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Bee Culture



Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

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COVER

Sometimes, the best part of beekeeping is done on the couch, in the Winter, in our dreams. But don't dream too long, Spring is on the very next page.

Painting by Lela Dowling & Jonathan Taylor

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KEEP IN TOUCH

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WA Inspector Gone

I regret to inform you that the Director has made the decision to terminate the Industry Apiary Program in Washington. My last day with the department will be January 5, 2000, but I will be out of the office after Wednesday December 22, 1999.

I have enjoyed working and communicating with each of you over the years. Thanks for all your efforts on behalf of U.S. apiculture.

I'm not sure what I'll be doing next, but I may be back in touch if it is in relation to the apiculture industry. If you care to stay in touch or to contact me you may email me at: jcbach@yvn.com.

James C. Bach
State Apiarist, Washington

Bottomboards, etc.

Whenever *Bee Culture* arrives it is without fail that anticipation of something new to be learned becomes a renewed experience every time. Congratulations on a splendid easy-to-read magazine with pertinent topics. There is for instance this "Wise Guy" column. Somebody had comments about the anonymity of the author. Well I don't have any problem with that, having had experiences of adverse happenings when somebody took offense to my opinion and retaliated with letting his displeasure out on my mailbox. And that happened not only to me. As a result I will never again write to the editor of the local paper with my signature.

At one time in the 70/80s I was a "Bee haver" of a multiple stack of deep hive bodies and two or three supers for the harvest. And that is all I ever did: Harvest. I had no notion about the bee intricacies. Out of this hive came once a swarm settling on a apricot tree branch of 1.5 in diam., five feet off the ground and about four feet wide. The very tip of the bunch was draped onto the gravel by

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about two feet. It broke the branch. But I collected it into a LARGE carton. Smoking the bees for the harvest procedure only resulted into blowing the smoke back to me. The use of this stinky stuff made them mad and I gave up on that too. Since 1995, now living on the Olympic Peninsula/WA, matters changed and I am trying to now to be a "Keeper" instead of a "Haver."

And that finally brings me to the "Screened Bottom board." This information and the pros and cons, if any, you find in Dr. Tom Sanford's Apis letter of June and December 1999. As soon as I read this design, I saw the advantages. Got in touch with a cabinet maker to do a deal, because one needs not just a hand saw and a hammer to do those contraptions ending up with a decent, sturdy job. All it really means that a hobbyist can do that sort of thing. For a commercial outfit I cannot see it to be cost-effective.

The bees have no problem walking on the screen up to their quarters. One does not need any more sticky boards or other means to mess with. The result: This time around we were allowed to use the Bayer strips (Coumaphos) as alternative to Apistan. The application started at the beginning of September. After 24 hours, all boards were covered with debris and *Varroa*. This continued. The count about two to 3000. Then I did not check until I came back from Vancouver and checked, counted and cleaned daily for another week of which DAILY 3000 to 5000 *Varroa* were counted (By square inch multiplied) It then diminished rapidly to nothing. During the season I never saw a mite on the bees nor did spot-checks with an ether roll reveal any mites in the glass. As I mentioned, I started in April with 8 colonies and ended up with 14 of which a lot are combines and except for two splits are swarms from everywhere. Next time I will

quarantine, place away from mine and treat before going into honey dos. I had however one colony with tracheal mites and they perished totally. (My fault). All my hives are elevated by about one foot above grade level. The ground is covered with plastic sheeting and over that wood chips. In pollination yards I use one gallon paint cans filled with gravel to elevate the hives.

Helmut E. Garz
Sequim, WA

Excellent, Dr. Ellis!

Just wanted to let you know that I support your editorial policy, and I don't think it necessary to include names to articles that are obviously editorials.

I had the distinct privilege of attending the Master Beekeeping School put on by Dr. Marion Ellis at the University of NE Ag Research Station near Mead last July. They were three of the most profitable days in my years (27) of keeping bees. Dr. Ellis is an outstanding educator and his widely varied resource staff did an excellent job of teaching the craft from the ground up. Included as a parallel course was the queen-rearing short-course taught by Dr. Marla Spivak and Gary Rueter from the University of MN. Together, this team brought a most delightful and educational experience for those who attended. The cost was most reasonable and included five meals. It was a real Beekeeping Bargain, and so well done. Thanks, Marion!

Larry Dieckman
Elburn, IL

Pig In A Poke!

For some time I have had heart problems, and finally had open-heart surgery. During this time I failed to read my *Bee Culture* thoroughly. Since I began feeling better, I have been reading my

Continued on Next Page

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back issues, and have found some things which I believe need to be given much more attention!

The first thing to annoy me, is how many bee breeders fail to name the breed of bees in their commercials. Just packages and queens! Do these breeders actually expect a prospective buyer to, as we say, buy "a pig in a poke?"

Arnold Bruck
Remington, IN

MN Hygienic Bees

After careful thought, I have decided to have Tom and Suki Glenn, of Glenn Apiaries maintain and sell breeder queens from the hygienic line of bees that I have bred here at the University of MN. They currently sell inseminated breeder queens, and I am confident they will do an excellent job at maintaining the line. Over the past two Summers, I have found that the time that I spend on evaluating, propagating and inseminating the line cuts into time I should be spending on new research projects. Tom and Suki will provide me with the queens that I need for experiments, and I will continue to evaluate the performance of the queens for disease and mite resistance, honey production, and Winter hardiness.

The bees will be called "Minnesota Hygienics." They are derived from a mixture of Italian colonies I have collected and evaluated from various locations throughout the U.S. Tom and Suki will maintain and sell them separately from their cordovan hygienic line.

My goal in breeding the hygienic line of bees was to demonstrate to the beekeeping industry that this behavior is a mechanism of resistance to American foulbrood and chalkbrood, and is one mode of defense against *Varroa* mites. I wanted to demonstrate how to select for the behavior so that queen producers could breed for it from among their own stocks. I think I have accomplished these goals. The most effective and genetically sustainable way to

propagate the hygienic trait in U.S. bees is to have many queen producers selecting for it, and I think there are many out there that are now doing that. However, there is demand to have queens from the breeding program available now, so I have decided to have the Glenn's help make them more readily available to the industry.

The breeder queens from the MN Hygienic line demonstrate good resistance to AFB and chalkbrood, and some resistance to *Varroa*. I am defining resistance as the ability to defend themselves against these diseases and mite better than unselected colonies. Naturally mated daughters of the breeder queens will still require treatments for *Varroa*, however at less frequent intervals. If left untreated, especially when mite invasion pressure is high (when many colonies are located in one location for pollination or in migratory beekeeping) even the most hygienic colonies eventually will collapse. Don't be fooled by the word resistance!

In these times, it is important to propagate lines of bees that can defend themselves against diseases and mites. I'm glad to be involved in this endeavor.

Marla Spivak
University of MN

To The Wise Guy

I am writing to shed some light on two points made in your December issue in "The Wise Guy" article. I would write directly to the author, but he/she prefers to hide behind this nom de plume. Surprising, Jerry Stroope and I share the same views on this anonymity (December Mailbox).

With regard to the proposed USDA purchase of 10 million pounds of honey, Guy says that "the ABF remained quiet." If Guy or anyone else who wants to be informed will contact the ABF Office, we will send him a copy of our February 23, 1998, letter to Agriculture Secretary Glickman in which the ABF "requests that you exercise your authority to purchase a minimum of 10 million pounds of U.S. produced honey to remove this honey from the

marketplace."

With regard to the issue of the honey loan rate, the ABF view is that the loan should be a loan and that a producer should use the loan to bridge between production and marketing. We have recently heard of some producers who put all their 1998 honey into the loan at the full rate, couldn't sell the honey for that amount, and were wondering how they could repay the loan. What effect does the loan rate have on the market? That's probably an unanswerable question. It does seem certain that a loan rate set near the market price would have more effect than a loan rate more distant from the market price.

Lastly, I do agree with Guy about joining organizations. A phrase we have used at ABF is "Join and Support the National organization that Supports You."

Troy Fore
ABF Executive Director

'Swinging' Extractor

Bee Culture had an article a few months back with plans for a one-man extractor, handheld, above the head, swinger type of thing.

Our beekeepers in our club are relatively new with few hives. A couple decided to try the design.

The extractor came out just like the picture. More honey came out in the uncapping phase.

Four men about had heart attacks swinging that thing around. The rest of us about had accidents from laughing so hard. Made for a wonderful bee-type experience.

