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MAY 2000



Bee Culture

Who's Who 2000
Cut Comb Honey
Varietal Honey

Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

MAY 2000 VOLUME 128 NUMBER 5

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State Inspectors, Extension
Specialists & Professors
And Much, Much More
The Only One Of Its Kind
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Subscription Information

U.S., one year, \$20; two years, \$38. Newsstand price: \$2.50. All other countries, (U.S. Currency only), \$10.00 per year additional for postage. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), May 2000, Volume 128, Issue 5, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

Advertising

For information on placing display advertisements, contact Dawn Feagan in our Advertising Dept. 800.289.7668. Ext. 3220

POSTMASTER: Send address changes to BEE CULTURE, The A.I. Root Co., 623 W. Liberty St., Medina, OH 44256

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Plan now for specific honey crops, like this tulip poplar. As distinctive in color as its flavor, it will command a premium price if it is marketed as a speciality crop, and not just a commodity.

Photo by Kim Flottum

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BEE CULTURE

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Response To Dr. Mark

I'm a life-long fan of satire and hyperbole - in fact, I'm the world's greatest fan of hyperbole - but Mark Winston's feeble effort "Of Guns and Bees" (March 2000 *Bee Culture*) compels me to write. Dr. Winston, if you are jealous of the bee folks at Montana for receiving their federal grant, please just say so, and leave satirical writing to those able to write satire. *Bee Culture* surely has more important issues to cover than "grant envy."

First you mention the worldwide danger of land mines "that kill or maim about 60 people every week and prevent farmers from entering and tilling extensive farm acreage." Then, just four paragraphs later, we learn from you: "Any local farmer could tell you where the land mines are " Please, Dr. Winston, are we to infer from your logic that those 60 victims each week were all suicide attempts, many of which were successful? (Just for the record, my closest relationship with the University of Montana researchers was when I once drove past some of their hives along interstate 90 outside Missoula.)

Roger Flanders
Omaha, NE

I really enjoyed the pollination article by Drs. Morse and Calderone. I've been looking for information like that for several years. I'm glad to see the updated data. The color printing looks very nice also.

On the other hand, Dr. Winston stepped into a minefield (pun intended) in his article. People should stick to what they know and when Dr. Winston strayed onto the topic of land mines he was far out of line and trivialized a serious worldwide problem with his casual remarks "of course, none of this is necessary. Any local farmer could tell you where

the land mines are " Were the world as simple as his view implies.

Land mines are designed with stealth in mind. If they were easy to find they would lose their purpose. That's one reason they are buried. If Dr. Winston were to travel to Mozambique, he would learn that tens of thousands of land mines have been washed from the marked fields and deposited helter-skelter along the river valleys, threatening victims, rescue workers, and livestock. On a trip to France in 1962 I saw forests fenced and off limits because of unexploded ordinance dating from WWI.

Dr. Winston, please stick to what you know or save your humor for the April issue.

David Morris
Laurel, MD

Old or New Needed

If anyone has older bee magazines or books they no longer want, I would love to have them. I have a few, but love to read the older ones also. I also have new books too.

Will gladly pay the postage to mail them. Let me know what you have.

Joe Reed
Rt 2, Box 2725
Cassville, MO 65625

Hive Ventilator Observations

In early 1996 there was a color advertisement in the BC for a new way to ventilate beehives, using solar energy to power an internal fan when the temperature is 70° and above, and the sun is shining. I purchased several of them that year.

The unit rests on top of the hive below the telescopic cover. The solar panel can be mounted on a plastic arm with a ball swivel and adjusts to intercept the sun, or

extends to eight feet from the hive by a cord. The fan draws the cooler air through the hive entrance and expels it through five circular vent holes in the ventilator. Instructions suggests that the unit remain on the hive during the Winter to remove carbon dioxide and moisture. There is a feeder jar hole on top of the unit below the cover.

Because of early defects, the upgraded model replacement was not available to me until December 1998 (at no charge). Therefore, observations by this hobby beekeeper were from March, '99 to date, during which the bee vents operated flawlessly.

In an apiary of 28 hives feeding on cotton nectar for four continuous months, the three hives with single brood boxes equipped with bee vents, produced five shallow supers of honey; the remaining apiary hives averaged three supers, or about a 31% advantage for vents.

The operation of the vent fan is so quiet the ear must be in contact with the hive to ascertain that it is functioning.

The manufacturer's claims are, however, mostly subjective and could not be substantiated: stronger hives, less swarming, increased pollination, stronger bees, reduced fanning, healthier hives, designed to last.

The modified solar panel arm of molded plastic deforms in the intense Summer sun, making alternate use of the solar panel extension cord a necessity.

The 60-day manufacturer's warranty is too short a guarantee, considering past problems, unproven modifications, few hours a day of operation, and initial cost (\$120.95 + \$9.95 shipping). An 18-month warranty would indicate the manufacturer's confidence in this model, backing up the claim as being "designed to last."

Fred Fulton
Montgomery, AL

Continued on Next Page

MAILBOX

Honey Board Confusion

As I read the latest *Bee Culture* I am confused on a lot of the terms and references to the National Honey Board, packers, distributors, etc. As a new beekeeper and a new subscriber to this magazine I wonder if you could print a brief but concise history of National Honey Board, packers in America, distributors, etc. I read a lot about the individual but I am still confused on who's who and what they represent to the beekeeper. Any and all info would be greatly appreciated.

Richard Flanagan
Charlotte, NC

NHB Resolution

In response to wide-spread dissatisfaction with overall performance of the National Honey Board (NHB) as evidenced by a survey of Indiana beekeepers, the following resolution has been drafted:

Honey Board Resolution

"Inasmuch as direction and support of the National Honey Board has become fragmented and largely non-supportive of American beekeeping, it is hereby resolved to seek *re-constitution* of the

National Honey Board to enable and encourage it to refocus its activities on American beekeeping including marketing of products of the hive such as pure honey in its various forms, pollination services and honey bees *per se*, and research which will make American beekeeping and its products more visible in the domestic marketplace and more competitive globally."

The Indiana Farm Bureau Honey Bee Committee has endorsed this resolution.

Despite its best efforts, the NHB is seen among many beekeepers as a best friend of foreign beekeepers, honey importers and large packers using great quantities of foreign honey.

On the other hand the NHB is seen as our best hope for nationwide promotion and support.

American beekeeping is an American treasure and it is likely a NHB which sees America's beekeeping industry in that light will regain the support and confidence it had in the early going of its existence.

Dave Laney, President
Indiana Beekeepers Association
North Liberty, IN

Germplasm For Free

The USDA, ARS Honey Bee Breeding, Genetics and Physiology

Laboratory has available limited quantities of germplasm from a stock of bees that has genetic resistance to tracheal mites. These bees have been used for several years in studies of various aspects of tracheal mite resistance. They recently were used as a standard reference stock in a survey of the level of resistance found in commercial breeder colonies (see article in the May 2000 issue of the *American Bee Journal*). The stock is a mixture of Buckfast bees imported in 1990, ARS-Y-C-1 imported in 1989, and other strains discovered during subsequent research. The bees have been propagated every 12-18 months using selection based primarily on resistance to tracheal mites; general colony vigor and productivity also are considered. Scientific reports that describe the resistance of these bees are available from the laboratory.

Our intent is to make available small quantities (up to 50 µl) of semen to bee breeders who wish to incorporate tracheal mite resistance into their breeding lines. Semen is available now, without cost, on a first come, first served basis. Persons interested should contact:

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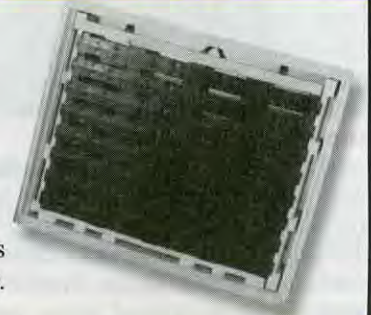
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INNER COVER

Some time ago I laid out an idea wherein businesses that specialized in queen and package production could, with a little planning, take advantage of their specialty by sponsoring working vacations for beekeepers. Simply put, a beekeeper would pay to spend time shaking packages, sticking queens, moving boxes, making deliveries,

stapling screen and all the other routine activities that go on. Rooms and meals would be provided in advance with local establishments, a 'guide' would need to be hired, insurance coverage made, and a few other accommodations made for the 'tourists. All for a price.

This proposal was met with, at best, disdain, but mostly with ridicule. A reaction I'm not unaccustomed to on this page.

But if you have any sense at all, perhaps you are beginning to rethink that opinion. Several northeastern states are now promoting 'Agritourism' as a viable way to bring dollars into their states. Grants to help farmers set up and accommodate city folks are common, and the money generated is considerable. Very, very considerable.

I'm not proposing that package producers bring in people from the suburbs. But they could bring in regular beekeepers who want to see how it's done, and are willing to pay for the chance to do so. Fifteen thousand people who keep bees read this magazine. I bet at least 100 are willing to spend a couple hundred bucks for a three-day experience.

If you are a potential 'tourist' let your suppliers know. If you are a business, I, again, suggest you explore this opportunity. Can you afford to ignore this any longer?

The Who's Who in Apiculture has been continuously published in this magazine for nearly 60 years. It started out as a single page listing in the Spring of each year (it wasn't always April), and wasn't consequential enough to even be listed in the year-end index for the first few years.

It gradually grew from a listing of state association contacts to include information on regulatory laws and registration requirements for each state. It progressed to include state inspectors, state extension specialists and college beekeeping professors (not, mind you, always professors who were beekeepers). As it increased in scope it added industry-wide associations and then federal government agencies that dealt with honey bees at least on paper. By this time it was three pages long and always appeared in the April issue.

It stayed that way until the late 80s, when it was again expanded to include county and regional associations in each state, which increased its length to the current book size it is now.

A couple of years ago it graduated again to appear on the A.I. Root Company web page as a searchable data base, where a viewer could scan and search by position or by state, and if available use live email or web page links.

It has been, over the years praised for its information and cursed for its errors. More praises than curses certainly, but errors exist always have and always will. It's a given when trying to elicit current information from small, no-profit groups that routinely change officers and don't have the motivation or incentive to make staying current a priority. Though discussed here, we've never offered a reward to anyone to answer our query letter in January in time, or even at all.

Too, some groups don't meet often and even a prompt response from a three-times-per-year group isn't prompt enough to meet the deadline. And, unfortunately, we must rely on the kindness of strangers for accuracy and timeliness because we don't have the resources to chase every county beekeeping association on the list.

The argument then, 'Why do it if you can't do it right?' holds weight. So too does the opposite 'It's better than anything out there, and as long as they do it, I don't have to. So it ends up a wash. We try hard. Harder than anyone else it seems, since no one else has tried. But there are still omissions, wrong numbers, wrong names and names that shouldn't be there. Not many, and, we hope, fewer every year.

Which is why we went to May this year. The extra month of response time has increased the number of returns that make the deadline, and this reduced the errors. By quite a few, actually. But there's still some lurking in those thousands and thousands of lines of data. Just so you know, we leave some there just to see if anybody will notice. And besides, if it was perfect what would our critics have to do?

Oh, incentives? With over 4,000 *different people a week* visiting our web page, Who's Who is the *second* most visited site there. How many possible members has your group missed?

Missed Opportunities



NEW

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New from www.bee-commerce! Bring elegance and beauty to your beeyard in an instant! Just place one of these fully assembled ornamental covers on your existing hive. Telescoping cover fits any standard Langstroth hive. Features peaked roof with hand-cut cedar shingles. The front is adorned with a hand-crafted queen bee medallion. Already painted sparkling white (but you can paint to match the color of your hives). An easy way to dramatically transform your hive from ordinary to exceptional! Price (fully assembled and painted): \$129.

The End Of Agriculture in The American Portfolio. Steven C. Blank. Quorum Books, Westport, CT. ISBN: 1567201652. 216 pg. Hard cover. \$55.00.

If the price of this book makes you wince, the title, and the conclusions reached by the author will make you absolutely squirm. Squirm, that is, if you have a long term vested interest in seeing that the agriculture industry in the country remains not remains healthy, or in your state just remains. According to Blank it shouldn't, and won't. There are good reasons for his conclusions, and each of us take advantage of those reasons every day when we buy food imported from places that can produce it cheaper than we can here (honey included).

Blank starts with his Economic

Food chain. Societies start, he says, at the bottom, with basic food production, using lots of land and labor. As this society progresses (and will as long as it eats), it begins to exploit the natural resources available, like mining, land, oceans and the like. Large countries have lots of these, and tend to prosper. Then, manufacturing moves in, using land and capital, followed by Hi-Tech manufacturing using land, capital and management. This peaks at Information Production using capital and management which is where the U.S. is now, according to Blank.

We should be spending our capital on producing Information he says, and using our earnings to pay for food, produced in countries presently further down the economic food chain. We can't, he adds, invest money in agriculture and expect to stay in business. It is too expensive in the resources that are far less expensive in other countries.

Farmers, beekeepers, lenders and anyone in agriculture needs to read this book. You may hate its message, but the knowledge will arm you for the future.

Kim Flottum

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THE WISE GUY



The Agricultural Marketing Service, better known as AMS – how do they affect me and you? AMS is a government agency inside the Department of Ag. They handle the oversight for Ag check-off programs such as the National Honey Board. The AMS also depends upon the check-off programs to fund (at least part of) their existence. I believe the National Honey Board gives them in excess of \$200,000 annually. (That amounts to the assessments collected on 20 million pounds of honey, at 1¢/lb, which represents 10% of the honey produced in the U.S. in 1999.) If for some reason the National Honey Board ceased to exist, would some jobs at AMS disappear? Maybe.

Now. Take a guess who gets to count the votes on a referendum to *continue* the Honey Board? AMS!! Do you think this is smart? The last referendum vote is still being questioned by producers. Even the Honey Board staff was amazed at how poorly the last vote was conducted by AMS. Would we allow either Gore or Bush to be the only one to count the votes in the next presidential election?

There is a wire service story going around about the pork check-off program. It seems the producers are unhappy with how the large processors have contracted with farmers to raise hogs for a set price and in doing so have kept the producer's price low. A group of unhappy producers petitioned AMS for a vote to

get rid of the pork check-off. To do this you need to get a certain percentage of the producers involved in the program to sign the petition. That number of signatures plus more were submitted to AMS, who must then verify the signatures. The verification process, according to the producers, took a very long time – months in fact. Then out of the blue AMS announced that 2,600 signatures were no good and there would be no referendum. Case closed, jobs saved.

That set off the producers and many lobbied their congressional reps, who in turn went to Ag. Sec. Glickman. The wire service story continues that Glickman suddenly wants to move ahead with the referendum and have USDA pay for it! Do you think he smells a rat also?

Why do we allow this to happen? We need an independent firm to handle the referendum votes. There will always be a cloud hanging over this whole program as long as AMS depends on the National Honey Board's (and other boards), existence.

AMS is only out to protect their position. Tell your congressman or woman that you are unhappy with their process. When the next two referendums are voted upon let's do it fairly and above board. If AMS is willing to let the chips fall where they may, then let me count the votes.

Wise Guy

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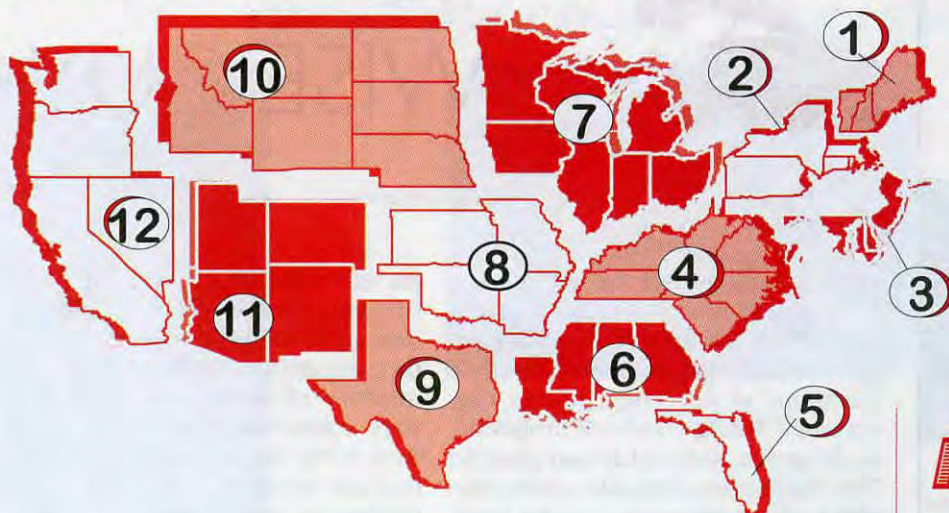
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MAY - REGIONAL HONEY PRICE REPORT



Store Survey

Honey reporters surveyed local grocery stores this month to get a picture of what's being sold, and where. Check out this data, then read the following article on how much honey is being consumed, and where that honey comes from.

Reporters counted 'fronts,' or rows of all kinds, sizes and brands of honey on grocery shelves. The average was 13.5 rows/store. This ranged from two to 58 depending on store size. Most were above eight and below 12. Local brands (local beekeepers) had an average of 3.8 of those rows, or 28%. National brands (Sioux Bee, Dutch Gold, Stollers, etc.) had 5.2 rows, or 39%. Store brands, like

Kroger's, Super Value, etc., had 3.1 rows, or 23% of the shelf space. Imported honey, whether in national or store brands, was usually a blend, of U.S., Argentina, Canada or Mexican honeys. There were, on average, 5.5 rows with imported honey, or 41% of the retail honey sold. Of course the label doesn't say if it's 1% U.S. honey, and 99% imported, or the other way around. And, there is almost always more than one country listed on the label. Looking at U.S. and imported honey in total (plus carry over) 38.2% of the honey sold in 1999 was imported. Draw your own conclusions about where at least some of that imported honey goes.

How Much Honey?

Here's an interesting question. How much honey is consumed in the U.S. each year, really? We wanted to find out again this year so we went searching for the numbers. USDA NASS produces an annual report that lists the numbers of colonies, honey yield/colony total honey production, carry over honey stocks from the previous year, and value for the previous year. The U.S. Department of Commerce records both honey imports and exports each year, and of course the Census Bureau reports the population.

