.90	1.76	1.69	2.83	2.83	2.13	1.64	1.25-3.59	1.93	1.88	1.52
12 oz. Plastic	2.09	2.11	2.08	2.37	1.85	2.06	2.01	2.18	2.08	2.08	2.28	2.01	1.20-2.89	2.14	2.08	1.74
1 lb. Glass	2.58	2.54	2.61	2.78	2.99	2.70	2.41	2.49	2.61	2.61	2.77	2.63	1.99-3.19	2.64	2.67	2.00
2 lb. Glass	4.23	4.09	4.15	4.62	3.10	4.59	4.29	4.30	4.15	4.15	4.33	3.99	2.10-5.99	4.35	4.36	3.43
3 lb. Glass	5.62	6.50	5.86	5.97	5.10	6.30	5.20	5.50	5.86	5.86	5.86	5.82	3.80-8.00	5.78	5.87	4.59
4 lb. Glass	7.16	6.15	7.83	6.89	7.83	7.97	8.18	7.99	7.83	7.83	6.09	7.83	4.94-11.00	7.55	7.14	5.62
5 lb. Glass	8.97	8.94	9.74	8.83	9.74	9.40	9.26	9.24	9.74	9.74	8.41	8.61	7.00-13.00	9.21	8.50	7.08
1# Cream	3.28	3.28	4.18	3.67	3.89	2.78	2.54	3.07	4.18	4.18	3.10	3.98	2.25-7.00	3.30	3.14	2.57
1# Comb	4.03	3.87	4.37	3.73	4.37	4.08	3.76	4.00	4.37	4.37	5.92	3.75	1.95-7.00	4.16	4.22	3.35
Round Plastic	3.65	3.22	4.40	3.00	4.40	3.75	2.83	3.99	4.40	4.40	5.75	3.50	2.45-7.00	3.76	3.71	3.05
Wax (Light)	3.00	4.11	3.44	1.90	2.50	2.94	2.65	2.75	3.44	3.44	2.90	4.06	1.25-6.00	3.06	2.55	1.88
Wax (Dark)	2.60	3.50	2.50	1.73	1.75	2.54	2.50	2.00	2.92	2.92	2.63	2.98	1.10-5.00	2.66	2.23	1.54
Poll. Fee/Col.	36.69	36.40	44.71	33.75	25.00	31.20	50.00	35.00	44.71	44.71	35.00	34.75	22.00-75.00	37.14	34.66	30.25

Roger Morse

Research Review

"Reading term papers is often rewarding, and always revealing."

In my introductory beekeeping course at Cornell, I give the students an opportunity to write an optional term paper. If the paper is satisfactory, I raise the student's grade one unit, from a B to a B+, for example. This year 14 students in a class of 67 wrote the paper, which is about the usual percentage; long ago I concluded most students are not too grade-conscious. Most of the students write about the honey market as a result of visiting five or six stores in Ithaca or their hometown. I limit the number of topics on which they may write. Some of their comments are revealing as I record below:

Mead: "The sales clerk was a very friendly old man" who offered one student an opportunity to taste his mead. "We were greatly saddened when we realized I was underage."

Comb honey: "The owner of the store told me she only keeps a couple containers of comb honey in stock because there isn't much market for it anymore." Another wrote, "I find comb honey disgusting. Who likes picking wax out of their teeth?"

Price: The best price for honey in Ithaca is $1.79 for one pound of clover honey sold in our largest supermarket under their own private label. However, one local specialty shop sold eight ounces of clover honey for $3.99, which caused the student to comment, "... a pretty outrageous price compared to other prices." Another reported, "The most notable difference was the range in prices as I went from store to store." One paper recorded, "I personally would go to Topps" (a supermarket in our area that offers local honey and national brands) "because I like to support the local economy." One student reported, "Supermarket brands were less." Another wrote, "I learned to be an aware shopper." Interestingly, no student made any favorable or unfavorable comments about foreign honey on the market.

Labels: "I think the Sue Bee labels are the most tasteful." Another student wrote, "A label with a rabbit in a field of wildflowers . . . was very attractive." One thing the labels and packages conveyed was the theme that "Honey is an all natural product." One label read, "We only use the finest quality of honey from the most experienced beekeepers." Another wrote, "The lid said hive-fresh." Several labels indicated the honey was "natural and made by local families." This appeared to make a favorable impression. It was obvious by the comments that many students tended to favor natural products. In fact, one student wrote, "I think honey's popularity on the world market stems from the fact that it is, by definition, an all natural substance."

Premature granulation: When I lectured about honey in my class, I talked about premature granulation of liquid honey in jars sometimes being a problem. I passed around some jars that were partially or wholly granulated. It was interesting to me that only one student mentioned finding a jar of half-granulated honey. This indicates to me packers are doing a good job of sealing their jars hot, and stores are doing a good job of rotating their jars.

An elixir: In a Korean store in Brooklyn a "honey medicine consisting of honey, lemon juice and mint leaves" and other "ingredients the owner would not divulge was popular with elderly adults." The above ingredients were revealed to this student "because I promised to buy two bottles." Another student wrote, "It makes me upset to see a health store passing off a product like bee pollen."

Private labels: One honey packer I visited recently took me into the room where he stored the labels he used. He had about 400 different labels from various stores, in addition to his own, under which he packed his honey. It was evident from what the students wrote that they did not understand the extent to which many grocery chains and supermarkets use their own labels. One of the chief reasons supermarkets are able to sell their honey for a lower price is that they buy in truckload lots directly from packers and avoid paying a broker's fee. The packer who may sell the same honey under his own label must pay a broker's fee to sell in the same store where the privately labeled honey he packed sells for less. A discussion of private label accounts is something I must add to my lecture material another year.

My reactions: In the above paragraphs I report what my students wrote. Some of their comments are a bit of a shock. For example, I was surprised by the young lady who wrote about comb honey being disgusting, especially since I had had a honey tasting and had discussed comb honey in a favorable light.

I think most of us who produce comb honey think of it as a premium product; however, it is true there is less comb honey on the market each year. I will admit I have seen too much crystallized comb honey on grocery shelves. I often make a little comb honey myself to give to friends – now I wonder what they may think about it. I remember too well one of my friends thanking me for some comb honey but remarking that crushing and straining the honey from the comb was quite a chore.

Reading term papers is often rewarding, for example, the student who wrote, "The last and probably most important lesson I take away from this paper is the many uses of honey in our society and its importance in our food industry."BC

? DO YOU KNOW ?

What Do You Know About Beeswax?

Clarence Collison

Beeswax has for a long time been considered an important hive product and a secondary source of income for beekeepers. Beeswax has many practical applications, both ancient and modern, and demand for this product greatly exceeds the amount produced annually.

Please take a few minutes and answer the following questions to determine how well you understand the characteristics and uses of beeswax.

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

1. ___ Pure beeswax is a mixture of several different compounds.
2. ___ Blocks of beeswax and comb foundation may be stored for years if the storage conditions are proper.
3. ___ Wax bloom on the surface of beeswax can be reduced by allowing it to cool slowly.
4. ___ Fermentation of diluted honey in wax cappings and refuse will effect the odor of beeswax and make it unsuitable for normal uses.
5. ___ Wax bloom found on candles, blocks of wax, and on comb foundation does not do the wax any harm.
6. ___ When beeswax solidifies from the liquid state, it increases in volume.
7. ___ The chemical treatment of candle wicking is called pickling.
8. ___ In its purest form, beeswax is yellow in color.
9. ___ The bleaching of beeswax is commonly done by the sun or chemically.

Multiple Choice Questions (1 point each)

10. ___ All of the following metals will discolor beeswax except:
    A. Iron
    B. Zinc
    C. Brass
    D. Copper
    E. Aluminum
11. ___ Worker honey bees have ___ pair(s) of wax glands.
    A. One
    B. Four
    C. Three
    D. Five
    E. Two
12. ___ Wax bloom found on the surface of beeswax is:
    A. High melting waxes that migrate to the surface.
    B. A fungal growth.
    C. A deposit of yeast cells.
    D. Low melting waxes that migrate to the surface.
    E. A mold that lives and develops on wax.
13. ___ The largest use of beeswax in the United States is in the making of _____.
    A. Candles
    B. Cosmetics
    C. Comb Foundation
    D. Pharmaceuticals
    E. Electronics
14. ___ Today, beeswax church candles normally contain _____ % beeswax.
    A. 51
    B. 100
    C. 67
    D. 26
    E. 42
15. ___ The ideal temperature of the beeswax for dipping candles is about _____ ° F.
    A. 145
    B. 155
    C. 165
    D. 175
    E. 185
16. ___ The ideal color for blocks of beeswax in a honey show is considered to be:
    A. White
    B. Canary Yellow
    C. Dark Brown
    D. Tan
    E. Golden Yellow
17. How would you remove wax bloom from candles? (1 point).
18. What is the function of a wick in a beeswax candle? (1 point).
19. If you are going to make a rolled candle, what two materials are needed? (2 points).
20. Why would an individual dip their molded candles two or three times? (1 point).
21. What are the "lost wax process" and batik techniques used for? (2 points).
22. What is the source of the best grades of beeswax in a beekeeping operation? (1 point).
23. Name one organic solvent that will dissolve beeswax. (1 point).

ANSWERS ON PAGE 48

GLEANINGS IN BEE CULTURE.

DEVOTED TO BEES AND HONEY, AND HOME INTERESTS.

Vol. VII. JUNE 1, 1879. No. 6.

A. I. ROOT, Publisher and Proprietor, Medina, O. Published Monthly. Established in 1873. TERMS: $1.00 Per Annum in Advance; 3 Copies for $2.50; 5 for $3.75; 10 or more, 60c. each. Single Number, 10c.

Although the Root Company had already been in the business of supplying beekeepers for six years, 1875 was a turning point for the beekeeping industry, the A.I. Root Co. and A.I. Root himself.

In 1875 *Gleanings* was still 75¢/year subscription, with discounts to clubs and 'sellers.' Talk about conventions continued, with Root's advice being that "Great Producers seldom attended, so which is best – listen to a great speech or read an article in a magazine?" That debate continues somewhat today, with most scientists willing to speak to a crowd of beekeepers, but only willing to write for other scientists. Meanwhile, the great producers still seldom attend meetings.

Swindlers were still on the scene, selling patent rights, distributing circulars and taking money for products or services not delivered.

Numbered problems were still addressed, but A.I. was slowly moving away from that avenue of communication.

The first change came in March, 1875, when A.I. wrote of ". . . the light breaking above," and ". . . my conversion to the Author Of All That Is." Religion, serious religion came to A.I., and his magazine. The Golden Rule was the way, and the way was what transpired in both the business and the magazine for as long as he had a say in what was printed.

In the Spring of '75 Langstroth began writing again, having recovered from his ailment, at least for awhile. He talked of patent rights (foolish!), and feeding queens and wintering.

The Heads of Grain section was becoming larger, taking the place, at least somewhat, of the Q&A section. The letters and Root's responses were taking over.

Moses Quinby died that year, alsike (Swiss) clover was mentioned as a great honey plant, different ways to 'cure' foulbrood were discussed along with poisonous (Laurel) honey, and honey adulteration with 'grape' sugar.

The first mention of 'artificial comb foundation' was made, along with the six frame sizes available. The second big change came in November, when the first 'Our Homes' department article was published. It had little to do with beekeeping, and was mostly about 'living.' By December chapters 1-5 were available as a stand-alone publication. The first year-end index appeared in the December issue.

In 1876 the price of a subscription went up to $1.00, artificial comb was taking off, better section boxes were designed, there were over 1200 subscribers, and in March the third great change occured. A foundation mill was perfected (though plates where experimented with earlier) and advertised for sale. It made 5½ sq. ft./lb. wax for 75¢/lb. (work-up for 50¢/lb.).

Complaints about small typesize were numerous, along with beginners wanting more detail and old timers not wanting the same subjects replicated month after month. Some things in this business *never* change.

In June '76 G.M. Doolittle began writing on a regular basis, extractors were selling at 12/day (give frame size when ordering!), and a column on managing box hives started, along with a regular Bee Botany and Entomology section.

Root bought a 4½ horse power steam engine to run his factory, declared gloves as not practical, restated that imported queens were still the best, and that foundation with paraffin worked fine with the bees.

The old windmill went up for sale, milkweed 'pollina' was not a disease and editors of newspapers were in the habit of making careless mistakes and errors. The press was in trouble with beekeepers even then. In October the first cover drawing appeared.

In the November issue A.I. reported seeing a Drone congregation area, where drones were falling from the sky like rain and queens were in the hundreds. There were 1787 subscribers in December.

The January 1877 issue had this letter:

"Does every fool that keeps a few swarms of bees write you about what wonderful things he, she, they or it, are doing? If so, and you read them all, I pity you and will suggest that you secure a place in some convenient lunatic asylum to return to when it becomes necessary." (G.M. Wing). There were, and continued to be lots and lots and lots of letters about those wonderful things.

Foundation machines were for sale – 12" - $100.00; 9" - $50.00; 5" - $30.00. Drone comb $3.00 extra.

Drawings of apiaries were popular, keeping the engraver busy, typos in the magazine when mentioned(!), the magazine was "Devoted to Bees & Honey & Peace On Earth & Good Will To Men."

In May the first 8 pages of ABC were inserted in the magazine (if you subscribed long enough you'd get the whole book). Questions were referred to the book, and in only 2 pages, were explained "How To Do Everything That Needs To Be Done With A Colony Of Bees," which would be repeated many times in future numbers.

Chaff hives (insulated) were popular, as were sections – 50,000 of the improved boxes were already

sold, made, Root explained with the new 25 horse power engine.

Year's end brought an advertiser's, diagram, illustration and correspondent's index.

1878 started off with the Root Co. doing away with the metal cornered frames and using only wood. Originally, frames had metal ears, that sat on, essentially, a knife blade on the rabbet inside the box. The metal ear, sitting on the sharp edge reduced to nothing the propolis problem and the act of squashing bees when the frame was replaced. A.J. Cook, Michigan's Beekeeping Specialist told A.I. all that was foolishness and he was tired of cutting his fingers. A.I. listened . . .

Lots of how-to-make-it-yourself articles were published this year – section boxes, saws, soldering equipment, smokers, feeders, and more. A.I. was giving away all his secrets!