Judy
Kentucky

Splendid "Inner Cover"

Congratulations on your splendid "Inner Cover" column in the October *Bee Culture*.

Your review of the effects of TV on print media as an analogy for what the Internet portends is masterful. Without question, the heat is on print media to not only add value to readers with interesting and useful in-depth material, but also to achieve and maintain the credibility that can be lacking

MAILBOX

on the Web, where anyone can say anything about any subject they please. The Internet is an all-too-fertile field for junk science, junk art and even junk beekeeping and junk apitherapy.

You correctly point out the importance of these changes for magazine and newsletter writers, and offer helpful words of advice. In reading your column, however, I wondered how much it was aimed at others and how much was it targeted at the editor of *Bee Culture*.

Gary Shilling
New Jersey

Barn-A-Bees



Maurice Ludington (age 90) discovered this hive, 20 feet high under and on the side of an old barn, September 15. Maurice said in 60+ years of beekeeping he has never seen a hive this big outside.

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Se Habla Español



Skunk Control

I read your letter from Loren G. Sanders from Stevens, PA with much sadness, concerning how he handles his skunk problem. I have only been a beekeeper for about 20 years. Much of my beekeeping knowledge has been gleaned from Richard Taylor. I was drawn to Mr. Taylor because of his philosophy of beekeeping and life. The beauty of nature and all that lives on this earth are intertwined. I remember one article about mice and mouse guards. The bottom line being was if a mouse got into your hive, it wasn't the fault of the mouse, but your fault for not keeping the mouse out. I also have skunks that visit my bees, but I learned a very simple way of solving the problem without killing the skunk. The problem is not his but mine.

Take a piece of tack stripping used to install carpeting. Nail it in front of the hive entrance. When Mr. Skunk tries to smash a bee he will instead draw back a wounded paw and your skunk problem is solved. Mr. Skunk will leave to go eat grubs and other pests and insects.

When I was a young man, I found killing animals easy. Today, life has become very precious to me.

Larry Sholtey
Ludington, MI

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INNER COVER



On the shortest day of last year, I, in earnest began my beekeeping plans for the longest day of this year. This event, and it is an event, marks the first time ever I have begun these mundane tasks while it was still too cold outside to wear a short sleeve shirt. Partly that's because those chores have always been relegated to an unheated, over crowded, poorly lighted, and drafty garage. Putting frames together with fingers too

numb to pick up those tiny nails wasn't for me. It'll wait I always thought. And it always did. Too often too long, but such was the cold, the light and available time.

This year has to be different though, different in many ways, but mostly different in how I'll be dealing with the bees in my charge. Not forsaking the traditional entirely, I am looking at the challenge of using nucs as the basic hive unit. Jim Tew's interest in nucs spilled over this past year and the advantages, and disadvantages, though fairly well defined already by others, need to be reexamined I think.

So new boxes and such need to be made, hive stands (I don't have any at all) are to be built and a different way of thinking needs to begin. Not a lot of new must be procured as many parts and pieces from the other equipment I have can be drafted into service. And there have been many who successfully manage this way, not out of desire but by necessity, producing respectable populations, controlling swarming and, yes, making honey and overwintering. It can, and has been done before. So I'll give it a try for a few seasons. We'll see.

From the 'What's Good For The Goose' department. Argentina, along with Uruguay, Paraguay, Brazil and associate members Chile and Bolivia, belong to a South American trade group called Mercosur, similar to our NAFTA. At their last summit meeting in December they had some trouble, and made some progress in aligning their economics more clearly. The problems, or disputes if you will, center on Argentina complaining about 'supposed' dumping of products by Brazilian firms that at the moment have a large cost advantage. According to the magazine *The Economist*, an Argentine judge, in November imposed quotas on imports of Brazilian chicken on the grounds that it was being sold at "ridiculous" prices. Brazil, of course, is threatening similar actions if the quotas aren't changed. (Sound familiar?)

Other products from Brazil were in similar straits, but resolved their problems with the government's help by setting either import quotas or minimum prices or both.

Brazil's Foreign Minister complained to *The Economist* that Argentina did not restructure enough (read: become more efficient) when times were good, thus keeping Argentinean produced goods expensive. Except honey, I guess.

If all goes as planned, our March issue will be somewhat historic. In 1989 The National Honey Board, in a brilliant move, commissioned Dr. Roger Morse, and others to actually calculate the value of honey bees to U.S. crop production. That figure, \$9.3 billion, has probably been cited in defense of maintaining the beekeeping industry, in defending honey bees and beekeepers, and in arguing for research funds more than any statistic, in fact more than all statistics put together. It was a real, fact filled research project that was produced. *Bee Culture* published a synopsis of the article then and did a major promotional blitz (to something like 150 ag and science magazines, newspapers, TV and radio outlets). The entire article was published as a peer reviewed research paper.

The National Honey Board, again in their wisdom, has financed the cost of updating that report, and will be using, again, the final outcome in a variety of ways. The report, however, will be published here in it's entirety, next month (again, if all goes as planned). It is fairly lengthy and contains data on, essentially, all major crops produced in the U.S. using commercial pollination.

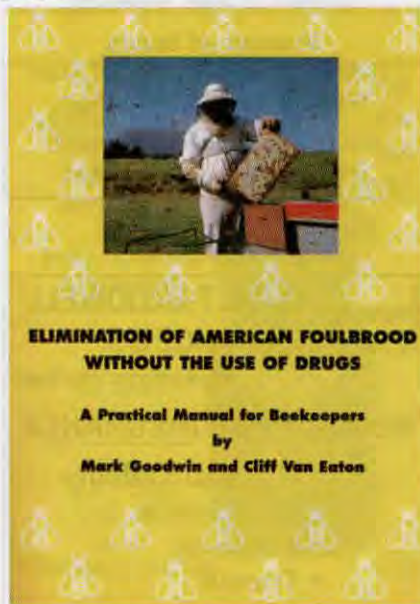
And yes, I have seen the final draft, and yes the value of honey

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This, That, and New Zealand Bees.

New For You

Elimination of American Foulbrood Without The Use of Drugs. A Practical Manual for Beekeepers. Mark Goodwin and Cliff Van Eaton. Published by the National Beekeepers' Association of New Zealand. Soft cover, b&w, 78 pages.



In the January issue of this magazine we published an article by the two authors that summed up this book. The book, however, goes into much greater depth on not only the examination program used in that country, but all of the ways used to keep AFB not only under control but at an almost zero level, even in commercial operations with thousands of colonies used for both migratory honey production and pollination.

AFB in this country is for the most part, controlled or prevented with drugs. Some states still require burning colonies infected, others only when the disease becomes rampant in an operation. This book takes AFB out from under the protective drug umbrella and relies on sound management, careful examinations, burning, cleaning and other techniques to essentially eliminate the disease. This isn't a bad direction to choose considering the outbreak of AFB resistant to the only drug available for control. Available from bee book supply companies.

Go Native. Gardening with Native Plants and Wildflowers in the Lower Midwest. Carolyn Haustad. Indiana University Press. 304 pages 124 b&w and 64 color photos. ISBN 0253213029. \$24.95.

The plants covered in this book are focused in the lower Midwest, but flourish in much of the country, excepting the extreme north and south. The book contains advice for all levels of gardeners from starting the garden to the finished product. Where, and how to buy plants are explained, and each has planting requirements, how to propagate, some bits on each plant's lore and a good description. Each has a detailed line drawing, and the color photos highlight the more showy. Many, of course are plants that attract honey bees, so providing a quick snack, and a beautiful garden can both happen in your backyard.

Farmageddon. Food and the Culture of Biotechnology. Brewster Kneen. New Society Publishers, P.O. Box 189, Gabriola Island, BC V0R 1X0, Canada. ISBN 0865713944. Paper, 229 pages. \$16.95 U.S.

The subject of this book, corporate control of biotechnology for corporate profit and the public be damned came to a head during the Battle at Seattle last December. Whether the author (he lives in BC) was part of this or not is unknown, but his ideas were certainly present.

Basically, the thrust of this book is that, at some time in the not too distant past, several corporate leaders sat down together and decided that, since their respective companies specialized in both ag products (seeds and chemicals) and pharmaceuticals (drugs to let us live longer), it would be profitable to 1) produce as much food as possible (and control all production technologies), so people would live longer (and more would live in developing countries); so, 2) those long-lived people (more of them, now that they are eating well), would require more and more different drugs to stay alive.