The National Honey Board, too,

	Reporting Regions												Summary		History	
	1	2	3	4	5	6	7	8	9	10	11	12	Range	Avg.	Last Month	Last Yr.
Extracted honey sold bulk to Packers or Processors																
Wholesale Bulk																
60# Light (retail)	65.68	65.75	70.00	69.25	70.78	66.33	62.71	69.00	72.00	62.00	66.50	66.50	40.00-100.00	68.26	68.26	58.22
60# Amber (retail)	63.25	61.19	68.00	68.33	72.88	63.00	63.60	61.00	70.00	62.00	58.75	62.50	39.00-100.00	64.32	64.32	55.93
55 gal. Light	0.59	0.60	0.60	0.63	0.60	0.60	0.58	0.65	0.60	0.59	0.65	0.65	0.45-1.50	0.65	0.65	0.69
55 gal. Amber	0.55	0.55	0.58	0.60	0.58	0.58	0.54	0.58	0.58	0.57	0.58	0.60	0.40-1.50	0.60	0.60	0.63
Wholesale - Case Lots																
1/2# 24's	28.63	26.62	29.27	31.40	29.27	32.00	30.41	29.27	30.00	29.27	28.95	29.27	24.50-42.00	29.19	39.19	30.50
1# 24's	42.97	43.15	48.00	44.90	44.40	43.50	42.16	44.40	48.00	38.40	44.30	47.47	32.40-60.00	43.34	43.34	43.27
2# 12's	39.44	34.45	45.60	44.69	39.60	39.00	38.56	40.70	40.50	41.80	37.60	40.50	29.40-52.58	39.34	39.34	39.15
12 oz. Plas. 24's	36.64	38.22	45.60	35.22	34.80	38.00	36.51	35.60	42.00	27.60	39.85	37.60	26.40-48.00	36.93	36.93	37.21
5# 6's	40.64	38.68	44.00	49.13	42.31	44.19	39.40	39.00	48.00	42.31	41.40	40.50	31.50-57.50	42.37	42.37	41.45
Retail Honey Prices																
1/2#	1.68	1.67	1.83	2.17	2.83	1.90	1.55	1.76	1.98	1.49	1.89	1.85	0.95-3.00	1.76	1.76	1.81
12 oz. Plastic	2.11	2.10	2.90	2.03	2.63	2.11	1.97	2.13	2.56	1.82	2.02	2.15	1.39-2.99	2.23	2.23	2.23
1 lb. Glass	2.58	2.41	3.00	2.72	2.88	2.60	2.39	2.44	3.00	2.39	3.14	2.93	1.58-4.00	2.68	2.68	2.66
2 lb. Glass	4.43	4.37	4.80	5.55	4.75	3.91	4.02	4.44	4.63	3.41	4.49	4.65	3.19-6.00	4.41	4.41	4.51
3 lb. Glass	6.32	7.22	7.80	6.92	6.25	6.40	5.67	6.11	7.08	5.79	6.23	5.85	3.99-10.00	6.26	6.26	6.35
4 lb. Glass	7.51	6.60	8.61	8.91	8.61	7.53	8.21	7.99	7.00	8.00	7.50	8.61	6.00-10.00	7.90	7.90	7.93
5 lb. Glass	8.66	8.61	11.00	11.75	9.32	8.25	8.26	10.99	9.00	9.32	8.60	9.25	10.00-12.50	8.66	8.66	9.35
1# Cream	3.30	3.20	4.19	3.58	4.19	2.83	2.98	3.15	4.26	2.29	3.72	2.88	2.13-5.50	3.27	3.27	3.16
1# Comb	4.08	4.15	3.60	4.30	4.07	4.17	3.75	4.16	4.88	4.07	5.25	4.50	1.95-6.00	4.22	4.22	4.17
Round Plastic	3.56	3.14	3.60	3.98	4.06	4.00	3.24	3.16	5.00	4.06	4.95	3.88	2.50-6.00	3.79	3.79	3.65
Wax (Light)	2.47	2.30	2.00	2.40	1.89	2.55	2.81	2.23	2.50	2.29	1.71	2.75	1.05-5.00	2.47	2.47	2.16
Wax (Dark)	2.14	1.75	1.75	1.70	1.55	2.48	1.81	1.25	2.00	2.05	1.24	2.25	0.95-4.50	2.18	2.18	1.94
Poll. Fee/Col.	36.41	40.00	35.00	33.67	30.00	35.17	40.61	40.00	20.00	37.53	37.53	34.33	20.00-55.00	36.87	36.87	38.20

keeps track of the honey that enters main stream commerce by their assessments on honey sold. The USDA production figures do not count producers with fewer than five colonies, and the Honey Board does not have figures for those that produce less than 6,000 pounds each year, so there are some gaps, but we'll look at these in a bit.

One concern that is always raised is the accuracy of the USDA data. We examined that data, which is compiled by survey, by comparing it to the very accurate NHB data, using a linear regression analysis.

Remember that the NHB does not have figures for domestic production from beekeepers that produce less than 6,000 pounds each year. Also, that the USDA does not have figures from beekeepers with fewer than five colonies. As a result this is not an apples to apples comparison and the data show that. With an r value of only .44 it is impossible to predict one by knowing the other (an r value of 1.0 would be perfect; an r value of .50 is essentially random; an r value of -1.0 is a perfect negative fit).

Since imports are monitored closely, NHB and USDA data are essentially the same for these (r = .99). When combined, USDA domestic production + imports compared to NHB domestic + imports has an r value of .87, which is pretty close. But why the difference in domestic figures? Since NHB misses some, and USDA misses some, but fewer, let's look at those in-between numbers. If you produce up to but less than 6,000 pounds you are anywhere between five colonies (not counted by USDA) and about 100 colonies (with a 60 pound average), which can be a small sideline business.

These people produced, in 1994 (calculated by subtracting NHB domestic production from USDA domestic production) 55.7 million pounds, which was 26% of the honey produced in the U.S. that year. In 1995 it was 11.8 million pounds for 5.6% of the honey produced. In 1996 it was 32.1 million pounds for 16.2% of the total; in 1997 it was 45.2 million for 23% of the total. In 1998 it was 36 million pounds for 16.3% of the total and last year these sideline operations produced 18.7 million pounds, for 9.1% of the total.

To reconcile these two sets of

data, USDA and NHB, at first seems difficult. And it is. Let's start with the chart below, looking at the USDA data to calculate the per capita consumption of honey for each year. Recall these numbers include those beekeepers that produce less than 6,000 pounds per year. Between '94 and '99 consumption increases from 1.5 pounds/person to 1.66 pounds (24 oz. to 26.6 oz.). This represents a 10% increase. Population, meanwhile, increases too, but only by 4.5%.

Now, here's a problem we had last year with how we calculated this figure. Last year (May 1999) we did not include the 'stocks held over' data in the calculation. Though the

Year	lbs. (x 1,000)	lbs./oz. per person
1994	2.865	1.10 (17.6)
1995	2.861	1.09 (17.4)
1996	3.144	1.19 (19.0)
1997	3.210	1.20 (19.2)
1998	3.196	1.18 (18.9)
1999	3.607	1.32 (21.1)

While the population is the same, NHB data, which does not fuss with stocks held over, indicates an increase of from 1.10 pounds/person in 1994 to 1.32 pounds/person in 1999. This represents a 16.6% increase (from 17.6 oz./person to 21.1 oz./person).

Year	¹ Produced U.S.	² Imported into U.S.	¹ Stocks From Previous Year	² Exports	³ U.S. Population	Lbs./Oz. Per Person
1994	217,168,000	120,941,467	49,049,000	8,551,715	260,292,437	1.50 (24)
1995	210,516,000	86,189,176	59,813,000	55,256,645	262,760,639	1.27 (20.3)
1996	198,197,000	146,812,596	42,226,000	111,559,508	265,179,411	1.42 (22.7)
1997	196,536,000	162,720,710	46,967,000	9,042,510	267,636,061	1.48 (23.7)
1998	220,311,000	126,919,822	70,696,000	11,053,550	270,098,313	1.51 (24.2)
1999	205,228,000	176,771,178	80,808,000	11,049,405	272,639,000	1.66 (26.6)

¹NASS
²U.S. Department of Commerce
³U.S. Census Bureau

error was consistent, stocks held in warehouses each year vary greatly. Fluctuations depend on imports, price and exports. They are included this year and do influence the data. This error was brought to our attention by an economist sometime after publication, so we waited until now to recalculate these figures.

If we take NHB data from both import and domestic assessment (using total assessments each year) and compute the per capita con-

sumption, the increase is, though less pronounced, no less dramatic. (See chart.) Remember, these figures do not include a separate figure for stocks held over. If the honey was sold it is counted. If not, it doesn't exist, yet.

Due to the techniques used last year, per capita consumption appeared to remain consistent. That was, as our critics have pointed out, in error. It has risen in the last six years somewhere between 10 and 16.6%, depending on whose figures you use.

The USDA data is significantly variable due to the fact that they include honey sitting in warehouses somewhere. Even so, it is a good indicator however, of trends in production and should remain in our calculations.

However, the NHB data errs in the other direction in that it is probably too conservative in its figures because of the significant data it doesn't collect. The small sideline operators can in some years account for a significant piece of U.S. domestic production. Both are right on for imports however, and that disturbing trend is evident.

So how much honey? In the last six years the range has been from (USDA) 1.5 - 1.66 pounds/person to (NHB) 1.1 - 1.32 pounds/person.

Country	Pounds (x 1,000)	Barrels (x 1,000)
Argentina	90,706.0	137.4
M. China	50,737.4	76.8
Canada	23,386.6	35.4
Mexico	6,803.7	10.3
Vietnam	3,355.1	5.1
Australia	723.4	1.1
Uruguay	332.2	.5
All Others	533.4	.8

Source USDA NASS



Roger Morse

Research Review

“Queen quality; Beekeeping history.”

There is only one queen in a honey bee colony. However, when colonies prepare to swarm or replace their queen they usually grow many queens that are forced to compete among themselves to determine which one will be the new queen.

If the queens are removed from colonies they react by growing new ones. It is known that bees rear their new queens from eggs and both young and older (two day old) larvae all at the same time. If older larvae are used, the bees will grow the queen more quickly but using younger larvae will enhance queen quality since the younger larvae feed on royal jelly for a longer period of time.

This paper asks what happens in the real world. The answer is that, at least under the conditions tested, queens that are produced more rapidly are the ones that will eventually head the colony. “Queen quality has little impact on the outcome.” “The rate of queen replacement appears an important factor in the honeybee life cycle.” In other words, the faster the queen is replaced the better because there is less disruption of brood rearing.

The experiments that were done to come to this conclusion were undertaken in northern Pennsylvania where there are only about four months of frost-free weather. I don't know if that is important or not.

Significance I think there is some important information to glean from this piece of research. In their evolution, the important point insofar as the bees are concerned is to force requeening to come about as soon as is possible. The fact that the resulting queen may not be as good as she could be is not so im-

portant. However, honey bees are interested in collecting only enough honey for winter or some other adverse period. They are not concerned with collecting a great surplus above this amount as we are. The answer is that if you are a honey-producing beekeeper you should requeen your colonies with better stock after they swarm. Likewise, all swarms should be requeened as soon as is possible since both the parent colony and the swarm are made up of the same genetic material. There is no question that some lines produce more honey than do others and this a factor you can control through selection and requeening.

Tarpy, D. R., S. Hatch and D. J. C. Fletcher. *The influence of queen age and quality during queen replacement in honeybee colonies.* *Animal Behaviour* 59:97-101. 2000.

Beekeeping in Prehistory

It has been found that beeswax was used as fuel in lamps from ancient Greece in the period 1600 to 1450 BC. This was determined by examining the residues found in some prehistoric lamps from the island of Crete. There are pictures of a ceramic lamp and conical cup used as lamps in the article I cite below and both were made from local clays. How these lamps worked, and whether or not there was a wick is not clear to me. Beeswax is a very stable material and because it contains such different compounds it is easily identified in our modern chemical laboratories.


It is known that olive oil was a common illuminant during these times too and it is possible the two were used together. However, if you have ever burned pure beeswax candles in your home you are also aware of their advantages, especially the fact that they do not smoke and they produce a pleasant odor.

The significance of this research is different to me. Beeswax could

not have been used as a lamp fuel unless it was a fairly common material. This means there must have been a fairly extensive beekeeping industry on Crete and in Greece in ancient times. We produce about 100 pounds of honey to obtain a pound or two of beeswax. I presume the ratio of beeswax to honey must have been the same in ancient times, which, in turn, means that honey must have been a fairly common commodity.

It is entirely possible that there was extensive beekeeping in ancient times since even today Crete and several other counties in the Mediterranean region are good, commercial type beekeeping areas. I have been in apiaries with forty and more colonies in the vicinity of Rome in Italy, Athens in Greece and I have seen even larger apiaries on Crete.

The size of an apiary (number of colonies) is controlled by the types and quantities of flowers available for the bees and these, in turn, are controlled by soil type. Soil type doesn't change over the centuries. Greece has long been known for its wild thyme honey, which is produced by this same imported plant in western Massachusetts and the western slopes of the Catskill mountains in New York State.

Unfortunately, we know little about beekeeping in ancient times though the Egyptians left some records of pipe-like, mud hives in some of their tombs. Since a small number of beekeepers still use these hives in Egypt today, and we know how they are managed, we have some notion about how it might have been done years ago. The ancient beekeeping methods were not so efficient as those we use today but they were apparently satisfactory. 

Evershed, R. P., S. J. Vaughan, S. N. Dudd and J. S. Soles. *Fuel for thought? Beeswax in lamps and conical cups from late Minoan Crete.* *Antiquity* 71: 979-985. 1997.

? DO YOU KNOW ?

Anatomy & Physiology 101

Clarence Collison

Mississippi State University

Effective colony management requires that you understand the factors that regulate colony development and have an understanding of basic bee biology. In its general form, the honey bee resembles any other insect; however, since the bee leads a highly specialized kind of life, it has numerous modified structures that

allow it to lead this lifestyle. In order to understand the bee's biology, it is important to know the basic anatomy and physiology of the honey bee.

Please take a few minutes and answer the following questions to find out how well you understand these important topics.

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

- ___ Honey bees have two pairs of salivary glands which are located in the head.
- ___ Queens and workers have the same number of antennal segments.
- ___ Digestion and absorption of food takes place in the worker's honey stomach.
- ___ Ocelli or simple eyes are capable of forming images.
- ___ The crop or honey stomach is located in the abdomen.
- ___ The spaces within the body of the honey bee not occupied by organs or other tissues are filled with blood.
- ___ The functions of the blood or haemolymph of the honey bee include the distribution of nutrients, oxygen and water.
- ___ Digestive enzymes are produced by the lining of the small intestine.

(Multiple Choice Questions, 1 point each).

- ___ The adult honey bee's thorax is composed of ___ segment(s).
A. Four
B. Two
C. One
D. Three
E. Five
- ___ The alkaline gland is associated with the _____.
A. Ventriculus
B. Salivary glands
C. Brood-food glands
D. Scent gland
E. Sting
- ___ The heart is found in the dorsal part of the abdomen and consists of _____ chambers.
A. Six
B. Five
C. Four

- ___ Seven
- ___ Three

Please match the following terms to the appropriate adult bee body structures.

- | | | |
|--------------------------|----------------|---------------|
| A. Tentorium | B. Propodium | C. Labium |
| D. Flabellum | E. Hamuli | F. Flagellum |
| G. Auricle | H. Ventriculus | I. Ostia |
| J. Malpighian Tubules | K. Aorta | L. Labrum |
| M. Proventriculus | N. Corbicula | O. Arolium |
| P. Hypopharyngeal Glands | Q. Scape | R. Mesothorax |
| S. Ocelli | T. Metathorax | U. Glossa |
| V. Prothorax | W. Peduncle | X. Spiracle |
| Y. Clypeus | Z. Tegula | |
- ___ Shield-like structure in front of the base of the forewing.
 - ___ Basal segment of the antenna.
 - ___ Forewings are attached to this thoracic segment.
 - ___ Small tubular structures which extend throughout the abdominal cavity and remove the waste products of metabolism.
 - ___ Uprturned hooks on the front margin of each hind wing.
 - ___ Upper lip
 - ___ Pollen basket
 - ___ Brood-food glands
 - ___ Attaches the thorax to the abdomen
 - ___ Two large tubes and connecting bridge that internally brace the walls of the head.
 - ___ Small spoon-shaped lobe at the tip of the tongue.
 - ___ Controls the passage of food from the honey stomach to the mid-gut.
 - ___ Slits within the sides of the heart which permit blood to enter the chambers.
 - ___ Fleshy lobe used when the bee must walk on a smooth or slippery surface.

ANSWERS ON PAGE 61



Collaboration

“Collaborate: To work together, especially in an intellectual fashion.”

If you want to know something about my personality, consider this. I am an author on 123 scientific papers, but I am the sole author on only 11 of those, and the last paper I wrote alone was in 1992. In other words, 91 percent of my research productivity has been done in collaboration with others, and often with up to six or seven co-authors.

I say this with some pride, since I hold as a core belief the principle that we all can accomplish considerably more by working together than by working separately. However, I can't say I am unique or unusual in that respect, as most scientific papers today are co-authored. There have been many classic collaborations in the beekeeping community that have advanced our knowledge of bees and made important contributions to beekeeping and pollination management.

Take bee pheromones, the odors produced by bees to communicate with each other. My own research on pheromones has certainly been collaborative, most notably with the fine and insightful chemist Keith Slessor and our students, but our work was based on earlier research by a number of pioneering research teams in this field. Perhaps the most memorable of these collaborations came from the Rothamsted, England, research station, led by Colin Butler, J. Simpson, and John Free from about 1950-1990, but also including their colleagues R.K. Callow, J.R. Chapman, N.C. Johnston, P.N.

Paton, A.W. Fergusson, J.A. Pickett and others.

This group made three important and seminal contributions to social insect research, the earliest being the identification of a key component of the honey bee queen pheromone, 9-keto-decenoic acid, which they called queen substance. Their second contribution involved elucidation of the chemical identity and functions of worker alarm compounds, and the third a similar study of the attractant worker Nasonov pheromone. These projects involved different combinations of researchers, but their remarkable contributions arose from the synergistic interactions of a unique and collaborative research team with a common focus and an ability to feed from each other's strengths.

We don't have to go overseas to find classic collaborations in basic bee research. Take the epic interaction between Gene Robinson (now at the University of Illinois) and Rob Page (now at the University of California, Davis), while Gene was a postdoctoral fellow in Rob's Ohio State University laboratory. Rob's training was in bee genetics and Gene's in physiology and behavior, but they and Rob's students put together a combination of skills and elegant experiments to elucidate the genetic basis to division of labor in honey bees.

While Gene and Rob would be the first to admit that many other scientists contributed then and more recently to this field, it was their ideas and experiments that told the most complete story first,

and in doing so revolutionized our image of a honey bee colony from that of a cohesive unit to one in which many different subgroups based on parentage perform tasks at different rates. This discovery provided a profoundly new perception of how individuals function in social insect colonies, and would not have occurred without a combination of skills and insights from these two scientists.

Collaboration is not only in the realm of basic biology, and certainly not only between scientists. There are many classic collaborations in bee research between beekeepers and scientists, some of which have led to important discoveries in honey bee management. Perhaps the most notable recent participant in these interactions has been Bill Wilson, now at the U.S.D.A. Weslaco bee laboratory. Bill has had his hand in such diverse pots as tracheal mite control with menthol, AFB management with antibiotics and the discovery of Apistan resistance in North America, but his hand has been only one of many. His work has been noteworthy in its collaboration with innumerable beekeepers to test his, and their, ideas in commercial settings, and once again the combination of Wilson and collaborators has been much more than either could have accomplished alone.

Collaboration is not unique to research, but is equally important to other activities in the bee world. Take, for example, meetings. Here in Canada, we recently completed an almost 10-year-long collaborative effort to host Apimondia 99, held in

Continued on Next Page

"What makes these and other collaborations effective? First and foremost are mutual respect and a willingness to use the word *we* instead of *I*, and mean it."

Vancouver last September. This effort linked beekeepers as represented by the Canadian Honey Council with professionals in apicultural research and extension, through the Canadian Association of Professional Apiculturists. By all accounts, this was a fine meeting, and it worked because of the unusual synergy and trust built up between these two organizations that allowed us to put on a considerably broader and better-financed meeting than could have been attempted by either group alone. And, an army of well over 200 volunteers from both communities provided the legwork and welcoming atmosphere that made the meeting function efficiently and feel comfortable to the international delegates that graced Vancouver for the week of the meeting.