By May that year there were 3,000 subscribers, 90% of all hives sold were of the Langstroth design (simplicity and others were slowing fast), and plans were underway to build a 100' x 40' brick factory on the county fairgrounds. They had 66 employees. By November that year the factory was finished, costing $10,000 and a new 50 HP motor was running everything.

The 1878 December issue had a supplement added showing the entire new factory and describing what went on on all three floors. A.I.'s office had observation hives, seed storage rooms and editorial space. Plus, a brand new #3 Cottrell & Babcock Press was added for the magazine. It was all *very* well done, and there were 4,000 subscribers.

In January, 1879 the look of the magazine changed (that new press, you know), and the month and year were printed standard on each page. ABC was being sold in 'parts,' and still inserted in each issue.

There were six pages of advertising, and labor was 2½¢ - 40¢/hour. A.I., discussing labor, said, "strength is easily found, but brains are scarce." Has this changed?

By March there were several engravings in each issue, the Simplicity Cold Blast smoker was selling well, and the price of sections was reduced. This due to cheaper lumber, better machinery and others selling for cheaper prices. Right.

Liz Cotton and N.C. Mitchell were still stealing beekeepers blind with their fraudulent schemes of selling patent rights, not delivering paid-for equipment and nothing-to-it 'training' classes and there were 62 employees.

In May, Mitchell was caught bribing a post master to get beekeeper's names, and Blasted Hopes, Our Homes, The Honey Column (prices for buying and selling), Notes and Queries, Heads of Grain, Bee Biology and Entomology were still popular columns. Railroad freight costs were dropping fast, and A.I. was buying back issues from subscribers to fill in *his* collection.

Section boxes with two screened sides were being used for queen cages in 1879, toads were increasingly a problem near swamps, and New Jersey was the first state to pass a law making honey adulteration illegal, but the feds still hadn't.

In June, '79 they were selling 1,000 smokers a month, A.I. was paying $10-25 for any invention he could use and Quinby's book was revised, and available for $1.50.

In July the full *ABC of Bee Culture* was advertised, (but only in parts). L.L. Langstroth was ill again (he had been writing steadily for a bit), and there were 4,240 subscribers.

In August that year the Post Master General put his foot down on sending bees through the mail (you couldn't), a ladies' column was started, wax adulteration was becoming more and more of a problem, and a detailed article on the types of hammers and nails to use in constructing equipment (and available in the catalog) was presented complete with engravings of each.

In October *ABC* was finished, with each page remaining in set-up type, so additions or corrections could be made instantly. The book was printed on demand, but it took two years to complete. The November issue had an engraving of Root's 500 colony apiary in a hexagon shape, with every colony 7' apart! There were 24' wide walks of sawdust and coal cinders between colonies.

In December that year Root released a one-piece section box that revolutionized the craft, and the beginnings of the great honey bee/grape discussion began. Do bees destroy grapes? Root said yes. Nearly everybody else said no. Time will tell.

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Next month we will again look at a longer, but no less interesting bit of American Beekeeping History.

Mark Winston

Mite Load

"The standard explanation for this high Winter loss was parasitic mites, with the combination of tracheal and Varroa mites receiving the blame."

Spring last year was a real good news/bad news time for beekeepers. The good news was that honey prices reached record levels, and appeared to be staying high. The bad news was that beekeepers in many states did not have enough colonies with which to make money on these windfall honey prices. Many beekeepers reported 50-80 percent colony losses over last Winter, with beekeepers in the northern United States most heavily affected. The standard explanation for this high Winter loss was parasitic mites, with the combination of tracheal and *Varroa* mites receiving the blame.

I'm not so sure. That is, I believe that the mites had a major role to play in that Winter loss, but I'm not so sure the mites deserve all the blame. Both tracheal and *Varroa* mites can be controlled, and kept at levels low enough to have only minimal effects on colony health. We have the medications and techniques available to deal with the mites, and proper applications should be effective. Yet, beekeepers throughout the U.S. have been reporting major losses; what's going on?

I think high levels of Winter loss have resulted from a mix of colony management problems that we are only beginning to appreciate, difficulties in providing appropriate extension information to beekeepers on how to deal with diverse mite situations, and an inadequate inspection and regulatory process that has left U.S. beekeepers with insufficient tools to cope with parasitic mites. Taken together, this combination of factors has proven to be a potent brew that has left beekeepers struggling with a problem that shouldn't be as serious as it has been.

One problem with tracheal and *Varroa* mites is that the two mites together may be considerably more problematic than either is separately, especially if colonies are stressed in other ways in addition to mites. We experienced this firsthand a few years ago, when beekeepers in my region lost 66 percent of their colonies one Winter, and we lost about 30 percent of our university bees. At that time, tracheal mites had been in our area for a few years, but were present in low numbers and seemed to be a minor problem. We had a poor season the previous Summer, and *Varroa* arrived, although the *Varroa* mites were not very abundant going into Winter. However, the combination of colonies at below-average strength afflicted with low levels of both mites proved deadly, and Winter losses were high.

This experience illustrates the concept of synergy, in which two or three factors taken separately have little effect, but when combined prove much more serious than any of them would on their own. Thus, strong colonies going into Winter with low populations of one mite could be fine, or below-average colonies with no mites would still do reasonably well, but slightly weakened colonies with both mites present at low to moderate levels may be a disaster.

Two of my students are currently investigating this phenomenon. One project, conducted by Danielle Downey, is comparing colonies with no mites, tracheal mites only, *Varroa* mites only and both mites together. She is examining individual bee behavior and colony-level effects. Early indications seem to confirm that the bees in colonies with low levels of both mites may live shorter lives and be less effective at foraging than those from one-mite colonies, but this project is still in its early stages. A second student, Alida Janmaat, has been investigating Varroa effects in colonies that are well-fed and those deprived of some pollen. Again, her results are just coming in, but suggest that colonies weakened by poor nutrition show greater impact from Varroa than those that are well-fed. If so, these results suggest that a reasonable level of mite control might not be sufficient to guarantee colony survival. Rather, good overall colony management that includes the maintenance of populous colonies going into the Winter, control of other disease and an adequate level of nutrition are still critical factors in determining beekeeping success.

Another problem that may afflict many beekeepers is improper application of mite control measures. Whatever the method used, be it grease extender patties, menthol, Apistan or formic acid in Canada, these tools are expensive to purchase and labor-intensive to apply. Thus, it is not surprising that beekeepers would do the bare minimum of mite control, but perhaps we have been underestimating the importance of continued vigilance against mites.

For a beekeeper running 1,000 colonies, it is tempting to skip that Spring treatment with menthol if colonies seem strong, or perhaps pass on that fall treatment with Apistan if *Varroa* are not visibly abundant. It is easy to underestimate mite levels unless careful sampling is done, but sampling is also expensive, and cutting back on sampling may appear to be an attractive way to cut

Continued on Next Page

"What is more disturbing is that there appears to be an epidemic of improper use of Apistan as well as other, non-registered miticides, at least if the corridor talk at beekeeping meetings is to be believed."

MITE LOAD ... Cont. From Pg. 19

costs when colonies seem healthy. Yet, it doesn't take more than one cost-cutting reduction in sampling or treatment before mite levels can boom, and suddenly it's a 50 percent Spring loss staring you in the face.

Even vigilant beekeepers are faced with a problem, because today's extension information does not adequately define when and how to treat for one or both mites. There is an overabundance of sampling methods to choose from, but there remains a poor understanding of the relationship between mite levels found by various sampling methods and recommendations for treatments. We are just beginning to see extension publications with clear recommendations for treatments based on pre-treatment sampling. We need to further refine these recommendations to be easier to use, and more effective at recommending which treatments should be applied when and how under different conditions.

Another factor that may be producing undesirable levels of Winter loss is *Varroa* resistance to Apistan. This is still undocumented in North America, but it is disturbing that beekeepers who do appear to be using Apistan properly, and apply it two or even three times a year, are still experiencing high levels of colony loss. What is more disturbing is that there appears to be an epidemic of improper use of Apistan as well as other, non-registered miticides, at least if the corridor talk at beekeeping meetings is to be believed. Even proper use of Apistan is resulting in high residue levels in beeswax, creating problems for the international beeswax market as well as providing the type of continuous, low level exposure to Apistan that can quickly induce resistance. If resistance is developing, we are in for a rocky ride the next few years, and the only ray of sunshine to brighten the picture is that honey prices will remain high due to shortages of production induced by high Winter losses.

While illegal use of miticides by beekeepers may be part of a developing resistance story, the U.S. regulatory process also must shoulder part of the responsibility. The clearest way to insure that *Varroa* will develop resistance is to have only one treatment licensed for use, which is currently the situation in the United States. Alternating treatments is the best way to prevent resistance, but there is an alternative available to Apistan that has yet to be registered for use on bees.

That alternate treatment is, of course, formic acid, which has been registered and used successfully in Canada for the past three years. Formic acid is not a panacea for mite problems; it is difficult to apply, can be dangerous to the applicator, is labor-intensive to use, and is not quite as effective against *Varroa* as Apistan. However, it does have two significant advantages. First, it is effective against tracheal and *Varroa* mites. Second, and most significantly, formic acid and Apistan can be alternated, thereby minimizing the possibility that resistance will develop. Our Canadian beekeepers have had good success using Apistan in the fall and formic acid in the spring, sometimes with the addition of an extender patty in the spring or fall to further suppress tracheal mite levels.

It is ironic that formic acid is registered for use in Canada but not in the United States, because Canada usually is stricter about licensing chemicals, and requires more testing than in the U.S. It is not clear to me why it has been so difficult to register formic acid in the U.S., especially because low levels of formic acid are naturally found in honey; formic acid leaves little or no residue in wax, and many more toxic pesticides are registered and widely available for other purposes. A well-coordinated, cohesive lobbying effort by the major beekeeping and professional organizations in U.S. apiculture would be warranted to overcome the apparently unreasonable caution that U.S. regulatory officials have displayed concerning the use of formic acid as a miticide in beehives*.

It also may be time to take a look at re-establishing beekeeping regulatory and inspection services, either run by government or privately. Both regulation and inspection have declined substantially in the last few years, due partly to government cutbacks, but also due to an attitude on the part of beekeepers that they want less government involvement in inspection and regulation.

With colony losses of 50-80 percent in many areas, I think beekeepers could use some help. Increased inspection, mandatory treatments for problem apiaries, and more regulation overseeing treatments before colonies are moved might be useful in reducing mite impact. The formerly robust inspection services we had for AFB, coupled with strict regulations concerning treatments of infested colonies, were effective in the past at bringing AFB under control. A similar service might also be effective against mite problems.

None of us likes regulations, we have become intolerant of inspection services, and certainly paying a fee for inspections would not be popular among beekeepers. Nevertheless, losing 50-80 percent of colonies is not going to be too popular, either. A better-coordinated effort to manage mite and other colony health problems might prove useful in reducing this high level of colony loss. And, it might be cost-effective. Paying $5 a year per colony for a government-run or private inspection service that would monitor mite levels and prescribe treatments might seem excessive, but saving $10 a year by using only necessary and properly timed applications might be one benefit of an enhanced inspection program. Even more significantly, a beekeeper using a properly run inspection service could earn hundreds of dollars in honey sales from a colony that might otherwise have been dead. Seems cost-effective to me. BC

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**USDA Scientists have completed all of the required studies to register formic acid in the U.S. Their work was finished years ago. The EPA has the research, but has not yet acted on it.*

101 REASONS A QUEEN GETS REPLACED

Dr. James E. Tew

All right, all right...maybe not a full 101 reasons, but there are a lot of good reasons to requeen regularly. I suspect that "Regular Requeening" is in the top three basic recommendations for good bee colony management. In my opinion those recommendations are: (1) Treat and control diseases and pests regularly, (2) Add extra space to both brood and honey storage areas before it is needed, and (3) Requeen regularly. Regardless of the number of reasons, you would not have read to this point if you did not appreciate the importance of queen management and replacement.

The queen normally bears the brunt of blame for bad things that happen in a colony. Obversely, when things go well, she gets credit for good times in the colony. Though it's a "feast to famine" existence for the queen, I suppose the queen really is ultimately responsible for most of the good and bad things that happen within a colony. The queen is the spark-plug of the colony's engine. Harry Laidlaw, noted author and researcher, has described the honey bee queen as a biological kit. This kit produces chemicals (pheromones) and makes genetic contributions (eggs) to the colony. When the beekeeper changes the "kit", changes are being made in the manner the colony will operate for the next couple of years.

Even a good queen runs out of steam after awhile.

There are four broad reasons in which all reasons for requeening cases will fall. They are:

1. The queen herself fouled up and got replaced because of it.
2. The bees in the colony screwed up and caused the queen to be replaced.
3. You - the beekeeper - screwed up and caused the queen to be replaced.
4. The queen, the bees, and you, all had bad luck, thereby causing the queen to be replaced.

The Queen Fouls Up

1. How can a queen screw up badly enough to get herself kicked out of a job? The easiest way to lose her prominent position within the colony is simply by getting old and not being able to maintain her chemical and genetic (eggs) output. As I breath down the barrel of my 49th year, I now find this old age reason to be scary. Yet it happens to all of us, both queens and beekeepers. We get old. How old is too old for a queen? Minnesota honey bee researchers Sugden and Furgala reported that many queens turned up superseded after 16 months. Requeening every two years has long been the general recommendation for the average hive.

In fact, if the colony is in a climate having a short nectar-producing season, the queen can go for two years. On the other hand, in extended blooming seasons or in operations where intensive egg production is required (e.g. package production), queens should probably be replaced annually. Annual requeening is a practice most commercial honey producers perform in order to maintain maximum honey output.

2. The queen must satisfy two masters - both the beekeeper and the bees within the colony. The queen may be meeting all beekeeper demands, but not be meeting bee demands and find herself in big trouble with the bees in the colony. What beekeeper will ever know why the bees don't like a particular queen? None. Maybe she doesn't smell just right...maybe she doesn't act just right or maybe she's got an attitude. Regardless, the chances are excellent that you won't change the bees' little minds. Through the years, I have encountered situations in which (what appeared to be) perfectly good, productive queens were absolutely unacceptable to the colony bees. I doggedly destroyed supersedure cells time and again until I just gave up - even though the brood pattern, demeanor, and population of the colony appeared okay - something was just not right with the queen. It usually happens with new queens from packages or from replacement queens.