The WTO mess brought this to

light, at least partially, and perhaps for that reason, and maybe this book, several of these giant conglomerates are now rethinking this philosophy. Supported with several first-hand accounts and a few leaps of faith, this book makes interesting reading, and, if you are concerned about this subject, should be understood.

English/Spanish, Spanish/English Illustrated Agricultural Dictionary. Robert Rice. Thompson Publications, P.O. Box 9335, Fresno, CA 93791. Paper, 160 pages. \$27.95 from the publisher.

We recently published a series of articles on labor in the beekeeping industry. One of those dealt with working with seasonal migrant employees. That many of these people speak Spanish was a given, but what wasn't was how to communicate with them. This book goes a long way in solving that problem. It has only a few actual beekeeping terms, but is rich in shop tools, plants, animals, machines and crops. It has many line drawings, but mostly the English to Spanish translations of words and phrases, and an equal number of Spanish to English translations.

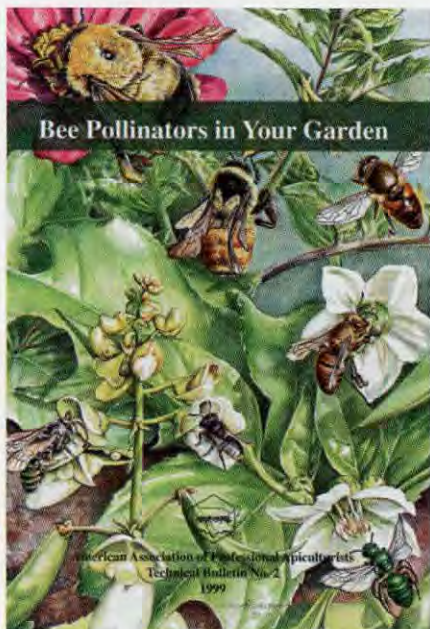
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Bee Pollinators in Your Garden is the newest publication of the American Association for Professional Apiculturists, edited by E.C. Mussen, M. Spivak, D.F. Mayer, and M.T. Sanford. It is an 18-page, 8" x 5½" color booklet that covers the following topics: Why Bees are the Best Pollinators, What is a Bee?, What Bees are Common? Habitat for Bees, Insecticides and Bees, and lists of sources for honey bees, non-Apis bees, bee equipment and references. Color photos of bees on flowers are provided for rapid identification. This is an ideal reference for beekeepers, master and home gardeners, and anyone interested in the conservation and value of bees as pollinators.

See www.entomology.umn.edu/AAPA/aapapubs.htm for pricing and contacts, or write to Dr. Marla Spivak, AAPA Secretary, Department of Entomology, University of MN, 1980 Folwell Ave., 219 Hodson Hall, St. Paul, MN 55108; email: spiva001@tc.umn.edu

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THE WISE GUY

Where is our business going? In what direction are we headed? Guess who holds those answers! You! If we sit and complain about low prices and high expenses, all we get is a headache and red eyes. Let's work to solve problems, not rehash them. I cannot stress this enough. I believe if we work toward a program that places a value on country of origin and not allow blending of different countries' honey, we will get a stable price and establish a stable market.

Let each product stand on its own merits. Again, if the packers in this country do not want to support this, then we as producers must move the honey industry ahead ourselves. I can see why some people may have a problem with this. If you have read the article about honey tested in Hong Kong by the World Health Organization, you see that it was not even honey. The honey appears to have come from an Asian country. It appears water and sugar are being added to honey to make a cheaper product. To quote the Hong Kong Consumer Council spokesman, Lo Chi-Kit "If you mix pure honey with something cheaper, that could mean a higher profit margin for that product, if you sell it as pure honey."

Doesn't this statement hold true with what's going on now? Packers are adulterating pure American honey with cheap imports, and we have no idea what it is or how it is produced! Folks, that is why we need to stop crying and take some action. Maybe we need to have the World Health Organization do some spot checks in this country. Wouldn't it be interesting to have some of those results published?

We need to regroup and to use

the name and product of honey as it should be used - as a value added product. We hear the Honey Board tell us of all the products that contain honey, and if you look at the packaging it shows honey all over the container. Our honey helps sell that product. We have raised the public's awareness of honey, and people buy that product because of honey. But when trying to wholesale to packers they tell you that they are competing with other sweeteners! I believe they are full of manure. How many breakfast cereals have you seen that say in large letters "with corn syrup" or "laced with sugar"! Or "dripping with Karo syrup"? None! Either they are stupid or we are to believe them. Folks, the packer mentality today is price, price, price! We have to bring the honey industry out of the tailspin the marketing people put it into.

Country of origin does not discriminate. Country of origin does not stop imports. Country of origin does not stop the blending of honey. It only stops the blending of different countries' honey together. How do you get this product information out to the public? Write articles in your newspaper giving them facts about honey and the benefit of using United States-produced honey. Tell about different floral sources. In most areas there are local cooking shows. Donate honey to these and make sure they understand it is U.S. honey and again talk about the floral source. When given the chance to give informational talks in your community, tell the same story. Our marketing efforts have to be at the level where we can be the most effective. We also will not be able to solve this overnight.

Wise Guy



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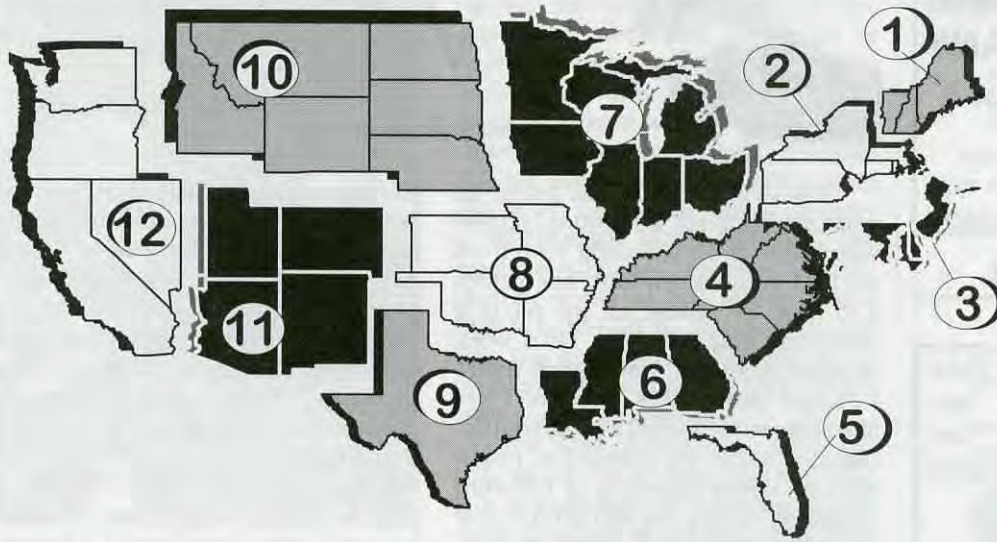
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FEBRUARY - REGIONAL HONEY PRICE REPORT



We polled our reporters this month (January, actually) on their expansion plans for the coming season. We asked if they were going to expand the number of colonies they operate, what they will do with their retail and wholesale sales and what product lines they thought would enhance their operations.

COLONIES. Colony number increase appears to be on the horizon for only a third of our reporters, while fully two-thirds plan no expansion. Downsizing isn't a big threat, but growth definitely has slowed. Queen and package sellers take note.

RETAIL HONEY SALES. Across all regions 41% of our reporters plan on expanding their retail sales. Nearly 46% will stay the same (this makes 87% growing or not declining), while 13% either don't sell retail (5%) or will downsize at this level.

WHOLESALE HONEY SALES. Only 25% of our reporters will be expanding their wholesale sales this season, though 45% will be staying, or trying to stay at the same level of sales. Reducing is being considered by 11%, while 16% don't sell wholesale.

When combined, 28% will be pushing for more sales at both retail and wholesale, 34% will be trying to keep sales for both at the same level as 1999. Good luck.

Reporters looking to either expand their operations, or to broaden their lines are looking at several options. Producing nucs and queens was often cited, which at first glance appears questionable when two-thirds aren't expanding their colonies. However, 'locally grown' has a better ring than bees from just anywhere - beetles and all the rest considered. Different kinds and sizes of con-

tainers bode well (see Ann Harmons's article, this month), and producing 'added value' wax should be profitable. Gift boxes, especially around the holidays was cited, and both starting, and expanding pollination services should do well, as long as costs are known, and covered.