What makes these and other collaborations effective? First and foremost are mutual respect and a willingness to use the word *we* instead of *I*, and mean it. This is more difficult than it might appear, since academics and beekeepers alike don't get paid a lot relative to some other professional occupations, and we hope for some personal recognition to make up for salary. Yet, the most successful collaborations, and certainly the ones that last, result from mutual good will and an attitude that we did something rather than "I did it, and I'll begrudgingly thank you for your technical contributions, but after all I was the one who came up with the original idea, and while I'm grateful that you tagged along, it really was more me who made it happen, so I will acknowledge you in publications and maybe a few speeches, but putting your name on the patent, well, isn't that a bit much?" and so on; you get the picture.

Good will is not enough to make a collaboration work, however. You also need good criticism, hard-nosed, no-holds-barred discussion, in which the fact that you like your collaborators doesn't seduce you

into believing ideas or slanting interpretations of data in a favorable direction only because you're friendly.

New students in my laboratory are sometimes startled by the aggressive criticism with which Keith Slessor and I examine our data. We figure it's better to test out our ideas and results in the privacy of a lab meeting before getting too much egg on our faces in public by pronouncing as fact something that hasn't yet passed the most rigorous intellectual probing. These intellectual challenges are considerably safer when conducted in an atmosphere of fundamental respect and the perspective that we're working on refining *our* ideas rather than self-promotion. Similarly, our Apimondia 99 organizing committee sometimes probed pretty deeply into any jobs that weren't getting done well or on time, but our previous and continuing base friendships and respect allowed us to probe hard but remain buddies at the end of the day.

Important collaborations require these personal traits of collegiality, mutual respect and sharing of recognition, but also needed is the right combination of perspectives. Thus,

a chemist working with a biologist, or a biologist working with a beekeeper, provide the diversity in approach that leads to new findings. Fresh perspectives also work, which is why the student-professor interaction can be so powerful in elucidating new findings. Students come into laboratories from diverse backgrounds, but rarely with the same point of view as their supervisor, and the wise professor allows students to lead in new directions rather than making them follow a predetermined intellectual path. By the same token, a good meeting is best planned with a mix of previous experience plus some new ideas from the fresh and young face in the group, who perhaps hasn't yet been seduced into an established mentality about how things should be done.

The careful reader noticed that I used an important word earlier, *synergy*, which perhaps sums up the reason that collaborations are important. The definition of synergy is *the interaction of two or more agents or forces so that their combined effect is greater than the sum of their individual effects*, derived from the Greek work *synergia*, meaning *cooperation*. The legacy of accomplishment we leave behind is indeed sweetest and most productive when we work together, and the words *collaboration* and *synergy* worthy of residence in anyone's lexicon of terms to live by. **EC**

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Early Spring

Though I like every some aspect of every season of the year, the Spring season is my least favorite. It just seems to be wishy-washy. One day is warm while the next day is cold or dry or wet or windy. But what season can compete with those blue, warm spring days? Problem is that I have not had one of those days yet this year. They'll come along soon enough, but I am not always as patient as I should be.

Last February, I drew for you a primitive BC yard layout. This time last year, I was busily building hive stands and assembling equipment. Though there is still much work to

be done, this season has already been different. I have already positioned pollen substitute in place and removed entrance reducers. For your perspective, I have updated the yard layout and present it in Figure 1 for your review. It is not to scale.

The numbered boxes are standard hives and are all in two deeps. You may recall from previous articles that the only single story hive died during this past winter due to dysentery.

Hives 1 & 2: Headed by one year old Cordovans. These two colonies wintered well, but had a significant die-off during early February. It is

still strong with honey and had a heavy *Varroa* load when I checked it last fall.

Hives 3 & 4: Headed by feral queens and are swarms from last season. They wintered nicely, but these queens are due for replacement this season. I was considering trying some of the "Russian" queens in these two colonies. What do you think?

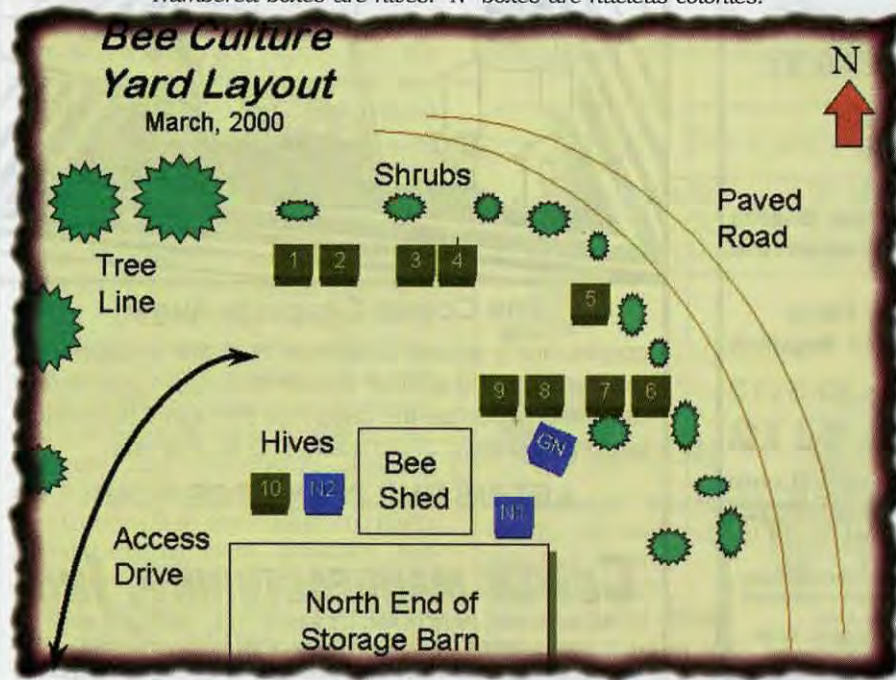
Hives 5, 8 & 9: 1999 3-pound packages from Harrell & Sons. They are good Italian bees and wintered well. All colonies are strong in honey and seem set for the season. Hive #5 has the "warm-way" entrance, but I can't tell that it mattered during the wintering process.

Hives 6 & 7: These are 1999 3-frame splits headed by New World Carniolans and were also strong wintering colonies. Hive #6 was particularly attractive to the skunk(s) that harassed my hives much of the winter.

Hive #10: Is headed by a feral queen and showed a light case of American foulbrood last fall. I applied Terramycin, but will withdraw that treatment this season. If the malady occurs again, I will need to address the potential disease source that this colony presents. It will either need to be destroyed or moved to another location.

N1 & N2 Nuclei: Are nucleus colonies. N1 is a 3 frame triplex colony. Two of the three queens were Caucasians, but one died during winter. There are two surviving 3-frame nucs left headed by a Caucasian and the other by a feral queen. N2 is a

Numbered boxes are hives. "N" boxes are nucleus colonies.



five frame nuc that wintered weakly and is not in good shape. Even if it survives, it will spend all season trying to build up to an average-strength colony.

GN Nucleus: This is the "Garden Nucleus" hive that I have written about in past articles. It wintered acceptably and shows promise of becoming an average colony this season. This queen is also due for replacement.

I am happy with my new bee yard when compared to my starting point last January. I am comfortable saying that I have gone from a run-down yard, to one that I would not be embarrassed to have you view. It's still a hobby and there is still a lot to do, but that is as it should be.

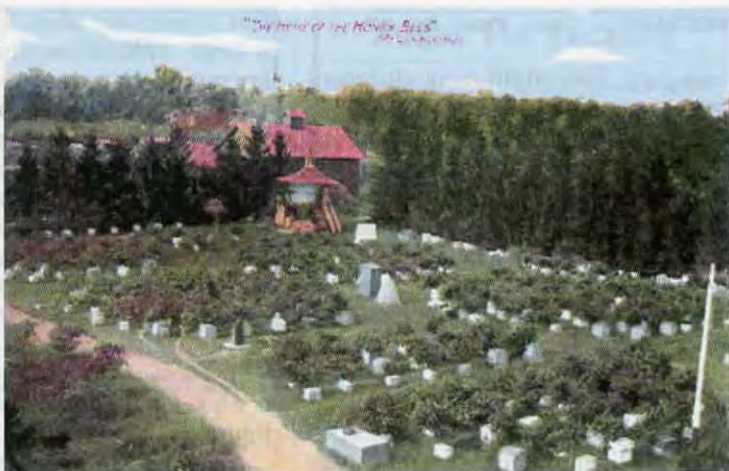
The Honey Bee Paraphernalia Collector. Yet another type of beekeeper?

The world of collecting – anything – seems to be at full speed. The televised *Antique Road Show* is a testament to that interest. Hardly ten years ago, the average antique shop was a musty-smelling junky place where you could actually find unloved pieces and negotiate a price for the piece. Not so now. Gigantic antique malls, with background music (usually old Dean Martin songs), and fixed prices, are the norm. If you really want to be a jerk, you can offer a lower price for the piece. The assistant will look pensive and occasionally say that the seller will come down 10% if the piece is more than a preset amount. Antiquing (called "junking" in the old days) is not much fun anymore. I feel as though I have gone to Wal-Mart. I like to find things that need me. I like to talk to the seller. I am now an antique in the antique world.

Competing with the Antique Malls are the web-based auctions. Against my better judgment I bought the following post card on eBay a few weeks ago. I don't want to mention how much I paid for a 5 cent card, but it was about a 32,000% increase. Am I a shrewd negotiator or what? The post card shows an old view of the A.I. Root Company's home bee yard. I have attached it in figure 2 for your review.

I feel that one of the facts we, as beekeepers, must accept is that there are many collectors of bee paraphernalia that are not beekeepers and never will be. They just like

The indistinct wording at the top reads, "The Home of the Honey Bees – Medina, OH."



old bee stuff and it is not common. We, as beekeepers, don't own our history as it were. One of the most unusual bee hives I have ever seen was the Spangler Hive that was a cylinder, not much larger than a 1-gallon can. It sat on three short legs. Though cute and interesting, I have no doubt that it was useless as a hive – or we would be seeing them everywhere. It is owned by an antique dealer who had never seen, nor wanted to see, the inside of a modern hive. He commented that the small hive was not for sale at any (reasonable) price and was one of his favorite pieces. Editor Flottum recently told me that old honey bee books were in big demand by collectors of old books in part because

some of them are so rare. Antique smokers, "queen catchers", books and hives are frequently grabbed up by people who are not one of us. If you decide to become a bee paraphernalia collector, be prepared to compete with other passionate people.

Is Collecting Antique Beekeeping Artifacts Another Type of Bee-Lover?

At a recent Spring meeting, I was forced to realize, that due in large part to universal *Varroa* infestations, our small industry has fractured itself into even more categories. For all our industry lives, we were: honey producers, pollination specialists, queen & package producers, general hobbyists, or equipment manufacturers. Even then, the honey producer

Continued on Next Page

An observation beehive house in an arboretum.



category was night/day different from queen production. The nexus was that both of those groups used honey bees – but for radically different things. Now to the traditional list of sub-categories of disassociated beekeeping, we can add:

1. Gardening beekeepers (Gardeners who want a few bees within the garden)
2. Virtual beekeepers (Computer jockeys who rarely, if ever, open a real colony but use computers to pursue beekeeping interests.)
3. Bee appliance collectors (people who collect: books, honey dishes, hives and hive parts, smokers, honey tins, ad infinitum, but have no actual interest in honey bee management.)
4. Apitherapy (people who keep bees for medical purposes)
5. Craft people (people who make (and use) skeps, wax, or bee motifs in their designs)
6. Others?

There is absolutely nothing wrong with these new groups. We all have the common theme of honey bees. We just enjoy or employ our pursuit in different ways. *Come on down!*

An Observation Hive House

Recently, I had the opportunity to visit an arboretum that was reputed to have an observation hive exhibit. At long last, I found the house but sadly it was not stocked with bees. None-the-less, the facility was interesting from an idea stance. The house, being about six

feet square and standard height had a large window on one side, a bee entrance that was protected by a chain-link fence on another side, and a human door on the third side. The fourth wall was solid. The house had a small ventilation system and, no doubt, could have had been heated during winter months. It was soundly constructed and probably cost more than \$1000.00. However, in the right place, as a exhibition unit, it would have been well received. I have presented a photo in figure 3.

As you can tell from the photo, the window glass protects the 4-deep frame observation hive from the requisite bumping and tapping that goes on when the public is around an observation hive. The fence offers some protection from the flight path for curious children and adults.

I offer this design, though not my own idea, to those of you who are working with museums, arboretums, or zoos, in programs that provide for honey bee exhibits. The fatal flaw within this specific hive demonstration is that it is always difficult to find beekeepers who will dependably maintain the unit. Within beekeeping, other than stinging occurrences, nothing makes a worse impression than an observation hive in poor condition. Does any among you have novel observation hive houses? **BE**

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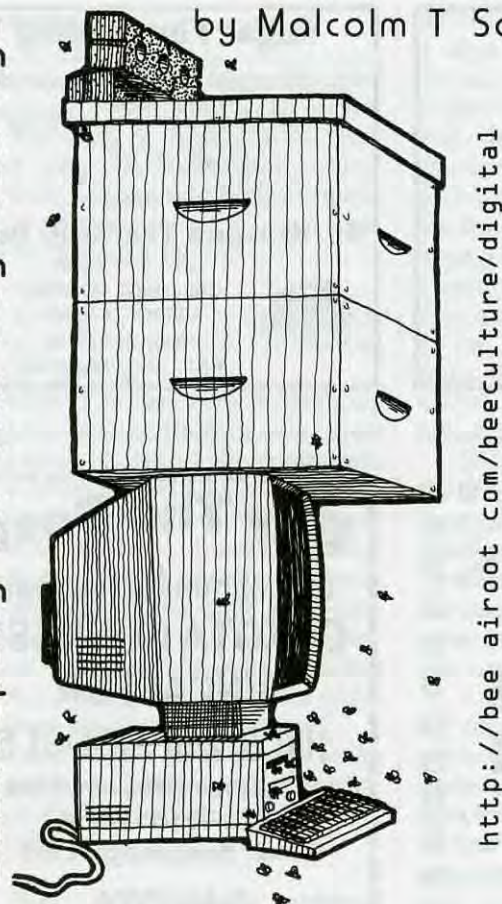
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by Malcolm T Sanford



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There's been a lot of discussion in the bee journals of late about Argentina. Mostly it deals with rumors that the crop is lower down by the Rio de la Plata. This may make some producers feel better in the short run. Long-term, however, beekeepers in the world market will probably be faced with increasing Argentine competition. One of the things driving this is that the country has taken to using electronic communications to help its beekeeping industry in almost every facet. This includes World Wide Web technology.

Argentina's Instituto Nacional de Tecnología Agropecuaria has a strong Web presence. It is <http://www.inta.gov.ar/>. A search from this home page for information about apiculture (*apicultura*) reveals over 106 documents of interest. This leads to the apiculture home page at <http://www.inta.gov.ar/apinet/>, called Apinet, an integrated platform for communicating apicultural information. Four entities are joined here to help the beekeeping industry. These are the Secretary of Social Development, National Technical Agricultural Institute, Northern University of St. Thomas Aquinas, Central National University of Buenos Aires Province.

The Apinet home page features a series of buttons leading to: Marketing and Technology, Investments and Products, Notices, News and others. The Marketing and Technology section includes links to genetics, nutrition, management, bee health, markets and pollination. The genetics section is divided up into explanations about queen production and centers of rearing, selection principles and production of package bees and nuclei. Not all of these sections are complete, but work is continuing, and when completed, will be a valuable re-

Don't Cry For Me Argentina

source not only to Argentina, but elsewhere in the Spanish-speaking world. Nutrition principles, for example, will discuss the advantages of artificial feeding along with a list of references on the topic in addition to the bee botany section already linked in. The Investments and Marketing section has an alphabetized list of producers along with online versions of their catalogs, products and prices. News is perhaps most informative from an educational standpoint. There is an advertisement for the 1999 Fourth National Beekeeping Festival and the Thirteenth Honey Festival in Buenos Aires. A self-directed distance education course with tutoring is offered year-round. It includes five modules of instruction, covering a comprehensive list of beekeeping topics including everything from what is a honey bee to marketing products worldwide. All the materials are sent by mail, and the course is estimated to take four months. Periodic beekeeping demonstrations are also held.

A link describing how the national apicultural Web works shows a nice graphic of the country and associated nodes of beekeeping activity. The national module is connected to several regional centers. It receives requests and attempts to get them answered using experts at the national level. In addition, there are several strategic initiatives described. A number of governmental extension organizations exist as well, many in association with universities and other institutions of higher learning. Finally, there is a link to the national local development program, which includes sections on national development in general, technical and financial assistance and training, offered to communities with less than 50,000 persons. In summary, the INTA site is well-organized and brim-full of information. My one complaint, however, is that it takes a long time for the pages to download, probably as a consequence of a slow server. This will no doubt be rectified as computer technology and the Internet develop in the future.

A search of the honey bee Web ring, described in another column a few months back, reveals more Argentinian information resources. One is the site for Espacio Apícola, translated as "the bee space," which is Argentina's leading beekeeping journal. An index of eight years of back issues is available that shows the comprehensive nature of this publication. From the home page, one can write the editors providing information about a particular operation and ask pertinent questions about topics of interest. Links off the home page go to discussions about conventions and meetings. One discusses the Beekeeping Exposition San Francisco, to be held 5, 6 and 7 May 2000. Over 1,500 beekeepers are expected at this event that now has a 10-year history. In addition, there is a collection of links to various commercial beekeeping and bee product enterprises.

A description of the current state of the honey market is found off the Espacio Apícola site, but it is somewhat out-of-date at present. A rather complete account of various beekeeping practices around the country can be seen here, however. Finally, many of the latest edi-

tions of the magazine are available not only in Spanish, but in English as well. For example, issue 41 (January-February 2000) begins with a discussion of what is currently happening in the country's apicultural regions. There is also a story by Drs. Juan Carlos and Leonardo Zaccaro, who have experimented with various kind of paints used for barrels and extractors and the resultant residues found in honey from these materials. Dr. Mónica Wingenroth and Pedro Calderón describe honey samples in the semi-arid region of Mendoza Province for pollen content, something important in Europe, which is increasingly concerned with honeys that might have place designations similar to wines. Fernando Esteban, Herna Vivallo and Gamaliel Zapata discuss the characteristics of beekeeping in southern Chile. Many other back issues are also available in English, most with summaries of articles along with the first page director's notes. Anyone interested in Argentine beekeeping would do well to study these pages.

Another site worth visiting is that of the Argentina Beekeepers Society (*Sociedad Argentina de Apicultores* or S.A.D.A.). This association was established in 1938 and has developed courses to train beekeepers both as beginners and as advanced apiculturists. It also lobbies for apicultural issues. The S.A.D.A. also provides a series of services, including a newsletter called the *Hive*

Bulletin, laboratory tests for bee diseases and honey certification and legal advice. Further detailed information on Argentina and its beekeeping is found at the Apiservices World Wide Web site. In a 1994 article on that, Mr. Gilles Ratia outlines effectively the challenges Argentina faces as it increasingly becomes a force to reckon with in the world honey market. **EC**

Dr. Sanford is Extension Specialist in Apiculture, University of Florida. He publishes the *APIS Newsletter*: <http://www.ifas.ufl.edu/~mts/apishtm/apis.htm>

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Early Season Prep

Roger Morse

For me, the joy in beekeeping is producing a maximum crop of honey. This is not difficult to do, but certain things must be done on time. In this article I review what the master beekeepers figured out 100 years ago and which are still good guidelines today.