The Bees in the Colony Screwed Up and Got the Queen Replaced

1. Pesticides come to my mind immediately. When bees are aggressively foraging, they can get in trouble working a chemically-treated crop. Normally, such bees die before exposing the colony members and the queen, but with some chemical compounds, house bees store the poison in the pollen and subsequently feed it to the queen. She's toast and either can't function correctly or dies outright. 2. The hive is not protected well enough during a robbing episode and the queen is killed. Or she is lost during a swarming event that occurred during bad weather. Maybe she's neglected within the colony. The point is that bees within the colony are not always perfect. At times they blunder also and the queen frequently pays.

Letting the bees replace a queen is a good, cheap way to produce a mediocre colony. These supercedure cells mean the queen was lost, and the bees are replacing her.

You, the Beekeeper, Screwed Up & Caused the Queen to be Replaced

1. There's no problem finding examples for this category. Aside from aging queens, beekeepers are responsible for queen loss and replacement more than anything else. A classic example is removing the center frame first when examining a colony. The frames are tight, burr comb is everywhere, and the population is high. Bees - including the queen - roll and tumble all over each other. In the process she's frequently damaged. To the bees and queen, it must feel like being in a land slide. To prevent this from happening, remove side frames first and then work toward the center where the queen probably is. Beekeepers-past used "follower boards." These were solid boards, ½ inch to ¾ inch, that were cut in the shape of frame. They were placed on either side of the colony, in place of the outer-most frames. They were easily removed allowing space to remove the first bee-filled frame. They also provided some insulation for the sides of the colony against temperature extremes.

2. You accidentally killed the queen. It happens. Many years ago, (such a thing would never happen to me now), I was on an overnight trip to a grower meeting in Ohio. I had been requested to bring a large observation hive to the session. The hive over-heated during the car ride and a few bees were dying. Evening was approaching. I wanted to make the best impression possible the next day so I decided to open the colony for the night, allowing them to settle down. At dawn the next morning, I returned to close the observation hive only to find all the bees clustered outside on the front of the observation hive. What to do, what to do? Bees were flying and crawling a bit, day was approaching, and time was slipping away. I gently smoked the bees into the hive - all the while searching for the queen. Even though she was marked with a bright red spot, she was not to be found. Though most of the bees went into the hive, a few were still flying and crawling about. Again, I checked all around for the queen. Nothing. The people traveling with me checked both me and each other. Nothing. Abruptly, I knew where she had to be - smashed on the bottom of my boot. And there she was - bright red dot and all. She could not be resuscitated.

Years earlier during a different screw-up, as I replaced a frame, the pieces of burr comb re-united themselves. I watched in bee-horror as my queen's abdomen exploded as it was crushed between the halves of pieces of burr comb as they recombined. On another occasion, I was party to putting a queen temporarily in a match box in order to hold a swarm in place. Just as the box was closed, the queen made a break for freedom only to be neatly decapitated just as the box slid closed. Neither of these two queens survived either. I'm using personal examples here. Feel free to jump in this discussion at any time with stories of your own.

The Queen, The Bees, And You, All Had Bad Luck That Caused The Queen To Be Replaced

Most examples of queen replacement in this grouping fall under "Acts of Nature." What's an act of nature? 1. An example of an act of nature is when a 14 inch diameter, 35 foot tall, pine tree falls in the bee yard landing on five colonies. This happened in a South Alabama yard that we did not visit frequently. By the time we found the mess, queens were being replaced in three of them. The other two were just busted up, but were still operational.

Continued on Next Page

101 REASONS... Cont. From Pg. 23

2. Colonies can go through fires, wind, and flooding with good and bad results. Having bears attack bee hives is not news, but I have had to deal with cows breaking through fences and knock hives over scattering parts and bees all about. Even though bees and equipment having survived a cow attack can frequently be saved, queens are almost always lost.

The examples listed emphasize the point that the queen usually bears the burden of hive problems even though they may occasionally nor really be her fault. Aside from all the instances listed above, there are basic reasons - besides the queen's age and bad luck - that will warrant queen replacement.

Elementary Apicultural Reasons for Requeening a Bee Colony

Aggressive Personality. If you work bees long enough, you will be stung. How many stings you take is pretty much up to you. All of us have our limits and at that limit, we decide that a colony must be requeened. It's just too hot to handle. Requeening with gentler stock will eliminate that problem. It will take several weeks for the results of the requeening to take place. But in the long run, it will be the hot colony that you will remember (though the memories may not be all that pleasant).

Excessive Swarming. What is excessive swarming? Certainly more than one swarm per year. Every swarm that leaves takes the year's honey crop with them. In their book, "Beekeeping", Eckert and Shaw said that requeening annually or at least every two years will tend to reduce the number of swarms which leave. They also wrote that queen mothers should be selected from stock showing retarded swarming characteristics. Remember that when you hive a swarm, it will have a queen that is probably two years old or older is an excellent candidate for supersedure. Also remember that by hiving the swarm, you are incorporating swarming tendencies in your beekeeping operation.

Excessive Propolis or Burr Comb Production. There's nothing really wrong with this characteristic other than it's messy. I've already said that I have accidentally killed queens by crushing them between halves of burr comb pieces. And propolis gets all over everything (as it probably should). Some races of bees are noted for propolis production though all races will gather it to some extent.

Low Honey Production. Small honey crops may reflect the source material in a given area more than poor queen stock. If one or two colonies really stand out as being poor producers while other colonies are making good crops, those two colonies are candidates for requeening. However, if you are on a two-year requeening cycle, it probably won't matter since all queens will be replaced every two years anyway.

Disease or Pest Susceptibility. Got a colony that stays sickly all the time? Does it have a spotty brood pattern and small adult population? Is the colony lethargic and never seems to produce much of a crop? Are their signs of chalkbrood or European Foulbrood? American Foulbrood and predaceous mites are much more serious and will be not be positively affected by requeening, but many other problems like Chalkbrood, European Foulbrood, or Nosema can often be cleared up by requeening. It's difficult to make a recommendation as to when to requeen due to disease susceptibility - solely. Every beekeeper wants all the colonies to be perfect, but I suspect that is an elusive goal. Some will always be bigger than others. When is the smallest of your colonies too small? Well...for sure when it can't maintain itself through the winter.

Poor Wintering Abilities. This is nearly a moot point. Colonies that don't winter well usually die before spring making requeenment unnecessary. But if colonies do come through cold weather in a weak and small condition, it is highly unlikely that the queen in charge will be strong enough to build the colony population up in time for the spring nectar flow. Again, a good colony for requeening.

Nervous, Skittish Bees. Are the bees runny and flighty? Do all the bees run to the back of the comb during normal inspections and hang in festoons that frequently drop to the ground? Unless this colony is a great honey producer in all other ways, this could be reason enough to retire the queen heading this colony also. In colonies such as this, it is difficult to find the queen and difficult to work the bees in other normal manners also.

It's the Queen's Fault. In nearly every instance (other than beekeeper goofs), either directly or indirectly, it is the queen's fault. The queen is held responsible for the actions of her offspring just as parents are held responsible for the actions of their kids (there's fodder for another article). On the other hand, requeening is risky. The beekeeper must psudo-surgically remove a colony's core and replace it with a new one. It is a serious undertaking. Know how to requeen before you start the process. Otherwise, you could kill two queens - both the old and the new. BC

Some resources to check out for more information:

Laidlaw, Harry H., Jr., 1979. Contemporary Queen Rearing. Dadant & Sons. Eckert, John E. and Frank R. Shaw. 1960. Beekeeping. MacMillan Publishing Co. Sugden, M.A. and B. Furgala. 1982. Evaluation of six commercial honey bee (*Apis mellifera L.*) stocks used in Minnesota. Part I. Wintering ability and queen longevity. Amer. Bee J. 122(2).105-109

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INSTALLING PACKAGES – Do It Right

Kim Flottum

Jim Thompson is a sideline beekeeper who lives in Smithville, Ohio, near Medina. He's been in bees, in one form or another for over 30 years – hobbyist, sideline, county inspector, instructor and now the manager of the Bee Supply Store at the Root Company.

Last Spring we followed Jim, and his helper for the day, Jim Caskey (a hobbyist with 11 colonies) while they installed 30 packages one afternoon. Thirty years experience pays off it seems – 30 packages, 2 people and all in about an hour and a half.

Come along and see how this seasoned veteran does this routine job – successfully.

Before anything starts, Jim gets the boxes ready to put the bees in. He uses as much drawn comb as possible, and puts in about three frames of honey, on the outside of the box. If there's not enough drawn comb, he'll use foundation. His goal is to give the queen room to lay immediately, or as soon as possible. The boxes are ready two or three days before the packages arrive.

The packages are picked up from a local supplier the day before and kept dark and cool until just before work begins. Jim started about mid-afternoon on a cool, cloudy day.

Next, the wood straps are removed . . .

. . . and the packages are set out and sprayed with sugar syrup to 'settle' them.

Continued on Next Page

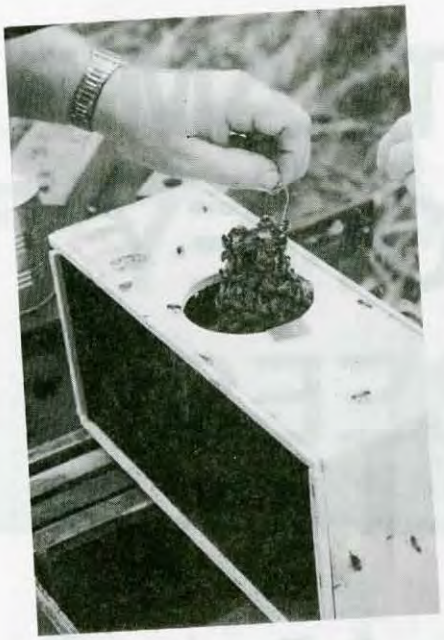
Then the cardboard cover over the feeder can is removed. Those staples can show up at the most inconvenient times later in the year, so don't drop them.

The feeder can and Apistan® strip. The wire holding the queen cage is alongside the feeder can on the other side from the strip.

A feeder can showing the hole covered with gauze.

Then, the feeder can and strip are pried loose. . .

While Jim Caskey removes four frames from the center of the colony, and grabs the feeder can . . .

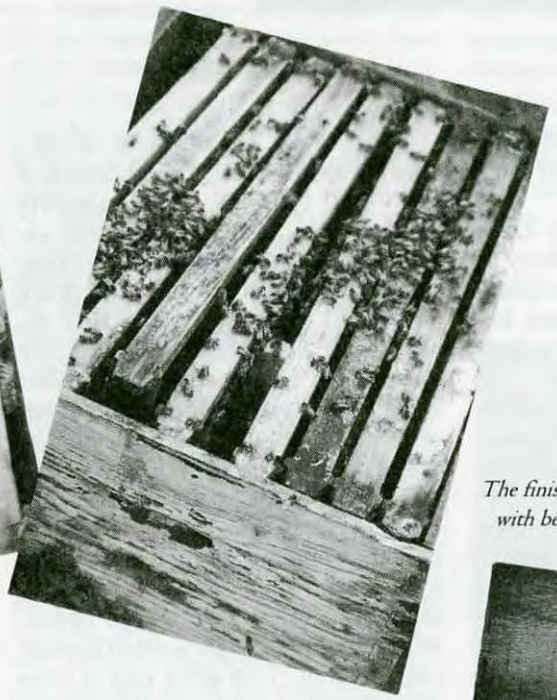


. . . while Jim Thompson gently lifts the queen cage out of the package.

Keeping the queen cage over the colony, the bees are unceremoniously shaken out of the package (gently) into the opening made by the removed frames .

With frames with drawn comb, the queen cage is securely 'stuck' to the side of a frame so it doesn't fall to the bottom . . .

. . . candy side up.



The cage is located near one end or the other because as soon as possible feeder pails are placed on top of the inner cover. If one leaked the queen would, perhaps, drown.

The finished product . . . a happy, healthy colony with bees on the landing board, fanning away.

HEITKAM'S HONEY BEES

Queens & Packages California Style

Kim Flottum

A bicycle for a beehive – and a life in bees and beekeeping. The trade of a lifetime made over 20 years ago by Pat Heitkam.

Today, Heitkam's Honey Bees has grown from that single colony in Santa Cruz, California to over 2,500 in Orland, California, and has become a prominent player in the U.S. beekeeping industry.

Five years after making that bicycle-beehive trade, Pat, his family and 100 colonies moved north to Orland. The goal – 300 colonies and an almond orchard. It was a slow start. Slow, and for the first years, pretty lean. But good friends (and good beekeepers) gave good advice, and a helping hand when needed, and today Heitkam produces 2,000 to 3,000 two-pound packages, 15,000 queens, a great number of nucs, and he also maintains a profitable pollination business in-season.

Those friends are also well-known in the industry – Clarence and Daryl Wenner, right there with nick-of-time information and shared skills, and Leonard Pankratz, a neighbor, a friend and a good beekeeping businessman.

Right now, the first part of February, Pat is moving a good chunk of his 2,500 colonies, plus brokering several thousand others, into almonds – the king crop in the pollination business. All of his contracts are within 20 miles of 'home.' He's already fed his colonies since early January, a couple rounds of pollen supplement (yeast and HFCS mix), plus an extender patty and all the liquid syrup they'll take. Last September he treated with menthol, extender patties and strips. He feeds a pollen supplement and syrup to get his bees 'fat' for Spring. Just prior to pollination, he wants lots of brood, which means a high pollen/protein requirement. This gives lots of bees for pollination. And pollination pays when you have strong colonies. Fully half of Pat's colonies are rented by the frame – at $5.00/frame and 10 frames/colony – a profitable enterprise.

About March 1, when almonds are over, or nearly over, grafting begins. But at the same time, strong colonies are used for package production – even those still in almonds. Life gets hectic, fast – he has bees still pollinating almonds or prunes, he's shaking bees for packages *and* grafting for queen production.

For breeding stock, Pat uses an Italian selection that works well for California and West Coast pollinators, chosen from select colonies from the previous season (Italian), and II stock from the New World Carniolan breeding program he's a part of.

Both lines are also screened for hygienic behavior, which Pat feels strongly about. All of his stock show some degree of this behavior above the general population.

Grafting is done using only day-old larvae which make better queens but, because of their fragility, reduces his 'take' to about 80 percent. That's an acceptable trade off according to Pat.