	Reporting Regions												Summary		History		
	1	2	3	4	5	6	7	8	9	10	11	12	Range	Avg.	Last Month	Last Yr.	
Extracted honey sold bulk to Packers or Processors																	
Wholesale Bulk																	
60# Light (retail)	66.85	68.29	74.00	68.71	73.50	66.33	61.50	71.67	80.00	77.50	65.33	58.50	40.00-100.00	68.26	69.25	60.86	
60# Amber (retail)	62.82	63.29	68.00	68.23	60.00	63.00	61.00	65.00	87.50	62.00	61.17	52.25	39.00-100.00	64.32	66.15	57.16	
55 gal. Light	0.55	0.53	0.57	0.53	0.45	0.52	0.51	0.57	0.50	0.52	0.55	0.53	0.45-0.70	0.55	0.60	0.75	
55 gal. Amber	0.51	0.53	0.53	0.49	0.40	0.45	0.47	0.53	0.50	0.47	0.48	0.50	0.40-0.70	0.50	0.58	0.71	
Wholesale - Case Lots																	
1/2# 24's	28.00	27.09	27.81	31.42	27.81	27.83	28.36	27.81	30.00	27.81	26.98	33.50	24.48-42.00	29.19	28.43	30.04	
1# 24's	42.50	42.09	46.80	43.48	43.20	42.50	42.12	39.00	45.00	42.00	46.87	47.28	32.40-60.00	43.34	43.73	42.91	
2# 12's	38.39	37.46	45.60	43.07	38.40	38.25	38.16	40.10	41.33	37.50	37.60	39.67	29.40-52.58	39.34	39.07	39.57	
12 oz. Plas. 24's	36.14	35.59	43.20	37.34	34.80	36.40	35.51	35.16	40.00	37.40	42.25	35.70	26.40-48.00	36.93	37.43	36.19	
5# 6's	41.49	42.84	44.00	46.90	47.12	44.50	39.26	39.00	48.00	41.25	41.40	37.90	31.50-67.50	42.37	41.93	41.49	
Retail Honey Prices																	
1/2#	1.72	1.54	2.83	2.17	1.39	1.65	1.62	1.76	2.75	1.49	1.89	1.88	0.95-3.00	1.76	1.76	1.81	
12 oz. Plastic	2.18	2.17	2.85	2.40	2.15	2.16	2.00	2.22	2.38	2.16	2.34	2.21	1.39-2.99	2.23	2.26	2.25	
1 lb. Glass	2.64	2.53	2.95	2.85	2.56	2.60	2.40	2.58	3.50	2.35	3.01	2.91	1.58-4.00	2.68	2.73	2.75	
2 lb. Glass	4.32	4.09	4.80	4.92	4.37	4.24	3.98	4.67	4.75	4.17	4.39	4.39	3.19-6.00	4.41	4.50	4.70	
3 lb. Glass	6.14	6.47	6.80	6.28	6.12	6.40	5.48	6.38	7.20	5.49	6.37	5.73	3.99-10.00	6.26	6.17	6.46	
4 lb. Glass	7.55	7.66	7.97	7.76	7.97	7.53	8.24	7.99	7.00	8.50	7.97	8.60	6.00-10.00	7.90	7.66	7.95	
5 lb. Glass	8.35	8.03	11.10	9.56	9.00	8.00	8.36	10.99	9.00	8.95	9.10	6.75	2.50-12.50	8.66	9.13	9.43	
1# Cream	3.21	3.06	3.63	3.51	3.63	3.07	2.69	3.24	5.50	2.62	4.48	3.27	2.13-5.50	3.27	3.32	3.24	
1# Comb	4.08	4.08	3.60	4.16	4.06	4.17	3.88	3.99	5.50	4.06	5.38	4.25	1.95-6.00	4.22	4.25	4.31	
Round Plastic	3.68	3.24	3.60	3.96	4.10	4.00	2.88	3.50	5.00	4.10	5.50	3.75	2.50-6.00	3.79	3.95	3.85	
Wax (Light)	2.43	2.81	2.30	2.35	2.84	2.52	2.14	2.30	2.73	2.84	2.10	2.58	1.05-5.00	2.47	2.35	2.64	
Wax (Dark)	2.15	2.28	2.08	1.63	2.54	2.48	1.96	2.54	2.55	2.54	1.85	2.42	0.95-4.50	2.18	2.08	2.21	
Poll. Fee/Col.	35.82	39.40	31.50	33.75	30.00	33.33	38.29	40.00	20.00	37.29	37.29	39.00	20.00-55.00	36.87	37.61	38.89	

? DO YOU KNOW ?

Bee Biology
Clarence Collison
Mississippi State University

In the north, beekeepers will soon be checking their colonies to see how successful they have been so far in wintering their colonies. In addition to evaluating their fall/winter management strategy, they will also be determining the immediate needs of the colony and initiate planning for the spring activities. The social structure of the honey bee colony is maintained by the queen and workers and depends on an effective system of communication. The activities of honey bees are regulated

by many different factors associated with the environment in which they live. Colony success is dependent upon the worker's ability to forage for the materials necessary for colony development, maintenance and survival.

Please take a few minutes and answer the following questions to determine how well you understand various aspects of colony biology and the beekeeping industry.

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

1. ___ Food transmission between worker honey bees in the colony is a form of communication.
2. ___ Adult bees can maintain themselves on honey or sugar syrup alone, but require pollen or a suitable substitute for the production of brood food.
3. ___ Honey bee workers forage for food according to their own needs.
4. ___ Worker bees of the same colony share a common distinctive colony odor which is different from that of other colonies.
5. ___ Worker honey bees work in teams as they build comb.
6. ___ Canola (rape) is an excellent source of nectar but the honey granulates very quickly in the comb.
7. ___ American foulbrood in a colony is an indication of poor colony management.

(Multiple Choice Questions, 1 Point Each)

8. ___ *Paenibacillus larvae* is the causative agent of:
A. Chalkbrood
B. American Foulbrood
C. Sacbrood
D. European Foulbrood
E. Nosema Disease
9. ___ In the past, burning colonies was associated with the control of:
A. European Foulbrood
B. Chalkbrood
C. Wax Moths
D. American Foulbrood
E. Sacbrood
10. ___ All of the following belong to the order Hymenoptera except:
A. Termites
B. Wasps
C. Hornets

- D. Ants
E. Sawflies
11. ___ The cardo, stipes and glossa are associated with the:
A. Wax Gland
B. Compound Eye
C. Pollen Basket
D. Proboscis
E. Stinger
12. ___ The dwarf honey bee is known as:
A. *Apis dorsata*
B. *Apis florea*
C. *Apis cerana*
D. *Apis mellifera*
E. *Apis laboriosa*
13. ___ The honey bee has ___ eyes.
A. Five
B. Three
C. Four
D. Six
E. Two
14. ___ In some parts of the United States Lyme disease is a serious concern for beekeepers and they need to protect themselves from being bitten by:
A. Chiggers
B. Deer Flies
C. Horse Flies
D. Mosquitoes
F. Deer Ticks
15. Give three reasons for requeening a colony. (3 points)
16. What is the first step in requeening a colony? (1 point)
17. Name three functions for the worker's mandibles. (3 points)
18. What two factors determine "division of labor" within the honey bee colony? (2 points)
19. Describe the storage patterns of honey and pollen in relation to brood on a comb removed from the central broodnest. (2 points)

ANSWERS ON PAGE 46



Roger Morse

Research Review

“The puzzle of honey bee communication continues.”

The fact that scout bees use the waggle dance to communicate to their hive mates information about sources of food they have found was discovered by Professor Karl von Frisch in 1944. The fact earned him the Nobel prize in 1972. Soon after it was found that bees use the waggle dance to communicate information about food it was discovered that they use the same dance to provide their hive mates with information about a new home when they are swarming (dividing).

The waggle dance looks much like a figure 8 and is performed on a piece of usually empty comb near the entrance, a place we call the dance floor. The wagging back and forth movement of the abdomen, which takes place between the two portions of the figure 8, indicates the direction of the food or home site in relation to the sun. The rapidity of the dance indicates the distance.

Dance variation

When honey bees perform the waggle dance for food that is within half a mile or so of their hive the direction that is indicated varies. In fact, to use these author's words, the dance is “imprecise.” However, if the same bees perform the waggle dance to indicate the location of a new home, about the same distance from the hive, the direction indicated by the dance is more precise though never perfectly so. When dancing for food or a nest site of more than about half a mile away the dances for food sources and home sites are much the same and show more precision. What is the logic behind this

variation when the bees are dancing to indicate food sources close to the hive?

