NOV 2000

Bee Culture

Bill Wilson Retires . . . 26

Plus . . .

Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

NOVEMBER 2000 VOLUME 128 NUMBER 11

FEATURES

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Asters . . . acres and acres of asters. A curse say some, and worthy Winter food say others. Hundreds of kinds of asters mark the end of Summer.

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MAILBOX

"Fowl" Dilemma

My husband is a long-time subscriber to *Bee Culture* and I admit I even take a peek on a regular basis. I have a dilemma that I hope you or your readers may be able to solve for me. I would like to obtain a small flock of free-ranging guinea fowl to help with our grasshopper problem. However, I have heard horror stories of guineas parking themselves immediately outside of beehives and feasting on the bees as they come and go. I would be very grateful if anyone could substantiate or dismiss this "fowl" behavior for me and, in the process, save our marriage.

Thanks you so very much.

Paula S. Thurston
776 Silver St., Elko, NV 89801

Way To Go, Wise Guy

"Way to go" on the "Wise Guy" portion in the September issue. You are right on target. I'm even more "galvanized" by the straightforwardness of your article concerning the producer's plight. What you say is so true. We are operating on our equity and that makes it tough. Keep up the good work.

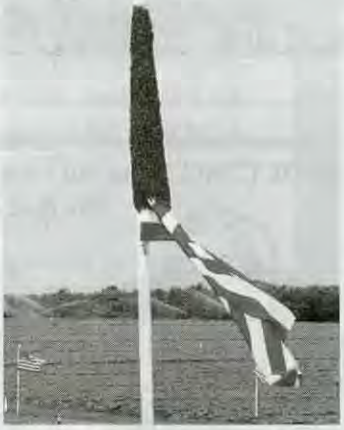
I naturally love "Wise Guy." September issue hit the nail on the head! Anyone who doesn't see it that way is either blind or have their eyes closed, because it is true; and truth needs no proof or props – it stands on it's own solid foundation!

Robert Strickler
Moss Point, MS

Patriotic Bees

I though you and your readers might like to see just how Patriotic we (farmers, beekeepers and bees) are in South Carolina. Mr. Cooley at Strawberry Hill, USA, in Chesnee, SC made this photo on July 3, 2000. They raise strawberries, peaches and cantaloupes which they sell at their roadside market. It is a picture to ride by on Scenic Hwy. 11 and see their fields. I have enjoyed pollinating for them and I look forward to the seasons to come. (Sorry the bees had found a home when I arrived.)

Ben Ivey
Union, SC



Wise Guy!

What a relief it was to read the unsigned letter ripping the Wise Guy apart. As readers, we may assume that you agree with or approve of, Wise Guy's blatantly inaccurate statements. We love opinions and celebrate the diversity that opinions generate.

Now, when opinions are written in a journalistic fashion, a certain responsibility follows. (Hey, there is an opinion for ya!) Why? People tend to believe the written word in a non-commercial setting.

So, the Root Co. by enabling and profiting from Wise Guy's inaccuracies, causes some people to believe these falsehoods. This doesn't make our industry a better place, which seems to be the pleasant and never-ending task at hand.

Let me offer these thoughts:

Always take the high road.

Be a slave to accuracy.

Leave the campground cleaner than you found it.

Put a name to every article, letter, editorial, etc.

Unsigned, Wheeling, WV

Foraging

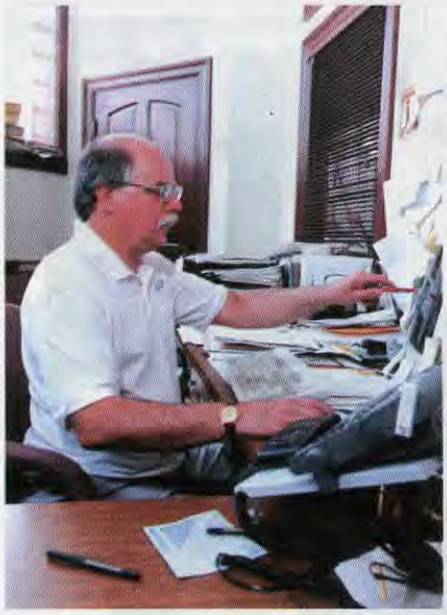
It is distressing to read an Authority's assertion which is so at variance with my observations. Clarence Collison (Sept. 00, p. 12) said that, "Foragers from a hive normally forage at the nearest, most profitable floral sources." My conclusion is exactly the opposite. I would have said that the foragers from each hive forage "their territory" (a radius of 1 1/2 to 2 miles) approximately uniformly. I have four different species of flowering trees which my bees forage with enthusiasm. But as I stand behind the hive and watch the flight of foragers, nearly all of them fly right over those trees and disappear into the distance. And about as many fly in the opposite direction. The pollen in the trap is a variety of colors. When the blackberries bloom the pollen in the trap is nearly all the same color but few honey bees are to be seen in the nearby bushes. Perhaps Clarence can cite a research report which is the basis for his statement.

Dan Hendricks
Mercer Island, WA

Dr. Collison's Response: The flight range and distribution of foragers varies over the season depending upon flower distribution, attractiveness, and rewards, as well as competition and other factors. In general terms, in order for the colony to maximize their returns for the amount of energy expended, they forage on the floral sources nearest the hive that provide the greatest rewards (Optimum Foraging Strategy). As the density of a foraging population increases for a given area, interaction of the foragers and subsequent reduction in floral rewards, forces the bees to spread out more evenly over the entire foraging area, especially in situations in which there is a limited amount of bee forage available or principally only one large agricultural crop present, i.e. cucumber field.

Like most aspects of colony functioning, food collection is organized hierarchically by integrating simple worker behaviors with colony requirements. A worker leaving the hive on a foraging trip can face an overwhelming array of flowers to choose from, some of more value than others. The quantity and quality of nectar and/or pollen produced can vary tremendously, both between plant species and within patches of the same species. Workers tend to visit the same locale at the same time of day for many consecutive trips or days as long as the floral rewards continue. Individual foraging behaviors involved in the collection of nectar and pollen are influenced by both genetic

Continued on Page 47



INNER COVER

I've had to pay a lot of attention lately to bee space. Now this is something most of us take for granted . . . you know, the space in a hive bees don't fill with propolis because it's too big, or fill with comb because it's too small. They just leave it be. To walk in and through. To allow air flow. To provide a place to be, well, a bee.

Left to their own devices they do just fine, filling the space they have with just enough comb, but not too much, and everyplace else with their gooey resins to keep out the drafts, the light and the many things that make life miserable.

My attention has focused on what happens when you begin mixing equipment from different sources. Mixing supers and frames from different suppliers can, dramatically, violate bee space in a hive. And what happens when you mix, and mix, and mix equipment? There are a slew of manufacturers, and none of them are quite the same. Rabbets, super heights, top bar thickness', all mixed together, and then set upon another mix . . . it can get ugly.

Bee Culture has commissioned a study to find out what's what when all these get mixed together. Several years ago Jeff Ott looked, for the first time, at the differences in manufactured equipment. Dick Bonney took it another step and looked at some of these combination problems. Now, because no one else would dare, we'll look at what happens when all manufactured equipment gets thrown into the mix.

Bees don't violate bee space, only beekeepers do. Check out our side by side by side comparisons, due out in our March issue. It's the only one of its kind.

•

Did you watch or listen to the debates early last month? No matter your preference, right after they were over the TV people went just a bit overboard with their 'Truth Squads,' don't you think? No? Measuring mis-statements has become routine, and necessary. It's no longer who's the best, it's become who's the least dishonest. But the lesser of two evils is still evil.

The USDA, too, is having some problems. In a report released at the end of September, USDA was found to be missing more than $230 million. And for at least the last six years USDA hasn't been able to account for many of its $118 billion in assets. A George Mason University government performance report ranked the USDA 22 out of 24 federal agencies – definitely one of the worst in the bunch. Funds intended for soil conservation bought wall murals, money for feeding children at day care centers went to addresses that were vacant lots. The USDA has according to its own Inspector General, a vehicle worth $97 million, and a microscope worth $11 million. Somewhere.

Part of USDA is AMS, the long arm of the law that oversees the Honey Board. Their track record isn't all that great either. Ask the pork people. AMS isn't funded with tax dollars though. The groups they oversee, like the NHB, pay fees for the service. All of the money AMS gets comes from "users."

Mr. Ken Clayton, an AMS Associate Administrator assured me that when AMS counts the NHB referendum ballots the AMS compliance officers would make sure everything was on the up and up.

Let's see. If the vote passes, AMS gains. If the vote fails, AMS loses – money . . . And AMS police are watching to make sure it's all on the up and up.

Truth squads, $97 million vehicles and foxes, watching the chicken coop. Makes one feel real secure, doesn't it?

Ah, but we've been assured it works both ways. The referendum just voted on called for very stringent new rules on record keeping by producers for better ways to track payments, and the quality control issues included are draconian compared to what's on the books now.

Do you get the feeling this isn't working both ways? In fact, what it is, is, producers are getting it . . twice.

Of course if the referendum fails none of this matters. Perhaps those AMS police *were* objective. And maybe they know where that $97 million vehicle is.

•

The Newsletter contest that ended in September was a huge success. Way too huge. We've been overrun with entries. What we anticipated as a week-long or so activity – the judging – took a week, and we weren't even half done. So. We Apologize. The winners hadn't been decided by the time we had to go to press. We'll finish up this task though, and we *will* have everything ready for next month.

I hate it when we miss deadlines, but I don't mind quite so much when it's because our readers respond so well to what we do. Thanks.

Kim Flottum

The Ugly Truth

What impact has imported honey had on the American honey market? With cheaper imports coming into this country driving down all prices, the price on the store shelf should be going down. Have you seen a price reduction on the shelf? I am sure you have heard the old theory that Americans will always have cheap food. That is why we allow so many imports into our country duty-free or close to duty-free. Or, that is why we subsidize some American farmers. If cheap food is the answer, then who is making all the money in the honey industry? The shelf price is still at levels that used to support wholesale prices to producers of 70 cents to 90 cents per pound. Now the producer price is at 40 cents to 54 cents. So, who is making the extra 20 cents to 30 cents per pound?

I believe that if we continue to embrace generic honey promotion, quality domestic honey production will soon fall into the hands of only a dozen or so large operations, along more and more sideline beekeepers. These same large producers will then control almond pollination because they will have 600,000 to 800,000 colonies between them. Most of these large operations will grow by default with the aging of our industry. Smaller operations will be literally turned over to larger beekeepers for such a small price that the offer cannot be turned down.

These large producers will compete with honey packers, who will continue to import the majority of their honey. If they're smart, large producers will be cooperative and as a block will market their honey as the alternative to the imported stuff. They could easily produce 150 million pounds without a great deal of effort. If they choose to, they could target certain packers and run them out of business by low-balling their clients with quality domestic honey. Or they could justly raise the level of the playing field by promoting quality domestic honey over blended and re-blended imported honey. Either way, I believe this will happen and may come very quickly; three to four years down the line wouldn't surprise me.

The wild card will be the sideline beekeepers, those with 500 or fewer colonies. Generally, they'll be retired or second income types. They will sell very little to packers and will pack and distribute most of their product to the public. Some of these people may expand beyond their own production and become a small to medium regional supplier. As I see it, this group will not be very close or attempt to work together since they are probably not overly dependent on their beekeeping income. They will fill the void left by the 1,000-hive operators most of whom will disappear. And, these regional operations will to some degree handle the small pollination agreements in their area.

How could we blame imported honey for this? Well here goes.

American Consumption	**320 million lbs.**
1. 2000 Honey Crop	205 million lbs.
2. 2000 Imported Honey	100 million lbs.
3. 1999 Domestic Carryover (in Producers' Warehouses)	8 million lbs.
4. 1999 Imported Honey Carryover (in Packers' Warehouses) (Guesstimate)	25 million lbs.
5. Total honey in U.S.	470 million lbs.
Potential Carryover for 2001	**150 million lbs.**

The consumption amount is always contested, but the Department of Agriculture says it is around 320 million pounds. The rest of the numbers come from the Department of Agriculture also, and 160 million pounds imported is conservative because in '99 it was 180 million pounds.

Is adulteration a problem? If 20 percent of all honey was adulterated (imported and domestic), we still would have a 50 million pound surplus in our country in 2000! That means that out of every 1,000 drums sitting in warehouses (yours, mine, importers', packers'), 200 would be adulterated!

If we have even an average crop in 2001 we could be looking at a 220 million pound carry-over in that year! Do we need import protection? Do we need a domestic promotion board? Folks, this is what imported honey has done for us. How do you change it? Let's put a tariff on imported honey. We know we need 100 million pounds, so after the tariff has been paid and the product used, the packer would receive 75 percent of the tariff back. Any amount over the 100 million pounds would pay the full tariff with no return. The tariff should be 175 percent of the average price for that year.

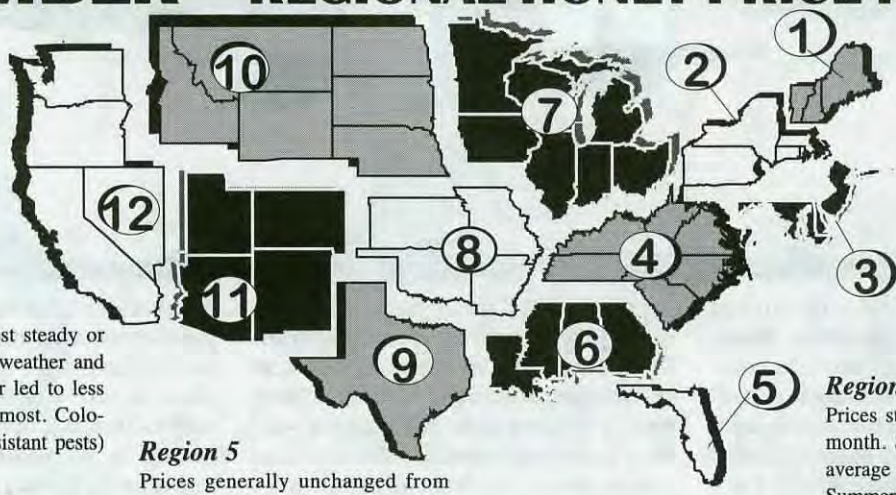
Also, every three years we should assess the U.S. production, and if we see an improvement in per colony production, the 100 million pound number should be lowered. With this we may see more operations increasing their hive numbers, and even new beekeeping operations. With this formula we would, as described above, see honey prices today ranging from 68 cents for lower quality products to 85 cents for quality honey.

If we don't see any relief you will see the large producers taking over the small ones just as suggested in the first part of this article.

But if we don't see a change, you can bet you'll see a consolidation of large producers, a consolidation of the U.S. pollination industry, a broadening of the role of the sideline beekeeper and importers and packers using imported honey on the outside looking in. Or maybe on the bottom, looking up.

Wise Guy

NOVEMBER – REGIONAL HONEY PRICE REPORT



Season Wrap-up

Region 1
Retail prices up, the rest steady or down. Average Spring weather and crops but poor Summer led to less than average crop for most. Colonies with problems (resistant pests) abound.

Region 2
Retail prices down, the rest steady to up a bit from last month. Average to poor Spring weather led to a mixed crop. Summer and Fall weather led to at best just average crops. Colonies went into Winter in pretty good shape, though.

Region 3
Prices steady across the board since last month. Good Spring and Summer weather led to pretty good crops. Fall less than perfect and colonies in some trouble for feed and pests.

Region 4
Prices steady since last month. Spring flows tended to early, the weather was acceptable and crop O.K. Summer and Fall weather, and crops less than ideal. Colonies O.K. now.

Region 5
Prices generally unchanged from last month. Spring flows and weather pretty good, Summer less so and Fall crop about average. Colonies in pretty good shape.

Region 6
Prices relatively unchanged since last month. The early Spring flows were right on time and produced a pretty good crop. The main crop was on time, weather not so good and the crop less than expected. Colonies stressed some and not in the greatest shape, so far.

Region 7
Prices steady since last month across the board. Spring was early for the most part and the weather was good for early flows. Summer crop was on average a bit late because the weather didnít cooperate. Fall crop was off too, but colonies in good shape so far.

Region 8
Prices up a bit for bulk containers but pretty steady otherwise. Spring flows were early for the most part and the weather was generally good. Summer and Fall crops were only average at best and the weather was poor. Colonies in only fair shape going into Winter.

Region 9
Prices steady to down just a bit this month. Early spring flows were on time and O.K. The main crop was late and the weather, was, well, dry. Colonies in fairly good shape after some late rains, or lots of feed.

Region 10
Prices steady across the range this month. Spring weather was about average and early crops were O.K. Summer crop a bit early, but mixed, depending on where you were. More down than not for most. Colonies in trouble in lots of areas going into Fall.