Cell builder colonies are made by putting about eight pounds of bees in a deep super with drawn comb. On top of that, another super is added with a feeder frame of pollen and honey and the grafted cells. The whole thing is fed continuously.

Assembling Nucs – feed frames and a queen cell are all added in the warehouse.

The nuc Pat uses showing the shade board (top), and the extra ventilation port (bottom).

Young bees are added to cell builders every other day. They are shaken from the colonies used for package production. Only young bees are used, and about a pound is added to each builder each time.

Twelve days after grafting, cells are removed from starters, placed in boxes of foam with holes carved out to fit exactly and taken to the warehouse.

At the warehouse, a Quonset hut sitting out very near nowhere, where most of his equipment is stored, the mating nucs are assembled.

Pat has two full-time, and at peak season up to 10 part-time employees, and this is peak season. Mating nucs are assembled on a wholesale level at the warehouse – about 800 per day. Nucs are basically the mini-nuc used in the industry, with a couple of innovative twists – notably the 'shade' board on top and the ventilation and entrance arrangement.

The nuc consists of a feeder can, filled with HFCS and Fumidil-B® by one person, a frame of honey, a frame of drawn comb and a frame of foundation. The ripe queen cell is added to the foundation frame, and one-third of a pound of bees is added (shaken from the package colonies).

When filled, the lid is added, and the nuc sits in the warehouse for four days, feeding, drawing foundation and 'getting acquainted.' On the fourth day, the nucs are moved to a mating yard and *not* disturbed for 17 days.

Between 500 and 1,000 nucs are placed in a mating yard, with 120 drone colonies/1,000 nucs supplied for adequate and proper mating. Yards are isolated to prevent outcrossing.

On or about day 18, mated queens are 'picked' to sell (about 70 percent get this far). These queens are sold outright, or added to the packages sold – in the buyer's equipment or new packages that are picked up. He sells no packages by mail order, and the 2,000-3,000 he sells on 'pick-up basis' go to California, Oregon, Washington and Idaho. The queens used are delivered the day they are picked. No waiting.

Pat also sells nucs in customer's equipment. With frame exchange, six to eight frames of bees and brood are put in a super, along with honey and drawn comb. Many of those go to Washington for pollination later in the season.

At the end of the season, the baby nuc frames are put 20/super, in the field, a queen cell added and used as an increase colony for next season.

Pat is pretty much a one-man operation when it comes to the business side of his enterprise. He handles the phone calls the machine doesn't take, fills out the forms and sends out the bills. He has an accountant keep track of that part of the business though because his record keeping time is at a minimum during the busy time of year.

Like most of the beekeepers in this part of the state, Pat harvests essentially no honey, his bees produce none, and he is a 'feed-lot' beekeeper.

A cell building colony, showing cow ear tag for ID, and the 1-gallon feeder can.

Continued on Next Page

HEITKAM'S ... Cont. From Pg. 29

I met Pat Heitkam the year Canada closed her border to American bees and queens – until then Pat's only customer. He, and many others like him, struggled to keep their business up and running with only the U.S. market to sell to.

A quality product, an ambitious and progressive breeding program, and solid, fundamental beekeeping principles have made Heitkam's Honey Bees a staple in the beekeeping industry. BC

Pat uses booms to move boxes for pollination.

Some Thoughts On Sugar

Richard Bonney

Many beekeepers feed their bees routinely in the late Winter or early Spring – whether the bees need it or not. There's nothing wrong with this. However, keep in mind that feeding a colony that is in good condition, one that already has ample reserves, can contribute to swarming by that colony later. Feeding will encourage the bees to greater brood rearing efforts – within the constraints of the weather, of course. If you do feed, watch for signs of impending swarms and be prepared to take control measures.

On the other hand; if you have increase in mind, that is, if you are planning to make splits or take nucs, then feeding is definitely in order. You want to stimulate the bees to greater brood rearing activity. Even here though, watch for signs of swarming. Stimulative feeding could allow the colony to get ahead of you as Spring moves along. There could be an early swarm before you realize what is happening.

Of course, sometimes we feed now because we must. As Winter ends, stores may be low, perhaps critically low. Feeding may be required for survival. But even if the colony could squeak through on the stores on hand, this is not the way to go. Without a comfortable reserve of food, the bees will not move wholeheartedly into a Spring expansion program, and of course this is the time when we want to see the population grow, even if we don't have increase in mind. So, consider all of these possibilities. Perhaps you should be feeding even though you had not planned to do so. Then the question of what to feed arises.

As we all know, bees need an ample supply of both carbohydrate (sugar), and protein (pollen) if they are to raise brood and expand their population. This article addresses sugar only. Protein is a topic for another time.

Most mid to small scale operations probably feed granulated sugar, in syrup form, although occasionally it is fed dry or as a hard candy. (Because of the difficulty in obtaining small amounts of high fructose corn syrup, we won't address that here.) The usual mixture for syrup is either 1:1 or 2:1, sugar to water. That is, one part sugar and one part water in the Spring, or two parts sugar and one part water in the Fall. Why the difference? First, let's look at the Fall. At that time of year, we feed for either or both of two reasons – to provide Winter stores for a colony that has low food reserves, or as a vehicle to medicate with fumagillin. We are feeding at a time when natural nectar flows are ending, brood rearing is slowing down, and activity in the colony is at an ebb. Our interest, and the bees interest for that matter, is in getting a large volume of food into the hive and stored away as efficiently as possible before serious cold weather sets in. Properly, Fall feeding is done when there is still flying weather. Where a large volume of thin syrup at this time might cause the bees to react as to a nectar flow, changing their behavior a bit, thick syrup usually will not. They will receive the syrup, process it, store it away, and continue their preparations for Winter. Further, since the syrup is thick, it contains less moisture than otherwise, and the bees have less processing to do.

Spring is a different matter. Even if we are feeding because stores are low, we want to encourage population growth. A natural stimulation to such growth is a sustained nectar flow. By feeding a more nectarlike mixture of 1:1, we bring on that stimulation.

Most beekeepers probably will use table-grade sugar (sucrose), but some may not. Other possibilities do exist. However, as has been written in many places, some of these other possibilities can cause problems, the most serious being dysentery and death.

Dysentery is often thought of in beekeeping circles as a disease. Strictly speaking, it is not. Dysentery is a symptom. It indicates excessive moisture in the bee's gut, and can result from several causes. When this dysentery appears in late Winter, it gives the bees problems if they do not have occasional flight days. The outward sign of dysentery is the dark brown or black stain from feces that accumulate around the entrances and on the hive front. These feces are deposited as the bees erupt from the hive on a warmish day after long confinement. In severe cases, the top bars of the frames will be covered with feces, also.

Note: Although nosema disease can cause symptoms similar to those of dysentery, dark staining in and on the hive is not automatically an indication of nosema. It could be simply an indication of poor quality food.

It has been pretty well drummed into us that we should not feed such things as molasses, candy, byproducts from soft drink manufacturing or anything else that carries material indigestible by bees. We

Continued on Next Page

Table 1	
Sugar (pounds)	Syrup level as marked on pail
10	1.10
15	1.65
20	2.20
25	2.75
30	3.30
35	3.85
40	4.40

Table 2	
Sugar (pounds)	Added water (gallons)
20	1.25
25	1.55
30	1.90
35	2.20
40	2.50
45	2.80
50	3.10

pretty much understand that granulated sugar and honey are the acceptable foods, although even honey can bring problems under certain conditions. For instance, researchers have discovered that both coarsely granulated honey and honey that has been heated can bring on dysentery. The only food that can be recommended without reservation is refined sucrose – table-grade sugar from sugar cane or beets.

This is not a problem for most beekeepers. Table-grade sugar is readily available, and although it is not cheap, neither is it excessively costly. Supermarkets often have sugar on sale. By watching for these sales, a lower cost supply can be built up over the year. For those beekeepers who have several or many hives, bulk sugar is often available from beekeeping supply dealers, from beekeeping associations, or directly from warehouses that accumulate surplus sugar from a variety of sources – broken bags and sweepings, for instance. Care must be taken with these sources, however. I once went to a warehouse belonging to a supermarket chain where really cheap sugar was available. The sugar was from broken bags and had been dumped into 40 gallon drums, many of them with no lids. The warehouse cats were using these drums of sugar as litter boxes.

A minor problem of dealing with sugar is mixing – how to achieve the requisite proportion and how to dissolve the sugar. Most of us seem to end up doing our mixing in the kitchen, but handling both sugar and syrup in quantity can be messy. Dry sugar spilled on the floor is unpleasant to walk in; syrup is even worse. I have finally learned not to make a mess in the kitchen. I do my mixing outdoors.

In addition to getting the mess outside, I also get away from the stove and any temptation to heat the syrup directly. For ease of dissolving sugar, we need hot or even boiling water, but the sugar or syrup should never be heated directly. The danger is in scorching or caramelizing the sugar. Caramelized sugar can kill bees.

When it is time to mix, a one-gallon quantity is relatively easy, as is a 1:1 proportion. It's when we go to the 2:1 mix in larger volumes that confusion sometimes occurs. Even though it's straightforward, let's look at the one-gallon 1:1 mix first. As it turns out, equal volumes of cane sugar and water weigh almost exactly the same, so measuring can be done either by volume or by weight. Furthermore, five pounds of sugar, the commonly available size, when mixed one to one, yields one gallon of syrup. So, for a one-gallon feeder jar or pail, dump in a five-pound bag of sugar (10 cups) and fill the jar with water (10 cups). You will have a gallon of 1:1 feed. For larger quantities, a marked pail is helpful. I have a six-gallon pail marked up the side in half-gallon increments. (For ease in handling, I seldom mix more than five gallons at a time.) When mixing time comes, I dump in the requisite number of five pound bags of sugar and add hot water to the appropriate gallon level. After some vigorous stirring, I'm done.

For a 2:1 mix, we have a different situation. It doesn't work to put 10 pounds (20 cups) of sugar into a one-gallon container and then fill with water. The required 10 cups of water will not fit because of the bulk of the added sugar. The solution is easy enough. Always mix the syrup in a pail. My six-gallon pail has alternate markings on the opposite side, as in the Table 1 below. (Smaller pails are readily available.) As it turns out, 10 pounds of sugar mixed at 2:1 yields approximately 1.1 gallons of syrup; 15 pounds yields 1.65 gallons, and so on. I marked my pail accordingly.

As before, with the pail so marked, I can dump in a known amount of sugar in five pound increments and then fill to the appropriate level with water.

When making 2:1 syrup, an alternate approach may appeal to someone mixing large quantities in a tank. Tanks cannot be calibrated as easily as pails. When using a tank, add a measured amount of water for each 5 pounds of sugar. In this instance, for every five pounds (10 cups) of sugar add 5 cups of water. Table 2 gives amounts of water to be added for varying amounts of sugar. The final volume will be greater, of course, since the sugar takes up space even when dissolved.

Again, a marked pail is helpful. With either system, keep in mind that precision is not required. Make your markings as accurate as possible, but the bees don't care if the actual mix is a little thicker or a little thinner than you intended.

Since I usually feed from one-gallon jars, and often at remote bee

Honey Buckets - Be Careful

White plastic five-gallon pails have become a common item in many beekeeping operations. They are used in processing and storing both honey and sugar syrup. Other industries use them commonly, as well, and they are finding their way into homes. They can be dangerous.

According to an item in the September 1994 issue of *Consumers Reports*, about 40 children, ages 8 to 14 months, have drowned in this type of bucket.

A few inches of liquid is all it takes. These containers are stable enough so that apparently a toddler can lean in to explore, lose balance, and go all the way in head first without tipping the pail over.

The U.S. Consumer Product Safety Commission has begun proceedings to find a solution – redesign, labeling or outright ban. Meanwhile, some manufacturers or distributors have started adding warning labels.

yards, I have an additional step. Using a large funnel, I transfer the syrup from the pail into five-gallon plastic carboys (jugs), although for ease of handling, I seldom fill them over four-gallons. I then can carry the glass feeder jars empty. I have found them much easier to handle this way. The carboys are easily transported, and because of the relatively small spout, filling the gallon jars at the bee yard can be done with minimum slopping.

A downside to these jugs is the difficulty of cleaning. Rinsing after each use with a bleach solution helps this problem, and their convenience makes them worthwhile. For that matter, rinse all of your feeder equipment with bleach; you will have less of a mold problem in storage. BC

Richard Bonney is an Extension Educator for the State of Massachusetts. He is a regular contributor to these pages.

Using Cream of Tartar

A part of the normal process when bees convert nectar to honey in the hive involves the chemical inversion of sugar. Simply stated, sucrose is converted to glucose and fructose.

When we feed bees sugar syrup, they make a similar inversion. The standard feed, granulated sugar, is sucrose. The bees convert this to glucose and fructose before storing it.

It has long been the practice of many beekeepers to add tartaric acid to sugar syrup to aid in the inversion process, and instructions for making syrup often call for tartaric acid, either as such, or in the form of cream of tartar. The acid also prevents crystallization of the syrup later.

Many years ago, a researcher found that if no natural nectar was coming in, feeding syrup containing cream of tartar (or vinegar) caused dysentery, shortening the life span of the bees to one-third that of bees fed plain sugar syrup. This finding was written up at the time but does not seem to have become part of the common knowledge of beekeepers. Tartaric acid is still occasionally recommended, without any qualification as to the possible ill effects. Use it judiciously, if at all.

Playing It Safe

Walter Wright

In the evolution of the species, honey bees have become masters of hedging their bets, or betting on both sides to minimize their losses. In this article I'd like to explore some generalities and provide some insight on the specifics in the reproductive process or the swarm impulse, where they hedge their bets.

One of the bee's most constant and formidable adversaries is the weather. They have devised means to survive harsh winters and hot summers in close quarters and much has been written about Winter clustering and hive cooling. But have you observed how they hedge their bets on "iffy" conditions? They are constantly aware of weather conditions. It doesn't matter whether it's flight temperature or the possibility of rain, when conditions are marginal, they only commit a small portion of the work force to foraging. If conditions change suddenly for the worse, they can sustain the loss. If no foragers went to the field in marginal conditions, there would be no gain for that period, so they hedge their bet.

When the weather improves they send more foragers to the field and when conditions reach a suitable stage for foragers brood is sometimes just barely covered.

But if conditions worsen again the number of foragers in the field is reversed to maintain the low risk. Fewer foragers return to the field for another trip.