Five findings have disrupted our normal management schemes for producing as much honey per hive as is possible: Chalkbrood was found in California in 1968, tracheal mites were found in Texas in 1984, *Varroa* mites were found in Wisconsin in 1987, Africanized honey bees were found in Texas in 1990 and small hive beetles were found in Florida in 1998. These five events are consequences of globalization and the international movement of people and products. If you can control these five problems, then you can think about maximizing honey production.

The amount of honey you will produce is a direct result of several simple factors. First, you must determine how many colonies your territory will support. Good beekeeping areas will provide sufficient forage for 40 to 60 colonies per apiary. However, an apiary on the edge of Central Park in New York City or in a mountainous area may be unable to support more than one or two colonies. In my part of the world in central upstate New York, apiaries usually have 10 to 20 colonies and almost never more. The quality of an apiary site is controlled by soil type, the plants that grow and flourish within a mile or so of your location and water. There is nothing practical that you can do to increase the number and quality of the plants in your area, but you can make certain you don't have too many bees in one location.

Young, vigorous queens

To produce a maximum crop, it is necessary to have young, vigorous queens that will produce as many eggs as possible. A honey-producing colony must have a large

population of foraging bees. But a large population of bees promotes congestion in the brood nest, which usually leads to swarming. When a colony swarms, 30 to 70 percent of the bees and the laying queen leave the hive and set up housekeeping elsewhere. When swarming occurs, the hive population is depleted and less honey is produced.

When does swarming occur?

To control swarming you must determine when it naturally occurs in your area. My data show that in south central Florida where I live in the Winter, swarming starts between February 21 (the earliest date in the past eight years) and the middle of March. (Note these are starting dates. I don't know when the swarming season stops in Florida.) In central upstate New York, swarming starts on May 15 and ends on July 15. There is sometimes Fall swarming in the north, but that is not important for our discussion today.

The season may be frost-free all Winter in Florida, but there are only four months of frost-free weather in upstate New York (May 15 - September 15). As you move north the sea-

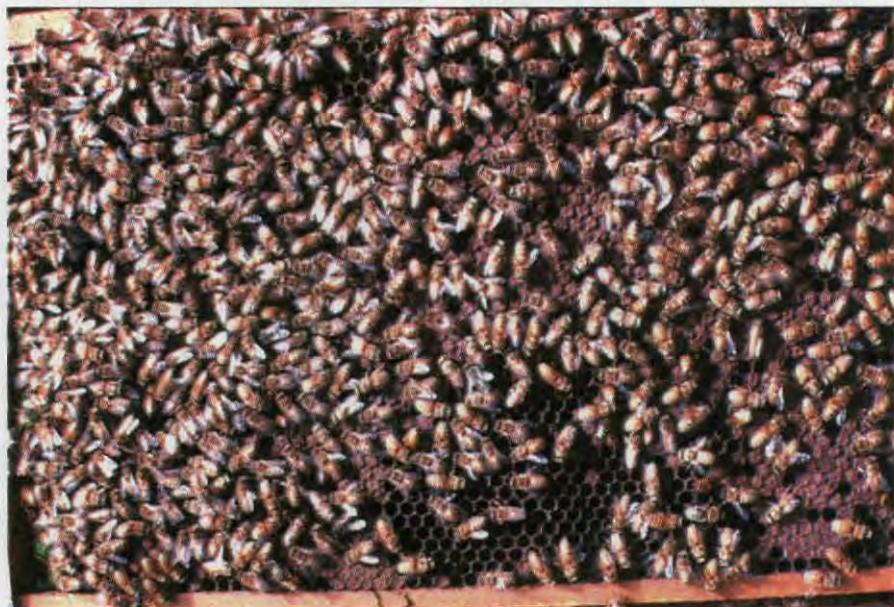
sons become better defined and the dates when events will occur are more precise. This makes it much easier to control swarming in New York state than in Florida simply because we know better when to do what. Dewey Caron studied the swarming time for two years in Maryland and found it was about one month earlier than in upstate New York.

The cause of swarming

The cause of swarming is a congestion of bees in the brood nest. We believe that congestion disrupts the distribution of chemical substances produced by a queen. When this disruption occurs, the bees respond in five ways. They start to grow a new queen, the mother queen loses weight so that she may fly, the workers engorge so that they may have the honey needed to sustain the swarm in flight and during its first few days in a new nest, the wax glands develop and wax needed to build new comb accumulates, and last, the scouts start searching for a new home. When the bees turn their attention to swarming, even in its early stages the bees are no

Continued on Next Page

Congestion, it is believed, is one of the primary precursors for swarming.



longer working to maximize honey production for you; their own future is their chief concern.

The answer to the whole problem is simple. You must grow a large population of bees to produce a surplus of harvestable honey, and you must not allow this great number of bees to congest the brood nest. When congestion takes place the bees cease to have gathering and storing honey as their chief concern. It is important at this point to emphasize that we do not worry about congestion in the whole hive, only in the brood nest.

Room for brood nest expansion

A honey bee brood nest is the shape and size of a football or basketball, covering several frames. Honey bees expand their brood nest upward, not sideward or down. (This very important point seems to have been lost insofar as those people who advocate top bar and long hives are concerned.) It is true that you may push an empty comb into the center of the brood nest, but the bees will soon have it filled with brood and the brood rearing area will return to its original shape. Under no circumstances will bees maintain two brood nests. If there is honey above the brood nest so that it cannot be expanded upward, there will be congestion as the bees will not expand the brood nest sideward more than a half or full frame even when there is room to do so. A nest that has honey above it so that it cannot be

And this is the result, bees in the trees, and not making you a honey crop this season.



expanded upward is honey-bound. A band of honey an inch or two wide is enough to stop the upward expansion of the brood nest and to cause congestion.

The swarming instinct

It is natural for bees to swarm. Of the five changes that take place when a colony prepares to swarm, and that we have measured, there is only one that is clearly visible and that you may use to assess a colony's status. That one change is the number and condition of the queen cups and cells. If you have your colonies in two supers, the best place to check for cups and cells is the area between the two bones. This is done by lifting and tilting the rear of the upper super up and forward so that you can see all of the bottombars of the frames in the upper super at one time. The cups and cells are easily seen.

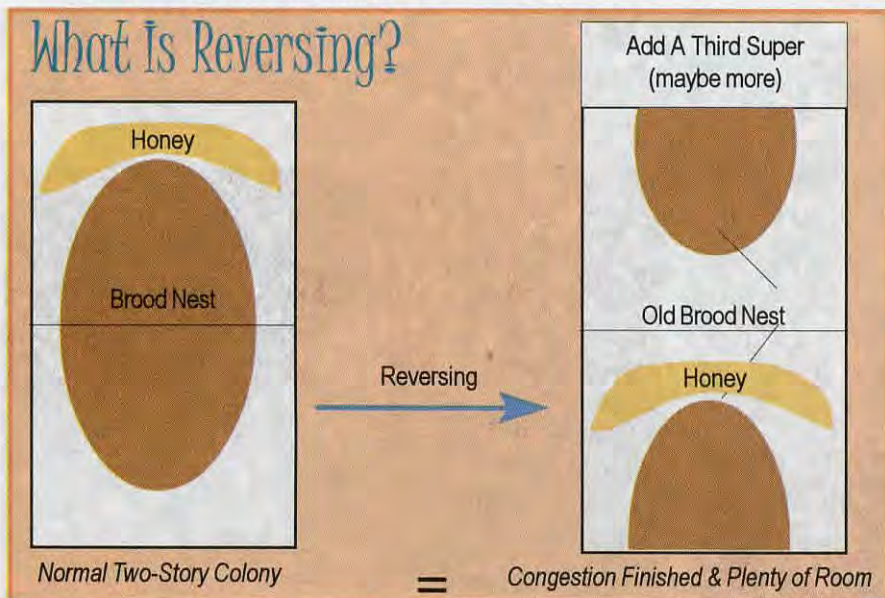
What is a queen cup?

A queen cup looks like an upside-down handleless cup and is about three-eighths of an inch across. It will grow into being a queen cell if the colony becomes congested and the queen lays an egg in it. The bees start to produce queen cups about the same time they start to grow drones in the Spring; in fact, I suspect these two events are triggered by the same factors.

Interestingly, honey bees remove all of the queen cups they have built sometime in the Fall or Winter. We have no data or observations on this point though there is a great deal known about when and how bees build queen cups and queen cells in the Spring.

The whitening of queen cups

The first queen cups built in the Spring are usually made of old wax that is taken from comb in the vicinity of where the cups are built. As a result, these new queen cups can be quite dark in color and you may not realize they are new. As the colony prospers and starts to become congested, the bees will add flakes of new, white wax to the cups, both on their sides and on the tips. This is called whitening of the cups. It occurs several days or more before the queen deposits eggs in the cups. It is an early warning sign but not a precise one to indicate what will happen or when. The number of cups a colony builds varies, but it is not unusual to find 20 or more. Some races of bees build more cups than do others.



Eggs in cups

When a queen has laid eggs in queen cups, swarming is under way. However, it can be stopped at this stage if congestion is relieved. If you find queen larvae more than two days old in cups (now cells), the only recourse is to split the colony into two or three parts and let nature take over – the colony is lost for honey production that year unless you live in a goldenrod area where there is a Fall nectar flow.

How to relieve congestion

There are several ways to relieve congestion. If your colonies are in two full-depth supers and the brood nest is in the middle, you may reverse the positions of the two supers. This splits the brood nest into two parts. The bees will slowly abandon the lower of these two nests, but for two to three weeks you have relieved the congestion. It is usually recommended that a third super be added on top when the supers are reversed. If you have strong, populous colonies you may find it necessary to relieve congestion two or three times during the active swarming season.

Another method is to raise one or two frames of brood into the center of a new super that is to be added on top of the one, two or three congested supers and to place one or two empty combs into the center of the brood nest where the frames of brood were removed. At the outset of the honey flow another empty super may be added on top. Depending upon your area's potential for honey production it may be well to

add more than one super. I prefer to oversuper and hope for one of those great years.

Artificial swarming

Sometimes, and often depending on how much time you have to devote to colony management, you may find it cheapest and easiest to remove some of the bees and brood to relieve congestion or do so early in the Spring before it gets started. I like to have a few small, one-story colonies in an apiary to use for requeening in the event an old queen fails for some unknown reason. Starting some nucleus colonies using your strongest colonies early in the season is also often good insurance against congestion that will probably take place a few weeks later.

Ventilation

Poor ventilation is thought to encourage swarming. I know of no data to support this idea but it was agreed to by old-time beekeepers. My experience is the same, and I believe that increased ventilation will deter swarming. It may also be helpful when bees are evaporating water from newly gathered honey. The most popular method of increasing ventilation is to slide one of the upper supers backward or forward a little less than an inch.

Queen excluders

I like to use queen excluders. I don't always use them but do so given an opportunity. However, they can increase congestion if put into place too early. I prefer to put them onto colonies about three weeks



A young, healthy queen is a solid preventive measure against swarming.

before the honey is harvested. The best excluder to use is the cheapest one you can find. I prefer the perforated zinc excluders. Some people believe the sharp edges on the perforations may cut the bees' wings, but I know of no data to support that thought and think it is a bit of armchair biology. Belief in excluders is an interesting affair. My experience is that most beekeepers are strongly in favor of them or violently opposed to their use. It's a little like religion and not worth pursuing because people have such strong thoughts. **EC**

Know what's going on in the brood nest. Eggs in a good pattern are one measure of a queen.



A well managed apiary now, means honey this summer.



It's All In The Timing

Variety is the spice of life and profit!



Ann Harman

Wow! Look at what the calendar says! Time to put supers on to get that (late Spring, early Summer) honey crop. Whoa! Wait a minute. Why are you looking at a calendar? The bees don't do that. In fact, I don't think they even have calendars.

Bees use weather and plants to adjust their lives. We do the same to a small extent. If it is raining, we grab an umbrella or stay inside. Have you given any thought to what the honey plants and the bees are doing then? Beekeepers should really be more aware of the weather and consequently of what the bee forage plants are doing. In this way we can make better use of the bees for a diverse honey crop.

So often we look at the calendar, decide it is time for supers, toss on a bunch and wait for the bees to fill them up. Then sometime later – perhaps mid-Summer to late Summer we pull the supers off, extract and bottle up our honey. Pretty and delicious. We'll call it "wildflower."

Would you like a chance to increase your honey income? Yes, it means a bit more work, but consumers are willing to pay a premium price for what they perceive to be a premium honey. How can you convince them you are producing a premium honey? By producing varietal honeys – plus giving that honey a special, unique name.

The United States features an

incredible assortment of climates and microclimates along with an equally incredible assortment of honey plants. Some local areas produce only a small assortment of plants useable by bees, while other areas are rich by comparison. Have you ever explored the foraging area around your hives throughout the foraging season? Although bees do like to work close to their homes, they are willing to travel for good nectar-producing plants.

It certainly is possible to move hives to a concentration of a particular honey plant. But not every beekeeper is able to transport hives or

to have a suitable outyard. However, you – or rather your bees – can make excellent use of those nectar sources near your apiary.

Now it's your turn to travel. All during the rest of this season, and all during the next bee season, drive or walk, or ride a horse (my favorite way), down the roads in the vicinity of your hives. Look for nectar-bearing trees and plants. Use field guides for identifying

them. You can also make use of the few books available about nectar plants, but a field guide usually gives you good identification information. Make notes of *what* you find and *when* those trees and plants are blooming. Record the plant and 'beginning' and 'ending' bloom dates. Things to be remembered grow dim after a few months. You also need

to spend some time in your beeyard. You can frequently tell by the amount of activity at the hive entrance if the bees have found a great source of nectar or whether there is not much available. Look at the direction of flight. Do you know what they are finding? Looking for honey plants is sort of beelining in reverse. While you are doing your searching, take some time to have a quick look inside a honey super. Do you see lots of bees, ripening nectar, all the frames being used, or is it fairly quiet? Clues from the hive can be a big help.

You see, what you are making is a 'Honey Plan.' With this plan you can have different honeys from special plants. Or perhaps Spring honey, Summer honey, Autumn honey. Or is your honey plant season short and from a single source?

Once you know *what* your bees are finding and *when* they are bringing it home, then you can plan your supering and harvesting so that you can have a selection of honeys for sale.

Yes, it will take some time to make your honey plan, and you probably will not have it complete for this bee season, or even next. However, with the time remaining this year, you will be a long way toward a good plan. And once your honey plan is made, it can be quick and easy to modify if you see a change in the available plants. You see, once you become familiar with what is growing where and blooming when, you will be more attuned to any changes in floral sources. Did a farmer neglect to mow his alfalfa field? Is that a new planting of sunflower? Somebody, totally out of his mind, sowed a ready-to-bloom sweet clover stand. Unfortunately, you are at the mercy of what others do with their land and their fencerows, and what the high-



way departments do. But with your honey plan you can cope better with such irregularities.

Now what do you do? Well, first you want to get honey supers ready to put on. At this point, decide on the type of honey for the floral sources available now – cut comb, chunk, extracted, round section. Remember that bees need more room for stores during the early, strong flow than later as it is “ripened.” Also, you must consider the “empty comb syndrome” of plenty of empty comb stimulating collection.

Some consideration can be given to your already-established customers. Do they prefer light or dark honey, strong or mild? Are you introducing customers to honey in the comb? If so, then a light-colored honey looks prettier than dark, even though the dark may be more flavorful. Once a customer has experienced comb honey, and likes it, then a dark honey is much more acceptable.

This brings you to the second phase of your honey plan – when to put supers on and when to take them off. Basically, you want to put supers on as the nectar flow starts and is increasing. After this point, the floral source will dictate when to remove supers. If you are seeing a long flow, lasting weeks, you can afford to sit back and wait a while. But if the flow is intense but short, you want to be ready to remove supers just as soon as they are capped. For comb honey you need to remove supers promptly anyway to avoid travel stain.

Off come the filled supers. Time for extracting that particular honey, or for preparing honey in the comb. The extracted supers are now ready for the next nectar flow, whenever that may be, according to your honey plan. Honey in the comb goes into a freezer to prevent insect damage and crystallization. The bees will tidy up the emptied extracted supers before starting on the next nectar collection.

If you put extracting supers on and left them on through several nectar flows, you will want to hold each up to a light to see whether light, medium or dark honey has been stored. The separation of a few groups of colors will enable you to

sell two or more different kinds of honey – at premium prices. Extract the light honeys first, working your way to the darker honeys. You may find some frames where the bees have stored two different colors of honey. Well, just extract the whole frame. You may have been accustomed to calling this honey “wildflower,” but perhaps it is due for a new name, a new image.

Do not feel too smug about your honey plan. The one thing that can disrupt that plan is weather. Beekeepers need to be weather watchers. In much of the country, temperatures during the Spring months tend to be rather erratic. Lovely and warm weather for a few days brings the bees out gathering nectar. Then just as a prime source of nectar is blooming, wind, rain and chill keep the bees in the hive. Blossoms get drenched, and wind blows them away. Summer can bring drought, and the result is a low volume of nectar and poor blossoming. Early Autumn frosts can prevent bees from flying. So some of your special honeys may not be available every year. Perhaps that makes them even more special.

People in different parts of the country seem to like different colors and flavors of honeys. Do not assume that because a light honey (or a dark honey) has not sold in the past it will not sell today. Perhaps it needs to be offered as a special honey, of course with a fancy name and a higher price.

Does that mention of a higher price bother you? Do you think that your customers will not pay a higher price for your honey? You have two ways of looking at this situation. You may wish to take your higher-priced, special honey to a different market, pos-

sibly a gift shop or tourist shop. Or you may wish to explain to your customers that the particular honey is always in short supply and that it is indeed a special flavor – then offer a taste sample. If they want everyday honey, then they can buy your normal, local flavor. But for special occasions and for Sunday breakfast with hot homemade biscuits, the special honey is the honey of choice. Does this situation mean sales of two jars of honey? Possibly. Why not? Special honey can be sold in smaller jars – 12-ounce or 8-ounce – but with a price proportionally more than that of a one-pound jar.

Although people grumble about high prices, their perception is that a higher price denotes higher quality. Customers can be persuaded to pay a little more for something they realize is special or scarce. Beekeepers can take advantage of this view by producing at least two different honeys if possible, even if one of those flavors is in short supply.

Beekeepers may well say that there is more work involved in producing varietal honeys and keeping them separate in supering and extracting. That reminds me of a conversation I had a number of years ago with a cattle farmer. He was wealthy, but his herd of Charolais was fairly small. I wondered if he had another source of income. But no, his secret was simple. His cattle were grass-fed on excellent pasture. His specialty was producing very high-quality beef that was sold to a railroad for the dining cars. The railroad officials were able to advertise that their beef was superior and were happy to pay the cattle farmer a premium price. That price more than compensated for the extra care taken in raising the cattle and keeping quality pastureage.

Well, your bees aren't cattle, but the principle is the same. Offer customers something special and don't be afraid to ask for appropriate compensation.

We'll have to explore naming your special honeys in a forthcoming article. ☐

Ann Harman is a sideline beekeeper and international marketing consultant.