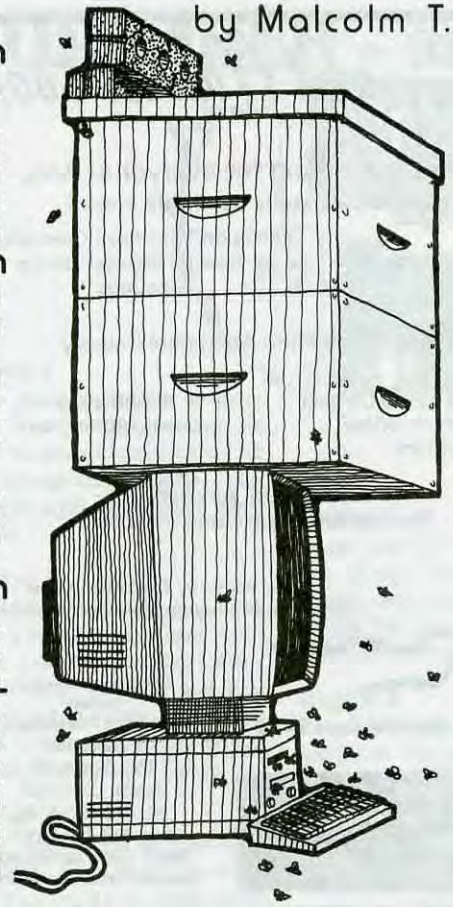
Region 11
Prices have climbed a bit since last month. Spring crop was a bit early, but the crop was about average. But the main crop was late, and the amount below what was expected. Colonies in average to a bit less condition going into Winter.

Region 12
Prices steady to a bit down this month. Early flows were right on time, but the resulting crop was only average. The Summer weather was just tolerable and the resulting crop barely average for the most part. Colonies in pretty good shape now.

	Reporting Regions												Summary		History	
	1	2	3	4	5	6	7	8	9	10	11	12			Last	Last
Extracted honey sold bulk to Packers or Processors													**Range**	**Avg.**	**Month**	**Yr.**
Wholesale Bulk																
60# Light (retail)	66.99	74.50	59.50	70.20	75.00	64.67	62.43	70.20	73.33	63.50	92.50	61.67	40.00-100.00	68.26	69.00	73.89
60# Amber (retail)	64.61	66.19	55.50	69.10	72.00	62.50	50.17	61.30	84.00	62.00	81.75	58.33	39.00-100.00	64.32	65.45	70.28
55 gal. Light	0.59	0.70	0.61	0.64	0.61	0.60	0.59	0.61	0.61	0.60	0.64	0.64	0.45-0.75	0.65	0.66	0.67
55 gal. Amber	0.54	0.65	0.56	0.59	0.56	0.58	0.56	0.56	0.45	0.56	0.59	0.61	0.40-0.70	0.60	0.64	0.60
Wholesale - Case Lots																
1/2# 24's	28.31	27.18	30.18	31.66	30.18	25.83	31.07	30.18	30.00	30.18	24.00	26.00	12.24-42.00	29.19	28.95	29.17
1# 24's	43.12	42.87	48.00	44.74	45.00	44.50	42.00	42.24	46.00	42.00	51.00	46.35	32.40-60.00	43.34	42.93	42.57
2# 12's	38.17	38.58	45.60	43.05	39.00	36.30	38.10	40.70	37.20	31.80	46.00	40.00	29.40-52.58	39.34	36.69	39.06
12 oz. Plas. 24's	36.72	37.26	44.40	35.49	35.00	40.40	35.10	34.86	41.90	40.40	42.00	36.95	26.40-48.00	36.93	36.22	36.87
5# 6's	42.52	45.86	54.00	45.08	47.24	42.00	40.62	39.00	48.00	37.50	50.00	39.00	31.50-67.50	42.37	42.23	43.01
Retail Honey Prices																
1/2#	1.74	1.48	2.83	2.17	2.83	1.99	1.55	1.39	2.00	1.49	2.00	1.70	0.95-3.00	1.76	1.71	1.91
12 oz. Plastic	2.24	1.87	1.85	2.37	2.75	2.42	1.89	2.18	2.63	1.82	2.48	2.08	1.39-2.99	2.23	2.19	2.23
1 lb. Glass	2.73	2.06	3.00	3.11	3.25	3.25	2.34	2.48	3.05	2.39	3.98	2.73	1.58-4.00	2.68	2.75	2.81
2 lb. Glass	4.31	3.62	4.80	5.55	4.00	4.23	3.97	4.68	4.66	3.41	3.09	4.26	3.19-6.00	4.41	4.58	4.65
3 lb. Glass	6.04	5.41	7.80	6.81	7.00	7.93	5.57	6.02	5.96	4.79	5.99	5.93	3.99-10.00	6.26	6.13	6.55
4 lb. Glass	7.57	6.60	8.00	8.94	8.00	8.00	6.56	7.99	7.00	8.00	8.00	9.95	6.00-10.00	7.90	7.25	7.73
5 lb. Glass	9.11	9.79	11.00	10.35	10.00	8.00	9.03	10.99	9.00	7.90	8.45	7.66	2.50-12.50	8.66	9.45	9.38
1# Cream	3.14	3.18	3.95	3.37	3.95	3.76	2.64	2.76	3.13	2.29	5.25	2.94	2.13-5.50	3.27	3.16	3.32
1# Comb	4.22	3.99	3.60	4.20	4.59	4.48	4.12	3.99	5.00	4.59	6.25	4.73	1.95-6.00	4.22	4.31	4.04
Round Plastic	3.68	3.14	3.60	3.92	3.99	3.75	3.64	3.66	3.99	3.99	4.13	4.56	2.50-6.00	3.79	3.71	3.89
Wax (Light)	2.25	2.96	2.13	2.01	2.84	3.00	1.57	1.95	2.45	2.00	1.75	2.67	1.05-5.00	2.47	2.22	1.75
Wax (Dark)	2.01	2.42	1.88	1.75	2.51	2.85	1.53	1.25	2.18	2.00	1.50	2.25	0.95-4.50	2.18	1.93	1.51
Poll. Fee/Col.	38.39	40.00	32.50	35.00	35.00	34.75	45.11	40.00	25.00	39.82	50.00	47.33	20.00-55.00	36.87	38.50	31.40

Beekeeping In The Digital Age

by Malcolm T. Sanford



The Virtual Library: Full-Text Resources on the World Wide Web

There are more and more full-text resources being implemented on the World Wide Web. The medium is thus becoming more and more a virtual library each day. Some examples taken from **Google.com**, one of the many **search engines** include: National Parent Information Network or **NPIN** developed by the U.S. Department of Education. This site is a "collection of resources and is intended for information purposes only. The materials provided here do not necessarily reflect the views or policies of the U.S. Department of Education, nor does the inclusion of any of these items imply their endorsement by the U.S. Government." **Kent State University** also is putting many publications online: "Part of the World Wide Web Virtual Library, this site allows you to search for full text journals by title or by category. Categories include Academic and Reviewed Journals, Political Journals, and Magazines and Newspapers. You can link to print magazines that maintain Web resources, as well as an extensive listing of "other resources" such as a comprehensive online yellow pages, virtual newsstands, classified ads, and employment postings." These appear to be free, whereas other organizations are restricting their full-text resources. For example, many libraries are following Connecticut's model: "**The University of Connecticut Libraries** purchases access to over 250 electronic databases. The Full Text Databases page contains links to those databases which are completely or partially full text. Subjects cover most disciplines as well as current news and statistical information. Select broad-based academic and news full text databases include: Wilson Web (Omnifile, SciTech, Art, BioAg) Dow Jones Interactive InfoTrac Expanded ASAP InfoTrac Health Reference JSTOR ABI/INFORM Global Academic Universe (Lexis-Nexis). Access to databases is *restricted to the UConn domain.*"

The grand daddy of full-text resources is known **Lexis®-Nexis®**. It is a premium subscription service that many libraries across the country purchase access to. It started out as a resource for law schools, but has widened its perspective to almost every topic imaginable. A full-text commercial site for self-publishers is called **Infopost**. Here one can put up everything from short stories and poems to self-help articles, which can then be sold at minimal prices. The concept is that prices are held down to very low levels as it costs relatively little to publish an electronic document and there is a potentially large audience willing to pay less expensive prices than those for printed documents.

Selling full-text resources is not the norm on the World Wide Web, however, where many users have become used to free resources. And fortunately, this is the case for several full-text resources that are of interest to beekeepers, some of which are not readily available. One example is ***Protein Content and Amino Acid Profiles of Honeybee-Collected Pollens***, written by Peter Stace, ISBN 0-7310-2867-8, Published by BEES 'N TREES CONSULTANTS, 94 High St, Lismore,NSW AUSTRALIA 2480. This is one of the few resources available on honey bee protein management, something that more and more apiculturists need to be concerned about according to the **introduction**: "The management of honey bee nutrition will need to be one of the major skills of Australian bee farmers in the 21st century. The days of being only collectors of honey and beeswax are fast coming to an end. Bee diseases such as European brood disease, chalk brood and nosema, together with increasing demand for higher production and lower costs, are forcing beefarmers to be more than honey collectors. They will need the nutritional management skills presently employed by breeders of poultry, pigs and dairy cattle. Out-of-season honey crops, pollination contracts, queen bee production and package bees are all helping beefarmers solve their price/cost squeeze. All these techniques require astute nutrition management. This book contains crude protein analyses of 45 major Northern NSW pollen floral sources, as well as notes on nutrition management. This information will enable beekeepers to manage their bees' nutrition more efficiently and profitably."

The above advice goes double for beekeepers elsewhere whose colonies are affected by mite parasites that Australians have yet to face. Like most resources, this publication is split into sections, each are accessed by hypertext links, similar to those used in this column.

I have a ragged copy of *Beekeeping in the Midwest* by Elbert Jaycox on my shelves that I have referred to many times in researching basic beekeeping information. Dr.

Jaycox was one of the great beekeeping extension thinkers and writers during his tenure at University of Illinois, Urbana-Champaign, 1963 to 1981. This book is a classic and was originally published as Circular 1125. It was reprinted in April 1985 with minor revisions by E.E. Killion, then Extension Specialist in Apiculture at the University. I am not aware that the printed version is widely available. The full-text, which includes eight chapters, however, is available electronically. Unfortunately, it is not as easy to access relevant information as the Australian resource mentioned above. The **forward** shows a listing of chapters and relevant titles, but each chapter must be accessed separately through an **index**, and no internal links exist to other sections. However, each chapter is blessed with an abundance of photos. Although written before the advent of both tracheal and Varroa mites, the information presented is priceless, especially for beekeepers in that geographic region of the United States.

The pollination bible (Agriculture Handbook 496, *Insect Pollination of Cultivated Crop Plants*) was published in 1976 by S.E. McGregor, just after he retired from federal service. It remains a classic in its field in spite of its age. Both paper back and hard cover copies are still available. It is now found in cyberspace's virtual library at the **A.I. Root site**. One of the advantages of the electronic format is the ability to update a resource, thus the claim that this volume is: "The first and only virtual beekeeping book updated continuously. Additions listed by crop and date." All nine chapters are present: alfalfa, almonds, clovers and relatives, legumes and relatives, tree fruits & nuts, exotic fruits and nuts, common vegetables for seed and fruit, small fruits and brambles, miscellaneous garden plants, foods, flowers and herbs, and crop plants and exotic plants. Although full-text for most of the book, the introduction is conspicuously absent. Presumably it might be added at some future time.

Value-added products for bee products is all the rage. It is one of the cornerstones of the **National Honey Board's** ambitious programs. And there is a wide range of possible products found at the **Board's web site**, which features food technology research. The Food and Agriculture Organization of the United Nations (FAO) also has an abiding interest in these products. The ambitious book, authored by Dr. Reiner Krell, ***Value-Added Products From Beekeeping***, FAO Agricultural Services Bulletin No. 124 is now on the Web. Although oriented toward developing countries, this volume contains a great deal of useful information on a wide variety of topics. The foreword says: "While production methods of other primary products can be adapted from common beekeeping texts, the further elaboration and use of the same products can rarely be found. If so, descriptions range from highly specific scientific results to self-proclaimed experts fraudulently exploiting consumer ignorance. In order to present a comprehensive and practical review this bulletin tries to synthesize available information from scientific literature and practical, technical literature including the few in-depth reviews available on some of the primary bee products such as honey, Wax and propolis."

This is a tall order, but Dr. Krell carries it off well. The book has nine chapters: **honey**, **pollen**, **wax**, **propolis**, **royal jelly**, **venom**, **adult and larval honey bees**, and cosmetics **a** and **b**. For most of these products, Dr. Krell provides both circumstantial and scientifically valid evidence of various claims made about them. This is extremely valuable as it helps separate the fact from myth that often surrounds these. When discussing honey, for example, he said: "For thousands of years honey was the only source of concentrated sugar. uniqueness, scarcity and desirability connected it to divinity very early in human history thus ascribing to it symbolic, magic and therapeutic significance. Much of the myth many of the traditional medicinal uses have continued until today. Few of these medicinal benefits have seen scientific confirmation and they are not always exclusive to honey. The majority are due to the high sugar content and therefore can also be found in other sweet substances with high sugar contents. It was not by accident that sugar, when first introduced to Europe, was considered a medicine for many diseases and was used with caution."

The value-added products book from FAO contains a large assortment of good quality graphics that accompany the text. It is an extremely useful addition to the fledgling virtual library of the world's beekeepers. No doubt we can expect much more of this kind of resource as the digital revolution matures in the future. BC

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

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? DO YOU KNOW ?

Successful Wintering

Clarence Collison
Mississippi State University

Beekeepers in the south need to be reminded periodically of what honey bee colonies in the north have to encounter during the Winter and how they respond in order to survive. While a sudden cold snap in the south may set our colonies back temporarily, they will rebound quickly as the weather allows and will continue building up for the early Spring activities.

The ability of the honey bee colony to regulate temperature and humidity along with its hoarding instinct gives it a wider range of climatic adaptability than is found with any other insect. Thermoregulation in the winter is achieved as bees crowd together, forming the familiar winter cluster.

How well do you understand the essential requirements for successful Wintering of honey bee colonies and the characteristics of the Winter cluster? Please take a few minutes and answer the following questions to find out how well you understand these important topics.

The first nine 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).

1. ___ Throughout the Winter honey bees maintain a similar, relatively constant temperature in the center of the Winter cluster.
2. ___ The fuel used by honey bees in the production of heat in the Winter cluster is pollen.
3. ___ Dysentery is an infectious disease of adult honey bees that is commonly found in late Winter/early Spring.
4. ___ Chilled brood is found most often on the outer fringes of the brood nest.
5. ___ Clustered bees prefer dark-colored combs of honey over new white combs for wintering.
6. ___ Colonies can raise queens in February in the northern regions of North America.
7. ___ A majority of worker honey bees in the Winter have fully developed hypopharyngeal glands.
8. ___ Honey bees consuming honey during the winter produce large quantities of metabolic water.
9. ___ The primary purpose of the entrance reducer is to keep the hive warm in the Winter.

(Multiple Choice Questions, 1 point each).

10. ___ In the more northern areas of the country, it is recommended that colonies enter the Wintering period with __ to __ combs well-filled with pollen.
    A. 1 to 3
    B. 3 to 5
    C. 4 to 6
    D. 2 to 4
    E. 1 to 2
11. ___ Honey bees begin to form their Winter cluster at:
    A. 45° F
    B. 48° F
    C. 61° F
    D. 57° F
    E. 52° F
12. ___ The minimum temperature for active foraging is approximately:
    A. 45° F
    B. 40° F
    C. 50° F
    D. 55° F
    E. 60° F
13. ___ The primary location of nosema infection in the adult honey bee is the:
    A. Rectum
    B. Honey Stomach
    C. Intestine
    D. Ventriculus or Mid-Gut
    E. Oesophagus

14. Explain where a Winter cluster would be located in the hive in November and in March in the north. (2 points)
15. Please give three reasons why dead colonies should be removed from the apiary when they are discovered. (3 points)
16. Crawling bees with disjointed wings at the hive entrance could indicate what three bee diseases? (3 points)
17. As the temperature external to the Winter cluster drops, the size of the cluster contracts. What is the purpose of this size reduction? (1 point).
18. Please explain why the introduction of a new queen in late Summer/early Fall will normally increase the probability of Winter survival. (2 points)
19. Please explain why treating colonies infested with varroa mites is considered most effective after the bees have formed the Winter cluster. (1 point).

ANSWERS ON PAGE 46

Mark Winston

Organic Honey

"Drawing the line between what can be labeled organic and what cannot is fraught with detailed arguments about what should be permitted and what is banned."

I eat lunch in my laboratory with my students most days, followed by my daily, near-legendary nap on the lab couch. Some days, though, I "do" lunch, invited out by one of my university's administrators to break bread with business people from the community and share with them some of the activities that Simon Fraser University is engaged in that benefit the world at large.

I did lunch the other day with a particularly unusual corporate leader, who got me thinking about organic honey. This fellow came from the antithesis of a corporate background. He grew up on a marginal farm in a small community on Vancouver Island, spent years in India studying with a guru, and eventually returned to Canada to start a fringe natural food restaurant and grocery store.

Sounds like your stereotypical hippie, except he is a person who combines a deep religious bent with extraordinary business sense, and he grew his fringe vegetarian hangout into a $70 million a year business selling organic cereals. He is now the largest producer of organic cereals in North America and employs hundreds of people, yet he has retained his spiritual quest and deep involvement in the ethical and religious beliefs that he connected with on his trip to India.

I asked him where he finds honey that meets the stringent organic criteria for inclusion in his cereal products, and the only source he could remember was from a small, obscure island off the coast of Australia. I later contacted his procurement office, and they gave me a few other leads, but generally they use non-honey sweeteners in their products, partly because organic honey is notoriously difficult to come by.