The tests and results from the paper I discuss here were undertaken to explain why this variation in the dance exists. The answer appears to be that “a bee dancing for a nearby food source should provide relatively imprecise directional information so that the nest mates she recruits will be distributed across the flowers” in the field.

Selecting a research site

The tests reported in this paper were done on a 90 acre island off the coast of New Hampshire and Maine (Appledore Island) and in the Adirondack Mountains of New York State (Syracuse University's Cranberry Lake Biological Station). Both sites have few flowers and Appledore Island has no natural nest sites that might distract the bees away from that provided by the experimenter. A single suitably designed bait hive is quickly and easily found. These areas were chosen because honey bees much prefer natural sources of food over an artificial feeder with scented sugar syrup as was used in these experiments. In fact, those who have worked with the honey bee dance language have soon learned that you just can not get bees interested in a feeding station if there are many nectar- and/or pollen-producing plants in flower in the vicinity.

The colonies used in these experiments contained approximately 4,000 bees housed in two-frame observation hives with one frame above the other. A wedge in the hive en-

trance forces the bees to exit and enter from the same side of the comb. This forced them to dance on one side of comb only and thus made it possible to videorecord the dances and in this way to measure each dance in slow motion.

How different are the results?

The results reported for the first three colonies tested showed how great the imprecision might be. When the new nest site was 400 meters from the hive the mean divergence angle for dancing bees was 9.7 degrees but when the same bees were dancing for food at the same distance the divergence was 16.9 degrees. There was some variation of course but the two values did not overlap. At 300 meters the dancing bees showed a variation of 5.3 degrees when indicating a nest site but when food was being indicated the divergence angle was 22.8 degrees. At 200 meters the differences were 13.2 and 28.5 degrees for a nest site and food respectively.

Puzzles

There is still much we do not understand about the honey bee dance language and one of the puzzles is found in this research. Why do bees fed at a feeder close to the hive, which is as much of a pinpoint as a home site, produce dances with low precision? The answer appears to be that in ordinary foraging, a scout bee forages over a large area. Thus, the lack of precision is part of the mechanism to scatter foragers over a large patch of flow-

Mark Winston



Once Upon A Bee

“Knock-your-socks-off proposals are rare and often come from the young.”

I live in a world of proposals. I have reviewed many hundreds of proposals about bees in my career, and probably into the thousands. These proposals include graduate student research projects, undergraduate theses, National Science Foundation grants, U.S. Department of Agriculture grants, foundation applications, book projects, television and film proposals, and on and on. With experience, it becomes easy to feel the rhythm of each proposal, to assess its merits quickly, to find the weak points, and to formulate a recommendation.

Except once in a long while, something comes across my desk that jars my complacent proposal ennui. Sometimes, a proposal goes beyond the predictable formula in which most planned work is presented and enters a new realm that is generated with enthusiasm and comes from the rare perspective that perhaps, just perhaps, something we do might improve the world around us.

These knock-your-socks-off proposals are rare and often come from the young. I recently had the privilege of reading such a proposal, and it arrived from an unexpected source: two Canadian high-school students, both recent immigrants to Canada from Italy.

Perhaps it shouldn't have been unexpected; these two young ladies are remarkable in every respect. For example, Alice (Miro) and Désirée (Tommasi) won last year's British Columbia science fair with a project

investigating post-smoking uses of tobacco. They reasoned that smoking is decreasing, meaning that tobacco farmers will suffer unless new uses for tobacco can be discovered. So they investigated a number of practical and societally friendly uses for tobacco products and began some pilot projects to look further into the opportunities they uncovered. They also have stellar academic and socially conscious pedigrees. Both maintain greater than 90 percent straight-A averages in school, they're already on various boards of directors for local environmental groups, they have won province-wide contests in other competitions such as essay writing, and both have wonderful personalities besides.

Alice and Désirée worked in my laboratory last Summer, helping with honey extraction and doing the lowest-level grunt work on research projects. In August, my lab group had the opportunity to host Jim Cane, a U.S. Department of Agriculture bee scientist from Logan, Utah, who was in town to serve as an examiner for the Ph.D. defense of one of my students. He kindly consented to give a talk on his research studying wild bee diversity and abundance and provided a fascinating glimpse into a project he has been working on to examine the distribution of pollinators in urban environments, particularly Tucson, Arizona.

I didn't think too much more of it, except a few days later Alice and Désirée showed up at my office door with a proposal, titled the "Once Upon a Bee Project." This was not your typical boring academic proposal; it began with a quote from a

1799 letter written by William Blake in which he says, "Some see nature all ridicule and deformity, and some scarce see nature at all. But to the eyes of the man of imagination, nature is imagination itself."

It went on, in their own words, as a fairy tale, describing how once upon a time in the Vancouver area "clean water ran into streams and oceans, clean rain fed plants and refilled lakes, clean air provided oxygen and small, simple animals like bees played a crucial role in preserving the greatest treasure of planet Earth, biodiversity." As human settlement increased, "habitat fragmentation occurred, so that populations of plants and bees were separated by expanses of parking lots, highways and malls and the bees started to disappear."

Wonderful sentiments, beautiful writing and extraordinarily high-risk proposal etiquette. You just don't start a serious proposal with a fairy tale, unless you're not so jaded as the rest of us, and you believe so strongly in what you're doing that you allow your emotions to spill over into the dry, fact-ridden world of fund raising for scientific research.

Alice and Désirée did not stop there, however. While they did start their proposal with poetry, these are not naïve young women. They moved on to offer concrete research ideas to elucidate the diversity and abundance of wild and managed bees in the Vancouver urban environment and relate their data to habitat structure. Further, and also unusually, they included proposed work to develop educational programs on

Continued on Next Page

“Science and its conduct are and should be impartial, unbiased, data-driven, fact oriented and emotionally neutral: Rubbish.”

bees in the city, to present these to schools, fairs and community groups, and to promote distributing seeds for bee-friendly plants as well as nest boxes for wild bees throughout the city.

I've worked with them to finish the proposal, and we're sending it to foundations and environmental groups, hoping to receive funding for a two-year project that includes both research and educational components, as well as pollinator conservation and enhancement objectives. In that, they are especially unique; how many of us are able to link our scientific research so directly with societally important objectives?

Many of their innovative ideas would be useful for any community-based project to enhance knowledge and appreciation of bees and to promote bee conservation in urban habitats. Some of the things they propose to do include:

Interpretive walks at a local garden: They would like to create a bee-friendly backyard garden, an “enchanted oasis for wild pollinators,” at a local interpretive garden and provide scheduled or weekend tours.

Work experience: Another component of their project is to provide work experience for high-school students. The idea here is to invite volunteer students to help with the research and/or educational programs, as part of the career planning curriculum offered in our Vancouver area high schools.

Web site: Alice and Désirée propose to develop a Web site, which might include images of native bees, a bee game about sustainability issues and audiovisual programs of bees buzzing and behaving.

Backyard-with-bees program: Yet another component of their project is a backyard restoration program. They plan on developing artificial bee nests for some of the common species in the area and distributing them to homeowners with backyards or balconies, along with brochures about each species and the importance of pollination in the city.

Their inspirational proposal is

certainly different from the norm and got me thinking about the unemotional, bare-bones approach taken in most proposals to conduct bee research. How did we get to be so boring, and why are foundations and government granting agencies so reluctant to allow engaging prose to enter the decision-making process for funding?

One reason must lie in the mistaken belief that science and its conduct are and should be impartial, unbiased, data-driven, fact oriented and emotionally neutral. Rubbish; the few scientists I know like that are nut cases; the vast majority of us are quirky, support causes, believe in issues, have hobbies and can be interestingly creative individuals. Yet, we've been trained to divest ourselves of individual expression when we write and speak in the scientific arena and to adopt a safe and neutral tone rather than letting any remotely artistic component flavor

our expression.

Perhaps another issue is how readily we separate research from real-world impact. While we go through the motions of justifying our work, how often do proposals include implementation funding, money to assist a discovery in having an effect on the world? Suppose proposed work had to include clearer information on how results were to be disseminated, and funds were withheld until information transfer was accomplished successfully? Could we begin rewarding imaginative proposals that include these twin pillars of research and education?