PRODUCING CUT COMB HONEY

A Beekeeping Specialty

Lloyd Spear

An advantage that hobby and sideline beekeepers have over commercial beekeepers is that they can produce the high value-added specialty products that require extra attention. By concentrating in these areas, hobbyists and sideliners will insulate themselves from the vagaries of the commercial markets and, most important, will tremendously increase their knowledge of bees and their enjoyment of beekeeping. Some of these specialty products include varietal and "raw" extracted honey, comb honey of all types and pollen and propolis. Because the cost of equipment is low, one of the first specialties that should be considered is the production of comb honey.

Beekeepers with large numbers of hives wishing to produce comb honey usually do so with Ross Rounds™, as labor is minimized. However, for those choosing to produce it, there is also good demand for cut comb.

Cut comb honey is, as the name implies, honey still in the comb, but cut from the frame in which it was produced. Such honey is sold as either "cut comb" or combined with extracted honey and sold as "chunk." Like most things associated with beekeeping, attention to detail will yield a beautiful product, full of flavor. I will share with you the techniques I have learned that enable me to produce 50-60 supers of cut comb annually. I'll start with the equipment and packaging and progress to the bee management techniques that are necessary.

To produce cut comb honey, you need only supers, frames, foundation and a sharp knife. However, some beekeepers insist on the use of queen excluders, and the highest-quality product will be produced if you also have a system for draining the combs after they are cut.

SUPERS

There are basically three sizes of supers used today. The outside depths are approximately 6-5/8", 5-11/16", and 4-3/4". An inexperienced beekeeper producing cut comb for the first time should consider using whichever super is on hand. If you are convinced that you will

be producing cut comb for a number of years, or if you have to buy a super in any case, the best choice is the 5-11/16" Unfortunately, manufacturers' dimensions vary by up to 1/4" so consider the above sizes to be approximate. The frames for the other two sizes either produce comb with an excessive amount of waste or a piece that is not quite large enough to make the best container presentation.

Super manufacturers build their equipment to accommodate frames with very wide combs, as they are the most efficient to extract. However, when used for comb honey, wide combs are a disadvantage, as the pieces cut may not fit into standard containers. The solution is to fit 11 frames into a super.

To fit 11 frames in a super, one side of the end bar should be sanded or filed so that only a sliver of wood is left between the end bar and the top bar. The best way to do this is to first assemble the frame, but do not put in a nail horizontally between the end bar and the top bar. Then with a coarse file, or a belt sander clamped up on end, remove most of the wood from *one side* where the two end bars meet the top bar. After this is done, place your nails horizontally through the other side of the end and top bars. (If you are using old frames that have already been nailed, I have found that the nails are very soft, and either the belt sander or the file readily cuts them down as they remove wood.)

FRAMES

If you already have frames that have a wedge top bar design, these can be used. Frames with solid or grooved top bars cannot be used for cut comb production, as the comb will not be held firmly enough. If you are buying frames, the best choice is the slotted top bar, and the second best is the wedge top bar. I believe the only sources for slotted top bar frames are Kelley (800-233-2899) and Rossman (800-333-7677).

Wedge top bar frames must be used with either grooved or split bottom bars. Slotted top bars can be

Continued on Next Page





One side of the lower end bar has been sanded down to fit 11 frames in a super. Top end bar is normal and shown for comparison.

used with any type of bottom bar, including solid bottom bars. Using solid bottom bars is a tremendous advantage as you'll save many hours by not having to clean out the bottom bar groove or split every year.

FOUNDATION

Purchase foundation made for cut comb. As this is another area where manufacturers use a bewildering variety of names, look for comb honey foundation with 16-18 sheets per pound. Of course, it should fit the frames you are using. If using slotted top bar frames, it should be at least 5 1/4" wide. Wider foundation will do no harm, but it should not be more narrow.

INSERTING FOUNDATION INTO THE FRAME

This is the area where beginners have the most difficulty. Comb foundation is delicate, but it must be firmly held in the frame. It is important when the foundation is exposed to the heat of the hive and the weight of the bees that it not sag or pull loose. If either happens, the frame is probably ruined for cut comb use, and it is likely that at least one adjacent frame will also be ruined!

Wedge top bar frames are the most difficult to handle properly. If the frames have been used before, gently remove the wedge with your hive tool. Remove any wax remaining on the frame or on the wedge. Be certain the portion of the frame that was under the wedge is smooth and splinter-free; scrape it with your hive tool if necessary. Place one side of the foundation tight against the frame, put the wedge in place, and fasten with *five* nails. Best are 3/4" #17-18. Before fastening the wedge with nails, the other side of the foundation should go in the

Split top bar placed on top of nails in jig.



groove or split bottom bar.

Never use the same wedge on a frame that was used in the previous year. If you do, the nails will go right back into last year's holes, getting almost no grip on the wood. Instead, use the wedge from an adjacent frame. One nail should go into each end of the wedge, one in the middle, and the other two should be equally spaced between an end and the middle. After nailing the wedge firmly into place, hold the frame and foundation at eye level. If the foundation is at a 90 degree angle to the frame on both the top and bottom, and the foundation is straight rather than wavy, your work is done. If the foundation is not firmly seated in both the top and bottom bars, remove the wedge and start over with a different wedge. If the foundation is wavy, see the steps below to use side pins in the frames.

Fortunately, it is much simpler to put foundation into split top frames. First, you have to make a jig that will hold the split top apart for long enough to get the foundation in.

Start with a pine board about 20" long and 5-6" wide. It should be 1" thick, but 3/4" is acceptable. Drive two #6 or #8 nails that are 1-1/2" or 1-3/4" long through the board so that they are parallel to each other, across the width of the board. They should be no closer than 1/2" apart, and no more than 3/4" apart. (See photo.) Place the split top frame upside down on the nails and gently turn the frame so that it is parallel to the board. If necessary, push down on the frame so it is resting on the board. Insert a piece of foundation into the gap between the top bar sides until it rests on the board. Gently lift the frame and foundation off the nails *without twisting the frame back into its original position.* (If the frame is twisted back into its original position, the nails will rip the foundation and the foundation will come out wavy.) Turn the frame so it is right side up and gently push the foundation up so 1/4" to 1/2" is above the top bar. Do not be concerned if the foundation is slightly above the bottom bar. Use one of the following methods to fasten the foundation in place:

- Fold the foundation over at a 90 degree angle to the top bar. This means that the foundation would have to rip before a portion could fall out.
- Drive one or more nails through the top bar (and foundation) so that it firmly grips the foundation.
- Put staples in both sides of the split top bar so that they firmly grip the foundation.
- Gently melt the top portion of the foundation against the top bar by using a hand-held propane torch.

I believe the first option is sufficient and most simple, and that is what I use.

Some beekeepers also support the foundation horizontally. This will not only eliminate any remaining tendency for the foundation to wave, but will help keep the foundation at a 90 degree angle to the bottom bar, even if the hives are severely tilted off level. Fortunately, all end bars have pre-drilled holes for horizontal wires in case the frames are to be used for extraction. These holes can be used to provide horizontal support for the comb foundation.

I have found that hairpins, bobby pins and support pins work equally well at providing this support. The

support pins, found in all bee supply catalogs, look best. However, the cost for small quantities varies widely from five to seven cents each. (One supplier will sell 500 for \$.0225 each, however. That is enough for 10 supers.) Support pins are easy to take out at the end of the season and can be used for many years. Hairpins and bobby pins work equally well, but either will last only one year. They are equally easy to remove at the end of the year. At our local drug stores, hairpins cost about two cents each and bobby pins about 3.5 cents each.

It takes a great deal longer to write or read about getting straight foundation in frames than it does to actually do the job. After the first year, it takes me about 10 minutes a super to clean out the top bar slot, insert foundation and insert horizontal supports. I believe it would take 5-10 minutes longer to clean, reload and support a super of wedge top bar frames.

QUEEN EXCLUDERS

One of the principal disadvantages of producing cut comb, compared to Ross Rounds™, is that queens love to enter the supers. After a queen has laid in a super, it is not suitable for that year, for producing cut comb. There is nothing more disheartening than to take off a cut comb super at the end of the season and find that most of the frames have been ruined by being used for brood production. Some cut comb producers avoid this problem by using manufactured queen excluders.

The only difficulty with this method is that most beginners find that they can't get the bees to move through the excluder to draw foundation above. There are two ways that usually work to get bees to move through an excluder to draw cut comb foundation:

- Put a shallow super (not a full-depth hive body) with drawn but empty comb above the excluder. When it is 80 percent filled, put the cut comb super *below* it, but on top of the excluder.
- If available, put either a couple of frames of brood in the super with the cut comb frames, or a full shallow super (any size) with brood, honey and pollen above the cut comb super. The bees will readily go through the excluder to take care of the brood and will then continue to go through the excluder to draw the cut comb foundation. If you put a full shallow super with brood above the excluder, do it when the dandelions bloom in your area. Wait three

Foundation being placed in slot opened by jig.



Frame formed parallel to board. Note wide space for inserting wax foundation.

weeks (for almost all the brood to hatch) and then put the cut comb super below the brood super.

I don't like manufactured queen excluders, so I don't use them. (Put another way, I have not been successful at using them, so I don't like them, so I don't use them.) Instead, I let the bees build their own excluder by not putting on the cut comb supers until either:

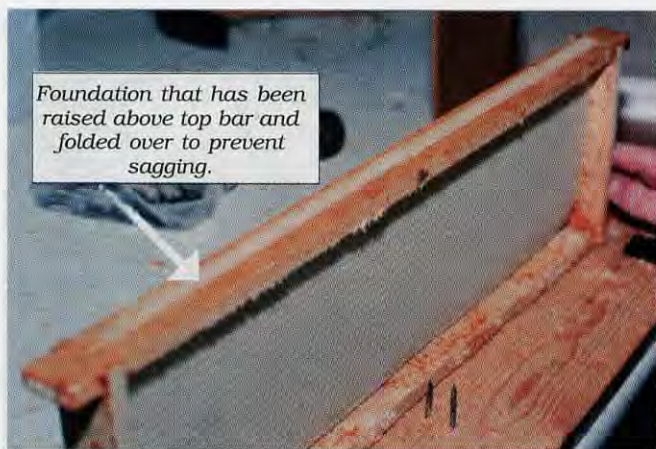
- The bees have filled three-quarters or more of a Ross Round™ super placed directly above the brood nest. Then I put the cut comb super directly on top of the brood nest and move the Ross Round™ super up.
- By inspection, I determine that the bees have a solid two-inch barrier of sealed honey on top of the brood nest.

Either of these two methods works well, but I generally use the first as less labor is involved. However, I admit that queens probably get into 10 percent of my cut comb supers, so the systems are not foolproof.

Continued on Next Page

Foundation nailed above top bar. Note space between bottom of foundation and bottom bar.





Foundation that has been raised above top bar and folded over to prevent sagging.

HARVESTING AND PACKAGING

Take the supers off the hive as soon as the frames are capped. A delay will result in travel staining, as the bees walk across the supers with their dirty feet. I immediately put the entire super in a large black plastic bag (color does not matter) and put it in the freezer for at least 48 hours. To kill any wax moth larvae or eggs, the temperature must be held to zero degrees for at least 24 hours. Just before I am ready to cut the comb, I take the super out of the freezer, but leave it in the bag for another 48 hours. When the warm room air hits the cold bag, condensation will occur. However, the condensation will be harmless on the outside of the bag. If the super were not in the bag, condensation would form on the combs.

When and how to freeze cut comb is largely a personal preference. Entire supers can be frozen, as I do; frames can be taken out of the supers and frozen; or the freezing can be delayed until after the combs are cut from the frames and put into containers. However, it is important not to have more than three days elapse between the time the supers are taken off the hives and the combs are frozen, and to always put the material being frozen inside a plastic bag and leave it there until thawed.

Before cutting the comb from the first frame, make a jig so that you will cut the pieces to fit exactly inside the containers you will be using. I use the hard plastic boxes that are 4-1/4" square, and my jig is nothing more than a stick with three nails spaced 4" apart.

Usually one side of the comb is better than the other. Determine the best side, and lay the frame down on a cutting surface so that the better side is up. Gently cut the comb away from the frame. Often the outside row of cells is not completely drawn or sealed, and I leave those attached to the frame so that the remaining comb has good sealed cells all around the outside row. Remove the frame and set it in a bucket to drain.

Using the jig, mark where the cuts should be made across the length of the comb. Use a *very* sharp knife and cut the comb into as many pieces as are appropriate. (A very sharp knife will cut the comb, but a dull knife will crush it. Combs with sharply cut edges look much better than those with crushed edges.) To measure the other dimension, cut an ice cream stick or something similar to the proper length. Lay that alongside each piece and trim accordingly. After doing a few frames, you may find that it is easier just to leave cells

attached to the frame. For example, I use 5-11/16" frames and need to cut the comb to fit inside a 4-1/4" container. From experience, I know that if the frame is entirely filled, I need to leave behind a strip that is two cells wide along either the top or the bottom of the frame. If the top row in the frame has a lot of unsealed cells, I leave that row attached as well as one row along the bottom bar.

After the comb is cut, the cells should be allowed to drain. If the cut comb pieces are put into clear containers without first draining them, there will be a pool of honey on the bottom of the container. This will usually granulate before the honey in the comb. If it granulates before sale, the container will not be attractive and will probably not sell.

If the cut comb pieces are used for making chunk honey it is especially important that they be drained unless you are certain that the color of the honey in the comb is the same as the color of the liquid honey into which the chunks will be placed. Otherwise, as the honey drains out of the cut edges of the comb, it will contrast with the color of the liquid honey. The two colors will not mix to make a uniform color.

I cut my comb on a piece of hardware cloth with the sides turned down to form legs and a rectangular cake pan underneath. After they are cut the pieces can be picked up by gently grasping cut cells on two sides between the fingers and thumb. I put them on a larger tray to drain for at least 12 hours. I use a piece of stainless steel with holes punched and held over an uncapping tank. When drained, the pieces are ready to be put into containers for sale as cut comb or put into jars for sale as chunk honey.

When preparing chunk honey for sale, it is important to think through the granulation process and the effect of granulation on your honey. Granulation will occur when honey contains sugar crystals, and it will spread rapidly when honey is stored in cool conditions or when it contains solids such as grains of pollen and dust. Granulation can easily be reversed by heating the honey until the sugar crystals are dissolved, but if chunk honey is heated, the comb will melt and all that is left will be liquid honey with a layer of wax on top. I know of only two ways to prevent granulation from destroying chunk honey:

- Bottle only enough to sell retail within 30-45 days.
- Before bottling with a piece of cut comb, heat the liquid honey enough to dissolve all the sugar crystals.

Many beekeepers do not like to heat their honey enough to dissolve any sugar crystals, so they limit sales of chunk honey to what can get into the hands of customers within 30-45 days and hope that it will be consumed shortly thereafter. This is, of course, perfectly legitimate. Those who wish for a longer selling period or shelf life have no choice and must heat the liquid honey.

I heat small amounts of liquid honey by filling glass gallon jars about three-quarters full and setting them in a large pan of water. I heat the honey, using a candy thermometer to measure the temperature, to 150 degrees and then immediately take the jar out of the wa-

ter, screw on the top, and set it on a counter to cool. The temperature will drop rapidly, but all or almost all the sugar crystals will be dissolved. The rapid drop in temperature will assure that taste is not adversely affected.

To package chunk honey, put the comb in the jar first. Use honey that is at room temperature or slightly above, as high temperature honey will melt the comb. Slowly, pour the liquid into the jar, running it down the side of the jar or the comb to avoid air bubbles. (Air bubbles that get between the comb and the jar may be impossible to get out.)

Always in demand, cut comb and chunk honey are specialties that beekeepers can produce with assurance that it can be sold at relatively high prices. While attention to detail is important, you'll find that you can easily produce a crop the first year and subsequently expand production by learning from your mistakes and, if you want, by increasing the num-



Foundation supported horizontally in frame. Top two are support pins sold by bee supply dealers. Bottom right is a hairpin and bottom left is a bobby pin.

ber of hives used. **EC**

Lloyd Spear is a sideline beekeeper and the owner/operator of Ross Rounds.

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B & B Honey Farm

It All Started With A Class

Kim Flottum

"A friend called," said Bill, "and asked me to cover a class for him while he was out of town. A beekeeping class. He didn't want to miss anything and thought I could handle it. I guess he thought right."

That was 27 years ago, while Bill Bernacchi and his wife Robin were living in LaCrosse, Wisconsin. Bill was an instructor in marketing at a local technical school and Robin was still attending school.

"The class was so interesting, I stayed and finished the course. I

got two packages — and I was on my way," Bill added.

A year later the Bernacchi's moved across the river to a hobby farm just outside of Houston, Minnesota. That's in the rolling countryside part of the state, in the southeast corner. It had a barn, but that was about it for outbuildings.

They quickly went from those first two colonies to a dozen, and just as quickly found out that there wasn't a bee supply dealer within 250 miles. And within a year or so, decided that if one wasn't close, op-

portunity was knocking. The existing farm became a business.

First attempts at finding beekeeping customers were difficult, but by joining several groups and obtaining a few mailing lists they had enough business to send out a cata-

logue, selling woodenware, foundation and other accessories. But selling bees really took off.

log, selling woodenware, foundation and other accessories. But selling bees really took off.

By 1980 the B&B (which stands for Bernacchi and Bernacchi, by the way) Honey Farm had their catalog printed locally, instead of Bill typing it each year. The inventory had expanded out of the barn, out of neighboring barns, and a new building went up. It was a 50' x 50' x 16' structure with a retail showroom.

Although almost all the business was mail-order, some walk-in customers still arrived. But a local ordinance forbid road signs, and finding B&B in this hilly terrain was difficult. Finally, Robin worked with the drop by, pick up their bees and move on. Although that part of the business has slowed a bit today, they still handle 300 to 400 nucs and 800 to 900 singles (full deeps) each Spring. They still sell package bees by mail and thousands of queen every year. It hasn't slowed much.



From the top of one of the nearby 'rolling hills' the B&B Honey Farm warehouse and retail outlet.

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The B&B crew - L to R: Robin Bernacchi, President; Bill Bernacchi, VP; Tony Bernacchi, Warehouse Mgr.; Ted Sennes, Bee Mgr. Not pictured - Katie Klaster, Office, Nick Bernacchi, Maintenance.

township board to get state installed signs in place. A downside, however, was that tourists, now seeing the B&B sign, would drive up looking for a Bed & Breakfast.

The 1985-1995 period was aimed at growth. Their first national ad had appeared in the May 1979 issue of this magazine, so they had some outside-of-Minnesota exposure early, and expansion continued. Bill was still working full time teaching, but was able to arrange his hours best help out the business. Robin was still the beekeeper and running the business day to day..

Many people were instrumental in the continued growth of B&B. Since they outsource everything they sell, they needed to work well with suppliers.

"Art Kehl, Dick Kehl and Lee Heinie from the Watertown, Wisconsin Dadant Branch office were especially helpful, but everybody in this business helps everybody else," Bill

said, "when suppliers work well together all our customers benefit, due to lower costs and etter products."

Robin and Bill's two sons, Nick and Tony, have done their part to move the business along. Nick, the oldest, now works elsewhere full time but helps when he can. Tony is now in school, but works half time and Summers. He helps run the bees now, works in the warehouse and helps out with the rest of the business. You may have seen him at one of the recent meetings B&B has been attending as part of their expansion program.