This tweaked my interest, and I tentatively ventured into the organic world to find out more. The first thing I noticed was how cleverly the terms "organic" and "natural" have become intertwined. Even by dictionary definition, they are difficult to separate. "Natural" means *present in or produced by nature,* and "organic" is defined as *simple, healthful and close to nature, as in an organic lifestyle.*

Some beekeepers take advantage of this overlapping etymology by subtly combining the organic and natural images. One honey producer operates a farm named "So and So's Organic Farm," but their honey is discreetly labeled as "natural" rather than "organic," avoiding the definitional quicksand that quickly absorbs organic producers in a quagmire of regulations.

Some beekeepers argue that all honey is organic, but that is far from the case. Organic foods are governed by official and quasi-official regulations that permit or deny the use of the term "organic." The intention of these regulations is to provide clear guidelines as to what is organic and what is not, so that consumers can trust the integrity of organically grown and processed foods. "Organic" confers a status on foods certifying that they have been produced without synthetic fertilizers, pesticides, antibiotics or hormones, and also in a manner that could be called "sustainable."

Drawing the line between what can be labeled organic and what can not is fraught with detailed arguments about what should be permitted and what is banned. There are a number of independent agencies that certify farm products from the United States and world-wide as organic, and enabling legislation to regulate certification and clarify definitions is expected to become U.S. law this Fall.

For honey, the Organic Trade Association has defined a number of criteria necessary to bestow organic certification. The first is that colonies must be located on certified land, and not within two miles of a sanitary landfill, incinerator, power plant, golf course, city, crops sprayed with prohibited substances or genetically modified crops. In addition, colonies must be managed without using miticides or antibiotics, although formic acid is permitted.

Given just these regulations, it is not surprising that organic honey is difficult to produce. Honey bees in North America are afflicted with mite and bacterial parasites and diseases that require prevention or treatment. For most of us that means synthetic chemical pesticides and antibiotics, banned substances from the organic perspective. It also is difficult to find any agricultural land in North America that can be certified organic over the required distance from an apiary.

Continued on Next Page

"I asked him where he finds honey that meets the stringent organic criteria for inclusion in his cereal products, and the only source he could remember was from a small, obscure island off the coast of Australia."

The list of certification criteria goes on, and even relatively minor rules are daunting for beekeepers who want to produce organic honey. For example, feeding bees non-organic sugar is unacceptable, unless colonies are inspected and certified as being in a starvation situation. Foundation wax with even a trace of miticide is banned, as is the use of chemical bee repellents, and clipping the wings of queens is prohibited. Finally, a facility that processes both organic and non-organic honey must be emptied and cleaned thoroughly before processing organic honey.

I talked with a number of U.S. packers who market organic honey, and they invariably bring it in from offshore. Indeed, I have yet to find a single certified producer of organic honey in the continental United States. I'm sure one exists, somewhere, but after a day of phone calls without success, it's fair to conclude they are a rare breed.

I talked with one honey packer who clarified the problem for me. Jeremy from Once Again Nut Butter/Dawes Honey, an upstate New York company that sells many organic products, put it succinctly: *"The problem in the United States is finding clean land in that diameter to keep your bees. We would like to buy domestically, but we haven't been able to find anyone who can provide it."*

The world of organic honey trading is a subculture in itself, and it took many phone calls, e-mail messages and visits to Web sites to track down where certified organic honey packed in the United States does come from. One producer I eventually found works in an isolated area in northern Canada, where the *Varroa* mite arrived only recently. He has been using formic acid, but is beginning to see high mite numbers that worry him. Another producer works out of an isolated island off the Australian coast, where his bees are free of mites and he can control other disease problems organically. A third supplier comes from Nicaragua, keeping bees in a jungle area without agriculture, and controlling mites successfully enough with formic acid.

Another problem with organic honey is that it is plagued with the same questionable practices that have infiltrated conventional trading in honey, adulteration and contamination. Although inspection of organic honey is more rigorous because of its certification, loads of impure honey sometimes slip through the cracks. Purity is an issue for all sellers and traders of honey, but the organic industry is even more susceptible to irregularities, and thus particularly quick to drop disreputable producers.

Organic honey production is not particularly profitable, either. One organic honey producer I spoke with told me he used to sell his honey at a 30 percent higher premium than conventional honey, but that advantage has dropped to only about 10 percent. Given the higher costs of running colonies organically, it's just not lucrative enough for North American producers to attempt.

The organic perspective is growing and becoming a major component of North American agriculture. Today, about two percent of farm produce is certified organic, and this number is increasing year by year. Prices have dropped, diversity and quality increased, and many consumers have become more astute and picky about the way in which their food products are produced.

I find it ironic that honey, that most natural and pure of products, has not been able to meet the high standards imposed by the organic industry. Some argue that the standards are too high, but to me the dearth of North American organic honey producers tells us something about what has happened to beekeeping, and to agriculture in general.

Admittedly, it is more difficult to produce organic honey than, say, organic soybeans or corn, because soybeans, corn and other field crops don't fly from their fields to forage over the wide range that honey bees require. Yet, we also haven't done enough to minimize the use of conventional synthetic chemical pesticides in our hives, and to eliminate the use of antibiotics.

We need to try harder, and with more focus, to return beekeeping to the pastoral, nature-friendly enterprise it used to be. The organic benchmark is a good one to aspire to, and a considerable amount of my own research and that across North America is now devoted to moving backward toward those days of purity.

Sure the criteria for organic certification are rigorous, but should we settle for anything but the highest of standards? My personal goal: Someday, I'd like to tell my cereal entrepreneur lunch date that he no longer has to go as far as Australia to find organic honey. Even better, I'm looking forward to the day when I can put the term "organic" on our university's Heavenly Honey label, with pride. BC

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

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SURVIVING

Cotton has long been a favored honey-producing crop for beekeepers, albeit a high-risk one for pesticide kills. In California's central valley, "cotton is inescapable," says Kevin Roberts, a commerccial beekeeper in the town of Los Banos. The town has a human population of 23,000 and a bee colony population, including migratory hives, that tops out at around 18,000 during the cotton season.

Bees placed in a field for alfalfa seed pollination may be surrounded on three sides by cotton plantings. "You simply can't get away from it," Roberts says. "And you don't want to because it's the only honey crop around here, by itself, for the whole latter part of the Summer."

Poisons come and go, but since chemical use intensified after World War II, beekeepers, pesticide applicators and cotton growers are still learning to live and work together in a sometimes uneasy peace.

"I pollinate for the same growers who work with the spray companies," says Roberts, president of the Delta Bee Club. "We serve the same customers. We're all out here trying to figure out how to live together."

Old-time beekeepers in the area recommend following the cycles of the cotton pests, says Shawna Roberts, Kevin's business partner and wife. And they have taken the advice into their business.

"There's sort of a golden rule with the pesticides and the cotton," Shawna Roberts says. "By August 15, most of the honey flow has been caught. That's also about the time spraying begins in earnest. And our rule of thumb is to get them out before then."

The nectar may be flowing in the cotton, but the Roberts prefer to move bees according to their own timetable. Beekeepers who play the odds or attempt to take advantage of exceptional years risk tragedy.

Jim Robertson is one of Los Banos' old-time beekeepers, having kept bees in the area for nearly 40 years. But Robertson says he lost nearly 2,000 colonies last year to cotton spraying. In a normal year, 800 of his 3,600 colonies die. In 1999, he lost 2,800.

"We got lulled into a false sense of security because the price of cotton was low and they weren't spraying," Robertson says. "The cotton price was in the cellar. It was at 56-60 cents, which is below their break-even. Then between the middle of August and the first of September they came through with the LDP payment (government subsidy) for cotton, which amounted to about 35 cents more to the farmer. Up to that point, they hadn't sprayed. Since they weren't going to make any money on it anyway, why bother. Then all of sudden, 'Hey, I'm going to make a profit on it. I better get out there and put some spray on to keep the bug damage down.'"

Robertson says his bees didn't have a chance. "They used hot stuff. Nothing but the worst. They didn't use any of the milder pesticides like they normally start with. They brought in Furidan and Monitor. Furidan kills it all, and Monitor kills your field force, but the residual is so long that it eventually gets your queens, too. You don't see a lot of dead bees around the hive with Monitor. Your bees just disappear. And then in two or three weeks your queens are gone. By October or November, you've got a box of honey and no bees."

Robertson says he was not compensated for his loss.

Pesticide applicators use extremely toxic pesticides on cotton including organophosphorus compounds (OPs) like methamidophos (Monitor) and chlorpyrifos (Dursban and Lorsban), which was recently banned for use in the home and garden and restricted for agricultural use; and carbamates, like methomyl (Lannate) and carbofuran (Furidan), which obtained notoriety in September when an Illinois farmer was accused of poisoning 27,000 birds on purpose with Furidan-soaked wheat.

OPs and carbamates work in a similar way. They block production of an enzyme that controls the chemical that halts nerve impulses. Poisoned animals twitch, tremble, convulse and die, usually by suffocation.

Pesticide kills remain a hazard at any time of the season because insect pests, like bees, can be unpredictable. "It hurts beekeepers worse who don't register," Shawna Roberts says. "There are beekeepers who haven't registered all their locations, and there are ones who haven't kept up with that when they move into a pollination rental. That's when they get hit worst because the spray company doesn't know where they are. There are also times when the spray companies act incredibly irresponsibly. People have lost hundreds of hives."

In Merced County, where Los Banos is located, applicators must check with the county when a pesticide is to be sprayed. The county informs the applicator whether there are registered bee colonies nearby. The applicator is legally required to contact the beekeeper and give 48 hours notice.

Kevin Roberts says that even when unregistered bees are inadvertently sprayed, the applicator may be required to "buy the bees" they kill.

"We don't want to spray bees," says Sylvia Brigham, co-owner of Bettencort Flying Service in Los Banos, a pesticide application company with two helicopters. "If we go to a field and there are bees, we can't spray. We don't want to buy bees. They're expensive."

Pesticide applicators have their own stories of problems with beekeepers. "The ones who don't register annoy us intensely," says Brigham. "That happened to us the other day. We went to do a job and the county said there were no beekeepers registered to inform. We went to the field – it takes time and money to get there – and there were bees in the middle of it. They had just moved in. We ended up footing the bill because we had to come back the next day after the beekeeper moved the hives out."

Brigham resents the financial hardship such incidents impose. Last year, one of the company's

COTTON FIELDS

John Mitchell

three helicopters crashed, and is still grounded. Work and income have been lost, and beekeeper mistakes add more costs. Brigham says that if there is one thing that she would recommend to beekeepers, besides registering, it would be to buy an answering machine. "It's essential to be able to contact them. They should all have answering machines and they should all check their machines a couple of times a day. It really helps us, makes it more efficient all the way around."

Roberts says that may be impractical for large-scale beekeepers. "Somebody with 6,000 colonies, if he's got 60 locations all in the same general area, he might get five or six calls a night. It's not feasible that that beekeeper is going to be able to move all his hives in time."

Overall, awareness of bees among sprayers is better than in the past. "My son used to keep bees; we have no intention of harming them if we can possibly help it," says Brigham. Roberts says he is aware of two pesticide applicators who are also beekeepers.

Rough history

"It's nothing like it was in the '50s and '60s. Back then, people lost bees by the thousands. There was no regulatory interest or compensation at all," says Roberts, recalling the stories of his former landlord and friend Andy Nachbaur.

Nachbaur provides perspective on what it was like to be a beekeeper in the heyday of pesticide use with minimal regulation. Born Anton J. Nachbaur Jr., he was a lifelong beekeeper and more recently, a prolific Internet writer on beekeeping who died last year. He owned a ranch and a commercial beekeeping operation in Los Banos.

"Beekeepers were going out of business because they could not replace their bees as fast as the crop dusters could kill them," Nachbaur wrote in 1996 about the earlier era. "I was spending everything I made from my own bees and all I could borrow to replace them every year. I also was waging my own small political campaign at the local and state levels to protect my honey bees from pesticides."

Beekeeper frustrations sometimes erupted into violence and property damage. Nachbaur wrote of a "Russian beekeeper in an adjoining farm town who had been arrested on suspicion of torching a plane parked across the road from his home and honey farm. But he had to be released because anyone could buy a 5-gallon honey can, fill it with petrol and place it in the cockpit of the crop duster's aeroplane. He later was picked up and released ... for shooting at a crop duster that flew over his bees and home. At another location, a tall, heavy beehive had been placed on a crop duster's airstrip in a place that the duster could not miss hitting it causing damage to his plane, and it did."

Today, some beekeepers feel the relationship hasn't improved much. "We're an inconvenience to the applicators. Most of them are angry at beekeepers, and many of them hold a grudge," Robertson says.

And beekeepers have their own outrages to tell of.

"You've seen these pictures from back in the '60s, Cesar Chavez and the grape pickers getting strafed by the crop dusters in the grape vineyards," Kevin Roberts says. "You look at the picture and you can see this airplane coming across the road—which they usually fly along the road so they can keep count of where they've sprayed—pictures of these guys coming across the road with their fingers on the trigger dusting strikers. People do the same thing here to bees, and you can see them do it. This is rare, but there are people for whom this is not as rare as I would like."

Why do they do it? "What's normal is people are in a hurry, and when they get slowed down more and more, they have less and less reason to be accommodating. It's frustration."

Roberts says sometimes impatient growers will shop around for an applicator that will spray without regard for bees. Recently, he says, a grower changed spray companies after the first one refused to spray over Roberts' bees. The grower was worried about pest damage to

Continued on Next Page

SURVIVING ... Cont. From Pg. 21

his crop and did not want to wait to inform the beekeeper. A second applicator was hired to spray a different field a week later. The company used Lannate without waiting for Roberts to confirm whether his registered bee colonies were still in the area. Fortunately, he had moved the hives the day before the spraying.

Flying colors

Beekeepers say crop dusters are the least efficient method of delivering pesticides and most likely to cause bee kills.

"The fixed-wing aircraft do the worst damage," Robertson says. "Ground rigs are becoming more prevalent now. We don't lose bees to ground rigs. They can put some bad stuff on us because when it goes in a ground rig it's a wet solution. There's more moisture added to it. When they are flying, it's low volume, so it comes out like a mist. It's more toxic, and it drifts more. In contrast, where they are doing helicopter applications, we have few problems."

Inefficient technology is expensive. Helicopters and ground sprayers, along with other technology that is currently under development, may render the fixed-wing crop duster obsolete.

This year, the U.S. Department of Agriculture's Agricultural Research Service is expanding tests of automated ground sprayers that, when combined with high-altitude data about crop fields, allow growers to greatly reduce the amounts of some poisons they spray on cotton.

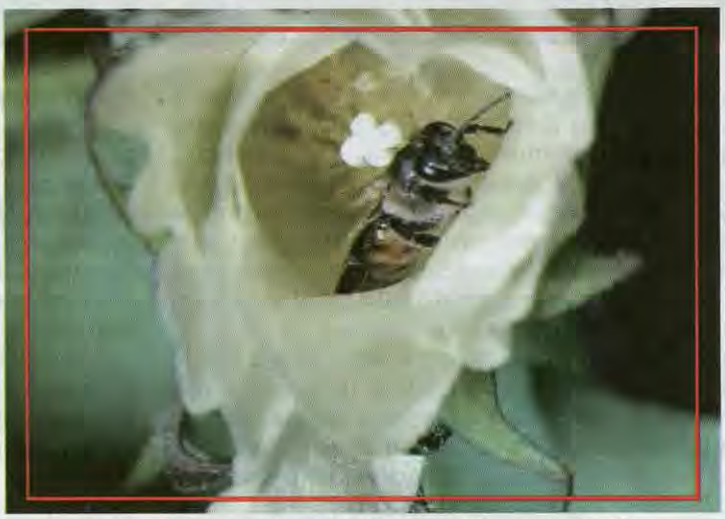
ARS entomologist Jeffrey Willers is working on a method of pest detection that uses "remotely sensed multispectral images" to build a "geo-referenced pest density map."

What that means is he uses a camera mounted on a high-altitude aircraft that records different wavelengths of light emanating from a cotton field. Areas of vigorous plant growth show different colors. The researchers have found a correlation between plant growth and pest density.

The first insect Willers and his colleagues have used the technology against is the tarnished plant bug.

"The technology tracks the behavior of the plants, not the insects," Willers says. "The information allows prediction of areas where insects are most likely to be active. Then we use human scouts on the ground to go in and verify the presence or absence of pests."

Cotton growers traditionally gather information about pests by sending scouts to gather random samples in large fields. It's labor-intensive, time-consuming and often inaccurate. Many growers spray large areas "for insurance."



When cotton is sprayed for insurance, honey bees die. (E.R. Jaycox photo)

The information gathered by Willers' camera is combined with the scout data to build a digital map that is uploaded to computerized ground sprayers. Pesticides are dispensed only in areas of the field where needed, and in varying amounts depending on the intensity of the infestation.

"Across two years (of data), the savings on that could be anywhere from zero percent, meaning that for some fields they're very uniform, you just need to spray the whole thing, to other fields where there is a high degree of variability among the states of growth," Willers says. "We had one field this year where we could reduce pesticide costs by 50 percent on a 185-acre block. So zero to 50 percent savings, maybe 60 percent, depending on the field."

Cotton producers spend $75 million annually to control the tarnished plant bug, according to the ARS, so the savings could be as high as $40 million in a good year to cotton growers.

Willers, who works at the Crop Science Research Laboratory at Mississippi State University, has been refining the technique at two farms, one in Mississippi and one in Louisiana. He has not yet tested the equipment in California cotton fields.

Willers explains how his technique could benefit bees and other beneficial insects. "If we can build an association with the map from the imagery that allows us to intervene aggressively and promptly, these historically frequent broadcast applications in the bloom phase can be avoided or reduced."