Reproduction of any species is one of the primary urges. But, unlike mammal species that mate and nurture young under what may be difficult conditions, honey bee colonies generally do not jeopardize the parent to produce an offspring (swarm). The parent colony has no child-bearing age restrictions and the drive to reproduce is not all-consuming. There is always next year. Survival of the parent colony has priority over generating a swarm. That doesn't mean that they are complacent about swarming, and have developed a behavior specifically designed for producing a swarm at the optimum time of the year.

The "experts" who look for a stimulus for swarm preparations have offered some real gems. Distribution of queen pheromone(s) and day length are two that come to mind. But I think experts are overlooking the obvious. The bees don't need a reason to start building swarm cells. The whole objective of the build-to-swarm mode is to generate that swarm.

Queen pheromone dilution lacks credibility in my opinion. In a double hive body brood configuration, swarm cells are almost always constructed in a plane at the bottom of frames of the top hive body. The queen passes through that plane regularly. Cells are opening up for egg laying in both hive bodies because of brood nest expansion during build-up.

"Honey bees seem to have a plan when it comes to swarming. Here's what I see, in Tennessee."

With respect to the influence of day length, I would point out that, very likely, the sun did not change position in the Spring of '96, but swarming was a month later then than in years past. There must have been some other reason for the swarming season being a month late.

But if these aren't the reasons for swarm preparation, what are? We must offer something more rational. To this end we ask the question: In view of the requirements for swarm establishment in a new location, what would be a better cue than increasing nectar availability? All they need are sufficient bees and evidence of suitable conditions to let them have a go at it, right?

There are two basic requirements for generating a swarm and assuring perpetuity of the parent colony. They must produce enough bees to populate two viable colonies, and there must be sufficient reserves to sustain the parent colony under adverse conditions. The swarm is on its own after it leaves, but the parent colony survival must be protected.

These requirements are accomplished in two phases. The first is all-out brood rearing, which I'll call the *pollen phase*, and the second is the replenishment of stores, which I'll call the *nectar phase*.

The most important feature of the build-to-swarm mode (spring build-up) is their emphasis on forager force. House bee duties are reduced by graduating nurse bees during this build-up period and they become foragers sooner than usual. During the pollen phase of late winter/early Spring, foraging opportunities are limited by weather. They must have pollen for brood rearing, but nectar is not essential, because stored capped honey is (should be) sufficient. Not only is it sufficient to feed the small brood volume, but

Continued on Next Page

SAFE ... Cont. From Pg. 35

some of it must be consumed to make room for the expansion of brood nest.

The emergence of the second brood cycle means the population is increasing, at least here in Tennessee, and Winter losses have been canceled out and the build-up is on. Each emerging brood cycle fills their vacated cells plus stores depletion cells with capped brood, then graduates to the foraging team. Ever-increasing brood volume generates the need for increasing amounts of pollen.

The bees seem to have a good "feel" for the overall volume of the cavity in which they operate, and this "feel" for overall volume, and the amount of remaining capped honey, plays a role in determining the limits of brood expansion. Generally, the smaller the cavity size, the sooner the limit is reached. If they expanded the brood nest to the point their stores became depleted, and nectar failed the parent colony could fail. They have some "formula" that dictates when enough brood nest expansion is enough. The brood *volume* does not increase much when housed in a small cavity, but the rate increases as the season progresses. The bees maintain their youthful vigor much longer in the Spring because of the limited flight in the early season. It would not surprise me to learn that bees that emerged on February first were leading the swarm on April 10.

If the bee population is sufficient to staff two viable colonies, all that remains undone is the insurance of survival of the parent colony. When nectar is available in sufficient quantity, brood nest expansion is reversed, and nectar is stored in the upper part of the brood nest. The swarm will leave with roughly half the work force. Some insurance nectar storage, to replace stores used for generation of the two colonies worth of bees seems appropriate. But what is important is that from the bees perspective, the backfilling of the upper part of the brood nest is mandatory for "swarm commit." When the nectar encroachment on brood nest volume meets their requirements for survival of the parent colony, they start building swarm cells. Whether that is the reason is irrelevant. Here, they go together. Additional nectar is between swarm commit and swarm exodus, because the departing bees take their fair share with them.

Conversely, if all these things do not fall into place, they can abort the swarm process. A number of things can cause them to fail to generate a swarm in any given year. Failure to optimize the brood nest in the Fall is probably the leading cause. Other reasons are early queen failure requiring supercedure or any problem resulting in general colony weakness. If the bees do not reach swarm-commit early in nectar availability, generally they don't swarm.

To wrap this up, the pollen-phase builds a colony to populate a swarm, and the nectar phase replaces some of the stores used to build that population. The replacement of nectar, plus the capped reserve of honey gives the decision makers of the colony confidence in parent colony survival with half the current work force, (playing it safe).

I considered submitting this article without any reference to my checkerboarding program. I intended that the earlier article (Dec. 1996) be the "what" and this to be the "why", but I concede that the distinction is obscure. So I'll add a postscript.

Checkerboarding is where some of the overhead honey is removed and replaced with empty comb. This takes advantage of one of the honey bee's weaknesses to prevent swarming. They want to store incoming nectar above and to the sides of the brood nest, and they will in the empty comb provided, readily, as long as there is continuous storage space available. If solid capped honey is overhead, they resist storing above that barrier, even when empty supers are provided above the solid honey (at least here in Tennessee). Storing nectar that exceeds feed requirements above the brood nest prevents them from backfilling the upper part of the brood nest. Failing to achieve the necessary brood nest backfilling with incoming nectar, the brood nest volume continues to increase to the level the existing queen can produce eggs. I suspect that storing nectar overhead continually adjusts their perspective ("feel") for how much brood nest expansion can be safely accomplished. Brood volume usually is limited to about 2-1/2 stories in my nine-frame system.

Next time, I'll look at supering, considering all of the above, and the fact that by March, *you* should be prepared to do exactly that. BC

Walt Wright is a retired engineer, with 9 years beekeeping experience. His engineering experience taught him to solve problems rather than treat symptoms. His ideas in beekeeping reflect that direction.

NEWS FROM NATIONAL MEETINGS I

The best from Memphis

Bee Culture Staff

I went to both the American Honey Producers (AHPA) and American Beekeeping Federation (ABF) meetings last month. I've done this before (though not for quite awhile), and the two have, in the past, been similar enough in non-political gain that there wasn't much to report. Not always, but mostly. That's good in a way, I guess. It means both meetings are focusing on the problems their members feel are important. It also means other subjects are left undiscovered. That wasn't the case this year.

The AHPA meeting was a noble effort at attaining unity in this industry. Meeting with, or at least at the same time were the Apiary Inspectors Of America (AIA), The American Bee Research Conference (ABRC) and The American Association of Professional Apiculturists (AAPA). Lots was covered here, much at the same time.

The ABF meeting, too, offered a first ever opportunity for two groups to meet and exchange ideas. The Eastern Apicultural Society (EAS) met there for a Director's meeting, and then sponsored the Saturday workshops. Lots of good stuff here every day, but with a significantly different focus than the AHPA.

Because they were so different there isn't room to cover everything this time, so next month we'll explore the ABF and EAS meeting, concentrating this month on the AHPA conference in Memphis.

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Formic acid registration, efficacy and application techniques were well covered by USDA and Canadian researchers. Already registered in Canada, they've been studying the safest, and most efficient way to get this dangerous chemical into a hive without killing bees, the queen, or the applicator.

Various pads have been used to absorb formic acid, allowing it to vaporize for two or three days. Usually, three applications are required. Problems encountered with this technique were significant, however. First, three trips is inefficient. Second, different pad materials released the acid at different rates, and finally, when outside temperatures are too high the chemical volitilizes very rapidly, driving bees completely out of the hive, and often killing the queen.

ALL SORTS OF LETTERS MET IN MEMPHIS

Several alternative forms of formic acid have been tried, mostly some type of gel. Delivery systems have been in the area of slow release, or increased exposure – basically, a container has three or four openings, which are opened one at a time over several days or weeks. Newer techniques include the gel held in an open-topped container covered with screen. This allows slow release over time, without additional trips to the apiary.

USDA has completed and submitted all required data to EPA for registration, but it's not yet been completed. Expectations are for Spring '97, but a delivery system still needs to be worked out. One from Europe works well, the gels work, too, and putting liquid on a pad works.

Ontario beekeepers have found that an application of formic in the Spring for both tracheal and *Varroa* mites, and an Apistan® treatment in the Fall have reduced mite levels significantly, and colony losses have gone from nearly 40% to about 10%. That's an improvement!

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Bill Rubink, a researcher from Weslaco, studied in detail the affect both *Varroa* mites and AHB had on feral colonies – a real life study of something we've always guessed at.

In a pre-AHB wildlife refuge in SE Texas, he found between 100-200 feral colonies/sq. mile. They were entirely Africanized within four years, after moving in.

After *Varroa* were introduced, however, things changed again. There was 30% loss within six months, 50% within nine months, 60% in a year and 80% within two years. The pre-*Varroa* loss was about 20%. This is good data for the media.

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Dean Breaux, who operates the Hybri-Bee program gave an update on the situation. Hybri-Bees produces the Starline and Midnight hy-

brids, available from several suppliers.

Hybri-Bees nearly shut down two years ago because of mites and other problems. So the operation was offered to Dean by stockholders Richard Adee, Harvey York and Dewey Robson.

But the program took a significant turn when Dean took over. Rather than try and maintain the expensive and difficult double cross hybrid, a closed population system was designed that selected for all the traits resident in the original Starline. With backing from the stockholders and others initial stock was obtained and the closed system was set up.

The first selection criteria is honey production, since the Starline is primarily a commercial queen. Cooperators measure this trait in their own stock each year and select the best, then send that queen to join the program. Other traits being considered are brood viability, temperament and buildup.

Also, some crosses do better in some areas than others, and one direction this program is taking is in producing a "regional" Starline. This still has a way to go though.

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Roger Stark, from Howalt-McDowell Insurance urged beekeepers to increase the value of their policies this year because the value of their equity has increased. For instance, in 1990 a standard box was worth $8 or $9, and today it's $14 - $16.

He reminded everyone that bees away from home generally have no coverage, to have *at least* a half million dollars of liability insurance and to have worker's compensation insurance (or a *yearly* waiver).

Pollination contracts, too, were mentioned. Many have an "Assignment Clause," wherein a broker, or a grower can "assign" a beekeeper to place colonies wherever he wants. If you don't have the equipment to move you could be at risk. Also, many contracts have a "hold harmless" clause that means you assume any liability the broker or grower got involved in. Roger's advice is to be sure you're aware of this problem.

He also said to check out "Act Of God" clauses, especially important this year in California with the loss of an estimated 20,000 colonies in the floods. If there is a clause, spell out beforehand what it will cost you if you can't supply colonies. Mites aren't usually considered an Act Of God, your opinion notwithstanding.

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Eric Erickson, from the Tucson Bee Lab detailed his findings of damage to bees from *Varroa* mites. He's found that some bees, when injured by mites, develop internal "nodules" composed of tylosine, while others did not. Further research showed that tylosine is a precursor amino acid to mellinin, the amino acid that aids in healing injuries to an insect's exoskeleton.

Moreover, there are seasonal 'peaks' of tylosine production, followed by colony dieoffs, generally in March and September in Arizona.

The hypothesis is that bees that have been injured by *Varroa* mites have an immune system response that begins by producing tylosine that, eventually, is reduced to mellinin and better health for the honey bee. Some bees, however, have this amino acid reduction halted right after the tylosine production, the mellinin is not produced and the bee suffers.

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Frank Eishen, a researcher at Weslaco described some of his work with 'natural product' smoke. He initially started because people he was working with in Mexico insisted that when certain plants were used in a smoker, some *Varroa* control was shown.

To test this Frank devised a cage that contained a known number of mite infested bees, smoked them and then counted any mites that fell off after 60 seconds. Mites that died stayed where they fell, while mites that were only knocked down could crawl, but became trapped a short distance away.

Frank tested cedar chips, citrus (grapefruit) leaves, melaluca, tansy, neem, and creosote bush.

With the exception of cedar, all of these gave good knock down of mites. Some better than others however. Creosote bush, which had not only knock down but significant mite mortality, also was very hard on the bees, killing them, with effects similar to tobacco.

The rest were fair to good at knock down, but were not lethal – to bees or mites.

Interestingly, he found two substances that killed a great number of bees – corn cobs, and cardboard, two common smoker fuels. No explanation for this was given, as he was taken completely by surprise. Obviously, not all corn cobs, or cardboard are lethal, but the implication is – be careful.

He also found that the same plant, grown in different locations had different effects, usually only a greater or lesser knock down, but for some it escalated to harming bees.

None of these will work, it seems, for mite control.

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Dr. Eric Mussen, Extension Specialist from California gave an overview of almond pollination, particularly relevant right now considering the weather where the almonds are.

There are about 410,000 bearing acres of almonds this Spring. And, at two colonies/acre, roughly a third of *all* the colonies in the U.S. are used on this crop.

This has been a tough Winter in California. It's been warm, so the almond blossoms haven't been chilled, at least yet. Chilled buds bloom even and fast, reducing the time bees are needed. Buds not chilled bloom unevenly and stretch the bloom period over a longer time frame. Fruit set is also reduced.

Lest you think pollinating almonds is a sure-fire way to make easy money, keep in mind pesticides and way, way too much moisture this year. Getting stuck will probably be the rule, rather than the exception.

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Dr. Shimanuki, from the Beltsville Bee Lab, discussed the current rumors surrounding foulbrood resistant to TM floating around. According to tests performed at Beltsville, foulbrood spores over 50 years old, and some from just this year responded essentially the same to a TM treatment in the lab.

It seems that, because of some inadequate treatments, a few beekeepers have selected for a popula-

Continued on Next Page

MEETINGS... Cont. From Pg. 39

tion of foulbrood tolerant of reduced doses of the medication.

This has come about due to either fewer treatments, or the right number of treatments but at a lower than label dose/treatment. This seems to be an isolated case or two, but those cases have commanded alot of attention.

Dr. Shimanuki stressed proper application techniques and doses, because short cuts can only lead to the kinds of problems showing up.

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Dr. John Skinner, Extension Specialist from Tennessee, discussed the fundamental principles to consider when designing a pollination contract.