I do know that something feels pretty right about what Alice and Désirée want to do. The beekeeping world could use a few more young, motivated, idealistic and well-focused kids like them, and if you find any, do what you can to help them out. I'm learning a lot from these two, and who knows? Maybe my next proposal will begin with a quote from William Blake. ☐

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

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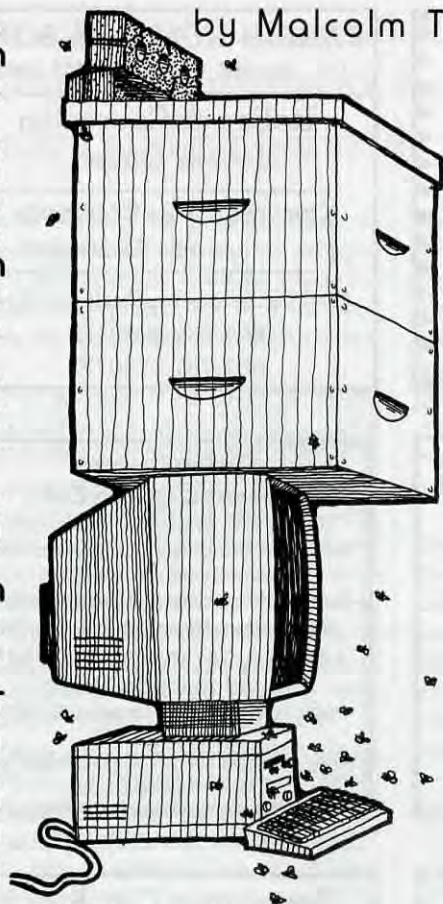
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An advantage of the World Wide Web is that information can be disseminated relatively inexpensively. That means that much more is available than might be otherwise. This is certainly true for top-bar beekeeping, a low-tech apicultural technique that has been taken up by those who have eschewed much of traditional commercial beekeeping. I discussed this **kind** of apiculture in my **APIS** newsletter in November 1996, which I subtitled a "kindlier, gentler beekeeping." In that article, I detailed efforts by Dr. Wyatt Mangum, formerly at North Carolina State University to convert his entire operation to this model. "The hive is inexpensive and can be made out of scrap lumber, perfect for a struggling young academician. It is also a flexible system. Dr. Mangum described reducing his larger hives to decrease their weight by simply using a buck saw to cut several bars off the end. He then converted the cut end to a queen-rearing nucleus. This is perhaps the ultimate in hive flexibility. Imagine taking a standard Langstroth 10-frame hive and converting it to an eight-frame model with a nucleus left over in the bargain. Although Dr. Mangum does a lot of queen rearing for which his TBHs are uniquely suited, he also loads these hives in the back of his pickup truck and takes them on the road to pollination contracts. He contends that in spite of his fears to the contrary, they typically suffer little damage during transport."

As that newsletter went to press, Mr. Jim Satterfield of Canton, GA wrote me that he was considering the development of a web site featuring this kind of beekeeping. He followed through. According to Mr.

Top Bar Hives

Satterfield, "This website is devoted exclusively to collecting and distributing information about beekeeping with top-bar hives (tbh's). Tbh's offer many beekeepers an inexpensive but satisfying way of keeping bees that produces less (but better) honey and more beeswax." The URL is <http://www.gsu.edu/~biojdsz/main.htm>.

Mr. Satterfield introduces himself on the site, accompanied by a **photograph** of him holding a nice frame of comb honey. In his introduction to the site he says, "Beekeeping in tbh's gives me so much pleasure because it fits my goals and philosophy better than beekeeping in conventional hives. I have sold all of my Langstroth equipment, and I'll never keep bees in anything but tbh's. I'm not a big-time beekeeper...I only expect to have a maximum of 25 tbh's, several five-bar nucs and queen-mating nucs." Mr. Satterfield gives credit to **Mr. Paul Magnuson** and others at the Honeybee Research Unit of the Agriculture Research Council, Plant Protection Res. Inst. of Pretoria, South Africa for their research and assistance. There are several drawings of the modified **Tanzanian Top Bar Hive** having some 30 frames provided by those folks. The sides and **the floor** are really nothing more than analogous to a sort of cavity. Exact **measurements** are also provided along with details on the **frames**, that are the basis of the hive. According to the designers, "The most important difference between Langstroth and top-bar hives is the absence of gaps between the top-bars in top-bar hives. Langstroth hives have gaps between the top bars of the frames containing the combs, since the bees must move vertically through the hive. The problem with these gaps is that, upon opening the hive, every bee in the colony is exposed to light, sounds, smells, air currents, temperature changes etc. They are therefore aware of the apparently catastrophic damage to their nest, and react defensively. In Europe, where Langstroth-type hives were initially developed, this posed no problem as their bees are generally far more placid than ours. However, especially since the 'Africanized-bee' hysteria began sweeping through the Americas, most honeybee experts are convinced that our bee (the African bee *Apis mellifera scutellata*) is the most defensive (or aggressive, depending on your point of view) honeybee in the world.

"The great advantage of the top-bar hive is that the top-bars form a continuous roof, without gaps. The beekeeper need make only a small opening in the hive for inspection or harvesting. Two or three of the top-bars are removed from one end of the hive. These will generally have neither bees nor comb on them. This opening need be only wide enough to permit lifting the combs for inspection without bumping or scraping them. By successively moving each bar, he/she shifts the inspection gap gradually towards the brood nest (the heart of the colony) in the middle of the hive. By puffing **A VERY SMALL AMOUNT** of smoke into the opening, the bees can be driven away from the gap into the undisturbed part of the hive. One uses just enough smoke to 'keep the bees' heads down. The bulk of the colony is thus never where the beekeeper is working, and remains rela-

tively unaware of the disturbance. Once the inspection gap has reached the middle of the colony, the top-bars are carefully returned to their original positions, and pressed tightly against one another again. If the beekeeper wishes to continue with the inspection, the process is repeated from the other end of the hive. Alternatively the hive can be opened from the other end next time."

Although designed for the defensive African honey bee, the idea of minimally disturbing the colony during inspection and manipulation is the basis behind using top bar hives with European honey bees. In theory, this means much less stress is put on the insects, resulting in a more benign management. When compared with commercial scale honey harvesting and extraction, harvesting honey from a top-bar hive is also easy. One takes a clean plastic bucket (with a lid) when visiting the bees, holds a ripe (more or less fully capped) honey comb over the open bucket, and twists the top-bar. The comb breaks off into the bucket, the top bar is replaced, and the bucket is immediately closed. This minimizes robbing and is especially valuable during a nectar dearth.

Plans for top bar hives are only limited by the imagination as there is no set size. They come in many variations from the typical **Kenya type** to those made from **logs** or installed in observation hives as seen on Mr. Satterfield's site. He has also constructed an ingenious **press** that can be used to separate the honey from the comb using an automobile jack. The judicious use of photographs on the top-bar web site adds much interest and provides clarity. This is especially true where Mr. Satterfield describes in some detail how he **works** his colonies. Another section describes certain innovations that are used to make **manipulation** more efficient. The top-bar hive can be used effectively in **rearing queens** and they can be **supered** by employing a little ingenuity.

Mr. Satterfield has also appended to his site a number of frequently-asked questions or FAQs. The one describing the hive's **history** says the idea is as old as history. Beyond many **advantages** found in these hives, Mr. Satterfield also details some of the **disadvantages**. The latter are well spelled out by Mike Allsopp of South Africa. "My feeling is that they are fun to work with, and very suitable under certain conditions (strictly for hobbyist and sedentary beekeepers), but I am doubtful on whether we should be encouraging their general usage. I think I differ from others on this due to four things:

1. There is a lot of misinformation on the importance of certain features of TBH's, such as the slanting sides and the reduction in defensive behavior. In reality, TBH's are just low technology horizontal Langstroths. In East Africa these days they have given up the slanting sides as they make no difference.

2. No-one has yet to adequately test the performance (in monetary return) TBH's and Langstroths. I have a guy in Cape Town doing just this at present. At first glance the TBH's are very impressive, but over a couple of seasons their total honey yield is far below that of standard Langstroths.

3. TBH's should only be used if suitable hive material is available. How can we counteract the destruction of hard wood trees to produce TBH's or log hives, as is the practice in much of Africa?

4. And the major reason: All of us bee people in South Africa are involved to a lesser or greater extent in 'beekeeping development programs' - advancing beekeeping in the rural and disadvantaged communities. In this respect I believe advancing the use of TBH's is the wrong approach. The aim of the programs I am involved with is the rapid development of semi-commercial beekeepers that can compete with the established beekeepers, not the provision of one or two hives to each member of the program. I suggest that using TBH's for these people retards their chances of ever becoming successful commercial beekeepers, rather than advances it. You can't easily follow honey flows or do commercial pollination with TBH's."