And areas of fields that aren't sprayed at all become safe havens for beneficials.

And in Los Banos, such reduced-pesticide technology could allow beekeepers to expand their operations by making cotton fields more hospitable. "Within about 25 miles of where I'm sitting, you cannot drive 5,000 or 6,000 thousand feet without finding a load of honey bees sitting on the ground, anywhere from 50 to 200," says Kevin Roberts. "We're right at the northern end of the cotton belt in this state, so all the people that keep bees farther north than us drive here and stop."

Roberts says with existing locations crowded, he's "looking for cotton locations all the time right now. You know, I've asked for locations around here before and was told, 'We had a beekeeper once, but we had so much trouble trying to get our sprays done, that we just don't allow them anymore.'" BC

John A. Mitchell is a contributing editor to Bee Culture *magazine. He is a radio producer and garden magazine writer living in Cambridge, Massachusetts.*

BEEMAN OF ITHACA

E. Franklin Phillips & The Phillips' Beekeeping Collection At Cornell's Albert R. Mann Library


E.F. Phillips in 1925

James P. Morris-Knower

In 1925, the United States was five years into Prohibition and four years away from the Great Depression. Jack Dempsey was the world heavyweight boxing champion, while Al Capone was now the bootlegging king of Chicago. It cost you two cents to mail a letter first class, and the letter carrier delivering it made 87 cents an hour.

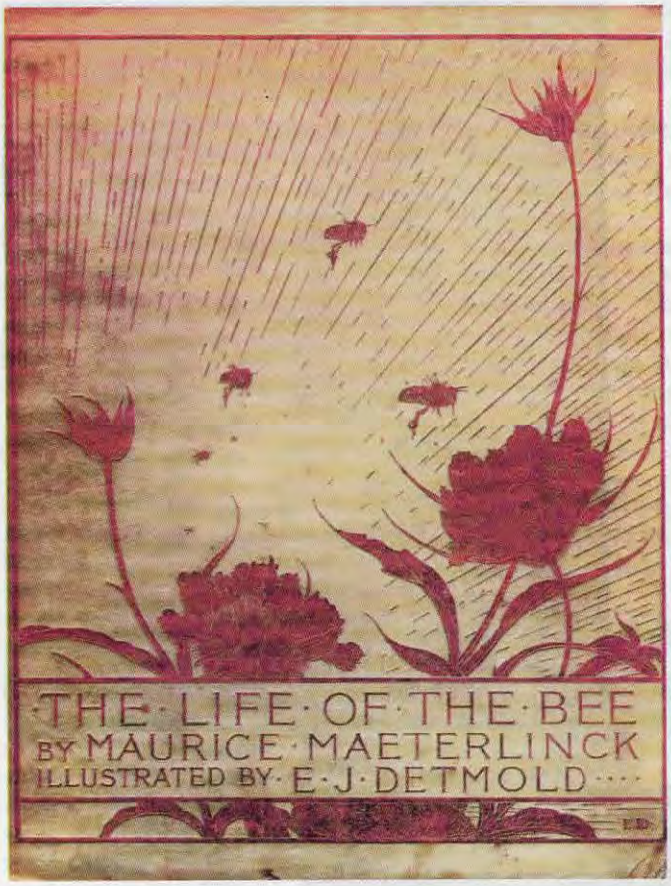
It was in January of that year that E. Franklin Phillips, a new professor of apiculture at Cornell University, wrote to his friend E.R. Root, president of the A.I. Root Company of Medina, Ohio, about a "half-formulated wish" he had for starting a beekeeping library at Cornell. "This letter . . . is written chiefly to get your reaction on certain points of vital importance to such an undertaking," wrote Phillips. "I want to start you to thinking about the project with the hope of enlisting such aid as you may desire to give later."

While plans were still sketchy at this point, Phillips revealed an ingenious plan for raising money for the library's endowment: New York state beekeepers would be asked to set aside one of their colony's hives for the library, with proceeds from that hive's honey going directly to the library. Once the beekeeper reached a goal of $50 – or just about $500 today – he would have met his obligation, and every year after a book would be purchased in his name. Today, with worthy causes like the American Red Cross or the SPCA hard pressed to get more than $25 out of anyone in a year, the plan to get beekeepers to donate this much money to a library might seem a bit ambitious – not to mention naive.

Yet in addition to being a respected bee scholar and teacher of apiculture, Phillips was a consummate salesman. His idea for a beekeeping library required the commitment of not just beekeepers but university officials and businessmen like his friend Root, and they all came on board. As his wife Mary remarked many years later, "As usual, Frank's enthusiasm carried many people along with his idea (for the library), for one of his greatest assets was his ability to fire people into action."

In the nearly 30 letters exchanged by Phillips and Root over the next several years, they discussed the logistics of creating a world-class apiculture library and the role Root (and others) would play in it That role included offering Phillips space in *Gleanings in Bee Culture* to publicize his grand ideas to the national and international beekeeping community. In a 1925 *Gleanings* article, Phillips outlined why he was starting his library. "It is a frequent source of amusement among those widely read in beekeeping that, after reading many current beekeeping articles, one may go to Langstroth, Quinby or some other older writer and find the newly discovered method or plan discussed in detail." He argued that the country needed a great central collection of beekeeping literature, what he called an "accessible storehouse of our knowledge of bees and beekeeping," and believed his audience would agree.

By the latter half of 1925, Phillips' half-baked plan had begun to cook and he seemed to be making believers out of a lot of folks. The A.I. Root Company made arrangements for Cornell to receive current copies of overseas bee journals, such as the Russian publication *Praktichesko Pchelovodstvo*, that it received in exchange for *Gleanings* and which otherwise did not come to this country. Other publishers donated back files of foreign beekeeping journals. Phillips, who had already donated his personal collection of beekeeping books to the library, now had an endowment fund large enough that he was able to place a large order for the leading

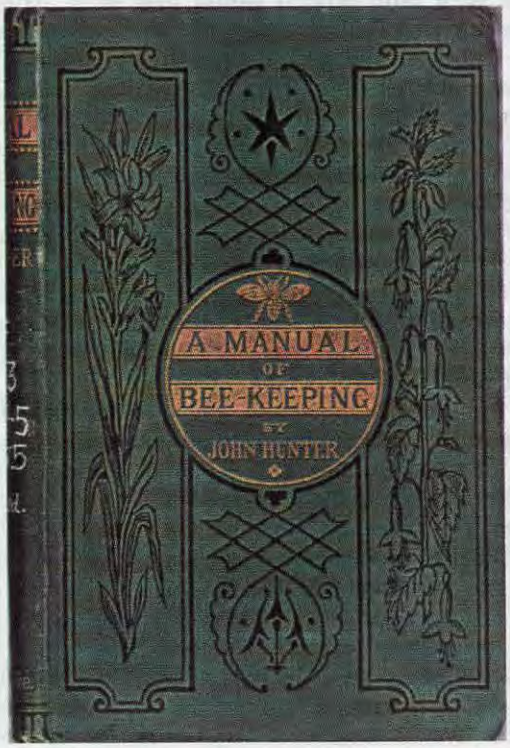


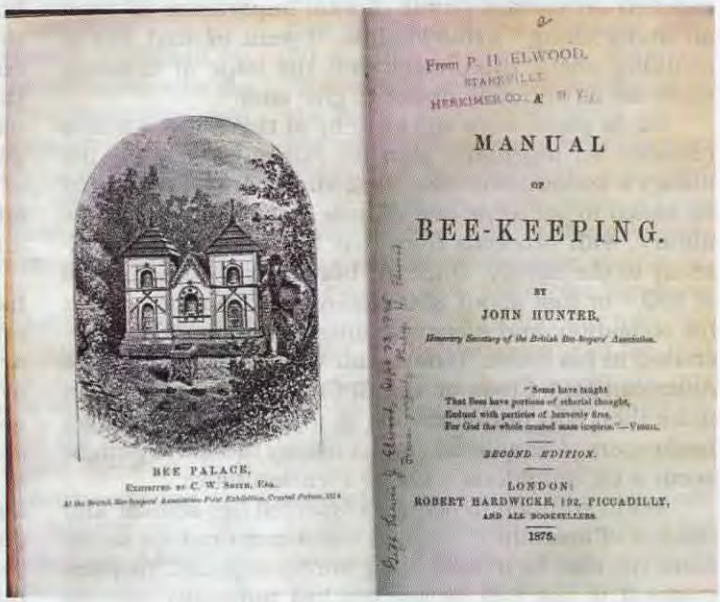
beekeeping books from European countries. And a prize of 10 queen bees was offered by CW Phelps and Sons of Binghamton to the New York beekeeper who did the most for the library that year, while the Ohio Beekeepers Association established four prizes for Ohio beekeepers who gave the most money from dedicated colonies.

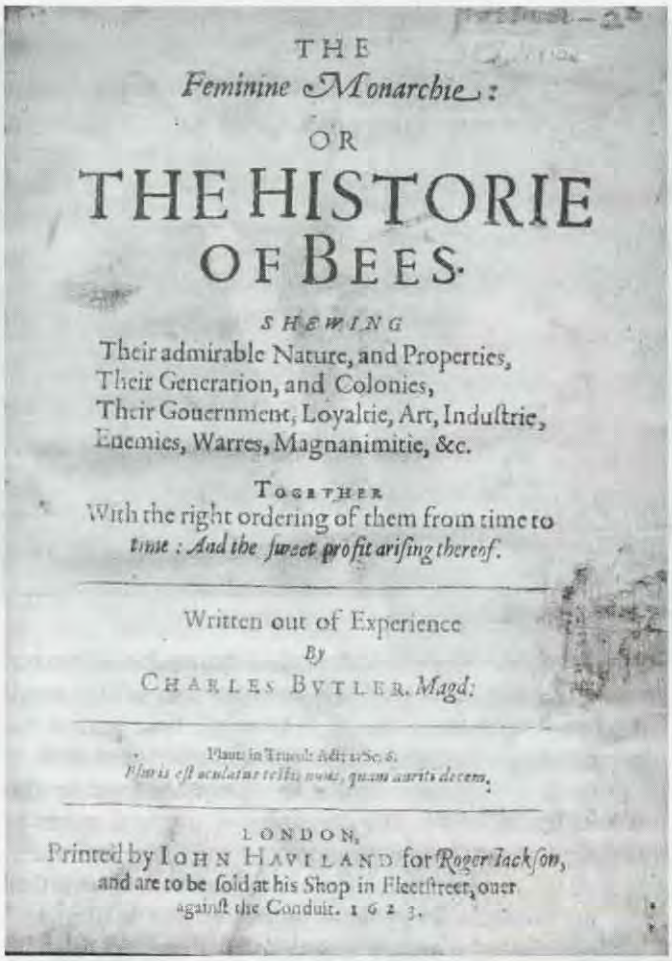
The most valuable resource for developing the library proved to be E.R. Root, whom Phillips had known since 1904 when he first came to Medina as a zoology graduate student looking for some practical training in beekeeping. In addition to donations of books and journals, Root provided Phillips with an invaluable network of contacts in the beekeeping world. In numerous letters written in 1925 and 1926, Root offered the names of beekeepers who he thought might have material for the library (although the two men had known each other for 20 years and exchanged dozens of letters each year until Phillips' death, they continued to address each other in these correspondences as "Dear Mr. Root" and "Dear Doctor Phillips," a degree of formality between friends that might seem strange to a modern audience). Root told of a beekeeper in Michigan, for example, and suggested that Phillips contact his son and mention directly what he was trying to accomplish. "(He) must have had quite a library," Root wrote. "He was in the habit of marking his books, and if you could get some of those marked books you would get some very racy reading."

Root offered not only contacts, but also advice on the delicacies of soliciting donations from people who were often the wives and children of now-deceased beekeepers. Regarding one such beekeeper from Georgia, Root told his friend that his collection was marvelous and that while Phillips could probably get his son to sell it for a reasonable sum, he could also probably get it for free if he mentioned Root's name and offered to turn the collection into a memorial in the father's name. And for a still-living Audubon, Iowa, beekeeper, Root suggested that Phillips travel to Iowa to visit him. "Let me tell you that (he) is the prize of the whole bunch if you can get him, and I am sure it will be worth your while to make a trip clear there, as it will please and flatter him very much."

Root's connections and Phillips' hard work had, by the Fall of 1926, started to pay off. In a letter dated September 28, 1926, Phillips told Cornell president Livingston Farrand that over the past year and a half the library had begun to take shape; 223 people from 29







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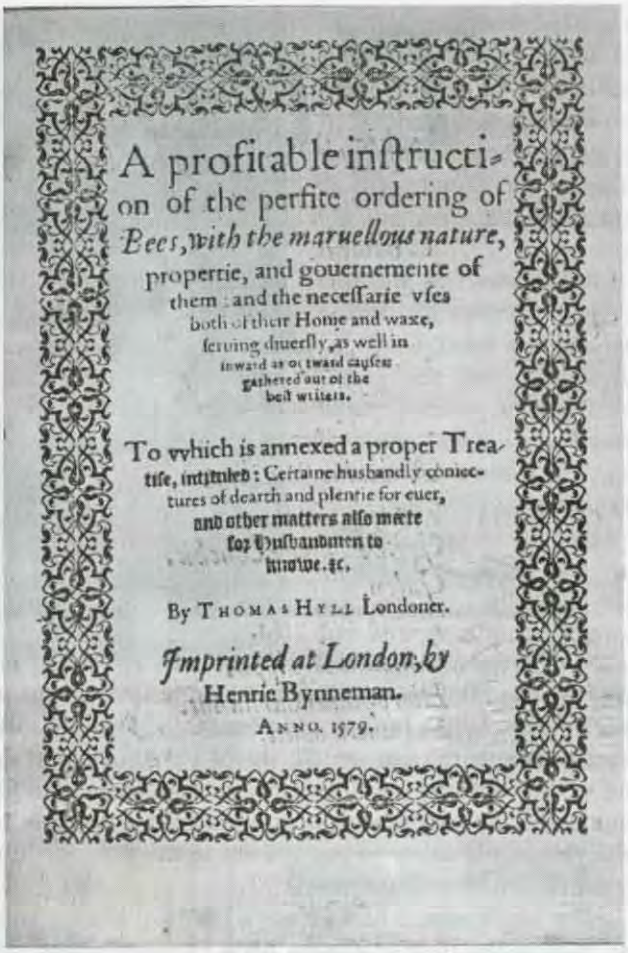

A profitable inſtructi-
on of the perfite ordering of
Bees, with the maruellous nature,
propertie, and gouernemente of
them: and the neceſſarie vſes
both of their Home and waxe,
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inward as outward cauſes
gathered out of the
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To vvhich is annexed a proper Trea-
tiſe, intituled: Certaine husbandly coniec-
tures of dearth and plentie for euer,
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states and 26 foreign countries had donated over 3,000 books, pamphlets and journals. He noted that among these donations were the libraries of several well-known beekeepers, and that because of this the library was attracting attention in the beekeeping world. This was just the sort of publicity and buzz that anyone starting a new project would want – be it a beekeeping library or a Barnes & Noble.

But this information was only a warm-up for what the professor really wanted to tell his boss. "Last week we received as a gift from the Langstroth family the personal journal kept for 45 years by the Rev. L.L. Langstroth, inventor of the modern beehive and well-known writer on bees who died about 30 years ago," Phillips continued. "This journal was lost for years and was finally located after considerable search on the part of the members of the family. It is a manuscript of great value to those interested in work in this field." Phillips closed his letter by declaring that this gift formed a suitable cornerstone for the library he was establishing.

By 1945, some 20 years after he started building what he hoped would be a great beekeeping library, Phillips announced his retirement. In a June 18 letter to Cornell VP George Rogalsky, Phillips happily noted that the library now contained the entire collection of the illustrious Langstroth. The library also had obtained the complete private collections of Moses Quinby, the inventor of the first practical bee smoker, and those of Dr. C.C. Miller, the Evard French Library and the John Anderson Scottish Library. The library's endowment fund was also strong, thanks in great measure to the assignment to the library of royalties from former Cornellian E.J. Dyce's patent for processing granulated honey (for many years, this patent grossed more royalty money for Cornell than any other). With justified pride and just a hint of boastfulness on the eve of his retirement, Phillips asserted that the only competitor for eminence in this field was the noted Drory Collection at the University of Berlin, which had been destroyed in the war.

Dr. Everett Franklin Phillips died of cancer in August 1951 at the age of 67. In the 50 years since his death and 75 years since he began building it, the E. Franklin Phillips Beekeeping Collection at Cornell's Albert R. Mann Library has continued to grow while retaining its eminent reputation. Today the collection remains the largest beekeeping library in the world, with books and serials ranging from Charles D. Michener's recently published 900-page taxonomy *Bees of the World* to Thomas Hill's 1579 *A Profitable Instruction of the Perfite Ordering of Bees*, one of the oldest beekeeping books in existence. And it is blessed with enough funding for a collection development policy that reads simply "purchase everything published in the field." Even the ambitious Phillips would hardly have dreamed this possible back in 1925 when he asked beekeepers to donate $50 to a library that didn't even exist yet. BC

James P. Morris-Knower works in Public Services at the Albert R. Mann Library, Cornell University, Ithaca, NY.