Between 1985 and 1994 the business volume continued to grow, and, with limited storage space, just-in-time inventory was the common practice. But it couldn't last. In 1995 another building was added to accommodate storage, and to help out with

the increased number of items being carried every year in the catalog.

"The hobby/commercial mix of the business hasn't changed much over the years, until just recently," Bill said, "The commercial side has been down a bit the past few years. The sideline and hobby business has picked up some though, " he added.

In 1997 B&B started handling HFCS (high fructose corn syrup) on a national basis, selling most of it in Texas, California and the upper mid-west. And, in 1998 Bill finally left his full time teaching job to focus completely on the business.

The future looks promising for B&B. Tony, still working, plans to stay in the business ("Maybe," says Bill), and a few other expansion positions are being considered for the operation, as long as business permits.

"Developing new sources for those products we already sell, both whole sale and

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B&B's first ad appeared in this magazine in 1979.

Inside the retail store everything is displayed. The office is in here, too.



Inside the first warehouse.



retail is high on the list of things to do," Bill says. "Our ventilated helmet and colony quilt are a couple, along with the warning signs we sell," he added.

"During the next five years or so, we plan to fine tune the operation, along with pushing for growth," Robin said.

"The one thing that won't change," Bill stressed, "is the personal service B&B offers its customers. We're both experienced beekeepers and have been through most everything that has happened, and we both can answer pretty much any question a customer asks. And, it's us who answer the phone. Every time. So, good service from knowledgeable people is the best we can do."

This year, B&B had to go through a major catalog change because the printing company they had been dealing with for years had been sold and moved away.

"This led to a delay in getting our catalog out," Bill said, "and we're really sorry this happened, but, it made us redo everything from scratch, so the end product, our new catalog, is a lot better. We think it was worth the wait," he added.

So, if you're in the rolling hills area of southeast Minnesota, stop in and chat with Bill and Robin. They may even have breakfast, if you call ahead. **BC**

You can reach B&B Honey Farm at 800.342.4811, or bbhoney@means.net, or write them at 5917 Hop Hollow Road, Houston, MN 55943 for their free catalog.



Inside the newer section of the warehouse. It has pallet racks and added much-needed room.

One of the trucks delivering 'singles'. These are single deeps and represent, essentially, a large nuc, or small starter colony.



One of the tanker trucks that hauls the HFCS.



2000 WHO'S WHO IN APICULTURE

The information contained in this Directory is as current and correct as possible. If you are aware of errors or omissions, please contact us at 800.289.7668, x3214, or email at kim@airoot.com. We will include corrections in our next Directory.

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 - PORTAGE CO BEEKEEPERS** – Peggy Kaminski, 1459 E. Howe Rd., Kent 44240, 330.673.0664
 - RICHLAND CO BEEKEEPERS** – Ralph Mitchell, 21690 Pealer Mill Rd., Butler 44822
 - SOUTHWESTERN OH BEE ASSN** – Robert Mohat, 8463 Monroe Ave., Cincinnati 45236-1971, 513.984.5864
 - STARK CO BEEKEEPERS** – Joyce Elavsky, 613 Webb Ave. SW, Massillon 44647, 330.832.1599
 - SUMMIT CO BKPRS** – Susan Cameron, 3247 Vanderhoof Rd, Clinton 44216, 330.825.7867
 - TRI-COUNTY BKPRS ASSN** – Dave Heilman, 1680 Madison Ave., Wooster 44691, 330.263.3684
 - WARREN CO BEEKEEPERS** – Oscar Brown, 7154 Hopkins Rd., Maineville 45039, 513.683.2220

OKLAHOMA

- OK STATE BKPRS ASSN** – Fredmarley, 12848 E. 12nd N., Collinsville 74201, 918.371.5791
- CENTRAL OK BKPRS ASSN** – Robert Wagner, 2928 S. Oak Dr., Midwest City 73130
- EAST CENTRAL BEEKEEPERS ASSN** – M.L. Lashbrook, Rt. 1 Box 59, Stone-wall 74871, 580.265.9271
- FRONTIER COUNTRY BKPRS ASSN** – Chuddie Smith, P.O. Box 34, Guthrie 73044, 405.282.4002
- GREEN COUNTRY BKPR** – Shirley Wright, Rt. 1, Box 355, Locust Grove 74352
- NE OKLAHOMA BEEKEEPERS** – Euvonne Harrison, 109 West 50th St. N, Tulsa 74126, 918.425.2026
- NW BEEKEEPERS ASSN** – Starlene Rauh, Rt. 2 Box 83, Morland 73852, 580.697.3380
- SW OK BEEKEEPERS ASSN** – Eva Bell Ritter, NC 84, Box 57, Marlow 73055
- WESTERN AR/ESTRN OK BK ASSN** – Danny Self, Rt. 1, Box 1325, Arkoma 74901

OREGON

- OR STATE BKPRS ASSN** – Phyllis Shoemake, 1702 Toucan St. NW, Salem 97304-2027

- **COLUMBIA BASIN** – Rocky Pisto, P.O. Box 131, Parkdale 97041
 - **COOS CO** – Wade Weathersby, P.O. 601, North Bend 97459, 541.756.3378
 - **EASTERN OR BKPRS** – Jan Lohman, 77225 Colonel Jordan Rd., Hermiston 97838
 - **KLAMATH COUNTY** – Ken Crow, 541-882-1893
 - **LANE CO BKPRS** – Ken Ograin, 88632 Faulhaber Rd., Elmira 97437, 541.935.7065
 - **METROPOLITAN AREA BKPRS** – Chuck Politan, 4390 Lords Lane, Lake Oswego 97304
 - **NORTH COAST BKPRS ASSN** – Bob Allen, P.O. Box 434, Garibaldi 97118
 - **PORTLAND** – Jim Allison, 503-663-1058
 - **SOUTH COAST BKPRS ASSN** – Joann Olstrom, 3164 Maple Court, Reedsport 97467, 541.271.4726
 - **SOUTHERN OR** – George Steffensen, 1634 Fish Hatchery Rd., Grants Pass 97527
 - **TILLAMOOK COUNTY** – Bob Allen, 541-322-3819
 - **TUALATIN VALLEY** – Chuck Sowers, 503-636-3127
 - **WALLA WALLA BKPRS** – Dave LeFore, 84760 Hwy. 339, Milton-Freewater 97862, 541.938.3286
 - **WILLAMETTE VALLEY** – Ron Bennett, 11260 Simpson Rd., Monmouth 97361 503.838.2328
- PENNSYLVANIA**
- **PA STATE BKPRS ASSN** – Yvonne Crimbring, RD 1, Box 315, Canton 17724, 570.673.8201
 - **2 C'S & A BEE ASSOC** – Joe Bayer, R.D. 3, Box 311A, Tyrone 16686, 814.684.1783
 - **ADAMS CO BKPRS** – John Creighton, 1431 Goodyear Rd., Gardners 17324, 717.486.5678
 - **ALLEGHENY MTN. BKPRS. ASSN.** – Eugene O'Neil, 11090 Glades Pike, Fairhope 15558, 814.267.3720
 - **ARMSTRONG-INDIANA BKPR** – Charlie Lyon, 207 Fairground Rd., Ford City 16226, 412.763.8360
 - **BEAVER VALLEY AREA BKPRS** – Jim Stein, 324 Mt. Royal Blvd., Pittsburgh 15223, 412.781.3467
 - **SUSQUEHANNA VALLEY** – Jim Aucker, 40 Pony Trail Drive, Bloomsburg 17815, 570.784.3830
 - **BERKS-SCHYLLKILL BKPRS** – Jerry Swartz, 22 Brown Rd., Shomakersville 19555, 610.926.6762
 - **BUCKS CO BEE ASSN** – Dane Snyder, 113 Country Lane, Lansdale 19446, 215.362.6031
 - **CAPITAL AREA BK ASSN** – Maria Contino, 6087 Rockland Dr., Harrisburg 17112, 717.657.3932
 - **CENTRAL COUNTIES BKPRS ASSN** – Valerie Lintner, HCR 1, Box 61, Huntingdon 16652, 814.643.6313
 - **CENTRAL WSTRN PA BEE ASSN** – Robert Travis, 620 S. Market St., New Wilmington 16142
 - **CENTRE CO. BKPRS. ASSOC.** – Lyn Garling, RD 1 Box 77, Rebersburg 16872, 814.349.2697
 - **CHESTER CTY BK ASSN** – Warren Graham, 1614 Delchester Rd, Newton Sq. 19073, 610.558.3817
 - **CLARION CO BEEKEEPER ASSN** – Patrick Kearney, RD 1, Shippenville 16254, 814.354.6218
 - **FRANKLIN CO BKPR** – Trudy Stone, 2187 Sollenberger Rd., Chambersburg 17201, 717.267.2433
 - **HARRITON HOUSE BKPRS ASSN** – Bruce Gill, 500 Harriton Rd. P.O. 1364, Bryn Mawr 19010, 610.525.0201
 - **LANCASTER CO HONEY PRODUCERS** – Kelly Miller, 2996 Spangler Rd., Manheim 17545, 717.664.5130
 - **LEHIGH VALLEY BKPRS** – Ken Eisenhart, 1565 Kumry Rd., Quakertown 18951, 215.679.0571
 - **LYCOMING CO BKPRS ASSN** – Martin Horvat, RR 1, Box 531, Jersey Shore 17740, 570.753.5513
 - **MONROE CO BKPRS** – Sandy Fisher, 4361 L Cherry Valley Rd., Stroudsburg 18360, 570.992.7274
 - **MONTGOMERY CO BKPR** – Harold Jenkins, 816 Kenilworth Ave., Lansdale 19446, 215.855.5613
 - **SUSQUEHANNA BKPRS ASSN** – John Brunner, RD2 Box 158, Montrose 18801
 - **WAYNE CO BEEKEEPERS ASSN** – Francis Motichka, 417 Carroll St., Honesdale 18431, 570.253.0166
 - **WESTMORELAND CO BKPRS** – Ken Karg, 165 Piersol Rd., Belle Vernon 15012, 724.929.3882
 - **YORK CO BEEKEEPERS** – Judy Breneman, RR 7, Box 7553 Spring Grove 17362, 717.225.3076
- RHODE ISLAND**
- **RI BKPRS ASSN** – Bernard Bieder, 140 Coldbrook Rd., Warwick 02888, 401.463.8654
 - **BRISTOL CO BKPR ASSN** – Bruce Holden, 11 Field Lane, Barrington 02806
 - **KENT COUNTY** – Kent Cameron, 256 Buttonwoods Ave., Warwick 02886
 - **NEWPORT COUNTY** – Ray Barker, 136 Cedar Ave., Portsmouth 02821
 - **PROVIDENCE CO BKPR ASSN** – Claire Desrosier, 275 Pine Orchard Rd., Chepachat 02814
 - **WASHINGTON COUNTY** – Ron Bachand, 33 Jeannette Court, Exeter 02822
- SOUTH CAROLINA**
- **SC BKPRS ASSN** – Ron Taylor, 203 Bama Rd., Cottageville 29435, 843.835.2482
 - **AG NAT RESOURCE MGT** – Samuel D. Bass, P.O. Box 1192, Bennettsville 29512, 803.479.9527
 - **BAMBERG CO BKPRS ASSN** – Gilbert Miller, P.O. Box 299, Bamberg 29003
 - **CHEROKEE CO BKPRS ASSN** – David Parker, P.O. Box 700, Gaffney 29342
 - **COLLETON BKPRS ASSN** – Ron Taylor, 203 Bama Rd., Cottageville 29435
 - **EDISTO BEEKEEPERS** – Henry Chassereau, Rt. 1, Box 172A, Ehrhardt 29081, 803.267.5075
 - **GREENWOOD CO BKPRS ASSN** – Kathryn White, P.O. Box 246, Greenwood 29648
 - **LOW COUNTRY BKPRS ASSN** – Archie Biering, 1081 Holly Ridge Ln., Cottageville 29435
 - **MID-STATE BKPING ASSN** – Jack Morris, 4 Knollwood Ct., Columbia 29209
 - **OCONEE CO BKPRS ASSN** – Dean Boggs, 103 Letson Cr., Walhalla 29691
 - **PEE DEE BKPRS ASSN** – Ron Moore, 675 Mustang Rd., Pamlico 29583
 - **PICKENS CO BKPRS ASSN** – Winfred Trotter, 926 Breazeale Rd., Liberty 29657
 - **PIEDMONT BKPRS ASSN** – Steve Genta – 3450 Fork Shoals Rd., Simpsonville 29680, 864.243.9013
 - **SPARTANBURG CO BKPRS ASSN** – Joe Guthrie, P.O. Box 1010, Spartanburg 29304
 - **SUMTER CO BKPRS ASSN** – F.L. Newman, 1030 State St., Sumter 29150
 - **WESTERN PIEDMONT BKPRS** – Larry Williams, 501 Youth Center Rd., Belton 29627, 864.338.5470
 - **YORK CO BEEKEEPERS ASSN** – Patrick Lourgan, 1756 Shythe Lane, York 29745
- SOUTH DAKOTA**
- **SD BKPRS ASSN** – Judy Guleson, Box 52, Britton 54430, 605.448.5163
- TENNESSEE**
- **TN BKPRS ASSN** – Marlene Thomas, 196 Long Rd., Kingston 37763, 423.376.1838
 - **ANDERSON CO BEEKEEPERS** – Marlene Thomas, 196 Long Rd., Kingston 37763, 423.376.1838
 - **BLOUNT CO BKPRS** – Tammy Braglin, 702 Lee Shirley Rd., Maryville 37801
 - **CAMPBELL CO BKPRS** – Adrian Baird, 1203 Davis Chapel Rd., LaFollette 37766, 423.562.6963
 - **CHEROKEE BKPR ASSN** – Steve Postell, 1211 Mayflower Rd., Sale Creek 37373
 - **DAVY CROCKETT BKPRS** – John Flanagan, 6553 Poplar Springs Rd., Greenville 37743, 423.636.0088
 - **DUCK RIVER BKPRS ASSN** – Austin DeJarnatt, 336 River Bend Rd., Shelbyville 37160
 - **KNOX CO BKPRS** – Andrew Morris, 4747 W. Beaver Creek Dr., Powell 37849, 865.938.7258
 - **LOUDON CO BKPRS** – Jim Goodman, 8633 Hwy. 11E, Lenoir City 37772
 - **MEMPHIS AREA BKPR** – Ken Chrestman, 8516 Grand Oaks, Cv, Arlington 38002, 901.377.1592
 - **MONROE CO BKPRS ASSN** – James Hagemeyer, 5337 Hwy. 411, Madisonville 37354, 423.442.2038
 - **NASHVILLE AREA BKPRS** – Barry Richards, 1020 Carr Cemetery Loop, Cross Plains 37049
 - **OVERTON CO BEE ASSN** – Ronald Johnson, 317 Univ. St., Livingston 38570, 931.823.5308
 - **PUTNAM CO BKPRS** – Walter Hall, 420 Old Qualls Rd., Cookeville 38506
 - **ROANE/MORGAN CO BKPRS ASSN** – Geraldine Hendrickson, 794 Dickey Valley Rd., Harriman 37748
 - **SEVIER CO BKPR ASSN** – John R. Kelley, 613 Sandy Point Lane, Sevierville 37876, 865.428.1272
 - **SUMNER CO BEE ASSOC** – Wayne Vantrease, 285 Vantrease Rd., Gallatin 37066
 - **TN BKPRS ASSN** – Dwight Tew, 509 Ellington Drive, Franklin 37064-5013, 615.791.1518
 - **WASHINGTON CO BKPR** – K. Saylor, 207 Paul Saylor Rd., Jonesboro 37859
 - **WEAKLEY CO BEE ASSN** – Jeff Lannom, P.O. Box 168, Dresden 38225
 - **WILSON CO BKPR ASSN** – Petra Eggenmüller, 3900 Rock Springs Rd., Watertown 37184
- TEXAS**
- **TX BKPRS ASSN** – Dr. John G. Thomas, 805 Vine St., Bryan 77802, 979.846.5068
 - **ALAMO AREA BKPRS ASSN** – David S. Grinnan, 168 Four Bears Tr., Kerrville 78028, 830.367.2168
 - **CAPITOL AREA BKPR** – Carol Malcolm, 3501 Basford Rd., Austin 78722, 512.480.0884
 - **CENTRAL TEXAS BKPRS** – D.D. Dillon, P.O. Box 575, Caldwell 77836, 409.277.6200
 - **COASTAL BEND BKPRS ASSN** – Tom Stewart, 4111 Catalina, Corpus Christi 78411, 512.852.4218
 - **COLLIN CO HOBBY BKPR** – John N. Paulson, 2421 Laurel Lane, Plano 75074, 972.424.1832
 - **CONCHO VALLEY ASSN** – Enoch Garcia, P.O. 60541, San Angelo 76906, 915.657.0377
 - **EAST TEXAS BKPR ASSN** – Richard Counts, 16239 Audrey Lane, Arp 75750, 903.566.6789
 - **EL PASO ASSN** – Tim Channell, 516 DeLeon Dr., El Paso 79912, 915.833.0079
 - **FORT BEND ASSN** – Elton Reynolds, 3419 Klosterhoff Rd., Rosenberg 77471, 281.342.4388
 - **GALVESTON CO ASSN** – Margie Coplin, 12230 Marion Lane, Dickinson 77539, 409.925.6338
 - **GOLD TRI ASSN** – Wallace Commander, 2445 Green Ave., Port Arthur 77642, 409.982.0907
 - **HARRIS CO ASSN** – Herb Barrier, 12318 Thornbriar Dr., Pearland 77581-2027, 281.485.1234
 - **HEART OF TX BEEKEEPERS** – Claude Lester, 900 Evelyn Dr., Lorena 76655, 254.857.4969
 - **HOUSTON BKPRS ASSN** – Herschel D. Womac, 11215 Tyne Court, Houston 77024, 713.782.7755
 - **METRO BKPRS ASSN** – Ray Stephens, 3800 N. Cummings Dr., Alvarado 76009, 817.790.5050
 - **MONTGOMERY CO BKPRS** – Janelvy, P.O. Box 66, Splendora 77372, 281.399.8543
 - **N. HARRIS CO BKPRS ASSN** – Linda Smith, 22818 Cranberry Trails, Spring 77386-2419, 281.350.2718
 - **NERSHAM BASIN ASSN** – Dean Brittingham, 2312 North Adams, Odessa 79761, 915.332.2215
 - **RED RIVER VALLEY ASSN** – Bennie J. Watson, 1952-A Hines Blvd., Wichita Falls 76703, 940.767.0207
 - **RIO GRANDE VALLEY ASSN** – Billy Wright, Rt. 5, Box 77, Donna 78537, 956.464.5042
 - **TRINITY VALLEY ASSN** – Theresa Erwin, 6118 Azalea Lane, Dallas 75320, 214.691.3422
 - **TRI-CO AREA BEEKEEPERS** – Dean Futch, 904 Chalk St., Copperas Cove 78522, 254.547.9125
 - **WILLIAMSON CO** – Jimmie Oakley, 1799 Goodson Ct., Round Rock 78664, 512.388.3630
- UTAH**
- **UTAH COUNTY BKPRS** – Alison Pack, 882 S. 1100 West, Provo 84601
 - **WASATCH BKPRS ASSN** – Larry Knowlden, 4143 S. Morris, Taylorsville 84119, 801.966.8619
- VERMONT**
- **VT BKPRS ASSN** – Harry Kulp, 405 Browns River Rd., Essex Junction 05452
 - **BENNINGTON CO BKPRS** – J. Esh, P.O. Box 723, Bennington 05201