The first question usually asked is: How many colonies/acre? The answer needs to be weighed by colony strength (a laying queen, five frames of brood and enough bees to cover six to eight frames, plus adequate food is the minimum to consider), wild pollinators in the area (both honey bees and others), how attractive is the crop (pears = low; apples = high), what competing weeds or other flowering crops are in the area, and what is the weather during bloom.

If you figure a generic one colony/acre under ideal conditions, any of the above factors should cause an increase.

For the contract the following are important:

- Who are people involved, names and addresses
- The number of colonies required
- price, and payment schedule
- colony 'quality'
- placement/location
- dates of delivery and removal (a good estimate)
- pesticide protection, and renumeration
- vehicle access
- water

If you are pollinating this season, even if you don't use a contract, drawing one up and discussing it with your grower(s) will help both parties understand the responsibilities involved.

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On a final note, the ABRC and the AAPA (yes, there will be a quiz at the end for all of these acronyms), voted to become one organization. This means that the beekeeping scientific community will speak with one voice when addressing questions, ethics and other dilemmas facing this industry.

I congratulate the wisdom in this decision, and urge other, like-minded organizations in our industry to follow their lead.

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Now, define the following: AHPA, ABF, AIA, ABRC, AAPA, EAS, USDA, EPA, AHB, TM, and AFB.

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Next month we'll look at the pollination symposium held at the ABF meeting in Virginia.

Ann Harman

Home Harmony

Pancakes, Flapjacks and Crepes!

Pancakes, flapjacks, griddle cakes – call them whatever you want – they are an extremely versatile food. Although most people think of pancakes as breakfast fare and put butter and honey between the layers, they can be served at lunch and dinner, too, and if we call them crepes, we can serve them as a dessert.

This month we are going to explore various recipes for pancakes. It's up to you to put the butter and honey on. Some people tend to think of maple syrup with pancakes. Why not try a mixture of maple syrup and honey? Many pancake recipes can double as waffle recipes, too, but for waffles, add about 2 more tablespoons of oil or shortening to prevent sticking. Either oil, butter or margarine is always in pancake and waffle batter for that reason. Since some batters can be mixed ahead of time, you can save several minutes if you want breakfast pancakes. But do try pancakes for lunch or supper, and serve a bowl of fresh fruit as an accompaniment.

Mixing up pancake batter is quick and easy – mix just enough to moisten the dry ingredients, but ignore the lumps. A standard pancake batter will improve if put in the refrigerator for three to six hours or longer. However, do NOT do this with batter that has separately beaten egg whites or one that contains yeast.

Although most pancake batter is mixed in a bowl, I find it very convenient to put the mixture in a large pitcher to pour the cakes gently onto the griddle. If you don't have a suitable pitcher, pour gently from the tip of a spoon. You can make pancakes any size you want from the tiny "silver dollar" size to ones that almost cover a plate.

Your pan or griddle must be hot for a successful pancake. The test with a few drops of water is always a good idea. The drops should bounce and sputter when the griddle is at correct temperature. Getting an even heat on a large griddle may be difficult, so try to heat the griddle evenly.

As a pancake cooks, bubbles will appear on the surface. Peek at the bottom side to keep track of the browning. Then turn the cakes just once. This second side will cook quicker than the first side and will not brown as evenly, so serve with the first side up. If you cannot serve them right away, you can keep pancakes both warm and a nice texture if you put them on a towel on a cookie sheet and put them in the oven at about 200°. If you need to stack the pancakes while keeping them warm, you should to put a cloth in between each one or they will get soggy.

RASPBERRY BUCKWHEAT CAKES

Buckwheat flour gives a rich color and flavor to pancakes. These are enhanced by the addition of raspberries.

3 eggs, separated
1 tablespoon oil
1 tablespoon honey
2 cups low-fat milk
1 cup whole wheat flour
1 cup buckwheat flour
1 teaspoon baking soda
2 teaspoons baking powder
2 cups ripe raspberries (or 2 ripe bananas)

Beat the egg yolks, oil, honey and milk together in a bowl. Stir in the dry ingredients, mixing thoroughly with the wet ingredients. In another bowl, beat the egg whites until soft, wet peaks form. Gently fold the beaten whites into the batter. Thin with more milk if necessary. Spoon onto a heated, oiled griddle.

Honey And Spice
Lorena LaForest Bass

ORANGE NUT PANCAKES

The next two recipes are wonderful for a brunch. Treat yourself to one of these this weekend.

1-3/4 cups whole wheat pastry flour
1/2 cup bran
1 tablespoon baking powder
2 eggs
1 tablespoon honey
3/4 cup milk
1/4 cup orange juice
1/3 cup oil
grated zest of 1 large orange
1/2 cup chopped nuts

Stir the flour, bran and baking powder together in a large bowl. In another bowl, beat the eggs, then add the honey, milk, oil, orange juice and zest. Add the egg mixture and the nuts to the dry ingredients, stirring until just mixed. Spoon onto a greased, hot griddle. Yield: about 12 medium-size pancakes.

Joy With Honey
Doris Mech

BANANA SUNFLOWER SEED PANCAKES

3 cups whole wheat flour
2 teaspoons salt
1 tablespoon baking powder
2 eggs
2 tablespoons oil
2 tablespoons honey
2-1/2 cups milk
2 large bananas
1 cup sunflower seeds

Mix first three ingredients in mixing bowl. Beat eggs in separate bowl; add oil. Add honey in a fine stream, beating constantly. Add milk. Add liquid mixture to dry mixture. Fold in sliced bananas and sunflower seeds. Spoon batter onto hot griddle. Yield: approximately 15 pancakes.

Nature's Golden Treasure Honey Cookbook
Joe M. Parkhill

GERMAN PANCAKE

This makes a special Sunday morning breakfast or brunch. Try it with whipped cream for dessert.

3 eggs
1/2 cup milk
1/2 teaspoon salt
2 tablespoons oil or melted butter
1/4 cup powdered milk

1/2 cup whole wheat pastry flour
butter to grease pan
3 large cooking apples
1 to 2 tablespoons cold water
1/4 cup warmed honey
cinnamon

Combine the eggs, milk, salt, oil, powdered milk and flour; blend until smooth. Pour the batter into a well-buttered 10-inch cast-iron frying pan. Bake for 10 minutes at 450°, then decrease oven temperature to 350° and bake until pancake puffs up at the sides and is brown, about 10 to 15 minutes. While the pancake is baking, slice the apples, combine with 1 to 2 tablespoons of water, and cook slowly over low heat until soft. Spread the cooked apples over the baked pancake, drizzle on the honey, and sprinkle it all over with cinnamon. Serve immediately, or your pancake will fall! Makes 4 servings.

Cooking With Honey
Joanne Barrett

BASIC CREPES

Crepes are tissue-thin pancakes, remarkably easy to make. One secret is a hot skillet; another is to have a very thin coat of batter in the pan; and another is the first crepe may be a mess, but the rest will be perfect. Crepes may be made ahead of time and reheated at the last moment. Crepes can be kept for several days in the refrigerator or for four weeks in the freezer. You can estimate filling a crepe with about 2 tablespoons of whatever you choose. If you are making a dessert crepe, you can flambé with fruit liqueur or cognac.

3 eggs
1 teaspoon honey
2 tablespoons brandy
1 teaspoon vanilla
2 tablespoons melted butter
2/3 cup milk
1/3 cup whole wheat pastry flour
1/8 teaspoon salt

In a mixing bowl, beat eggs; add honey, brandy, vanilla, butter and milk. Beat with electric beater at low speed until well-mixed. Add flour and salt, and continue to beat until batter is the consistency of light cream. Allow batter to stand for an hour or two. When ready to bake, heat a 6-inch crepe pan or skillet and oil it. Pour in about 1-1/2 tablespoons of the batter and tip the pan to spread the batter over the entire surface. Cook the crepe until it shakes loose from the bottom of the pan. Turn and brown lightly on reverse side. Yield: 14 to 16 crepes.

Naturally Delicious Desserts And Snacks
Faye Martin

HONEY CREPES

A special batter which gives a particularly light, golden crepe with a delicate honey flavor. It can be used whenever sweet crepes are required.

To make crepe ice-cream baskets, line an ovenproof teacup with them and bake at 400° until golden and crisp, about 10 minutes.

1/2 cup water
1/2 cup milk
1 cup flour
2 tablespoons oil
1/2 teaspoon salt
2 eggs
1 tablespoon honey

Beat or process together all the ingredients to a smooth batter. Leave to rest for at least one hour. Beat again briefly before using. Brush a heavy 8-inch skillet with a little oil and heat. Pour in enough batter to just coat the bottom of the pan; there should be a protesting sizzle as it goes in, and any excess swilling about should be immediately tipped back into the batter bowl. Cook until the underside is golden, then turn or flip to cook the other side. If you don't get about 16 crepes, you are making them too thick. Stack them up as they are ready.

Honey
Sue Style

Recipes for crepe fillings and sauces can be found in a general cookbook. You can substitute honey for sugar in these, but be careful if you decide to flame the crepes if you used honey in a sauce.

Try different flavors of honey as toppings. Mix warmed honey with butter and add a dash of flavoring. You can make your toppings as creative as the pancakes. Enjoy!

Richard Taylor

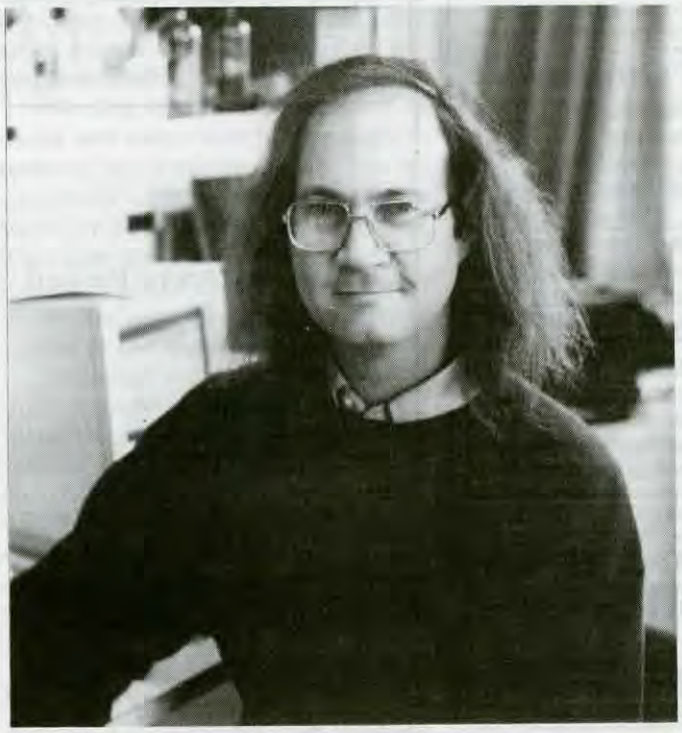
Bee Talk

"At the age of 44, Dr. Seeley stands in the very top ranks of the world's biologists and, as a successor to Karl von Frisch, he is at the forefront of those devoted to honey bee biology today."

I have, for some time, been following the career and scientific achievements of Tom Seeley and, with the recent publication by Harvard University of his monumental book, *The Wisdom of the Hive*, it is time to make his work more widely known to practicing beekeepers. Dr. Seeley moves mainly among scientists and is never seen at gatherings of beekeepers except, rarely, as a speaker, so his discoveries have not received as much attention there as they warrant.

At the age of 44, Dr. Seeley stands in the very top ranks of the world's biologists and, as a successor to Karl von Frisch, he is at the forefront of those devoted to honey bee biology today. Unlike the vast majority of persons trained in honey bee biology, Dr. Seeley is not attached to any department of entomology or apiculture, where the orientation is, of necessity, toward the place of beekeeping in the agricultural economy. He belongs, instead, to the section of neurobiology and behavior at Cornell University, so his work is pure science.

Tom Seeley recently disclosed to me something of his astonishing life and the origins of his interest in social insects. He grew up in Ithaca, New York, and he told me his earliest memory of bees is from third grade, when a local beekeeper visited the school to tell the children about his craft. That visit set the direction of Tom's life, for, from then on, he found himself watching and studying bees and other social insects at every chance he got. For his 10th birthday, his parents gave him *The Makers of Honey*, a popular book by Mary Phillips. He became a Boy Scout, and an Eagle Scout, earning his merit badge with a study of yellow jackets. While he was still in high school, he got a job helping in a plant breeding program and there, out in the fields one day, a stray swarm of bees arrived! Tom got it hived in a box and then spent the next several days and nights devouring all the books about bees that he could find. His father, a horticulturist, happened to know Roger Morse, and this led to a job helping in the Cornell apiaries during his last year in high school.



Dr. Tom Seeley

Soon after this, Tom went off to Dartmouth where four years later, he would be graduated *summa cum laude* and begin earning an ever lengthening list of academic honors and awards, the first of these being in chemistry and botany. This was another piece of good fortune, for his training in chemistry would eventually prove vital in his landmark studies of honey bee communication. One day while he was a student at Dartmouth, he chanced upon a book on the "New Books" shelf of the library. It was *The Insect Societies*, by Edward O. Wilson of Harvard University, the world's leading authority on this subject. He immersed himself in this book, which determined, once and for all, the direction that his life was going to take. He applied for admission to the graduate program at Harvard, hoping for a chance to study

under Dr. Wilson, but, to be on the safe side, he also applied to three medical schools, thinking that if he did not get into Harvard, then he could become a physician and still study bees on the side. All of the medical schools accepted him, but so did Harvard, and that settled the matter.

At Harvard, Tom found Dr. Wilson too busy with his own research to spend much time with graduate students, but, fortune smiled again. Bert Hölldobler, a distinguished German scientist, happened to be in residence at Harvard just then, and Tom came under his mentorship. Dr. Hölldobler had been a student of Lindauer, and thus belonged to the tradition of ethologists to which Karl von Frisch had brought fame. Their approach, somewhat unlike that of most American scientists, was to study nature first, and then devise experiments based upon questions arising from those observations. It is this way of doing science that Dr. Seeley has carried to such heights. The result is that, in page after page of his writings, a reader seems to be entering into new worlds as questions pile upon questions and slowly, one at a time, solutions begin to emerge in the clear and beautiful prose of this author.