Thanks Bill

Patti Elzen, Bill Rubink, Frank Eischen, James Baxter, Paul Rivera & Walker Jones

On September 1, 2000, Dr. William T. Wilson retired as the lead scientist of the Honey Bee Group at the Weslaco USDA laboratory after 39 years of an outstanding research career. Those of us who have had the extraordinarily good fortune to work directly with him in honey bee research at Weslaco would like to take this opportunity to pay tribute to Dr. Wilson, both to the scientist and the man.

The professional history of Dr. Wilson begins with his graduation from Colorado A&M University in 1955 with a major in Entomology. In 1957 he was awarded a M.S. in Entomology from Colorado State University. He completed his doctoral degree in Entomology, investigating the genetics of American foulbrood resistance in the Brown line of bees, in 1967 from Ohio State University, studying under the distinguished honey bee researcher Dr. W.C. Rothenbuhler. His career with USDA-ARS began in 1968 as a Research Entomologist in Laramie, Wyoming. There he also served as Research Leader and Location Leader for several years. In 1984 he transferred to the Weslaco laboratory, where he remained until this September.

Those of us who work in honey bee research at Weslaco are fortunate to have wonderful facilities and funding support, due to the efforts of Dr. Wilson. When he first came to south Texas, he started the original honey bee laboratory with nothing but a smoker, veil, and hive tool. The new Honey Bee Research building, increased staff, and increased funding levels we now have are directly due to Dr. Wilson's efforts and vision and his excellent relationship with the U.S. beekeeping industry.

Regardless of the shortcomings of a non-existent program in 1984 in Weslaco, Dr. Wilson has built an entire research program that has further cemented his reputation as one of the world's most distinguished honey bee researchers and a true friend to all beekeepers. He has consistently addressed major issues facing the honey bee industry, such as American foulbrood, tracheal mite control, Africanized honey bees, varroa pesticide resistance, and the introduction of the small hive beetle into the U.S. He is perhaps best known for developing the Terramycin extender pattie for control of foulbrood, a technique that was widely accepted by the beekeeping industry. His discovery of tracheal mites in Mexico in the early 1980's was key in advance forewarning to U.S. beekeepers of eventual movement by this pest northwards. Dr. Wilson pioneered the testing and development of menthol crystals, amitraz, and formic acid for the control of tracheal mites and varroa. We as scientists in the lab have relied and will continue to rely upon Dr. Wilson's insights as to tactics and avenues for study and how to best serve the U.S. apicultural industry.

The character and integrity of Dr. Wilson is well recognized by all who have worked with him. The question raised in many of our minds when a problematic situation arises, is "I wonder what Dr. Wilson would think of my approach?". The personal generosity of Dr. Wilson toward many of the less fortunate beekeepers to the south, such as providing food and clothing, as well as his genuinely respectful behavior toward all persons, serves as a model to all of us who continue in the program here at Weslaco. One incident particularly speaks clearly to the kindness and heart of Dr. Wilson: during a visit with a beekeeper in Mexico, Dr. Wilson noticed that the man's shoes were falling apart; Dr. Wilson took off his own socks and shoes and gave them to the beekeeper, leaving Dr. Wilson to walk barefoot after the visit was over.

Dr. Wilson has had several graduate students work under his direction, mentoring several who have received doctoral degrees, such as Dr. Jeff Pettis at the USDA Beltsville lab, and who are now recognized honey bee researchers across the country. All of the scientists, and all of the technicians in the lab - Jesus Maldonado, Noe Buenrostro, Arturo Cavazos, Roy Medrano, and Henry Graham - hold "the Jefe (Boss)" in high esteem.

Many times Dr. Wilson has run interference for beekeepers on difficult issues, taking on such battles as new compounds for American foulbrood resistant to terramycin and the registration of varroa control compounds. He has testified to the U.S. EPA in defense of the beekeeper, both hobbyist and commercial, in their needs for the research and regulatory agencies to pay attention to the many serious problems of the industry. He has been a tireless voice championing the small as well as large beekeeper.

For his research efforts, Dr. Wilson has been the recipient of numerous awards, including the USDA-ARS Scientist of the Year, USDA Technology Transfer Award, USDA Secretary's National Honor Award, and a Fullbright Faculty Fellow at Ohio State University. He also has received recognition from the honey bee industry, with awards from numerous national and regional industry organizations, including the prestigious Eastern Apicultural Society's Hambleton Award for Research Excellence.

Dr. Wilson and his wife Cathy are leaving the Rio Grande Valley here in Texas to move to his native state of Utah for a short time and then they will move on to the Seattle area to be close to members of their family. And we here . . . all of us also feel like we are members of his extended family, a bond that won't be broken by his retirement. We look forward to frequent e-mails to keep in touch and, of course, ask for advice. We wish him all the best. BC

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James E. Tew

How to manage 1500 hives with only a pickup truck.

Oliver Collins and his wife, Cheryl manage 1500 hives - with no outside help. They move these hives many times beginning in Spring through late Summer. And they do it all with only a pickup truck. Short of working themselves to death, how is that possible? With trailers, lots of trailers. Though Mr. Collins uses only that heavy-duty pickup, he has 51 trailers (that's right – fifty-one), each capable of holding twenty colonies. What's more he has about 500 hives that are not trailered, but more about that later.

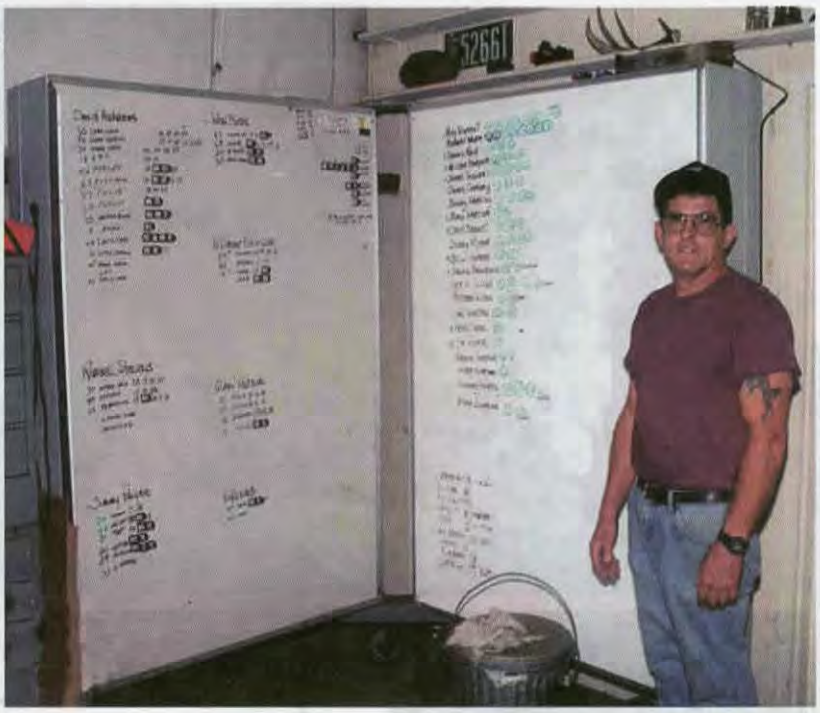
One of the trailer jacks and a view of the lashing rope.

The Location

Obviously, moving 1000+ colonies in loads of twenty colonies each can take a long time if the distances traveled are very far. Operating on the Eastern Shore of Maryland, near Salisbury, Oliver has developed a specialty pollination business based predominantly on local watermelon, cucumber, cantaloupe, and apple contracts. He rarely gets out of his Zip Code to fulfill these pollination contracts, and most of his customers are his neighbors. True. Oliver has a novel situation but not completely novel. I personally know beekeepers in other states that are situated within large pollination areas that could profit from Mr. Collins' procedures and techniques.

The Philosophy

The upfront cost of the trailers



Mr. Collins showing two of the several pages of his giant organizational book.

is expensive. Oliver builds his own trailers and they are deluxe. No short cuts taken anywhere. All welds are clean and ground smooth. New tires and new axles are used to assist with the "hitch and go" concept. The trailer beds are capable of being removed and left sitting on jacks, but normally, the axle is left under the trailer bed. The trailers are all just alike. If a problem arises, it arises fifty-one times, but it's the same problem – not fifty-one different problems on different styled trailers. A single jack is used to remove the trailers from the truck and is then removed to be used on the next trailer. Except for a central walkway for working bees from the trailer, there is no trailer floor. Individual hives sit in metal brackets and are lashed down with a continuous looped rope. After a few years' service, the trailer is sandblasted and repainted. The trailer design is the epitome of practicality. Nothing extra, but everything that is needed is strong, well maintained, and painted.

The trailers obviate the need for other human labor other than the assistance of his wife (and his dog that goes along, too). Oliver feels that, though the initial cost of the trailers is significant, it's upfront and one time whereas labor costs are erratic and continually rising.

Management

This is a specialized operation. Pollination only. Honey production is minimal. Additionally, Oliver does not produce any queens but buys them from commercial queen producing operations, and he requeens on schedule. Colonies are worked on the trailers on a seasonal basis. For the most part, colonies are kept strong and are housed in approximately two deeps. There are no tall colonies. Partial trailers are not rented out. If the grower request is a few hives short, Oliver just sends in a full trailer. It's not worth taking extra hives from the trailer to cater to individual pollination orders. Oliver uses written contracts.

Like a general overseeing battlefield conditions, he built a large "whiteboard book" on which he lists grower names, all the trailer locations, number of trailers needed, and dates of move in and out. By using such a large board, he can see the big picture and determine where to shift trailers in response to upcoming pollination requests.

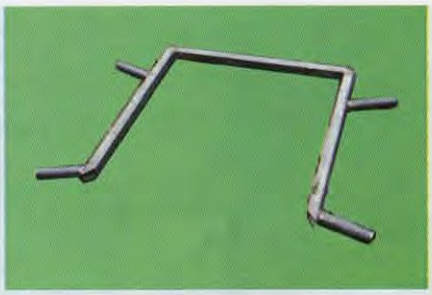
Nothing lower than nineteen inches

Like all of us, Oliver is not as young as he once was. He said that he has made every effort to keep everything – everything – at least nineteen inches off the ground (even his smoker bucket). The 500 hives that I mentioned earlier are put onto custom-built stands – again a Collins design. The stands are lightweight,

The Collins 4-hive collapsible stand.

Continued on Next Page

The Collins entrance closing/reducing device in the closed position.



A lightweight hive carrier made from 1" steel tubing.

The Collins hive hand truck.

well made, and collapsible. He did make the passing comment that this aspect of his operation is one that he is not strongly bonded to and that he was considering eliminating these colonies from his operation. Even so, the stands are a great idea. Another development of Oliver's is the entrance closing/reducer device. As shown in the photo, a perforated, zinc-coated, metal grid, which is held in place by clips on either side of the entrance, can be used to either close or, by reversing; can be used to reduce the entrance. For a fully open entrance, the metal grid is simply removed.

More

Though he is obviously an excellent metalworker and welder, he was never a professional welder by trade. Due to his minimalization of human labor, he has designed a hand truck-type hive mover as well as a hive carrier that two people can use to move individual hives. Both of these devices use the hive cleats shown in the photo to provide the lift area. Cleats are screwed on with drywall screws.

Oliver modified the winch on the hand truck to provide much faster lifting action than is normally found on such winches. He said that the tires should probably be pneumatic but the hard tires work very well.

You can see the hive carrier in the photo. It simply slips in from either end of the hive and gives a firm grip from which to lift the hive. Oliver's bottom boards are permanently attached to the bottom deep.

Summary of Oliver Collins' pollination operation.

The Collins' bee operation is neat, clean, freshly painted, organized, and well maintained. It was a joy to visit his facility. His narrow focus on a specific aspect of commercial beekeeping – pollination - has resulted in a finely tuned, modern operation. He has used his mechanical skills to devise some clever labor saving devices that could be useful to many beekeepers – pollinators or not. Our industry would profit greatly if we had more beekeepers like him.BC

Dr. James E. Tew, State Specialist, Beekeeping, The Ohio State University, Wooster, OH 44691, 330.263.3684, Tew.1@osu.edu

Tropical Apiary Products

Ian Farber

Keeping bees in Paradise has many rewards

Tropical Apiary Products of Maui is a small, efficient business on the Hawaiian island of Maui. Its owner is Dennis Morihiro, a hard-working knowledgeable beekeeper who established Tropical Apiary Products of Maui about eight years ago on his homeland. At the present time, Dennis is possibly the sole beekeeper on the island of Maui.

Dennis was born and raised on Maui and, except for a period of time spent working on the United States mainland, he has lived on Maui all his life. While he was working in California, his beekeeping 'hobby' began in 1984 when a swarm landed on a friend's garage and Dennis was asked if he wanted the swarm. Without any previous beekeeping experience, it might be thought surprising that Dennis accepted the offer, rounded up a box and hived the swarm. It was then 'hidden' on his own property behind a fence so as not to alarm the neighbors. Shortly after obtaining his first swarm, a friend offered to sell Dennis two very tall hives that had not been extracted or worked for at least two years. Dennis paid $15 for these two established hives, and he now owned three beehives and could consider himself a hobbyist beekeeper. Dennis' hidden apiary soon grew to eight colonies through capturing more swarms and making splits.

After making the decision to move back to Maui, Dennis decided to start his own beekeeping business on his homeland. He obtained a large shipping container, purchased all new equipment and supplies on the West Coast, loaded his container and had it shipped to Maui. Eight years later, he still has some new supplies available from his containerload of equipment. This is fortunate as there are no bee supply outlets on Maui.

The tropical island of Maui is the second largest of the Hawaiian Islands, with a land mass of 728 square miles. Vegetation ranges from barren, arid regions to lush rain forest areas that receive over 400 inches of rainfall a year. Sugar cane and pineapples are two of the major agricultural bases for the island. Feral honey bee colonies abound, and honey bees are seen almost everywhere.

Dennis Morihiro currently manages about 150 hives in four or five locations all over the island. Bees are moved for the Christmas berry bloom during August through October, then moved again for the macadamia nut bloom during January through March and then moved to their final location for the 'multifloral source bloom' during May through July. Eucalyptus trees provide a good source of pollen for early hive buildup. However, in spite of the three main honey flows, there are a number of problems associated with finding and keeping outyards on Maui.

First, farmers will not pay a beekeeper for pollination services on Maui. Many farmers believe that the beekeeper gets his reward from the honey he collects. Some farmers do let Dennis maintain a year-round outyard location on their property in exchange for the pollination services his bees provide. The macadamia nut farmers certainly benefit from this arrangement as two varieties of trees are necessary along with the bees for pollination to take place. But no honey is harvested during the first five years after an orchard is planted.

Dennis tries to keep his hives away from public view as he has received complaints in the past that bees from his hives were stinging farm workers. He now chooses locations out of direct line of sight from main roads and farm buildings. Maui has feral colonies all over the island, but it is easier to blame the beekeeper when someone gets stung. Dennis accepts these comments and now chooses his apiary locations with care.

Dennis thinks residential development has started to change rainfall patterns on some parts of Maui. He has noticed that some areas have become drier in the last few years as large tracts of land are cleared for housing developments. Bee forage is being lost. Removal of vegetation for housing developments is thought to cause drying out of the soil in areas where vegetation was once lush and plentiful. This adds to the loss of natural vegetation and honey bee forage areas.

Maui's potable water is now obtained from wells

The pallet system in use, along with the modified entrances, and numbered colonies.

Dennis uses the 'rock' system of record keeping. Yes, that's the ocean over his shoulder.

rather than from surface flows. Dennis feels that a lowered water table has now developed in some areas from removal of ground water by the large wells. As a result, bee forage has declined as trees and plants struggle to survive by seeking out water from the lowered water table. This results in trees and plants that can no longer produce plentiful blossoms and nectar due to the stress of an insufficient water supply. Existing kiave or mesquite forests produce a nice light honey in years with sufficient rainfall although these honeys tend to granulate quickly, often while still in the comb.

Bees are often attacked by five to eight-inch oval centipedes that sneak into the hives to eat the bees. Cockroaches, mice and ants cause additional hive problems. Dennis screens his hive entrances year-round with hardware cloth to try to keep these animals out. Hives are placed in groups of four, on wooden pallets to keep predators out and keep the equipment off the damp ground. Woodenware doesn't last long without care and treatment in Maui's year-round humid climate.

Like many beekeepers, Dennis has a 'system' of rock placement on the tops of the hives to indicate the amount of honey in the hives. Aluminum water trays are also placed on the tops of some of the hives. Dennis uses recycled sheet metal shipping pallets cut down to size to serve as quad hive stands. Individual hives are held in place with Meyer clips. Hives and supers are numbered and a log is maintained for record keeping purposes.

Tropical Apiary Products of Maui also answers swarm calls, on average one per week. Dennis pointed out where he had removed swarms and which housing units had steep and difficult roofs to climb.

Honey extraction is done on a site which is certified as an approved, inspected facility that is up to current health standards. Dennis operates two 30-frame extractors. Bees are removed from the hives with a bee blower. Uncapping is done with a Dakota Gunness uncapper. Shallow areas of capped comb missed by the uncapper's flails are uncapped using a surfboard wax removal scraper. Honey is not heated but is filtered for removal of wax debris. Dennis extracts twice per year on average. In years of drought, he is able to extract only once per year. Bakeries purchase much of Dennis' local Maui honey. He also sells his honey on a limited basis in local grocery stores. The other honey available on Maui mostly originated on the Big Island of Hawaii or on the United States mainland. Dennis' crop averages about 90 pounds per hive, down to 30 pounds in years of drought. It seems that the rain doesn't always fall where it benefits the hives and the bees in them.