Obviously, the top-bar hive is not for everyone, but many see it as viable alternative to traditional beekeeping. Whether one uses the technology or not, however, Mr. Satterfield's site provides us the wherewithal to judge how it might fit our philosophy or methods. It is yet another example of how access to the World Wide Web provides a richer array of choices for us all as we move into the 21st century. ☐

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At Some Point You Reach Perfection

It will always be impossible to put people in distinct beekeeping categories. Some of us are organized while others are disorganized. Some are life and death passionate about the craft while others see it only as a relaxing hobby. We have rule-followers and we have free spirits. The way we decision-make in our bee operation varies greatly from one to another.

During the Christmas holidays, I spent one day helping a couple of beekeepers move bee equipment. They had purchased the small operation of a beekeeper who was retiring from the craft. I can't say that my beekeeper friends had consciously decided to increase their operation, but the opportunity came along and they took it.

Beekeepers' operations grow in size for two primary reasons:

1. The demand for bee services is growing and an increase is economically justified;

or,

2. They enjoy beekeeping and want to enjoy it more.

For either reasons #1 or #2 above, purchasing used equipment – or even an entire operation including live colonies – can be a way to grow in beekeeping, but deals are all over the page. Some equipment is in great shape, but not the type or size you use. There may be lots of equipment, but it is in bad shape and will require maintenance. Winter months are a good time to repair equipment, but that season has just

passed. Before purchasing equipment like that shown in Figure 1, be sure you have a firm footing in American foulbrood's appearance and characteristics.

Arrow points and beekeeping On a recent weekend, one of my daughters and I went searching for arrow points (Called arrowheads in the Southeastern US). I have done this most of my life and introduced her to the hobby (?) when she was at an early age. The location, which we searched, used to be (reasonably) rich in points, but that was many

years ago when I was a kid. As has been the case now for the past several trips, we didn't find much. This year's finds were only a broken arrow tip and several pieces of broken pottery. However, we don't give up. We already plan on making the trip again next year. One day soon our luck will change.

Finding bargains in beekeeping equipment is like searching for arrow points. You have a general idea where to look, but that doesn't mean you will find anything. Later when you're not looking, you will stumble across a bargain in a spot you never

Continued on Next Page



What price would it take for this equipment to be a bargain?



A duct tape repair job on the corner of a hive. Temporary, but remarkably efficient.

considered. Obvious places to look for bee bargains is at bee meetings, but bee equipment frequently turns up at auctions or estate sales. When searching for bee bargains, you're just looking for beekeeping's arrow points. All arrow points are not perfect just as all bee bargains are not really bargains.

When to repair and when not to repair

One of the aspects of beekeeping that we must all accept is that our craft is literally made up of thousands of parts – some little while some are big. Even bee operations that are neatly maintained are plagued with “parts” Worse? Most of these parts are made of wood, which is prone to decay, or breakage. When you're considering purchasing the beekeeping operation of another, the condition and standardization of the equipment is paramount.

Yes, this equipment could be repaired, but why bother?



At this point, I must refer you to the first paragraph in this piece in which I spoke of different people and their differing personalities. Some beekeepers will use nearly any equipment in any condition while other beekeepers will work diligently repairing and refurbishing the used equipment. Neither is exactly right or wrong. To a degree, the bees don't seem to mind unsightly equipment so long as the nest is protected from the weather and from enemies. When to repair a piece of equipment? Honestly, in my personal case, it depends on how badly I need it. All too often, I have grabbed a box with frames – both in poor repair – on my way to retrieving a swarm. I always have every intention of removing the swarm from the equipment before it establishes itself, but you know how it goes.

Honestly again? I don't repair equipment much anymore. For the most part, repaired equipment looks just like that – repaired. A simple repair, such as placing a small metal sheet over a damaged brood box joint is okay, but the rot and decay are still there and is still progressing. In a pinch, a quick fix is the ubiquitous duct tape. It doesn't last very long, but is quickly replaced. Not very aesthetically appealing however.

I don't mean to sound sloppy, but I tend to keep good equipment in selected yards while the more “fatigued” equipment is kept in other yards. Rather than make extensive repairs, retire the piece in question and then give it one more life as kindling for next winter's fires.

Now having said all this, at times a piece of equipment just cries for a quick fix. Surround yourself with gadgets for removing nails. Forget any-

thing more than the very simplest repair on a frame that has been cross-nailed to the top bar. For repairing supers or brood boxes, carbide-tipped blades are nearly a requirement. However, don't intentionally cut nails. In rotted wood, nails struck with a saw blade may go flying across the shop. Caulking compound is useful in filling repaired cracks or rotted joints. In most cases, you are only squeezing another season or so out of the tired equipment.



A wax rendering system suitable for about 100 hives.

Okay, so your operation has grown For whatever your reason, your operation has grown. You were managing a few colonies and now you are managing a few more. Do you recall those guys on TV in the 50's who would balance about ten spinning plates on ten pool cue sticks. It was nerve-wracking. The guy was all over the stage trying to keep the plates going. In beekeeping, if your colony numbers increase, then you will need to “rush back to all your other plates.” Will your extracting system be able to withstand the increased load? Will your truck still be large enough? Do you have markets for the increased honey crop. Got enough locations for all those colonies?

New Locations If you're an established beekeeper, you already have some potential yards in mind. You know the routine. You can't go anywhere without speculating on the possibility of a passing site being,

"a good place for a bee yard." Numerous articles have been written on the virtues of a good yard and I refer you to those for finding and setting up yards. But a comment or two is in order on speaking to the land owner about the possibility of setting up a yard on his or her property. At this point, I assume the land owner is a stranger to you. You'll rarely be offered a prime location – from your perspective though it may be prime from the land owners. Do yourself a future favor and don't take on a yard with bad features or characteristics. Normally, they only get worse with time. If the spot that you are offered doesn't fit the bill, move on to look for other arrow points. Be persistent and specific with the owner, clearly listing the attributes you need or the specific location you want. However, be prepared to be told no. From my past experience, know when to quit with a prospective location. Years ago, I waited on an owner for 3-4 weeks to take a ride with me across his property to look for the proper spot for a bee yard. Time and again, the owner put me off. Finally, he said that he was just not going to have time and I should look elsewhere. I had wasted the better part of spring waiting on him. All these years later, when I ride by his greenhouse operation, I get a little flush of anger.

New (or used) processing equipment Okay, so you found a bargain on used hive equipment, got it repaired, found new locations and have stocked the operation with nucleus splits. Your operation has grown – but have your extractor and wax-processing equipment grown also? In my experience, honey filters and uncapping knives are predictors of the extracting chain being under-powered. In recent years, filtering devices for the smaller operations have increased in quality, but filters require frequent maintenance. They are designed to plug up. How frequently is yours plugging? How about that wrist? Aching earlier in the day than just a few seasons ago? Well, that may very well be due to aging, but increased honey crops will strain your entire system – including you.

I once knew a friendly beekeeper who had long ago retired. He spent his Winter months slowly extract-

ing honey with a small outfit. He used the slow procedure as a marketing procedure. Customers in his small showroom could see the process on-going nearly anytime during the fall and winter season. He was the exception. Most of us want the honey supers extracted, and out as soon as possible.

Ideally, we should purchase a balanced extracting line where all the components compliment each other. You wouldn't normally use a hand held knife to uncap frames to go into a 44 frame radial. You must decide if you need a smaller extractor or a larger uncapping device. As you know, there are no ideal worlds – especially in beekeeping. If you stumbled across a good deal on a 44-frame radial, but could not afford the remainder of the processing equipment, then go with the imbalance – but have future plans to correct the situation. A common mistake is to install an extractor with a sump that's too small. You see, an uncapping knife that can't keep up with the extractor is one type of mistake, but a sump that's too small for the output of the extractor is a big, messy mistake of a much more serious kind. Finally, are you processing enough honey that you are sick of manually emptying five-gallon buckets into larger settling tanks? Maybe you need a honey pump. Bee supply companies are standing at the ready to sell you one. What? That new pump moves so much honey so fast that now you need more settling tanks?

None of my comments are new. The evolution of your extracting line will be active and changeable so long as you keep bees. It will require constant maintenance and cleaning. Only the very smallest processing lines will be essentially problem-free. The hard fact is that we, as honey line operators, change also. Very few of us get younger with passing time. What we enjoyed doing eight years ago is now out-and-out work. We tend to go mechanized as we become increasingly tired of the work load. Every year, I'm a year older but every year, the weight of honey stays the same. As we increase our mechanization, we run head-long into problems. It would be greatly helpful if you could *enjoy* developing and upgrading your extracting line.