Upon completing his doctorate, Tom was elected to the Harvard Society of Fellows for two years. This is probably the highest honor a young scholar can receive anywhere in the world. The recipient is simply given a bountiful grant and invited to do whatever he wants with it. Tom used the money to spend two years in the forests of Thailand, studying the Asian bees *Apis dorsata*, *Apis florea* and *Apis cerana*, combining all this with a two-year honeymoon. This was followed by six years on the faculty of Yale University, and then on to Cornell and Ithaca, the town of his childhood. In addition to his two books, published 10 years apart, there have come from his pen dozens of articles on honey bees, published in scientific journals devoted to ecology, sociobiology, ethology and theoretical biology.

Conversing with Tom Seeley, one quickly comes to appreciate his fastidious devotion to what is true. Exaggeration and dogmatic utterance find no place there, and arrogance is totally foreign to him. No flat statement of scientific fact comes from his lips which has not been through the process of scientific verification. If something is not known to be true, then it is not affirmed. If he begins to say something and, halfway through, comes to realize that his mode of expression might be inaccurate or misleading, then he goes back and begins his sentence again. If he raises a point that scientific evidence seems to suggest, then he offers it as merely hypothetical, not yet proven. With respect to something simply not known – and of course there are still countless unknowns in the realm of bee biology – he declares it to be a "mystery." This was his response to my very simple question of how bees know when there are large areas of empty combs in their hive. They, in some sense, do know this, but how? That is a mystery, waiting to be solved.

I have also discovered that there are two not very common things that Tom and I share. One is a kind of childish sense of wonder. This obviously inspires his vast research, as it governs so much of my own life. And the other is a genuine love for the bees themselves. Tom has a small apiary of his own and, like any backlot beekeeper, he gets his little extractor out once each year and harvests the crop.

The last time I saw Tom Seeley, it was just before Christmas. He was standing out in front of his laboratory watching a crew of workmen erecting a fine two-story building across the road. With his knit cap pulled down to his ears, and his hair flowing over his shoulders, he could have been mistaken, if seen on the streets of Ithaca, for some poor, homeless person. But it turned out that the building that was going up was going to be his new bee laboratory, which he had designed himself. And where, I wondered, did all the money for that come from? Well, it turned out that Harvard University had recently offered him a lifetime full professorship, and Cornell University was giving him this new building in return for his promise to stay. It will be quite an addition. The entire second floor will house observation hives, where Tom and his many assistants can pursue the answers to a lifetime supply of questions surrounding the mysterious world of the honey bee.

I took leave of Dr. Seeley as he was about to go off and "stand kettle" for the Salvation Army at one of the supermarkets. This is his, and his wife's, annual yuletide ritual, although he practices no religion. And that, I thought, perfectly expresses the character of this gifted, kind and modest man.

I have lately been immersed in *The Wisdom of The Hive*, and Tom has helped me through some of its more puzzling sections. Next time I shall describe a few of his fascinating and sometimes astonishing discoveries about our favorite animal, the honey bee. BC

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

Questions?

Canola Honey

Q **I have five acres of Canola near my apiary. I have heard that this honey crystallizes in the comb, making it unusable. Can anything be done about that?**

Charles Wilson
Florissant, MO

A I have had no experience with Canola honey, but it is my understanding that it does granulate very fast. There is not much you can do about honey that is granulated in the comb, except give the combs back to the bees. I would think that prompt harvesting and extracting would solve the problem, since no honey granulates instantly. I will appreciate hearing from any readers who have had experience with Canola.

What Kind Of Bee?

Q **What kind of bees do you use for getting comb honey?**

Maurice E. Pouliot
Cambridge, VT

A I use whatever bees happen to be in my hives. Having strong colonies is much more important than what kind of bees you use. Some bees make nicer, whiter cappings, but there is no good way of knowing in advance which colonies will do this, and it is not the most important consideration anyway.

Nosema Treatment?

Q **Is acetic acid effective in treating combs for nosema? It is sold in England for this purpose.**

E.L. Scofield
Virginia Beach, VA

A I have had no experience with this, but I believe it would not be legal here, particularly since it is highly corrosive. My own view is that nosema problems can be minimized by having your hives well up off the damp ground, perhaps a foot or more, and in the open sunshine. Nosema seems to be encouraged by dampness.

Sugar to Honey?

Q **I found one of my hives very short on stores in February, so I began feeding sugar syrup. Later, when the tulip poplars bloomed, I removed the feeder and added supers, which were eventually harvested. My question concerns the supers still on the hive that were there when the feeder was still in use. Do these have sugar syrup in them, or have the bees replaced any sugar syrup in them with honey?**

Marguerite Loddengaard
Hillsborough, NC

A It is impossible to say for sure, but my guess is that, since the feeder was on the hive during the brood rearing season, then it is likely that most, if not all, the sugar syrup was used for brood rearing. The best way to answer your question would be to sample some of the honey in question to see whether it has any flavor of honey.

Mint Honey

Q **Are Rosemary and the mints good sources for honey? I have contracts with spice companies to grow these.**

Steven Cottingham
El Paso, TX

A Rosemary and the mints generally are very attractive to bees for their nectar. I have never seen honey labeled from these sources in this country, but what is claimed to be Rosemary honey is found in Mediterranean countries and is said to be delicious. Small plantings of these would, however, make no significant difference in your honey crop. To get honey that would be recognizable as from these sources you would need several acres, even for only a few hives.

AHB And Excluders

Q **Can a queen heading a swarm of Africanized bees penetrate a queen excluder? My hives are becoming Africanized, and my question is whether I can keep Africanized bees out of them by putting queen excluders under and over the brood nests, thus preventing entry by Africanized bees.**

Maynard B. Putnam
Cochise, AZ

A There are two reasons why I think that would not work. First, a queen, before departing with a swarm, does become smaller, and I suspect she could get through a queen excluder if she had to. Second, excluders trap drones, and soon become plastered and obstructed by the drones that perish when thus imprisoned. My correspondents in South America tell me that Africanized bees are just wonderful in greatly out-producing other bees, and they all tell me that they would not want to go back to Italian bees. So maybe the solution here will be to have our apiaries at a safe distance from people and livestock and have good bee suits and big smokers. It should be remembered that Africanized bees, like all stinging insects, are aggressive only in proximity to their nests.

Excluder Use?

Q **How important are queen excluders?**

Tim Grove
Searsburg, NY

A You certainly do not need them for producing comb honey in areas of strong nectar flows. As for strained honey, it depends on your management system. They are an obstruction to the bees in the hive, but this is not terribly significant.

Beekeepers in good honey-producing areas do not need to use excluders unless they have some special management system that requires them. It does not matter if brood sometimes appears in extracting supers, provided it gets hatched out and replaced with honey before the supers are harvested.

What Size Hive?

Q **What is the best size for a beehive?**

Name Withheld

A Many sizes and models of beehives have been invented and marketed over the past century, but today the standard 10-frame hive has become virtually universal on this continent. Hive size can still be varied, however, simply by adding or removing full-depth or shallow supers. Many commercial beekeepers think a hive should consist of two full-depth hive bodies, resulting in a full two-story hive, so that the bees will have ample room for Winter stores. Such a hive is also easy to split, creating two colonies, perhaps temporarily, in accordance with certain management systems. For producing comb honey, a one-and-a-half-story hive, consisting of one hive body and one extracting super, works well. Bees can, however, be kept in single-story hives, consisting of one full-depth hive body, and will winter well that way even in cold climates, provided all supers are removed by August, allowing the bees to have all of the late-flow honey for their Winter stores. I have found that bees overwintered in a single-story hive come through healthy and strong in the Spring without any supplementary feeding, provided they are left heavy with stores in the Fall. Beekeepers who use full two-story hives often find the bottom story virtually empty of bees and brood in the Spring, which suggests that a single story, heavy with stores, would have done just as well.

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

Answers!

Richard Taylor

?Do You Know? Answers

1. **True** Beeswax is not one material but a complex mixture of many long-chain molecules; lipids (fats) and hydrocarbons. Over 300 individual chemical components have been identified to date.
2. **True** No microorganisms routinely attack and/or degrade beeswax in normal storage. Only certain soil microbes are able to degrade waxes, thus wax refuse and scrapings on the ground in an apiary soon disappear. Beeswax is a stable material; samples thousands of years old have been found to have deteriorated very little.
3. **False** Wax bloom on beeswax can be reduced by cooling it quickly. Beeswax poured into pans and allowed to cool slowly to room temperature will show bloom within a few months whereas extruded wax that is forced to cool quickly may take a year and a half to show bloom.
4. **True** The odor of beeswax may be masked, and sometimes destroyed, by fermentation of diluted honey in wax refuse. It is often impossible to remove the fermentation odor from the wax, making it unsuitable for normal use, including the manufacture of foundation. If cappings and old comb wax containing honey are stored for a long period of time, the wax may be considerably devalued as a result of slow fermentation, as the honey absorbs moisture.
5. **True** Bloom on beeswax, whether on foundation, candles, or stored wax does no harm. Foundation covered with bloom, and several years old, is readily accepted and drawn by bees. Bloom has no adverse effect on the way a candle burns.
6. **False** When beeswax solidifies from the liquid state, it loses about 10 percent of its volume. This shrinkage is especially evident in cakes of wax that are cooled rapidly, as they will have high shoulders and often, long deep cracks.
7. **True** The chemical treating of a candle wick is commonly referred to as pickling. This process helps to solve afterglow and odor problems and also helps to burn the wick tip to an ash that will fall off, rather than burning itself totally down to the melted wax cup.
8. **False** Beeswax when first secreted by the wax glands appear as a translucent, white ellipsoidal flake. Freshly constructed beeswax combs, prior to their use for food storage or larval growth, are similarly white.
9. **True** There are various techniques of bleaching beeswax but it is normally done either by sunlight in greenhouses or chemically. Chemical bleaching usually follows filtration bleaching because the adsorbent process alone seldom produces white beeswax. Sun bleaching does not remove as much beeswax aroma as do other bleaching methods.
10. E) Aluminum
11. B) Four
12. D) Low melting waxes that migrate to the wax surface.
13. B) Cosmetics
14. A) 51
15. C) 165
16. B) Canary Yellow
17. Wax bloom can be removed from a candle by rubbing it with a soft cloth or by warming the surface.
18. A wick conveys the melted fuel to the flame by capillarity.
19. Piece of wicking
    Piece of foundation or thin beeswax
20. Either to simulate a dipped candle or to give the molded candle a smooth, finished appearance.
21. Lost Wax Process- Used to make bronze and other metal castings.
    Batik Techniques- Method of making colored designs on fabric.
22. Fresh Honey Cappings
23. Chloroform, Benzene, Ether

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

FEBRUARY, 1997 • ALL THE NEWS THAT FITS

Is Honey Board At Risk?
GENERIC ADVERTISING THREATENED

The U.S. Supreme Court heard arguments (December 2) regarding the constitutionality of mandatory assessments for generic commodity promotion under federal marketing orders. Agriculture Secretary Dan Glickman said, "I want to emphasize the Department's strong support for these programs. We need to remember that marketing orders have provided producers the opportunity to ensure a steady supply of reasonably priced, high quality fresh fruits, vegetables, nuts and milk for consumers for more than half a century. Producers continue to vote overwhelmingly in support of these programs, which is a clear indication that they find them to be beneficial. As the majority of producers have found, product promotion and the other marketing tools available through marketing orders increase sales, both at home and in international markets."

UNIVERSITY AZ HAS AHB MANUAL

The Univ. of AZ Africanized Honey Bee Education Committee, with Dr. Dave Langston as Chair, has developed this Africanized Honey Bees in AZ Manual to assist individuals interested in training others in their community about Africanized honey bee safety and awareness.

The manual contains general information about honey bee biology and:

- 37 slides with a script
- Public service announcements,
- Handout masters,
- Masters for four pamphlets,
- Sample 911 protocol,
- Two videos,

as well as a list of places to get additional materials.

The videos included in the training manual are:

- ***Africanized Honey Bees in Arizona***, a comprehensive overview of Africanized honey bees since their arrival in 1993
- ***Africanized Honey Bees***, a video of the 37-slide set narrated by a professional.

The pamphlets included in the training manual are:

- *They are Called Africanized Honey Bees*
- *How to Bee Proof Your Home*
- *Outdoor Recreation Safety Tips*
- *Africanized Honey Bees and Your Pets and Livestock*
- *Preparing schools for Africanized Honey Bees*

Cost is $62.50 (U.S.) that includes shipping and handling. Contact College of Agriculture, Publication Distribution Center, 4042 North Campbell Ave., Tucson, AZ 85719.

Processing & Marketing Costs On Food Dollar

Item	1970	1994
Farm value	32.1 cents	21.0 cents
Labor	29.1	37.0
Packaging, advertising	9.8	12.0
Rent, interest	3.3	6.0
Transportation	4.7	4.5
Depreciation, repairs, fuel, electricity	6.2	8.5
Profits before taxes	3.3	3.0
Business taxes	3.0	3.5
All other costs	8.5	4.5
Total food dollar	**100.0**	**100.0**

Purdue University

Cold Works
AFRICANIZED BEES SLOWED

Desert heat hasn't halted the westward migration of America's latest pioneers, but mountain cold might slow them down. Killer bees, according to entomologists, don't like the cold.

Africanized honey bees, their latest sighting confirmed on October in northern San Diego county, entered California two years ago from Arizona. But the California contingent do not seem to have gotten beyond the expanse of desert and farms in the state's southeastern corner. One reason is that people and officials had warning and time to prepare. Another is geography: the coastal ranges form a last barrier.

"These bees don't like to climb mountains," said state entomologist Bill Routhier. "They're a tropical bee."

They have been confirmed in Texas, New Mexico, Arizona, and California. They have been blamed for four deaths – two in Texas and two in Arizona.

Scientists suspect their spread to the southeast has been slowed by colder weather as well as parasitic mites. The migration appears to have stopped in that direction, a University of Tennessee expert said last August.

For several years, state experts in southern Calif. have been warning people to look out for the bees and to fill up any crevices or open pipes where they could set up colonies.

Killer bees are known to have attacked three people in California, all of them men trimming trees. Two were in Blythe and one in Brawley. No one was seriously injured.

Scientists look for killer bees in traps set across the region, but detection is hit-and-miss.

"Obviously, there were bees in the area that we were not aware of," said Eric Mussen, an entomologist at the University of California, Davis.