Club support is not available on Maui as there are no other known beekeepers on the island at this time. If there are beekeepers with one or two hives, they keep to themselves. As a result, there is no club or beekeepers' organization from which to seek out assistance or advice. Clubs do exist on the Big Island of Hawaii and on Oahu.

Dennis has helped others interested in starting with bees in the past, but he does not sell supplies or equipment. He will readily assist with phone numbers and addresses of mainland suppliers if people want to purchase and bring in supplies. Queens are available on the Big Island of Hawaii from a number of sources. Bees and equipment may be moved from one Hawaiian island to another, but importation of bees from outside Hawaii has been banned since 1985. This has kept the islands mite-free. State inspections take place upon request and are free of charge.

Dennis has added queen rearing to his many jobs. He has begun raising his own queens so he doesn't have to bring them in from a neighboring island, and he requeens every 18 months. He feels this is required because of the almost year-round bee seasons on Maui. The queens do not have a period of time when they are not laying as they do in the colder climates. Requeening is done as a means of swarm prevention as well.

Tropical Apiary Products of Maui collects and cleans its own pollen for sale. Pollen cleaning is done by drying, fan cleaning and a system Dennis made of two ramps along which the pollen travels. The larger pollen pellets are able to jump the space between the ramps while the debris falls into the center and is discarded.

Owning and operating a business like Tropical Apiary Products of Maui is a lot of work for one man. Dennis estimates that he put in over 4,000 hours of work time on the business last year, but he enjoys his work, does as much as he can himself, and he doesn't complain. If the queen rearing and nuc production go as planned, Dennis will have 150 hives and 100 nucs this year. Yes, it takes a lot of work, but he enjoys what he does and perhaps that is a reward all by itself. BC

James E. Tew

Bee Culture's Beeyard

Processing The Honey and Wax Crop

Honey Processing

In articles past, no doubt I have said too much about the work and mess involved in processing honey. Though honey processing ***is*** pure work and an unavoidable mess, where would honey bees and honey beekeepers be without honey? Honey production and processing will be an integral part of beekeeping for many years to come.

The Processing Event

Actually, I could have processed this year's crop anytime after late July, but why rush to this task too soon. Occasionally the nectar season runs a bit late, but as I said last month, this was not much of a honey crop year for the BC Yard. We removed the supers last month and have discussed that procedure elsewhere[1].

The supers were stacked near the extracting line until the entire crop was gathered. A few (too many) bees buzzed around the room and invariably got into other rooms were they were not welcomed. A surprising rush of fruit flies came along and did a great job of being annoying. Finally, we got all the honey off and began the process of extracting honey and rendering cappings.

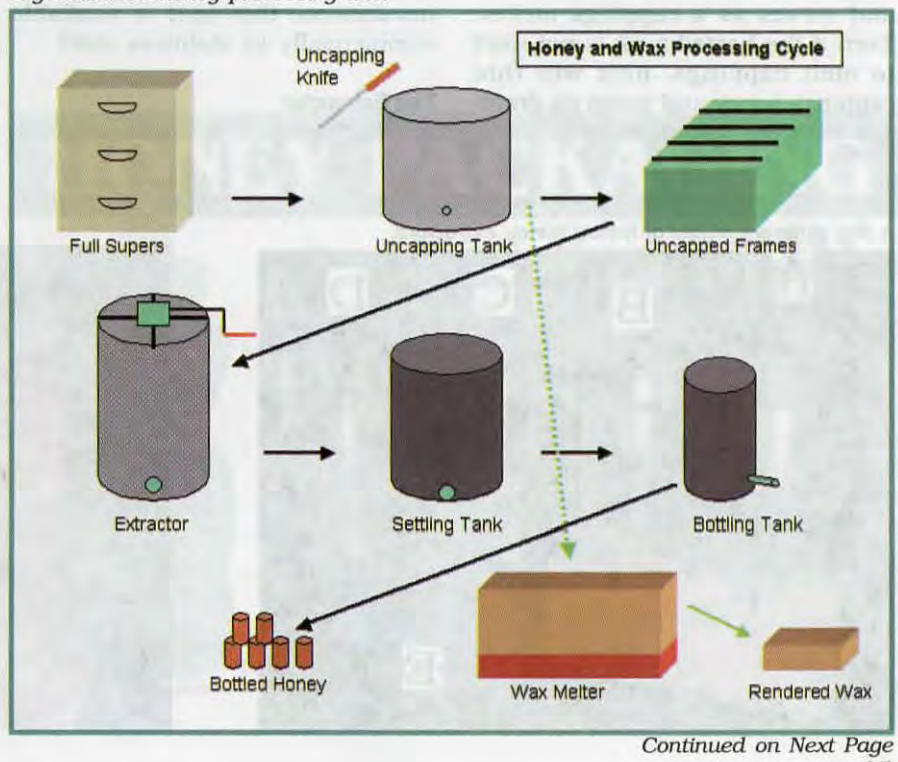
There is no standard honey processing line. I don't know of a company to phone for ordering "One hobby-level extracting line to go." The equipment you choose and where you choose to process your crop is unique to your operation. Very few of us drive exactly the same car, but we know how to drive each other's car. Very few of us can precisely copy another's processing line, but we can use (and understand) each other's honey processing line. We like some cars better than others and we like some extracting layouts better than others.

Just like there are standard elements to all cars, there are standard elements to all extracting lines. A commercial extracting line is just a hobby beekeeper's line on steroids. Everything is larger, but all the basic elements are still there.

Uncapping

After the supers have come into the extracting room and all is made ready for the extracting process to begin, one of the first elements to be encountered is the extracting knife. I refer you to the September, 2000 *Bee Culture* for a complete review of uncapping knives. An electrically heated knife is an inexpensive luxury that I would highly rec-

A generalized honey processing line.



[1] See Bee Culture September, 2000

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An electrically-heated uncapping knife.

An uncapped frame tank. It can also be used as an uncapping tank.

ommend. Bigger machines, those with vibrating knives, flails or drums are for another article.

The Uncapping Tank

The uncapping tank can really be anything – depending on how many frames are to be uncapped. For just a few frames, a five-gallon bucket will suffice while 10,000 frames will require a tank of significantly larger proportions. This tank, and most other tanks in the line, has a valve for drawing liquid honey off the bottom. If practical, the uncapping tank could be used to temporarily store uncapped frames while the extractor is running and eliminate the next piece of processing equipment – the frame holder. In some cases, the uncapping tank is electrically heated and serves as a cappings melter. Even if the heated tank is not used to melt cappings, heat will thin cappings honey and speed its drainage from the bottom valve.

All kinds of uncapping tanks are on the market. Some are round while others are square. Some are stainless steel and others are heavy plastic. Some are small while others are large. You get to choose and you get to pay.

The Uncapped Frame Tank

This tank is optional. Its greatest use occurs when more than one person is working the extracting line. For instance, one person is uncapping while another runs the extractor. Occasionally, thick honey extracts slowly resulting in uncapped frames accumulating while awaiting extraction. As stated above, this tank normally has a drainage valve to allow leaking honey to be combined into the settling tank. Though a bit uncommon, this unit is available commercially in stainless steel.

The Extractor

The extractor is the heart of the extracting line. Every piece of equipment in the line is important, but the extractor is always the central piece of equipment. There are old extractors. New extractors. Hand-cranked units. Electric models. There are even plastic extractors. I personally know of extractors that are approaching 50 years old that are still being used. Through the years, we have acquired quite a collection of extractors in our laboratory. Though they have been made in many designs, one feature is common – they all throw honey from the frames by use of centrifugal force.

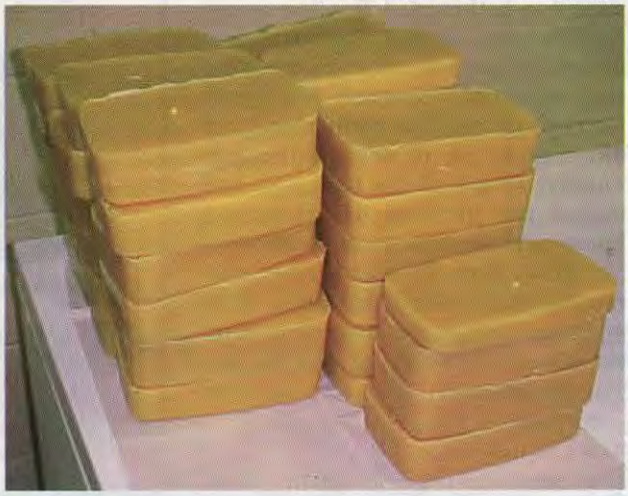
Hand-cranked extractors are the most dependable and the most laborsome. If possible, buy one with a motor. You will never get any younger.

Old extractors are commonly made of tin or of galvanized tin. Clear epoxy coatings are available for sealing these old tanks.

A common characteristic of

A few different styles of hobby honey extractors.

High quality wax from cappings.



honey extractors – of any size – is to wobble all over the extracting room if not firmly attached to a base (not provided). The white box in the photo can be filled with cement blocks or bags of sand and provides an excellent weighted base for a small extractor when the extractor is attached to the box. Extractors A and B are top cranked while Extractor C has a side crank. Extractor D is driven by a geared electric motor. The plastic extractor E, is made in China. Such lightweight extractors are cheaper and slower to use, but provide a good service for the beekeeper with a small number of hives.

So much as possible, keep the extractor low to the ground. The higher the extractor, the higher you must lift the frames to get them into and out of the extractor. If you are extracting 20 frames, this is not critical, but as your colony number grows, you will appreciate a much lower extractor. Having said that, you must have the extractor high enough for a catch bucket to catch the draining honey. Too low to the ground and you will be required to use a shorter drain bucket which will require more frequent emptying (or overflowing).

Settling and Filtering

Filtering is the weak link in most lines. By design, filters are designed to plug up. They are the extracting line element that you love to hate. Commercially manufactured filters are available but an easier route is to use settling tanks. A settling tank is anything from a five-gallon bucket to tanks (maybe drums) with the capacity of hundreds of pounds of honey. Keep the room warm – even better – keep the settling tank warm and bits of wax and bubbles will float to the top where you can skip off the scum. (Don't use the word "scum" around your honey customers.) A drum of honey, allowed to settle for a week or so will be remarkably clear, but before final bottling, you will still want to filter the honey. The public goes ballistic if they find a bee leg or wing in their premium jar of honey. Settled honey is either drained from the bottom or pumped from the settling tank. The particulate matter (scum) goes into the wax melter.

The Bottling Tank

After filtering or settling – or both, the honey goes to the bottling tank. It's not uncommon for small operations to bottle straight from the settling tank. Again, filter the honey through some kind of coarse filter to get the visible residue from the final product. Higher end bottling tanks are electrically heated. Warm honey flows much better than room temperature honey. It doesn't have to be hot, but only warm.

After bottling the crop, you are at the point where you can begin to clean up the biggest mess that you will make all year. Ready access to warm water makes the job much easier. Try as you will, honey is sticky and seems to get all over everything. At least it's a sweet mess.

The Wax Crop

The beeswax crop is a twin to the honey crop. Cappings from the uncapping tank and material from the settling tanks can be put into the wax melters for the final phase of honey processing. Again, many models of small, electrically heated, wax melters are available to the hobby beekeeper. Honey from the wax melter is not high quality honey and is normally fed back to the bees (with the appropriate concern for disease caveat). A solar wax melter is energy free, but is not very efficient – plus the nice, yellow wax can be bleached nearly white in the process.

What About You?

There it is. What about you? Do you have two colonies or fifty? Do you want an uncapping/wax melter combined? Can you get along with a hand-cranked extractor or can you justify an electrically powered one. Do you want a filter or are you going to try to get by just by settling your honey crop. The choices you make will be fundamental in the development of your personalized honey extracting line. One principle is always in effect, "The greater the number of hives, the move advanced the extracting line."

What About You, Again?

A rewarding number of you have paid the compliment of communicating with me concerning various discussions I have held here. By the time you read this, Spring will not be so very far away. What would you like to see in BC's yard next season? There is still so much undone in the yard that I could go for several years just trying to stay caught up. Still, if there is something on your mind, talk to me. If possible, I will try other beekeeping paths in future articles. There are so many paths to consider. BC

Dr. James E. Tew, State Spec., Beekeeping, The OH State Univ., Wooster, OH 44691, 330.263.3684, Tew.1@osu.edu

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CADILLAC FRAMES GM EFFICIENCY

Kim Flottum

I dropped in on our friend Bob recently (we've visited with Bob a number of times over the years) and he was putting together frames for next season. Bob is a traditionalist when it comes to frames - 'wood and wax and make 'em yourself' is his motto.

But he's also no slacker when it comes to streamlining the process - after all, there are other things in life. So I waited around a bit, watched, kibitzed and took some photos. People I know make frames faster, but nobody has a finished product with the quality I saw here.

So, if you're making frames this Winter, watch over Bob's shoulder for a bit. You might pick something up ...

Bob first predrills every top bar for the nails. He works on groups of 50(1). Next he inserts the eyelets, 10 at a time (2,3). When done, he sets up his home-made nailing box, secures in the eyeletted end bars, glues the tops, puts on the top bars, inserts the nails in the predrilled holes and nails them, two nails at once (4,5,6,7,8,9).

When the top bars are done the box is turned upside down exposing the bottoms of the end bars. These are glued and one split bottom bar

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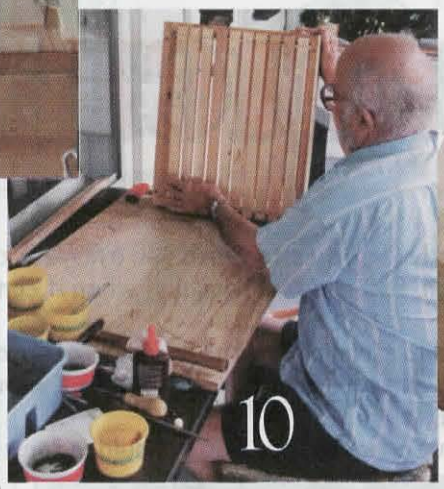

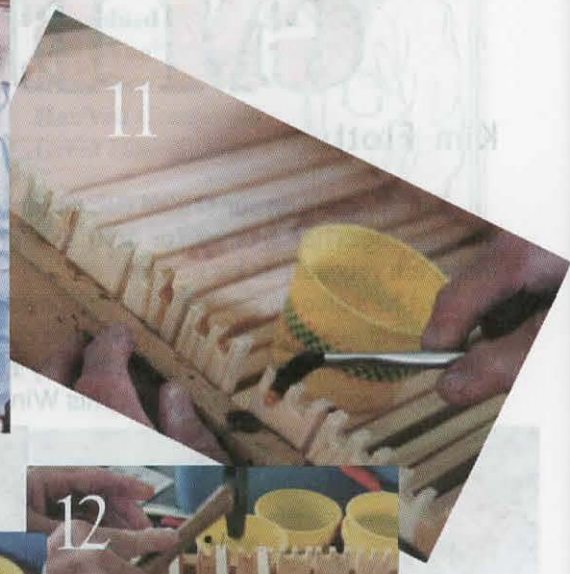

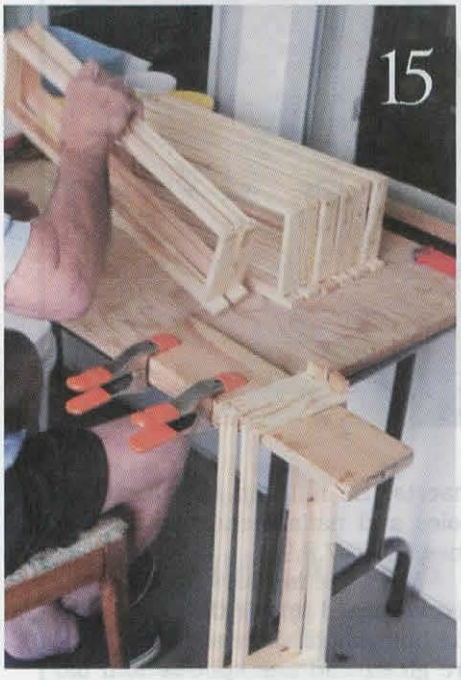

inserted and nailed. This keeps the frame square. When one is complete, the second split bottom bar is fastened. When done, the box is removed (10,11,12,13,14).

Bob quickly grabbed some incomplete frames to show me the next step (note the eyelets aren't in the end bars yet). When the top and bottoms bars are fastened, Bob clamps a right-sized board to his work table. You can see it is the same width as the inside of the frame (he uses three boards). Then he loops the frames over the board, predrills the next nail hole, inserts the nail and drives it home. All 10 nails are in now (15,16,17,18).

When all 50 frames are completely eyeletted, glued and nailed, the next step begins. Bob uses a wiring board, but first removes and cleans the wedge bar, then places the frame on the board. One nail is put in an end bar (left or right handedness can play a big role here) for later. Wire is threaded through the eyelets until complete and the end of the wire wrapped around the nail previously inserted. Another nail is put in the end bar, the wire pulled tight and wrapped around the second nail. It goes "pling" if it's tight enough. To make sure, each wire is crimped for added tension (19,20,21,22,23,24).

Finally, the foundation is added, the wedge bar reinserted and nailed to hold. Wires are electrically embedded with just the right touch and the finished product ready for the bees next Spring (25,26,27,28,29).