VIRGINIA

- **VA STATE BKPRS ASSN** – Jerry Austin, 2236 Kern's Mill Rd., Sutherlin 24394, 804.822.8679
- **BLUE RIDGE BKPR ASSN** – Coy Shupe, Rt. 1, Box 2268, New Castle 24127, 540.864.5529
- **CENT VA BKPR EAST** – Dale Brittle, P.O. Box 681, Bowling Green 22427, 804.633.6575
- **CTRL VA BKPRS WEST** – Guy Miller, 2025 Spottswood Rd., Charlottesville 22903
- **HALIFAX BEEKEEPERS ASSN** – E. Donald Chandler, P. O. 265, Virgilina 24598, 804.585.2402
- **LOUDOUN BKPRS. ASSN** – Billy Davis, 703.737.6803
- **MT. EMPIRE BK ASSOC** – Edwin Wilson, 190 Dogwood Drive, Wytheville 24382
- **NASA-LANGLEY APIC CLUB** – George Maddrea, 902 Wormley Creek Dr, Yorktown 23692, 757.898.5710
- **NELSON CO BKPRS** – Michael Lachance, P.O. Box 298, Lovingson 22949-0298
- **NO PIEDMONT BKPRS** – Ann Harman, 1214 North Poes Rd., Flint Hill 22627, 540.364.4660
- **NORTHERN VALLEY BKPRS. CLUB** – Frederick Co. Ext., 107 N. Kent St., Winchester 22601
- **NORTHERN VA BKPRS** – Pearl Liles, 2451 S. Culpeper St., Arlington 22206
- **PIEDMONT BKPRS ASSN** – George Kelley, 1659 Virginia Byway, Bedford 24523-4705, 540.586.0766
- **RICHMOND BKPRS ASSN** – Robert Falconer, 4440 Honey Lane, Glen Allen 23060
- **SHENANDOAH VLY BKPRS** – Alden Dodge Rader, Jr., 1752 Cold Springs Rd., Stuarts Draft 24477-9616, 540.337.3502
- **SOUTHWEST PIEDMONT BKPRS** – Jack B. Hill, 1091 Brentwood Dr., Collinsville 24078-2147, 540.647.8400
- **TIDEWATER BKPR ASSN** – Bob Schwartz, 11156 Mill Swamp, Smithfield 23430, 357.7829

WASHINGTON

- **WA STATE BKPRS ASSN** – Lavonne Babcock, 17411 Russian Rd., Arlington 98223, 425.335.0488
- **CENTRAL WA BKPRS ASSN** – Alice Bounds, 418 Dean St., Zillah 98953, 509.829.6698
- **CLARK CO BKPRS ASSN** – Mary Ann Morrison, 14303 NE267th St., Battle Ground 98604
- **COWLITZ CO BKPR ASSN** – Eva Davis, 3956 Columbia Hts Rd., Longview 98632
- **INLAND EMPIRE BKPR** – Albert Bell, 17110 N. Highland Lane, Colbert 99005-9758, 509.468.2201
- **MT BAKER BKPR ASSN** – Patrick Harman, 4540 Sand Rd., Bellingham 98226
- **NORTH OLYMPIC PENINSULA BKPRS ASSN** – Cherie Pickett, 878 N. Kendall, Sequim 98382
- **NORTHWEST DIST BKPR** – Kim Miller, 7111 Totem Beach Rd., Marysville 98271, 360.653.8216
- **OLYMPIA BKPR ASSN** – Bob Bower, 2448 Madonna Beach Rd. NW, Olympia 98502-9213, 360.866.7708
- **PIERCE CO BKPR** – Karl Crotty III, 19607 SE A.B.D. Rd., Auburn 98092

- **PUGET SOUND BEE ASSN** – John de Groot, 18606 NE 161st Place, Woodinville 98072, 425.788.2259
- **SKAGIT VALLEY BKPR** – Judy Pefley, 25277 LK Cavanaugh Rd., Mt. Vernon 98274-8096, 360.422.7323
- **Washington Professional** – Chester Ferguson, 306 W. Washington Ave., Yakima 98903, 509.452.5772
- **WESTSOUND BKPRS** – Roy Barton, 7572 Grahns Lane NE, Bremerton 98311, 360.613.0175
- **STANWOOD-CAMANO BKPRS ASSN** – James Osborn, 1340 E. Juniper Beach Rd., Camano Island 98292

WEST VIRGINIA

- **WV STATE BKPRS ASSN** – John Campbell, 102 First St., Parsons 26287, 304.478.3675
- **BARBER COUNTY BKPRS** – Gabe Blatt, 3554 Haneys Br. Rd., Huntington 25704, 304.4291268
- **CABELL-WAYNE BKPR** – Gary Strickland, 330-30th St., Huntington 25702
- **CENTRAL WV BKPR ASSN** – Dudley Dodrill, 197 Fairview St., Sutton 26601
- **CORRIDOR G BKPRS** – Kathy Watson, RR 1, Box 61B, Chapmanville 25508, 304.855.8504
- **EASTERN PANHANDLE BKPRS ASSN** – Thomas Kershner, Rt. 1, Box 113, Falling Waters 25419
- **HAMPSHIRE CO BEEKEEPERS** – Darlene Fredrick, Rt. 4, Box 1494, Keyser 26726
- **KANAWHA VALLEY BKASSN** – Jean Mead, 20 Shady Ln., Winfield 25212-9675, 304.562.3339
- **MARION CO BEEKEEPERS ASSN** – Fred McClain, P.O. Box 243, Farmington 26571, 304.825.6650
- **McDOWELL CO BKPRS** – Bob Beasley, P.O. 136, Elkhorn 24831
- **MID OHIO VALLEY BKPR** – Clifford Leeson, Rt. 2, Box 353-A, Washington 26181-9571, 304.863.6858
- **MORGANTOWN AREA BKPR** – Myrna Huffman, 93 Hill Top Lane, Morgantown 26508
- **NORTH CENTRAL BKPRS ASSN** – Steve Hamrick, RR 5, Box 698, Clarksburg 26301, 304.622.9827
- **RALEIGH CO BKPRS ASSN** – Barney Walls, 115 Honey Lane, Beckley 25801
- **SO WV BKPRS** – Cathy Watson, RR 1 Box 61B Covert Branch Rd, Chapmanville 25508
- **TRI STATE BEEKEEPERS ASSN** – Don Snider, 7 Meadow Dr., Wheeling 26003, 304.242.5878
- **TUCKER CO BKPRS ASSN** – John Campbell, 102 First Street, Parsons 26287, 304.478.9675
- **WEST CENTRAL BKPRS** – Mary McCormick, HC 62 Box 44, Harmony 25243

WISCONSIN

- **WI HONEY PRODUCERS ASSN** – Lee Heine, P.O. Box 544, Hustisford 53034, 920.349.8382
- **BROWN CO BKPR** – Thomas Cashman, 1418 Chicago St., Green Bay 54301, 920.432.2261
- **CHIPPEWA & EAU CLAIRE BKPRS** – Fern Eggen, 11567-22nd Ave., Chippewa Falls 54729 715.723.6584
- **DUNN COUNTY BEEKEEPERS** – Harold Jensen, Menomonie, 715.664.8505

- **MARATHON CO BEEKEEPERS** – Dean Kaatz, 210 River Dr., Wausau 54403-5449
- **OZAUKEE-WASHINGTON CO BKPRS** – James Bohn, 1214 S. 7th St., West Bend 53095
- **POLK-BURNETT BEEKEEPERS** – Beverly Weber, 1006 25th St., Clayton 54004
- **ROCK CO BKPRS** – Ed Sprigler, P.O. Box 511, Sharon 53585
- **SAUK-COLUMBIA COS BKPR** – Daniel Licht, S 6566 Hwy PF, N. Freedom 53951, 608.522.4890
- **SHEBOYGAN CO BKPRS** – Elaine

- Schuman, 126 Grafton Ct, Kohler 53044 920.457.5492
- **ST CROIX CO BEEKEEPERS** – Bob Olson, 1237 Willow Ave., New Richmond 54017
- **TAYLOR-CLARK BEEKEEPERS** – Florette Kohn, N2580 Cte, Medford 54451
- **WAPUACA CO BEEKEEPERS** – Stan Jakubek, P.O. Box 54, Iola 54945, 715.445.2285

WYOMING

- **WY BKPRS ASSN** – Ray Opitz, P.O. Box 1241, Mills 82644, 307.237.3055

INDUSTRY ORGANIZATIONS

- **American Bee Breeders Association** – Fred Rossman, P.O. Box 909, Moultrie, GA 912.985.7200
- **American Beekeeping Federation** – Exec. Dir., Troy H. Fore, P.O. Box 1038 Jesup, GA 31598, 912.427.4233, 912.427.8447, info@abfnet.org, www.abfnet.org
- **American Honey Producers Association** – Jack Meyer, Jr., 536 Ashmont Rd., Madison, SD 57042, 605.485.2221, 605.485.2231
- **Apiary Inspectors of America** – Barton Smith, Jr., State Apiary Inspector, 50 Harry S. Truman Parkway, Annapolis, MD 21401, 410.841.5920, 410.841.5835, smithib@mda.state.md.us; www.mda.state.md.us/DOCS/aia/aia.htm
- **Eastern Apicultural Society of North America, Inc** – Kathy Summers, 432 Baxter St., Medina, OH 44256, 330.723.2783; FAX 330.725.5624; summerskathy@msn.com
- **Western Apicultural Society of North America** – Eric Mussen, 530.752.0472; ecmussen@ucdavis.edu
- **National Honey Board** – Executive Director, Nathan Hollerman, 390 Lashley St., Longmont, CO 80501-1421, 303.776.2337, 303.776.1177; www.nhb.org
- **Mid-U.S. Honey Producers Marketing Assn** – Gary Reynolds, Box 363, Concordia, KS 66901, 785.243.3619
- **National Honey Packers & Dealers Association** – Richard Sullivan, Exec Sec, P.O. Box 545, Matawan, NJ 07747, 732.583.8188; 732.583.0798; RichardSullivan@afi.us.org
- **Professional Apiculturists Assn** – Marion Ellis, 210 Plant Industries E. Campus, P.O. Box 830816, Lincoln, NE 68583, 402.472.8696; http://ianrwww.unl.edu/ianr/entomol/aapa/aapa.htm
- **The Canadian Honey Council** – Heather Clay, Suite 236 234-5149 City Hills Blvd NW, Calgary, AB T3A 5K8, 403.208.7141; 403.547.4317; CHC-CCM@telusplanet.net; http://sss.honeycouncil.ca
- **Can. Assn. of Prof. Apic.** Dept. of Environmental Biology, University of Guelph Dr. Cynthia Scott-Dupree, Pres., Guelph, ONT N162W1; 519.824.4120 Ext. 2478; 519.837.0442; csdupree@evbhort.uoguelph.ca

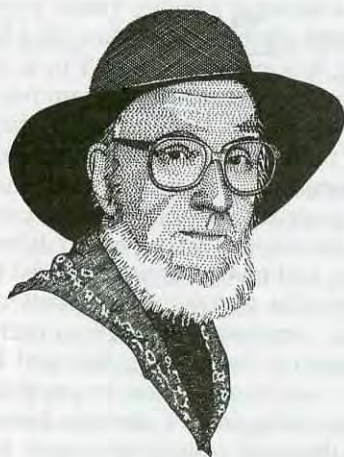
GOVERNMENT

- **Beltsville Bee Lab** – Dr. Mark Feldlaufer, Rm. 209A, Bldg. 476, BARC-East, Beltsville, MD 20705; 301.504.8205; 301.504.8736
- **Baton Rouge Bee Lab** – Dr. Thomas Rinderer, Research Leader, 1157 Ben Hur Rd., Baton Rouge, LA 70820; 225.767.9280; 225.766.9212; trindere@ars.usda.gov
- **Texas Bee Lab** – Dr. William T. Wilson, Lead Scientist, USDA, ARS, SRC Bldg. 205, 2413 East Hwy. 83, Weslaco, TX 78596; 956.969.5005; 956.969.5033; wwilson@weslaco.ars.usda.gov; www.rsu2.tamu.edu
- **Utah Bee Lab** – Dr. William P. Kemp, USDA-ARS/Bee Biology Lab, Utah State University, Logan, UT 84322-5310; 435.797.2524; 4 3 5 7 9 7 0 4 6 1 wkemp@cc.usu.edu
- **Tucson Bee Lab** – Dr. Eric H. Erickson, USDA-ARS Center Director, 2000 E. Allen Road, Tucson, AZ 85719; 520.670.6380, Ext. 103; 520.670.6493; eric@tucson.ars.ag.gov; gears.tucson.ars.ag.gov
- **Honey Market News** – Linda Verstrate, USDA-AMS, Fruits & Vegetable Div. 21N. 1st Ave. Suite 224, Yakima, WA 98902; 509.575.2494; 509.457.7132
- **American Apitherapy Society** – Jim Higgins, 3801 US 50, Hillsboro, OH 45133; 937.364.2331

Richard Taylor

Bee Talk

"Priceless Blessings"



One of the deep satisfactions from my lifetime of beekeeping has been to witness the revival of interest in comb honey. There is a story behind that; several of them, in fact. Some I've told before, but I'll try to pull them all together now. They contain some lessons, not only for the beekeeper's craft, but for precious friendships, and for life itself, and especially, on how vast changes in one's life can result from the smallest coincidences.

I still remember, after all this time, my first taste of comb honey. I was a little boy, and my mother brought home a regular wooden section of clover honey. It was the most delectable food I'd ever tasted, and the image of it is still vivid in my mind. There were no supermarkets back then. The grocer stood behind the counter, you told him what you wanted, and he ran back and forth fetching it from the shelves. Often one could find comb honey stacked up there on the counter, produced by some local beekeeper. I think bread was 10 cents a loaf back then, and a quart of milk also a dime. When, at age 16, I took up beekeeping, with two hives, I produced only section comb honey, like so many other beekeepers, and I recall selling it up and down the street for 15 cents, two for a quarter. There are some wonderful memories there, but I'll skip over those.

You could still find

comb honey in the stores up until World War II. Many back-lot beekeepers produced it, and a few produced it on a large scale. I am told that three beekeepers here in New York state earned their livelihood producing comb honey. But after the war production of comb honey declined, to the point that it was very hard to find. You could find cut comb honey sometimes, but rarely comb honey in those wonderful square basswood sections.

Then, in the late '40s or early '50s, the circular section was invented by a retired physician in Dearborn, Michigan. His name, which should be honored forever in the annals of apiculture, was Wladyslaw Zbikowski. I happened to be in the Dearborn area one day and had heard that this gentleman had made some sort of innovation in beekeeping, although it was not clear what it was. So I looked him up and was instantly struck by what he showed me. He had begun by chop-

ping up plastic pipe to make circular sections, but by the time I met him, he had perfected the molded plastic sections, and the frames to hold them. They have, since then, undergone almost no change.

Dr. Zbikowski was a brilliant inventor, but not good at promoting his invention. He was also highly opinionated and had a way of going off in several directions at once. So, for several years, circular sections remained virtually unknown. I was producing comb honey with this equipment in the mid-50s, but had a hard time marketing it because it was so totally unfamiliar. Still, I knew that this was a major development in beekeeping, so I did what I could to make it known to beekeepers, at bee meetings, and so on.

Then, in the mid-70s, an architect and sideline beekeeper in Ohio, by the name of Tom Ross, heard of this invention and got in touch with me. I supplied him with some equipment and, soon after, ran into him

Continued on Next Page

Lloyd Spear

Richard Taylor

Tom Ross



at a bee meeting in Columbus. He soon became so convinced of the importance of this system that he gave up his profession as an architect and began producing the circular section equipment on a large scale, as it had never been patented. This involved a very large investment in manufacturing equipment. Thus was born Ross Rounds, a trade name now known to just about every modern beekeeper in the world. And therein, too, lies the beginning of the revival of the comb honey industry. Today circular section comb honey can be found everywhere, and there are beekeepers who produce thousands of sections every year.

So there are my first examples of how small coincidences can, over time, have enormous consequences. What if I had not been in Dearborn that day, or, years later, run into Tom Ross at a meeting?

As a small aside to this, I recall a minor event that occurred in the '50s when I was teaching at Brown University in Rhode Island. I stopped by a printer's shop on my way to the university one day and composed a little message to paste on the back of my circular sections, explaining what comb honey is, it being then virtually unknown, at least in New England. Today, in whatever part of the country you find yourself, or indeed, whatever part of the world, if you see circular sections, then the message on the label is apt to be, almost word for word, the thing I scribbled out for the printer that day long ago. Tiny things can have lasting consequences.

Here is another example, a major part of this very large story. About 10 years ago I happened to meet an avid beekeeper named Lloyd Spear and, as our acquaintanceship grew, we discovered that we had many interests in common. So we became good friends. I was quite overwhelmed by the energy and resourcefulness of this man, on top of which he had a great love of life. One fine day, while visiting his elderly mother in a town nearby, he dropped over to see me and to pick up a few used supers he'd heard I had for sale. Before leaving, he asked in passing, "And how is Tom Ross these days?" It was a question that was to alter his life. I responded that Tom, as I

had heard, was retiring and in the process of negotiating a sale of his entire Ross Rounds corporation to a large bee supply manufacturer. What followed happened very fast. Within a year Lloyd Spear had become the owner of this great business and, fueled by his energy and business acumen, Ross Rounds is now expanding at an enormous rate, in this country and around the world. Mr. Spear, in the meantime, has become well-known to readers of this magazine, for he is not only a great entrepreneur, but a highly talented beekeeper who has a gift for explaining things clearly.

I have often wondered: What if, on that day a few years ago, Mr. Spear had not, in passing, asked me about my friend Tom?

Here we see, graphically illustrated, not only how big things often have small beginnings, but also, how friends, without even trying, sometimes bring great blessings into our lives.

And therein lies the greatest story of all, having little to do with bees, but much to do with beekeepers and friendship.

Back in 1994 I found myself quite suddenly alone in the world, lonely and devastated. For months I

was a walking zombie. I was working with my bees, and this kept me going, but my heart wasn't in it, or in anything else. That Summer I went off to the EAS meeting, sharing a room with my friend Tom Ross, as usual. He casually mentioned that a distinguished horticulturist who sometimes wrote about honey plants had passed away, survived by a beautiful widow, also a horticulturist. I immediately began a correspondence, soon to be followed by daily and sometimes twice daily phone calls to her distant home. This flurry of activity was soon followed by visits and then, very soon, Connie Bright became my precious companion for life. Not a day goes by that I do not think back, with astonishment and wonder, on that incredible sequence.