The latest killer bee collection, in the Anza-Borrego Desert State Park, was actually made in June. But the research was part of a project on bighorn sheet, and the scientist mistook them for domestic honey bees.

If the bees get established on the coast, experts said, it will probably take a while before the signs emerge – more bees in traps and more attacks.

"You don't see human-stinging incidents for two years after you've identified bees in an area," said Routhier.

From the Antelope Valley Press, November 6, 1996

From Ontario, Canada
THORNE'S HAS NEW AGENT

E.H. Thorne Ltd., UK are pleased to announce the appointment of The Bee Works, Ontario, Canada as their North American agents. We are sure this appointment will be of benefit to all beekeepers across the U.S.A. and Canada. E.H. Throne Ltd. are world renowned for their range of beekeeping equipment and supplies. For 85 years the name Thorne has been synonymous with top quality beekeeping equipment and they have won numerous International awards for their products. They have the only full color catalog in the English speaking world, which is recognized as being one of the most comprehensive around. For further information contact David or Jean Eyre, The Bee Works, 9 Progress Drive, Unit 2, Orillia, On, Canada, L3V 6H1. Phone/Fax 705-326-7171. e-mail <beeworks@muskoka.net>, or web, http://www.muskoka.net/~beeworks.

EDUCATIONAL MATERIALS AVAILABLE

The Video Project's recent catalog lists several multimedia programs on endangered species and biodiversity. *The Rainforest: Zooguides* is an easy to use multimedia reference that explores the ecology, peoples, animals, plants and resources of rainforests worldwide. The CD-ROM covers the causes and effects of rainforest destruction and investigates why these regions should be saved. The program includes over 400 photographs and 60 minutes of video clips as well as full color maps. It is available for $59.95. *Encyclopedia of U.S. Endangered Species* is a comprehensive reference guide to more than 700 species legally classified as endangered or threatened in the U.S. This CD-ROM features illustrated reports, text, and locator maps on each species, including their legal status, origin and population. Over 3,500 color photos illustrate the reports. Cost is $49.95.

Endangered, produced by the National Wildlife Federation, is a 30 minute video which provides an introduction to the reasons thousands of species in the U.S. are endangered, the importance of protecting nature's diversity, and how the Endangered Species Act works. An action guide is also included for $29.95. All can be ordered from: The Video Project, 200 Estates Dr., Ben Lomon, CA 95005; 800-4-PLANET; (408) 336-0160; Fax: (408) 336-2168.

The editors of The Green Disk have released the latest version of their very popular *Guide to Environmental Computing*. Version 1.2 of the guide contains over 1,100 listings of World Wide Web Sites, listervs, online databases, bulletin board services, software, educational programs, CD-ROMs and datasets. Also included are articles on green computing, listings of service providers, books, conferences, workshops and much more. The guide is international in scope and ranges from highly technical and specialized listings to more general sources of environmental learning and research. The guide is published on disk only in Mac and IBM formats, so it is keyword searchable and updated easily. The cost is $20 + $5 ship. & hand. Orders can be taken online with VISA/MC, or print/download the order form at http://www.igc.org/greendisk. Mailing address is The Green Disk, P.O. Box 32224, Wash., DC 20007; Tel./Fax 888-GRN-DISK; Outside North America, 207-655-5472.

Read With Care

THE EVOLUTION OF TEACHING

1960s
A peasant sells a bag of potatoes for $10. His costs amount to 4/5 of his selling price. What is his profit?

1970s
A farmer sells a bag of potatoes for $10. His costs amount to 4/5 of his selling price, i.e., $8. What is his profit?

1970s (new math)
A farmer exchanges a set P of potatoes with a set M of money. The cardinality of the set M is equal to $10 and each element of M is worth $1. Draw 10 big dots representing the elements of M. The set C of production costs is comprised of 2 big dots less than the set M. Represent C as a subset of M and give the answer to the question: What is the cardinality of the set of profits?

1980s
A farmer sells a bag of potatoes for $10. His production costs are $8 and his profit is $2. Underline the word "potatoes" and discuss with your classmates.

1990s
A farmer sells a bag of potatoes for $10.00. His production costs are 0.80 of his revenue. On your calculator graph revenue versus costs. Run the "POTATO" program to determine the profit. Discuss the result with students in your group. Write a brief essay that analyzes this example in the real world of economics.

Anonymous

OBITUARY

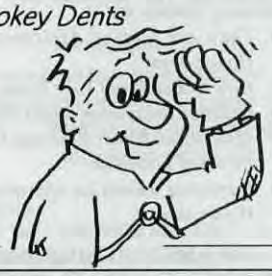
Funeral services for Laura Ruth Weaver, 88, of Navasota were held Thursday, Dec. 26, 1996 at the First Baptist Church in Navasota. Dr. J.W.L. Adams of the First Baptist Church officiated.

Weaver died December 23, 1996 in Navasota. She was born in Benchley, Texas on July 9, 1908, the daughter of William Franklin and Lily May (Free) Meads. She was a homemaker. During the mid-40s she was president of the American Beekeeping Federation Ladies Auxiliary. She was preceded in death by her husband, William Howard Weaver, and brother Arthur Mondrick Meads.

Surviving are son and daughters-in-law, Raymond Morris and Mildred Weaver of Navasota, and Gladys Lucille Weaver of Navasota; brother and sister-in-law, William Franklin and Lula Mae Meads of Bryan; one niece, two nephews, three grandchildren and three great-grandchildren, along with other relatives.

Memorials may be made to the First Baptist Church Library, First Methodist Church Library, or the Navasota Public Library.

Smokey Dents



Smokey took the month off – he'll be back in March!

Glorybee, 1-800-GLORYBE (456-7923), check, MC, Visa, Discover cards accepted.

HONEY WANTED

ALL TYPES OF SPECIALTY HONEY: Clover, Orange, Sage, Basswood, Alfalfa, Mint, Buckwheat, Tupelo, Tulip Poplar, Gallberry, Mangrove, Fir Honey, Honeydew, & other single source honey. We pick up anywhere. ODEM Intern. Inc., 320 Boul. Industriel, Unit 15/16, St-Eustache, Quebec, Canada J7R 5R4. 800-387-3789 FAX 514-974-1450.

FEEDING

SUGAR FOR FEEDING Granulated sugar. 1,000 lb. minimum order. Available in most U.S. locations. Please call: Bill Heerdegen, St. Simons Trading Inc. 1-800-621-9935. FAX (906) 884-2747.

VIDEOS

BEGINNING BEEKEEPING VIDEO 2 hrs! All survival essentials: building hive; installing, feeding, medicating, inspecting, managing bees; harvesting, diseases & parasites; behavior. $35. Dr. Iacobucci, 172-BC Washington, Pembroke, MA 02359 (617) 826-8888. (TF)

PERIODICALS

RURAL HERITAGE – bi-monthly in support of farming & logging with horses, mules, & oxen. Includes THE EVENER Workhorse, Mule & Oxen Directory; $22 6 issues; sample $6. Rural Heritage, 281-B Dean Ridge Lane, Gainesboro, TN 38562.

WANT INFORMATION ON EXOTIC animals & the marketplace? Subscribe to Wings & Hooves. $16 yr. Dept. 1, Rt. 1, Box 32, Forestburg, TX 76239-9706.

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

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

IBRA: INFORMATION AT YOUR FINGERTIPS. IBRA is *the* information service for beekeepers, extension workers & scientists. Our members enjoy the benefits of belonging to IBRA, which includes *Bee World*. For information contact: IBRA, 18 North Road, Cardiff CF1 3DY, UK. Telephone (+44) 1222 372409. Fax (+44) 1222 665522.

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

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

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

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

THE AUSTRALASIAN BEEKEEPER. Published monthly by Pender Beekeeping Supplies Pty. Ltd. Send to: Australasian Beekeeper, PMB 19, Maitland NSW 2320, Australia. Sub. $US27 per annum, Surface Mail (in advance). Bank Draft. Sample on request.

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

BRITISH BEE JOURNAL. Monthly single copies 33p + postage. $15./yr. U.S. Annual subscription postpaid. Subagent: 46 Queen St., Geddington, NR Kettering, Northants, NN14 1AZ, Eng.

Bee interested. For beekeeping information read the AMER. BEE JOUR. New editorial emphasis on practical down-to-earth material, including question & answer section. For information or free copy, write to: AMERICAN BEE JOUR., Hamilton, IL 62341.

THE AUSTRALIAN BEE JOUR. Monthly, SeaMail $30. (Aus.), AirMail $50. (Aus.). Write to: Victorian Apiarists' Assn. Inc., Editor, Judy Graves, 23 McBride Rd., Upper Beaconsfield, Victoria, 3808, Australia. Sample $3 (Aus.) on request.

ANIMALS EXOTIC & SMALL The premier journal of the Exotic & Miniature animal industry. Subscriptions $10./one year, $19./two years, $29./three years U.S. MasterCard, Visa, American Express & Discover welcome. AES, 1320 Mountain Ave., Norco, CA 91760-2852 (909) 371-4307 FAX (909) 371-4779 e-mail AES01@aol.com.

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

SOUTH AFRICAN BEE JOURNAL. Published in English & Africaans, primarily devoted to African & Cape Bee races. Subs. including postage (6 copies). 1995 all subscribers outside of South Africa R100-00 surface mail, payment made in S.A. Rands. NB. Sample on receipt of donation. P.O. Box 41 Modderfontein, 1645, South Africa.

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

INNER ... Cont. From Pg. 6

know some of these people paid their own way, but most have a travel budget from their department, or from a grant (read TAXES, again).

But the complaint I have is *NOT* with them however, (or mostly not, anyway). The *system* that actually *rewards* scientists for spending lots of money to speak to a roomful of people is the same system that *punishes* scientists for writing articles in trade journals that thousands and thousands of the same people who attended the meeting could use. What's wrong with this picture?

Let's see. Spend money to speak to 50 or 200 people, or punish people to speak to 1000's. Hmmm.

O.K. I admit. Scientists are *invited* to speak at meetings. I've invited lots of scientists for EAS and the Ohio State Beekeepers Association. So, as Editor of this magazine, I ***INVITE*** any or every scientist in the beekeeping community to write something that thousands and thousands of beekeepers can use. This is a *formal* invitation. You will be *paid* for your trouble. You can show this to your boss and say, "See, I've been invited to provide information to the people who pay my salary," (and the boss's, by the way).

I have sung this song before, and while our *readers* have agreed strongly, the response from academia has been (except for two graduate student articles) ZERO. Surprised? Disappointed?

So, I'm going one step further this time. If I can convince at least three tax supported scientists who do not routinely make meaningful contributions (and there are, fortunately, some), to make a meaningful contribution to this journal (meaningful = useful information for our readers), I will not only pay them (or their university, or granting agency or whoever) the going rate I pay authors, but will contribute, *in their name*, an additional $100.00 to the anti-dumping fund.

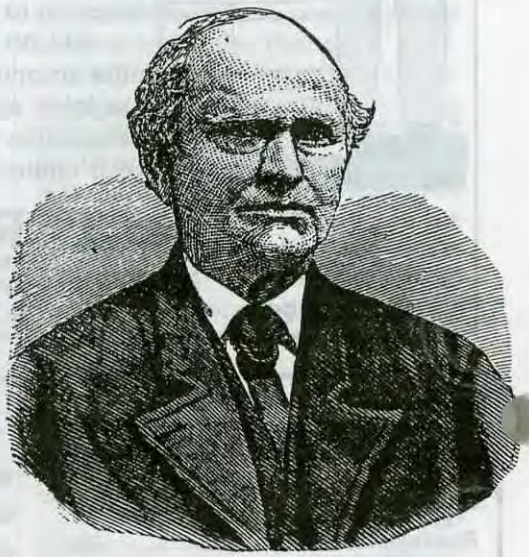
Now, since most of these people don't read this journal (punishment, remember), I'm asking our readers who do read (assuming some do, anyway) this to encourage the scientists they know or are in contact with to consider this proposal.

I've put up my bet. Any takers?

Kim Flottum

Display Index

Adam Grimm, A Biography



ADAM GRIMM.

Adam Grimm was born in Germany, in 1824. His father kept a few hives of bees, in which Adam took deep interest, and did not rest satisfied till he himself became the owner of a few colonies. He emigrated to this country in 1849, settling at Jefferson, Wiconsin, on a farm where he remained until his death, which occurred April 10, 1876. Soon after settling at Jefferson he obtained a few colonies of bees, and was so successful with them that at one time, when all other crops failed, his bees came to the rescue and helped him over the most critical time of his life.

In 1863 he had increased his apiary to 60 stocks of black bees in all sorts of box hives, and in 1864 he commenced to use frame hives, and transferred all his bees into them. In the same year, 1864, he bought his first Italians, and, as rapidly as possible, Italianized his apiary, and then sold large numbers of Italian queens all over the country.

About 1869 or '70 he imported, personally, 100 Italian queens, 60 of which were alive on their arrival at New York. Of this number he introduced 40 in his own apiaries. He increased his stock regardless of cost, every year, but had larger returns especially in later years, both from the sale of honey and bees. Queen-rearing he thought unprofitable. He had an intense enthusiasm in the business, and worked so hard in the apiary as probably to shorten his life. His success was the cause of many others engaging in the business.

He established a bank at Jefferson, of which his was cashier (his bees having provided the capital); but during the honey harvest he left his bank to the care of employees and went from one apiary to another, personally supervising all that was done.

We shall not soon forget two or three pleasant visits which we made at his home, with his interesting family. He told us that his wife remonstrated with him for working so hard, telling him that he now had a competence, and could give up his bees with the laborious care of so many; but he seemed to think the returns were large for the amount of labor, making the work still a pleasure, although no longer a necessity. He reached the number of 1,400 colonies; and on one of our visits, when he had nearly 1,000 colonies, he said, with a half-comical expression, "What would I do if all should die in the winter?" And then, the comical look giving way to one of German determination, he said, "I would buy some more; and with so many hives full of empty comb I would show you how soon I would fill them up again."

His daughters, Katie and Maggie (both since married), were his able and faithful assistants; and the son, George, since his father's death, has assumed the principal care of the bees, for which he is well fitted by his previous training.

Mr. Grimm was trim built, of medium size, pleasant in manner, but especially impressing one as of great earnestness. He was very methodical, and kept an exact account of his business, showing, in a single year, $10,000 as a result of his beekeeping. – *E.R. Root, 1905*

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