Indeed, a Cadillac frame. At just under 10 min./frame to completely construct, at 50/batch, both the efficiency and quality are worth noting. Yes, using air-powered staple guns and nailers will decrease time spent even more, but the quality will not improve.


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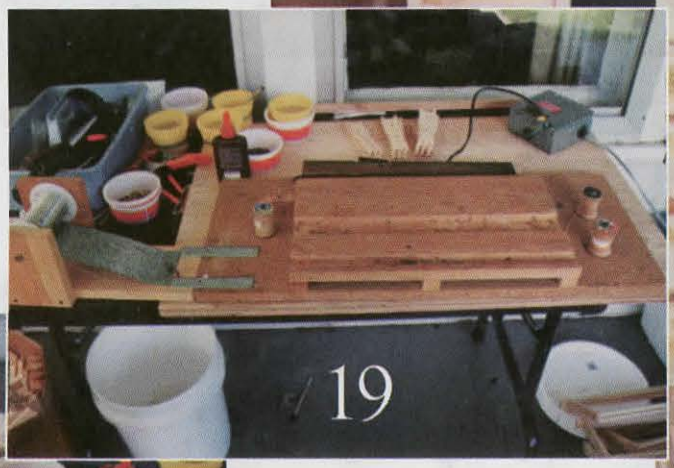
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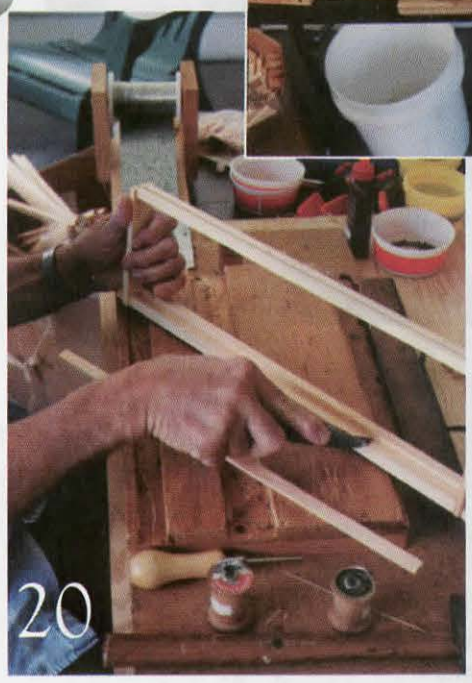
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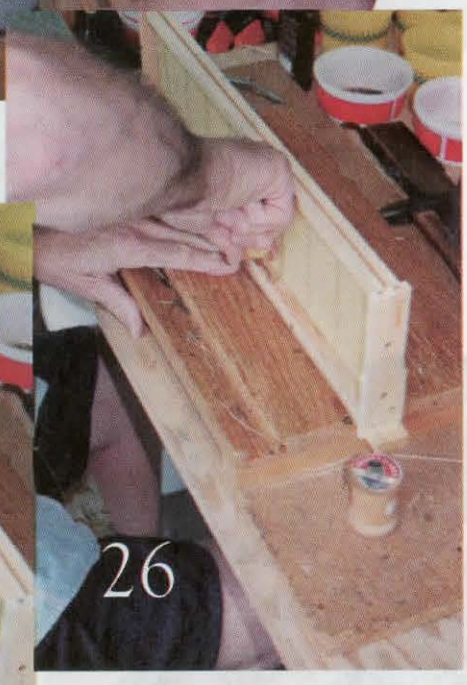

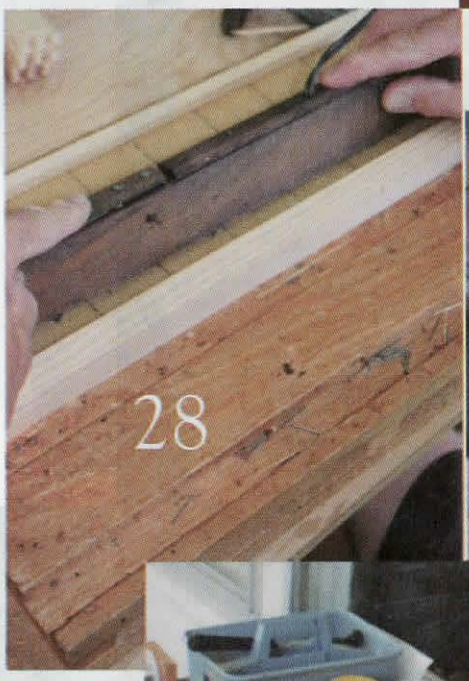

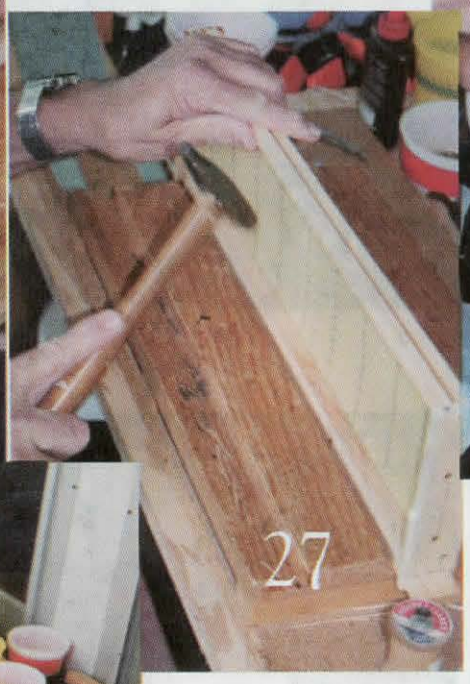

And, as Bob said, with Mozart on the radio, and the aroma of wood and beeswax all around . . . this part of beekeeping just doesn't get better. BC

Bob Smith is a hobby beekeeper, videographer and the proud owner of thousands of Cadillac frames.

STORING HONEY

Ann Harman

Honey crystallizes. Stop it before it starts, or fix it later. Here's how.

Do you know what your honey crop is doing right now? Is your stored honey happy? Or do you even know?

In much of the country cold weather has set in and heating systems have been turned on. Even in the warmer parts of the country, the weather has cooled, especially at night. We pull our jackets out of the closet and turn our thoughts to Thanksgiving assuming our supply of honey is doing just fine until we need it.

Honey is not only a delicate product but a cranky one. The aromas, colors and flavors of honey need to be treated with respect, otherwise some of those desirable properties will be lost. Since we cannot follow each honey bee gathering nectar we really do not know for certain what combinations of nectar have gone into her collection. The honey bee is perfectly happy with whatever she is able to gather for food. We are not so happy when that honey crystallizes, whether it is in a tank, a 60-pound bucket, or in jars and squeeze containers already labeled for market.

Beekeepers are generally familiar with how quickly their honey crystallizes and whether it forms large, crunchy crystals or smaller, gritty crystals. Wildflower honey, however, can differ significantly from year to year depending on the floral sources available that particular year.

Storing of honey can be a problem. Perhaps it is best to review some of the properties of honey to see what happens during storage and how we can best cope with this fickle crop.

Honey is, of course, basically a plant product. The plant contributes a distinctive color, aroma, flavor and sugar content. Various other substances are also present in honey in small quantities. In addition, honey, as stored by the bee, contains pollen grains, mostly from the main floral source the bee visited, but also from the collections of pollens found in every hive. The nectar of the plant is mostly water. The amount of sugars in nectar and the kinds are characteristic of the plant. Glucose (a simple sugar) and fructose (another simple sugar) are the main sugars in honey. A small amount of sucrose (we know it as table sugar) is present in varying concentrations in honey. Glucose is the sugar that is responsible for crystallization. Crystallization is a very complex process, and it is not necessary to understand all that happens. What is necessary is to know what we can do in processing and handling our honey crop to minimize unwanted crystallization.

Crystals can form around any small particle, such as one grain of pollen, a speck of lint, an ever-so-tiny bit of dust and minute crystals already present in the honey. Temperature contributes to crystal formation. The best temperature for crystal formation, as Professor Dyce found in making creamed honey, is 57°F. At warmer temperatures, crystals may not be able to form readily. Below freezing, crystals cannot form.

Now we have a bit of a dilemma here. Warmer temperatures, say in the 80s or above, are detrimental to the delicate aroma and flavor of honey. Some honeys will also darken in these warmer temperatures, even if not exposed to light. So storage at warm temperatures is not necessarily a good thing. Think carefully about storing honey next to a furnace or other heat source.

Room temperature, around 70°F, is fine, but some honeys will slowly crystallize at that temperature.

If you thought your cool basement was ideal, see what the temperature really is. You may be at the optimum temperature for crystallization and speeding the process along when all the while you thought you were preventing it.

Refrigerator temperature is too close to the optimum crystallization temperature. Honey will definitely crystallize in a refrigerator. So do not even consider that as an option. In fact you should caution your customers about storage in a refrigerator.

That leaves us with cold. Beekeepers use freezing temperatures to kill and prevent wax moth both in comb honey and in equipment. Now we have another reason to appreciate freezing temperatures. We can keep honey frozen, whether liquid or in the comb, to prevent crystallization. Secondhand freezers of all sizes and shapes are easy to find and frequently quite cheap. Freezers are a relatively simple mechanism and tend to live for years, but many people cannot or do not wish to move them from place to place. Keep your eyes open for bargains.

True, you may think you have too much honey to make a freezer suitable. However, if you have honey in containers waiting for sale, storage of those in a freezer may be your best bet. Will labels come off in the freezer? Depends on the label. Some labels have such tenacious

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STORING HONEY ... Cont. From Pg. 43

stickum that they refuse to come off. Other labels gradually unpeel themselves and refuse to stick back on again. You will just have to experiment with your label. One caution on labels – if moisture condenses on thawing jars, printing may be damaged by the moisture. Rub a wet finger across your label and see if it smears. If so, either do not store honey with that label in a freezer or plan to replace the label.

What about those pollen grains in honey? There is no way to remove those by simply straining. If you wish to remove pollen, you will have to follow the filtering procedure. However, many customers want local unfiltered honey. So those pollen grains are the start of possible crystals. If you sell unfiltered honey, think about storage in a freezer.

Next we come to bits of lint and other debris that cause crystallization. Any short-fiber straining material will deposit bits of lint in the honey. However, synthetic fabric, such as nylon, has long, continuous fibers and will not deposit bits of lint during honey straining. Metal strainers, if kept clean and dust-free, are also good. Make certain that any straining material has a very fine mesh to remove as much of the miscellaneous debris as possible.

Some honeys crystallize quickly so that the honey you extract, however promptly you act after capping is complete, may contain some fine crystals. A quick heating and quick cooling can remove these, but rapid heating and cooling is not always possible. Freezing would be the only solution to preventing crystallization in this case.

Crystallization can be an extreme annoyance for a beekeeper who has to cope with a brick-hard mass in a tank, bucket or jars. But let's think for a minute about what the customer sees. Honey that is just starting to crystallize does not always do this in an attractive way. The customer sees discolored globs snaking through liquid honey. The word "spoiled" immediately comes to mind, and the honey is tossed out. I am sure you have heard a customer say "I need to buy a jar of honey – mine went bad." Yes, education of the customer is important, but we do not always have a chance to talk to our customers. A small label explaining crystallization and what to do is definitely a good idea but not always read. Monitor your honey at your various sales venues and exchange any beginning to crystallize.

Now we have to cope with tanks, buckets and jars, labeled and unlabeled, full of crystallized honey. Somehow that honey must become liquid again without delicate flavors and the beautiful color. Commercial operations have hot rooms and various other ways of heating large quantities of honey. But hobbyists and sideliners have to create their own methods.

*Let's make a more sophisticated warming unit. **This month**, obtain one old refrigerator with a good seal on the door (freon and compressor and motor removed). Get a heat limit control (W.T. Kelley has one in their catalog), a light fixture box and a ceramic single-bulb fixture. Add to that about 7' to 10' of appliance wire, a 110 wall plug and some sheet metal screws.*

You'll also need a drill and a 1/2" metal bit, some duct tape and about an hour to make a safe, easy, inexpensive honey warming box. Start looking now, and stay tuned.

The first item on your list should be a thermometer. You will be using this to insure that your honey is not exposed to too high a temperature for too long a time. For small quantities of honey, you might wish to use a hot plate. Sitting a metal bucket or washtub on a hot plate can give you a "double boiler" style of heating. But you must make a rack to rest your honey container on so that the hot water can circulate and the honey container is not in such direct contact with the heat from the hot plate. A rack can be made from a piece of hardware cloth. A one-inch-high rack is quite adequate. Or you can use one or more cake-cooling racks that cover the bottom of the water container. If the water container seems too large for the hot plate, a sheet of metal can be placed on top of the hot plate element to distribute the heat better to the water container. It will take a bit of fiddling around to make sure the water bath stays hot, but not boiling. You should be able to stick your fingers into the water bath without saying "ouch."

One of the best solutions is to purchase some sheets of plastic foam house insulation and create a hot box. This can be made any size you wish. An insulation hot box has many advantages. The sheets of insulation are cheap. The hot box can be taken apart and stored as flat sheets. It is lightweight and easily moved, even if made into a large box. Although the foam insulation is a bit fragile, dents and dings in it make no difference. If you punch an unwanted hole in it just duct-tape a piece of foam over the hole.

Your heating element is a light bulb. What wattage? Well, that depends on the size of your hot box. You will need a 100W bulb for a fairly large hot box; 75W or 60W for a smaller one. Remember that thermometer you bought? Install that in your hot box. You can rest it on top of buckets or you can suspend it with a string about the level of your buckets or cases of jars. Keep an eye on it. That light bulb enclosed in the foam hot box will generate more heat than you realize!

Certainly you can make your foam hot box as fancy as you wish. A small "muffin fan" can be used to circulate the warm air. A thermostat can be installed to control the light bulb. You can devise all sorts of fancy ways to join the sheets of foam or you can just use some pieces of duct tape. A pallet or a rack will help air circulation under the honey containers.

The foam hot box is probably the best way to liquefy jars and squeeze containers with labels since no water is involved. Labels soaked in a water bath are probably best peeled off and new ones put on. Although the temptation is great to bottle and label and be done with it, you save time, money and frustration by labeling only that which you are taking to sell. However, you may well have some labeled containers left over from sales that need to be stored for a period of time. If you can freeze, do so. Or if you are monitoring your sales, you may be exchanging labeled containers of crystallized honey. Use your hot box.

By the way, that hot box can be used to gently warm supers before extracting. Stack the supers alternating short side with long side to get the best air circulation. Set the supers on a pallet or rack to have air circulation underneath. But watch that heat! It is so easy to flick on the light bulb and return the next day to find a puddle of honey and wax. Such temperatures are detrimental to honey but catastrophic to honey supers. Remember that the bees keep most of their hive in the high 80° range.

Putting containers of honey out in the sun, or creating a "solar-heated" box much like a solar wax melter by putting a piece of glass over a box or empty hive body, are not good ways to liquefy honey. You simply cannot control the amount of heat, and the danger of overheating is too great. Honey in jars exposed to sunlight will darken. Microwaves may be handy for only a few jars. A water bath in your kitchen oven will hold only a very small quantity and is also difficult to control. By the way, chunk honey (a piece of comb surrounded by liquid honey) that has crystallized is best fed back to the bees if it is your own honey from healthy hives. Just put the open jars on the top bars with an empty hive body and cover over them. The bees have more time for cleaning up that mess than you do.

As long as there are plants and honey bees, beekeepers will be coping with crystallized honey. Do your best to preserve the fine qualities of this wonderful product. BC

Ann Harman is a sideline beekeeper and international marketing consultant.

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a. Total Number of Copies *(Net press run)*	14,036	12,863
b. Paid and/or Requested Circulation (1) Sales Through Dealers and Carriers, Street Vendors, and Counter Sales *(Not mailed)*	185	91
b. Paid and/or Requested Circulation (2) Paid or Requested Mail Subscriptions *(Include advertiser's proof copies and exchange copies)*	12,142	11,253
c. Total Paid and/or Requested Circulation *(Sum of 15b(1) and 15b(2))* ▶	12,327	11,344
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f. Total Free Distribution *(Sum of 15d and 15e)* ▶	179	179
g. Total Distribution *(Sum of 15c and 15f)* ▶	12,503	11,523
h. Copies not Distributed (1) Office Use, Leftovers, Spoiled	1,533	1,340
h. Copies not Distributed (2) Returns from News Agents	-0-	-0-
i. Total *(Sum of 15g, 15h(1), and 15h(2))* ▶	14,036	12,863
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16. Publication of Statement of Ownership
☐ Publication required. Will be printed in the November 2000 issue of this publication.
☐ Publication not required.

17. Signature and Title of Editor, Publisher, Business Manager, or Owner: Kim Flottum, Editor — Date: 9/25/2000

I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including multiple damages and civil penalties).