I suppose a love story like that has little place in a bee journal, but, once again, large things often have small beginnings. What if I had never met Tom Ross? What if I had not gone to that EAS meeting? And again, how effortlessly do our friends sometimes bestow on us such priceless blessings! ☐

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

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?Do You Know? Answers

- False** Saliva is secreted by two pairs of glands discharging into one median duct that is located just behind the head. The glands of one pair lie in the back of the head, those of the other pair in the ventral part of the thorax.
- True** Both workers and queens have 12 segmented antennae, whereas drones have 13 segmented antennae.
- False** The worker's honey stomach is a temporary storage organ that is used for transporting water, nectar and honey. Digestion and absorption of food occurs in the true stomach (ventriculus) and intestine.
- False** The compound eye is capable of forming images. Ocelli, or simple eyes, are capable only of monitoring changes in light intensity falling upon the lens.
- True** In the anterior part of the abdomen, the oesophagus or food tube expands into the crop or honey stomach. This structure is a transparent bag which, when full of nectar, honey or water, occupies a large part of the anterior end of the abdomen.
- True** Honey bees have an open circulatory system. Blood fills the body cavity of the bee; it is not confined in a closed system of arteries, veins and capillaries like that of man.
- False** The primary functions of honey bee blood are the distribution of digested food materials absorbed from the digestive tract, reception of waste products of metabolism which are removed by the excretory organs, and the transport of carbon dioxide to be eliminated through the respiratory organs and the skin. Unlike man, bee blood is not responsible for the distribution of oxygen.
- False** Digestive juices and enzymes are produced by the cellular lining of the ventriculus.
- A) Four
- E) Sting
- B) Five
- Z) Tegula
- Q) Scape
- R) Mesothorax
- J) Malpighian Tubules
- E) Hamuli
- L) Labrum
- N) Corbicula
- P) Hypopharyngeal Glands
- W) Peduncle
- A) Tentorium
- D) Flabellum
- M) Proventriculus
- I) Ostia
- O) Arolium

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

Clarence Collison is a professor of entomology and head of the Department of Entomology and Plant Pathology at Mississippi State University, Mississippi State, MS.



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GLEANNINGS

MAY, 2000 • ALL THE NEWS THAT FITS

Apimondia Surplus \$ CANADA'S HONEY COUNCIL & RESEARCHERS BENEFIT

The work of the Canadian Organizing Committee for the Apimondia '99 Congress of the International Federation of Beekeepers' Associations, which was held during September, 1999 at Vancouver, is drawing to a close. The Canadian Apimondia '99 Organizing Committee was formed in 1992 to organize the 36th Congress of Apimondia, on behalf of the Canadian Association of Professional Apiculturists (CAPA) and the Canadian Honey Council (CHC). The Committee included the following members: Don Nelson, Cynthia Scott-Dupree, John Gruszka, Don Dixon (Chair), Mark Winston, Paul van Westendorp, Merv Malyon, Gard Otis, Jean-Pierre Chapleau.

In addition, two other individuals who worked to support the Con-

gress deserve special recognition, Fran Kay for her work on publicity and the production of the souvenir program and Heather Higo for chairing the committee that coordinated the work of the volunteers.

The Congress was a tremendous success with approximately 3000 registered guests representing virtually every country where honey bees are kept. There were more than 400 presentations related to every aspect of beekeeping imaginable. ApiExpo, the commercial display of beekeeping equipment and services was the largest such display ever held in the Americas with approximately 90 displays occupying some 130 booths.

The Canadian Organizing Committee met just before the Canadian Honey Council Annual Meeting at Saskatoon during February, 3-6, 1999

Continued on Next Page

PIONEERING RESEARCH ENTOMOLOGIST DIES



Sedlak photo

Celebrated entomologist Edward F. Knipping, who pioneered research to develop pesticide-free ways to protect livestock and crops from the devastating effects of insects,

died March 17 at his home in Arlington, Va., from cancer at the age of 91. Knipping retired from USDA's Agricultural Research Service in 1973 after 42 years with the Department, but had continued to work with ARS as a research collaborator. ARS is the

chief research agency of USDA.

Working with ARS colleague Raymond C. Bushland, Knipping pioneered the sterile male insect technique to suppress insect pests. This technique involves irradiating male insects, then turning them loose to mate with wild fertile female insects. These matings do not produce fertilized eggs, so numbers of insect offspring plummet dramatically.

Knipping and Bushland first developed the technique to combat

Continued on Page 67

TUCSON TRAGEDY



On February 21, 2000 Ed and Dee Lusby had a fire at their Industrial Yard in Tucson, AZ. The fire began around 5:30 a.m. and consumed a 30' x 50' corrugated metal storage shed that contained wax rendering and foundation mills, as well as woodenware making equipment including a radial, table, and jointer saws. Over 11,000 sheets of 4.9mm foundation were lost along with much bulk wax.

Rapid response by the local fire department aided with supplemental help from adjacent fire departments contained the fire to the one building.

Because the Lusby's keep their

equipment segregated in multiple small buildings rather than one large one they managed to save most of their equipment. "I guess there is something to be said in not putting all your eggs in one basket. Rather lose a little to restart again than lose it all in one building and one large fire," Dee Lusby said.

The Lusby's expressed gratitude to all those that called to see if they were alright or needed help.

"We can't really remember all who called as things went so fast for so many days, so hopefully this will get out for Ed and me through the magazine."

WILSON ACHIEVES



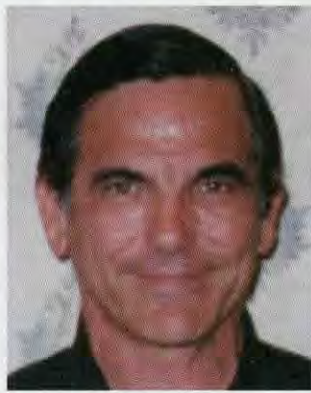
Bill Wilson receives lifetime achievement award from American Beekeeping Federation at the 2000 meeting in Ft. Worth, TX. The award was presented by David Hackenberg, ABF President.

CALIFORNIA HONORS ITS OWN



Young Beekeeper

Valeri Severson, who works with her father at Strachen Apiaries, has a love of beekeeping that has led her into a swarm of projects. Valeri has joined with Sue Cobey in the development of the New World Carniolans. Valeri has served as an officer in the California Bee Breeders and has served on the executive committee of the California State Beekeepers Association.

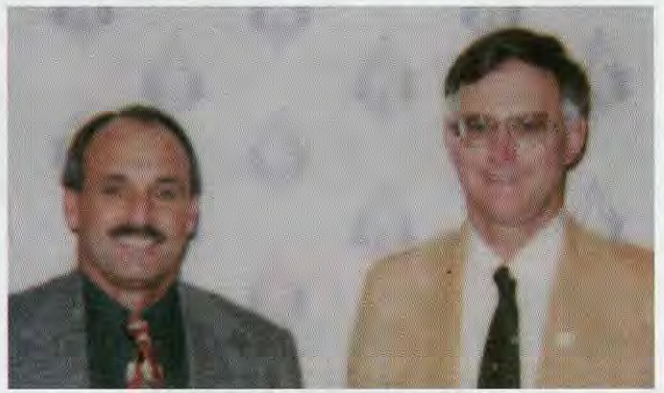


Beekeeper of the Year

Bob Siefert started keeping bees in 1970. He increased the number of hives each year, and started his own bee business in 1981 with about 650 hives. He now has about 1,800 hives and does pollination of almonds, prunes, pears, cranberries, alfalfa, pumpkins, onions, carrots, and vine seed crops. He also produces package bees and queens, and was president of the Beekeepers Association of Northern CA in 1986. He is a member of the Sacramento Area Beekeepers Association, the Nevada County Beekeepers Association, the Western Apicultural Society, the CA Bee Breeders Association, the Western Apicultural Society, the CA Bee Breeders Association, and the CA State Beekeepers Association.

Lifetime Honorary Beekeeper

Koebnen & Sons family bee business was started in 1925 by Robert Koebnen's father in its present location in Ord Bend. He was in bees for the honey, when Star Thistle was abundant. As agriculture changed, this bee business changed to breeding queens. Bob became a legal partner at 16. Today the business includes his nephew and his two sons. His youngest son, Kamron, oversees the entire beekeeping operation.



Distinguished Service Awards

Gene Brandt (left) was presented with a Distinguished Service Award for the work he did in helping to obtain the Section 18 on Coumaphos from Department of Pesticide Regulation. While Gene says, "I didn't do nearly as much work as Eric (Mussen)," his phone calls and letters helped to get this application accepted and approved. Thanks Gene, for all you so competently do for CSBA.

In recognition of the many hours Eric Mussen (right) spent in the tedious work of filling out the Section 18 application for Coumaphos in a manner which enhanced its acceptability to California Department of Pesticide Regulation, the California State Beekeepers Association named him as recipient of the Distinguished Service Award.



President's Award

The President's Award was presented to Bert Walters by President Troy Bunch for his many years of friendship, a willing hand of help in time of need, and support during Troy's beginning years in beekeeping.



Lifetime Honorary Beekeeper

An aerospace engineer was told by his daughter that a bunch of bees had moved into the storage shed at the pool, making it difficult for the kids to enjoy the pool. Our engineer advised that he would take care of the

problem. Four years later Charles Duncan did so.

Realizing that bees are the greatest engineers in the world, he joined the Los Angeles County Beekeepers Association where he was president for six years. He also joined the Western Apiculture Society where he was president for one year. He's been a member of CSBA for about 20 years and a member of the apiary board for two or three years. He was a member of the CSBA team that went to Venezuela to meet first hand the African bee.

He has removed bees from buildings all over the Los Angeles area. One job required stripping the siding from the entire house where he and his partner removed 58 active colonies. As they removed each colony, new swarms were waiting in the nearby trees to move in.

CANADA'S HONEY ... Cont. From Pg. 65

to begin winding down the work of the committee and prepare a final report to CAPA and CHC.

Although there are still a few details left to resolve, the Organizing Committee believed that they were close enough to the end of their work that they could announce the financial results of the Congress. The Committee was very pleased to announce during the CAPA and CHC meetings that they expected a financial surplus from Apimondia '99 of approximately \$400,000. Under the original agreement between the Organizing Committee and CAPA and CHC any surplus resulting from Apimondia '99 would be di-

vided equally between CAPA and CHC. The Committee further approved the release of the 1st payment on the surplus of \$175,000, to both CAPA and CHC for a total transfer of \$350,000. The final payment of the remaining surplus is expected to be made once all of the outstanding obligations of the committee are met, sometime during 2000.

The Apimondia '99 Organizing Committee wishes to extend a most sincere thank you to all of the Official, Plenary and Symposium Sponsors and well as the more than 100 volunteers, without whose support the Congress would not have been possible.

Lots of People

ENOUGH FOOD?

According to a report from the Johns Hopkins University School of Public Health, the world population is expected to top eight billion by the year 2025. Currently, the planet has six billion inhabitants and there is enough agricultural output to feed them all. Economic and trade policies, however, combined with declining outputs in some developing countries leads to death by starvation of 18 million annually.

The report notes that the Green

Revolution of the last 40 years managed to triple food production, while world population doubled over the same period. Feeding an additional two billion, however, would pose a significant challenge to production capabilities. While the introduction of new seed varieties could help avert catastrophe, the report notes, family planning could yield more immediate benefits.

From Biotech Report

Missed For 5 Years??

NZ HAS VARROA!

New Zealand's NZ\$1.8-million live bee export industry is on hold and under threat of closure after *varroa jacobsoni* mites were found in three beehives on a property in South Auckland.

Ministry of Agriculture exotic disease response co-ordinator Matthew Stone said in a statement that an inspection of hives on three other properties showed signs of infestation.

Stone said the evidence suggested varroa may have been present and undetected for up to five years.

All the suspected infected premises were non-commercial operations with a total of 14 hives within 10-kilometers of each other. Eight of these hives were dead with others showing low populations and other typical symptoms of varroa mite infestation.

The ministry said the pattern on the properties suggested that natural dispersal through bee movements abandoning and robbing of crashed hives was the likely means of dissemination.

"Exports of live bees out of New Zealand have stopped, even though some of our major markets of bee products Canada, South Korea and Europe have varroa present," the ministry said in a statement. "Because of this, bee exports are not expected to be halted for long. New Zealand has a large live bee export market with 17,500 packages of bees

exported to Canada and Europe in 1999."

The country's largest beekeeper, Arataki Honey said a shipment of bees worth NZ\$100,000 had been due to leave for Canada on Wednesday, April 12, afternoon. Other shipments had been scheduled for later this week.

The ministry's national manager for international trade Jim Edwards said the ministry had identified consignments that are in transit and was in the process of notifying the importing countries concerned.

"At this stage it is unknown how the mite arrived in New Zealand," a ministry spokesman said. "Spread is commonly by live bees and there have been no live bee imports permitted into New Zealand for at least 40 years to protect our bee health status."

The New Zealanders declared a controlled area under the Biosecurity Act that covered most of the country's biggest city and its surroundings.

The movement of any bees live and dead beehives, supers of honey intended to be extracted, used beekeeping equipment and appliances was prohibited within the area or from the area to other areas.

The ministry said this will remain in force until a survey has determined the mite's distribution. There were further controls on the movement of the items from the North

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KNIPLING ... Cont. From Pg. 65

screwworm flies, whose flesh-eating maggots parasitize livestock, wildlife and humans. The technique resulted in the eradication of the wild screwworm population in the United States, Mexico and parts of Central America, saving the North American livestock industry millions of dollars annually and winning praise from environmentalists.

Today, Knippling's technique is used worldwide to eradicate outbreaks of other pests such as Mediterranean fruit flies. In Africa, the technique is used to control the tsetse fly, which spreads sleeping sickness.

Knippling also is considered the "founding father" of the concept of areawide integrated pest management. Realizing that for most pests total eradication is not feasible, in the early 1980s Knippling developed the concept of using specific insect parasites, predators, and other tactics over a broad area to keep pest populations below the point where

they impose a financial burden on farmers and ranchers. Kept at low levels, the pests would be more responsive to biological, rather than chemical control.

Today, Knippling's areawide concept has grown to include not only parasites and predators as weapons against crop pests, but also other environmentally friendly tactics, such as mating disruption and insect attractants.

"Dr. Edward F. Knippling was truly a giant in the world of science," said Floyd P. Horn, ARS Administrator. "His innovation and foresight have not only tremendously benefited agriculture and the environment for many years through reduced reliance on chemical controls, but also have saved people around the world from great misery by eliminating or controlling pests that spread disease."

For his numerous contributions to science and agriculture, Knippling won praise, awards and tributes

to South Islands.

Five teams of apianists led by ministry staff are inspecting beehives within the controlled area.

Until now New Zealand and Australia have been considered the only major beekeeping countries

free of the mite.

This resulted in New Zealand becoming a major exporter of live bees and queens to the northern hemisphere.

Alan Harman

from many sources worldwide. In November 1999, Progressive Farmer magazine named him among 21 scientific pioneers who most shaped American agriculture in the past 100 years.

In 1995, Knippling was awarded the prestigious Japan Prize from the Science and Technology Foundation of Japan and was honored at a state dinner hosted by the Emperor of Japan.

His other awards include the National Medal of Science in 1996, the President's Award for Distinguished Federal Civilian Service in 1971 and the USDA Distinguished Service Award in 1960.

In 1967, President Johnson awarded him the National Medal of Science, the nation's highest recognition for contributions to science. In 1966, Knippling was selected by Princeton University for the Rockefeller Public Service Award for distinguished public service in

the field of science. In 1986, he was inducted into the ARS Science Hall of Fame for his research on the sterile insect technique and other technologies to suppress and manage insect pests.

Knippling began his career with USDA as a field aide in Mexico studying bollworms. Later, while on assignments in Iowa, Georgia and Texas, he conducted research on various pests of livestock. From 1953 to 1971, he was the director of USDA's entomology division. During World War II, he worked on developing insecticides and repellents for the military. In 1971, he was appointed science advisor for ARS.

Edward F. Knippling was born in Port Lavaca, Texas, where he worked on his father's farm. He graduated from Texas A&M University at College Station and received his master's degree and Ph.D. in entomology from Iowa State University at Ames.

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“Did you hear that guy on the radio saying he had bees for sale?” Gary knew I was always thinking about buying more bees. We both think about more bees; then our wives say no. But I hadn't heard the guy on the radio.

“Do you think it's Bobby Gene?” I asked.

He didn't think so.

“Maybe it was Shroeder.”

He shook his head.

“Kasminski.”

“I didn't actually hear it,” he admitted.

His wife's best friend had heard it, and he said he would try to get the phone number from her. A couple days later, I got a note on my door that read, “Phone 6271 – Gary.”

A woman answered the phone. I could hear a couple of kids crying in the background, a microwave beeping, and the washer was running.

“Do you have bees for sale?”

“Peas?”

“Bees. Honey bees.” There was a long pause. I could hear a kid pounding on something. I thought I had better explain.

“Gary told me you put an ad on the radio saying you had bees for sale.”

“Oh,” she said finally, “do you have honey for sale?”

“Yes,” I said, a little flabbergasted. “I do.”

“Is your name Bobby Gene?”

“No, but maybe you're thinking of my wife. Her name is Bobbalee.”

“Bobbalee. Hmm. No, she's not on my list. I have Bobby Gene, Kasminski, Gary and Shroeder. I suppose I could add Bobbalee to my list. I don't need any honey now, but I will in a few months. What's her number?”

I gave her my wife's number.

“It's my number, too,” I suggested.

“Where does she have her bees?”

I told her.

“North of town? So your wife must know Bobby Gene.”

“Yes,” I said, “she knows him, but so do I.”

“Does she sell her honey any cheaper than Bobby Gene?”

“No, my wife and Bobby Gene have colluded to fix the international price of honey,” I felt like saying, but didn't. Instead, I said that her price was about the same as his.

“If it were just a little cheaper, I'd put her on the top of my list,” she said, suggesting that I name a lower price.

Unfortunately, I am not allowed to bargain. A few years ago, I watched Bobbalee haggle with the owner of a couch and chair that started out at \$80 and was soon plummeting toward \$20. As it sank past \$20, my sense of fair play rose from its slumbers.

“But Bobbalee,” I protested, stepping over near the couch's owner, “this fine couch and chair are surely worth more than \$20.”

A glimmer of hope came back into the owner's face. We were now brothers in arms, fighting the cutthroat capitalism of big business.

Bobbalee took my arm and led me toward the truck.

“Here's the key. Go sit in the truck until I give you the high sign. When I do, start the truck and drive it up here.”

That was the end of my bargaining days. The woman on

the other end of the line was waiting for my answer about the price of honey, but I was remembering my youth when I bargained far and wide, paying full price for broken phones and antique computer accessories.

“Are you still there?” she asked.

“Yes,” I replied, but I wasn't. I was thinking of the five broken phones I bought years ago. The number nine didn't work on the yellow princess phones. It had a note attached to it that read, “Do not try to call Chuck or 911 on this phone.” The green phone's note said, “Doesn't ring.” The white phone said, “For talking only.” The red phone and the black phone tags said, “For listening only.” Arranged on a shelf, they made a very attractive phone bank.

“Hellooo,” said the woman bargaining for honey.

My slightly used computer accessories, all made from solid cast iron, make great weights for telescoping covers. Who said I couldn't spot a bargain?

“I'm going to hang up now,” said the woman bargaining for honey.

“No, no,” I said, “I was just thinking.”

“Maybe I should be talking to Bobbalee instead.”

“No, no,” I lied confidently, “I'm allowed to bargain.”

“No, you better not. Tell you what. I'll call Bobbalee in a couple of weeks and see what we can work out. Does that sound okay?”

“Sure.”

“Thanks for calling,” she said cheerfully.

“You don't know anybody that has any honey bees for sale?”

“No. Sorry.”

“Okay,” I said, but it wasn't okay. I knew I could bargain. I'm going to keep after Gary until he finds the right phone number, and then I'll show them. I'll be buying bees for a penny apiece by golly.

Gary's Hot Tip

Ed Hughes

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