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PS Form **3526**, September 1998 *(Reverse)*

?Do You Know? Answers

1. **False** The temperature in the center of the winter cluster varies considerably depending on whether the colony is raising brood or not. Temperature inside the broodless winter cluster varies between 20 and 30° C. When brood rearing is resumed the temperature inside the brood rearing cluster is maintained constantly at approximately 34° C.
2. **False** The fuel for heat production in the winter cluster is honey. Honey is converted into heat by metabolic processes of bees inside the cluster. This heat is conserved by the insulating properties of the cluster as well as the comb.
3. **False** Dysentery is a non-infectious disorder of adult honey bees. While the condition can be aggravated by various infectious adult diseases, it normally occurs when the rectal contents of bees become about 30-40% of their total body weight. This is usually due to the accumulation of water, because there is too much water in the food the bees are consuming. This situation is most likely to occur during the Winter when honey bees are unable to take regular cleansing flights.
4. **True** Chilled brood is most often found on the fringes of the brood area rather than in the center where the cluster is concentrated. This condition often occurs in late Winter/early Spring when brood nests expand rapidly and there is a shortage of adult bees to cover all of the brood.
5. **True** The winter cluster invariably moves up among the dark brood combs and tends to avoid new white combs of honey as it slowly eats its way upward in the hive during the Winter.
6. **True** Colonies can raise queens anytime there is a stimulus to raise them and there are eggs and young larvae present. In February there would be brood present but in many areas of the country there would not be drones present for mating.
7. **True** In the winter the hypopharyngeal glands (brood-food glands) of the majority of bees are fully developed, just as if they were nurse bees. This is believed to be a mechanism which allows the bees to store protein and raise a generation of brood when conditions will not allow them to break cluster to feed on pollen.
8. **True** During the process of metabolizing honey, bees give off large quantities of water. In the winter it is important to get rid of this water so that it does not condense within the hive.
9. **False** Honey bees make no attempt to heat the interior of the hive apart from themselves. The primary purpose of the entrance reducer, therefore, is to keep mice out of the hive.
10. B) 3 to 5
11. D) 57° F
12. D) 55° F
13. D) Ventriculus or Mid-Gut
14. The winter cluster in November would be located in the lower part of the hive and in March you would expect to find it in the uppermost hive body.
15. Dead colonies should be closed up and removed from the apiary as soon as possible. Failure to follow this recommendation could result in the spread of disease when the combs are robbed out. Leaving the colony in the apiary or improper storage of the equipment will result in molds growing on the combs and honey that remains may absorb moisture and ferment. The dead, rotting bees may also damage the combs.
16. Paralysis, Honey Bee Tracheal Mites, Nosema Disease
17. Cluster contraction conserves heat by diminishing the surface area over which heat can be lost and by reducing internal convection currents.
18. Vital to successful wintering is a large population of young bees that can live five to six months. A young queen in comparison to an old queen will lay eggs later into the fall, providing a higher proportion of young bees in the population.
19. Chemicals used for *Varroa* mite control do not penetrate capped brood cells so treatments must last three weeks in order to completely break the mite brood rearing cycle. Only female *Varroa* mites are found on adult bees in colonies that have ceased to rear brood and have formed their winter cluster. Thus, a broodless condition increases mite exposure to the chemicals.

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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3 grades - select, commercial & budget	250 - 500	$4.60	250 - 500	$4.10
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	over 1,000	$4.20	over 1,000	$3.60

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MAILBOX ... Cont. From Pg. 5

and environmental factors.

Large scale distribution studies of foragers from hundreds of hives in many apiaries using the magnetic recapture system developed by Dr. Norman Gary at the University of California, Davis has shown that the factors that effect foraging behavior are extremely complex and dynamic. In general, bees were found to have a strong tendency to forage at the nearest source for each floral species in the area, particularly if competition for the same species is greater at the more distant areas by virtue of other hives being located closer to those distant areas. When the only available patch of a floral species is a great distance away, some bees nevertheless, will fly that great distance. This is true even when competition from other hives is great at the distant source, and when nectar and pollen sources of other species closer to the hive would seem to be much more profitable.

A colony's foragers use simple feedback mechanisms to select where to go and what to collect, based on colony needs. During poor forage conditions, the number of scouts increases improving the possibility of the colony finding a new resource. If a scout discovers something, her dance quickly informs others of the find and the colony can exploit the resource. Colonies tend to concentrate on the best available resources.

Dr. Thomas Seeley worked in a natural foraging area in a forest with meadow patches, and mapped locations of where a colony forages. Maps may vary each day. This "information center" foraging strategy changes foraging patterns based on information scouts bring back. By comparing dance information, recruited foragers concentrate on the highest quality and closest forage opportunities. Experienced foragers reevaluate their behavior, although they are reluctant to change.

Foraging honey bees also exhibit a floral "species diversity preference". They may fly a greater distance to a preferred source, flying past other profitable flowers to reach foraging sites, just because those sources are different and perhaps more stimulating. Presumably, nutrients from diverse flora are required by the colony.

The extensive body of knowledge associated with foraging behavior and distribution patterns are interpreted and reported by numerous authors. The following offer extensive disscussion on the topic:

Caron, D. M. 1999. *Honey Bee Biology And Beekeeping.* Wicwas Press, Cheshire, CT.

Gary, N.E. 1992. *Activities and Behavior of Honey Bees*, Chapter 8 In: The Hive And The Honey Bee, J.M. Graham (ed), Dadant and Sons, Inc., Hamilton, IL.

Seeley, T. D. 1985. *Honeybee Ecology.* Princeton University Press, Princeton, NJ

Winston, M.L. 1987. *The Biology Of The Honey Bee.* Harvard University Press, Cambridge, MA.

GLEANINGS

NOVEMBER, 2000 • ALL THE NEWS THAT FITS

Pollination Possible
NEW BLUEBERRIES

Thanks to research accomplishments at the ARS Small Fruit Research Station in Poplarville, Miss., farmers from Mississippi and other Gulf Coast States have become a presence in the blueberry market.

The Poplarville station has released six new blueberry varieties to date, including Jubilee, Magnolia, Pearl River, Cooper and Gulfcoast, which are all available commercially. Biloxi, the newest blueberry, was recently released in honor of Biloxi, Mississippi's 300th birthday.

Typically, southern blueberry growers are small farmers who net about $2,000 an acre. The total blueberry acreage in Mississippi is about 1,800 acres, and there are about 10,000 acres in the Gulf States region. Total U.S. production of fresh and processed blueberries in 1999 was 180.2 million pounds, valued at $156 million.

ARS researchers help these farmers by developing new varieties and improving cultural practices, pest control and postharvest handling.

ARS researchers are also investigating bee pollinators that may potentially help the Southeast's blueberry production, given the lack of

Continued on Next Page

Just Like 2000
RECOURSE LOAN AVAILABLE

On Monday, September 12, the Department of Agriculture finally authorized release of funds to implement the honey recourse loan program provided for in the Agricultural Risk protection Act of 2000 signed by the president into law on June 20. The program is exactly the same as the program that had been in effect last year. Instructions had been issued to the field on administration of the programs, but funds to implement the program had been held up in the Department of Agriculture pending issuance of an omnibus regulation implementing a number of different provisions authorized by the Act. Through the help of the American Honey Producers Association and Bob Bor, its Washington Counsel, the Department agreed funds could be released for making honey recourse loans since the honey provision in the law was self-executing similar to the provisions relating to AMTA payments.

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BLUEBERRIES ... Cont. From Pg. 49

native blueberry pollinators.

The Osmia ribifloris bee, which is native to the western United States, is a promising pollinator. In its native range, the bee gathers pollen from manzanita, a shrub like tree with flowers that closely resemble those of blueberries. Poplarville researchers are developing strategies for growers to release and manage these bees.

ARS researchers have undertaken a new project where they are screening southern cultivated and wild berries, including blueberries, for their resveratrol-producing potential. Preliminary evidence suggests resveratrol has anti-cancer properties and cardiovascular benefits.

Top 10 Signs That You've Had Too Much of the Modern World

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8. You have a list of 15 phone numbers to reach your family of three.
7. Your daughter sells Girl Scout cookies via her Web site.
6. You buy a computer and a week later it's selling for half the price you paid.
5. Cleaning up the dining area means getting the fast food bags out of the back seat of your car.
4. Your reason for not staying in touch with family is that they do not have e-mail addresses.
3. You consider second-day air delivery painfully slow.
2. You refer to your dining room table as the flat filing cabinet.

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CRANBERRIES DOWN IN 2000

The forecast for the 2000 cranberry crop is 5.84 million barrels, down 8% from 1999 but 7% above 1998. Oregon and Washington are forecasting increases from a year ago while Massachusetts, new Jersey, and Wisconsin are expecting a decrease.

The cranberry industry has a marketing order under which growers can only sell 85% of their sales history to the processors for the 2000 crop year. These restrictions apply to all five of the major cranberry producing states.

Due to the marketing restrictions many growers cut back on inputs or acres to restrict production and cut costs. The reduced inputs include using less fertilizer and not purchasing bees for pollination.

Production in Wisconsin is forecast at 2.90 million barrels, 13% below 1999 but 15% above 1998. Production has declined largely due to reductions in inputs. The season started out well with little Winter damage but the cool, wet July is keeping production low. Some hail damage was also reported.

The Massachusetts crop is forecast at 1.83 million barrels, down 3% from both 1999 and 1998. A mild Winter caused little Winter damage plus very few insect problems were reported. Growers indicated that the crop had average pollination and set with medium berry size. Growers reported some root rot from the heavy rains but indicate that the crop looks good.

New Jersey expects a crop of 550,000 barrels, down 20% from 1999 but 6% above two years ago. Growers reported good fruit set. Fruit size was reported as average. No significant weather damage was reported but production is expected to drop due to reductions in inputs by the growers.

In Oregon, the crop is forecast at 410,000 barrels, 28% above last year's crop and up 15% from 1998. This year's crop experienced good pollination and fruit set conditions. Fruit is sizing and coloring nicely. No abnormal problems with pests were reported.

The Washington crop is forecast at 153,000 barrels, 4% above last year but 9% percent below 1998. Washington had a mild Winter with little frost damage. Bloom was early and heavy. Weather conditions contributed to good bee activity and favorable pollination. Insects and weeds have been a problem but weather conditions have been highly favorable for a good crop.

Production of cranberries in the United States in 1999 totaled a record high 5.37 million barrels, up 17% from 1998. The area harvested, at a record high 37,300 acres, increased 2% from the previous year. The average yield of 170.9 barrels per acre was 22.2 barrels above 1998. The average price per barrel for 1999 is $17, a decrease of $21.80 per barrel from the 1998 crop year.

From Fruit Grower

2000 TEXAS HONEY QUEEN

Colleen Henson, daughter of Margaret and Barry Henson of Eddy, TX is an honors graduate of Bruceville-Eddy HS and is attending McLennan Community College.

She is a dance instructor, active in church, runs track, and spends her free time dancing, fishing and working on the family farm.

An accomplished beekeeper, Colleen gives demonstrations on beekeeping, hive construction and the many uses of hive products.

As official spokesperson of the TX Beekeepers Assn. she has made numerous appearances this year at schools, clinics field days, stock shows and the State Fair to promote all aspects of beekeeping.

Colleen will proudly represent Texas in the ABF competitioni at the Convention in San Diego in January of 20001.

Honey Producers and Sioux Honey

ANTI-DUMPING SUIT FILED

On September 29, 2000, the American Honey Producers Association and the Sioux Honey Association filed an anti-dumping and countervailing duty petition against honey from Argentina and the People's republic of China.

Collectively, imports, Jan through June of 2000 exceeded 100 million pounds; 51.9 million from Argentina and 22.4 million from China. These imports have captured a 43.6% share of the domestic market, nearly half of the U.S. market. When all imports are considered, U.S. producer's share has dropped from 47.9% in 1997 to 44.2%in 1999, to a low of 39.4% by June 2000. Moreover, the accumulated volume of honey inventories in producer hands amounts to roughly 40% of production in 1999.

Further, 23 million pounds of honey were imported in July this year with 10 million pounds coming from Argentina and 7.5 million pounds from China. This is a 12% increase over the same time frame in 1999. If the trend continues, imports will exceed 200 million pounds. If domestic production this year is 200 million pounds and that is coupled with the 80 million pound domestic carryover from 1999 there will be 480 million pounds of honey in this country. There is annually a 325 million pound market in the U.S.

The petition, drafted my M.J. Coursey of the law firm Collier, Shannon, Scott, PLLC, is very comprehensive. The results of the economic studies in both Argentina and China are apparent and the consequent impact the low prices are having on the American honey industry is very evident. The increase in the volume of imports from Argentina and China has been achieved through aggressive pricing and underselling of domestic producers. As a result, we have seen severe price depression and suppression of U.S. produced honey, as well as lost sales and market share.

AHPA GETS LDP

The conference report on the agriculture appropriation bill includes a provision that makes economic assistance estimated at $20 million available to hard pressed commercial beekeepers on their 2000 crop of honey. The conference report was filed Friday, October 6, 2000, and is expected to pass both Houses of Congress this week and be signed into law by the President.

The provision was added to the agriculture appropriations bill at the instance of Senator Cochran (R-MS), a good friend of the honey industry. In drafting the language of the honey provision, Bob Bor, Washington counsel for the American Honey producers Association, worked closely with Hunt Shipman on the Senator's staff.

Assistance would be provided in the form on nonrecourse marketing assistance loans at a loan rate of 65 cents per pound. The amendment would allow the loans to be repaid at the prevailing domestic market price for honey, as determined by the Secretary. On the other hand, a producer could forgo obtaining the loan and receive, instead, a loan deficiency payment on the honey equal to the difference between the loan rate and the loan repayment prices.

To provide an orderly transition to the new program, the conference report would convert outstanding recourse loans for the 2000 crop into nonrecourse loans at the 65¢ per pound rate. In addition, loan deficiency payments would be made to producers who had marketed or redeemed honey prior to 30 days after the date of enactment of the Act. Payments would be based on the payment or gain the producer received as of the date on which the producer lost beneficial interest. To assure prompt implementation of this amendment, the conference report provides that the Secretary of Agriculture must begin making loans and loan deficiency payments not later than 30 days after the date of enactment of the conference report.

The same payment limitation on marketing loan gains and loan deficiency payments that applies to other crops would also apply to honey. Elsewhere in the bill, that limitation was increased for the 2000 crop from $75,000 to $150,000.

Both the Federation and Producer organizations worked earlier this year for LDP without success, and settled for a recourse program. Apparently, continued pressure from Mississippi beekeepers and AHPA representatives persuaded Cochran to negotiate with house Ag people to get this through.

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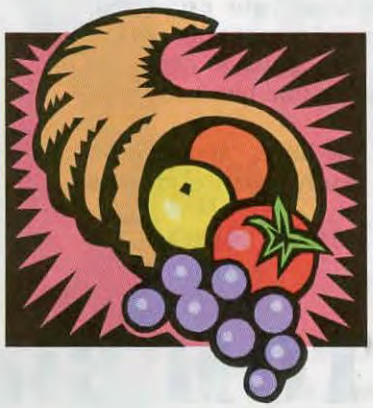

A beekeeper up the road told me that he had just stepped into the shower and turned on the water when he discovered the cistern had gone dry. Bobby Gene hollered out the bathroom door for his wife to turn on the well pump, but she didn't respond. He went to the front door and hollered. No answer.

As he was standing there, it occurred to him that the pump switch for the well was just a few strides across the yard and that, since he lived on a country road, no one was likely to see him parading around in his shower sandals.

"So, you didn't even put a towel on?" I asked.

"Nope," he said proudly, "I was in a hurry."

He had just taken the first couple strides toward the switch when a bee buzzed by. Bobby Gene doesn't keep any bees in his yard. They're all out in various pastures, miles from his home.

Like any other beekeeper, he stopped to watch its path through the yard to see where it was going. It takes me a dozen or more bees to establish any kind of direction, and I imagine Bobby Gene stood there a while in his shower sandals watching bees before he noticed that they were headed toward a large shed.

Following the bees into the shed, he looked up to see an enormous swarm hanging overhead from the shed trusses. He told me he could tell they were getting ready to move and that there was no time to lose.

He did not have a ladder tall enough to reach the swarm but, after a moment's thought, he had the solution.

Hurrying out into the yard, he began hauling in empty hive bodies and started construction on a stepped pyramid. It was slow progress, and it wasn't until near the end of the building process that his wife showed up. She first saw him scurrying across the yard carrying a hive body and wearing only his sporty shower sandals.

"What the heck do you think you're doing?" she exclaimed, for it wasn't Bobby Gene's habit to go around so scantily clad.

"I don't have time to talk," he said. "I'm going to climb up there about halfway and then you hand me up that hive body with the bottomboard on it."

"And there I was," Bobby Gene told me later, "standing on top of a mountain of boxes stark naked, gently lowering chunks of that swarm into a hive."

"You weren't a little apprehensive?"

"No, no. They're so tame when they're hanging in a swarm. You know, they're without a home and it's almost like they're a little embarrassed about it. They're shy. Kind of like me with no clothes on."

"But you weren't terribly embarrassed."

He ignored my comment, and I could see he was deep in thought.

"You know, I could have made a lot of money on that swarm," he said thoughtfully.

"How's that?"

"I should have had the wife go in and get the video camera. Wouldn't that have made the greatest video?"

"I suppose it would have," I said, but I wasn't sure who he wanted to show it to. There are some audiences that would not have been receptive. Family get-togethers and Sunday schools were definitely out. So were friends and neighbors.

"I could have sent it to that TV show and won a hundred-thousand dollars."

"Too bad," I said.

"Gosh, I wish I had thought of that at the time."

"But they would have had to edit certain parts out, if you know what I mean."

He looked at me, like he wasn't sure what I meant.

"I mean, it's not an X-rated show."

"Oh, sure, I suppose so. We would have had to do some editing. Still, it would have won hands down."

"Certainly better than the beard-of-bees trick."

"Oh, without a doubt. I never heard of anyone doing the beard-of-bees with no clothes on."

"Me either," and I meant it. I just hope he doesn't try it again.

Bee Naked!

Ed Hughes

BOTTOM BOARD