Okay, got more colonies and have the extracting line in balance So I'm finished, right? You're processing more honey so you will probably be holding more extracted honey inventory. You'll be needing either five-gallon heaters or drum heaters. Most of us don't sell our honey so quickly that it doesn't have time to granulate. By the time you get around to bottling, it will need to be liquefied. Have you got hand trucks and drum trucks. If you put honey in drums, you will absolutely need a specialized drum truck to move drums around. A full drum of honey weighs in at about 630 660 pounds. Don't take a chance with that much weight on a common hand truck.

How about wax processing? When you were a smaller operation, you could render cappings in a small pan over boiling solar or drop them in an inefficient solar wax-melter. That won't work anymore. You'll be needing a larger wax processing unit. Again, bee supply manufacturers are standing by.

A new truck By now, you can probably justify a new truck. Though I am kidding, I suspect that many of us really could justify a new (or improved) truck. We are far beyond using the trunk of a car. A strange thing is that a new truck will still require a lot of lifting on your part. Why not include a hydraulic lift gate for a few thousand more? An easier out is to acquire a low trailer and tow it behind your car (or your old truck).

Finally At some point you reach perfection, but I don't know where that point is. The fact is that we all look for bargains. We all like to develop and maintain an efficient processing line. We like labor-saving devices all around us. Many of us will grow in our beekeeping enterprises and we will meet challenges that those ahead of us have already faced. There are no standardized beekeeping/processing systems. Only parts and pieces that you bring together to make up your personalized operation. That's a major part of the enjoyment (and expense). ☐

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Make Your Honey

CUSTOMER FRIENDLY

Ann Harman

OK get out of that beekeeper's chair and get into the customer's chair. You need to have a different perspective on your honey sales. You know what *you* like. Have you ever asked your customers what *they* like? Or maybe you are guessing what they want. Beekeepers need to begin viewing their product from the customer's point of view, not from that of a beekeeper. This holds true not only for labels but for containers.

For example, you think your honey looks beautiful in a glass queenline jar. It's true, it does look nice, but what you want your customers to do is eat the honey and then buy more. You are not selling a table decoration. You are selling a food. That is what is inside the container. So you need to make it easy to get honey out of the container and into or onto whatever the customer does with honey. The appearance of the container will attract customers to your product. But the ease of using the product in this case liquid honey - will bring them back to buy more.

It really is too bad that we here in the United States consume our honey as a liquid. In most of the rest of the world, creamed honey is the preferred product. It can be used in exactly the same way as liquid honey. Furthermore, for ease of mixing with other ingredients all you have to do is heat it gently. The honey turns back to a liquid for mixing or perhaps measuring.

Creamed honey can be put into all sorts of containers but really does not work well in squeeze bottles, such as our squeeze bear. In coping with liquid honey, we have to have certain criteria for a container to put that thick liquid in. What do we actually do? We put it in a glass jar then expect the customer to get it out with a spoon or knife. That is messy. Creamed honey works great with spoons and knives.

However, jars do have some use. For those who cook with honey, it is easy to pour from a jar into a measuring cup to obtain a quantity of honey. And a jar can be used to refill a convenient container for use at the table.

Customers want convenience. Therefore, your honey container must suit their needs. If we consider the most common uses of honey, we may then be guided into appropriate containers. The Winter season brings customers who want a spoonful for a sore throat or cough. Other customers want to put honey in their tea and on cereal or toast. A squeeze container is by far the best way to do all that.

If you want to sell honey to families with children, a squeeze container is the only way. Even a very young child can cope with a squeeze container. The worst thing kids can do with a squeeze container is write their name on the kitchen table. But turn a child loose with a jar and a spoon or knife and there is honey

everywhere.

Customers want speed. Mopping off a table, spoon, container and fingers takes time. It's a nuisance. You're a beekeeper and are used to sticky - in the honey house, on door-knobs, telephones and clothes. Your customers are not beekeepers and really have not learned to live with sticky. Jams and jellies behave much better than liquid honey.

What about the wooden or plastic honey dippers? Well, some people know how to use them. But I have found that most people have no idea how to use the dipper. Besides, it can be a bit drippy, too. If you are selling to a shop, you are not available to teach customers how to use a dipper. To sell a dipper really means that you need to educate the customer at the time of sale. However, dippers do not really solve the basic problem of how to get honey from a container to its final destination, tea or toast.

Plastic squeeze containers now come in quite an assortment of

Continued on Next Page





Typical squeeze containers that are easy to use.

Plastic containers that are lightweight, nearly unbreakable but not as easy to use.

Typical glass containers, good for beekeepers, questionable for consumers.

shapes and sizes, and new ones are appearing all the time. Are you keeping up with what is available? Look through the bee journals at the ads. Send away for catalogs from bee supply places and container companies. The beginning of the year is an excellent time to request catalogs. You can then plan your orders for the coming honey season. Try a new approach, a new container. You might wish to try several different styles of squeeze containers this year to see which ones sell best. Or you may find that you need to package your honey in two or more different containers influenced by the various places that carry your honey.

Are you still keeping in mind your customers' preferences? I hope so.

Before you start investigating various containers, remember that the ones designed for use with honey hold even ounces, such as eight ounces or one pound. Since honey is frequently sold by weight, a container that holds, for example, a pint or an even measure of fluid ounces will hold a different quantity of honey by weight. You will have to determine the weight of honey in a non-honey container if you are selling by weight. Keep in mind that your label will have to say something about the weight or volume of the contents.

Now let's look at the argument that honey in a glass jar looks so beautiful with the light shining through. Well, you can buy honey containers in the completely clear plastic if your sales display really

shows the honey to advantage. But many sales displays are just shelves, and the lighting may also be rather poor.

I have encouraged you to take a walk through supermarkets and various shops to see the displays of jams, jellies and honey. There sit the jars with no light shining through. Jams and jellies are, for the most part, dark so their sales depend on effective labeling. In such situations your honey needs effective labeling, too. Now go and take a good look at the places where your honey is sold. Is there light shining through? Or is the honey on a shelf? Or is your honey display flat on a table at a craft fair? Be critical. Then use some imagination and try to picture what your sales display would look like if the honey were in different containers.

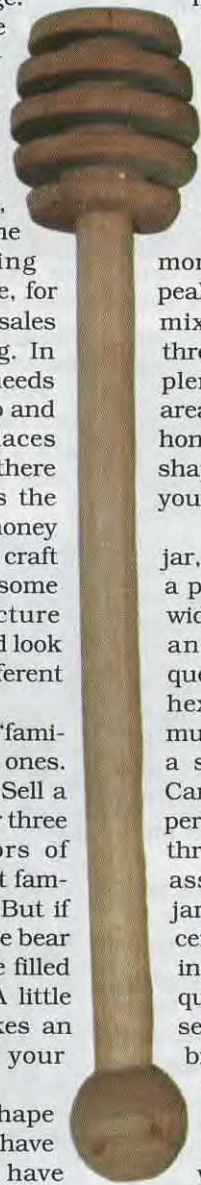
Squeeze bears come in "families" from big bears to little ones. Here is a good selling point. Sell a bear family. If you have two or three different colors and flavors of honey, then each bear in that family can be a different flavor. But if all your honey is the same, the bear family will be just as effective filled with your best wildflower. A little wooden crate or a box makes an appealing presentation for your bear family.

Bears aren't the only shape of squeeze container. Angels have appeared recently. Clowns have been around for a long time but have

never become popular. The plain cylinder is useful and is easy for label design. The plastic squeeze skep is moderately popular and deserves greater use.

A combination of squeeze containers can make your honey displays more interesting and more appealing to consumers. But do not mix too many styles. Two or three styles in different sizes are plenty. See what sells in your area, in the shops that carry your honey. A trial run of a different shape will let you know whether your ideas worked.

The plastic queenline-style jar, as well as glass jars, do have a purpose. Glass jars come in a wide variety of shapes: the pint and quart canning jar, the queenline, the many sizes of the hexagonal, the glass canning mug, the round "barrel" jar with a small shoulder popular in Canada, the tiny salt-and-pepper mugs and more. Take a look through Mid-Con's catalog. The assortment of available glass jars is wonderful. You can receive a Mid-Con catalog by calling 800.547.1392 or fax a request to 913.768.8968. You will see enough in that catalog to broaden your selection of containers. As you look through the catalog keep in mind - what would the consumer want? What would the people who might buy your honey want?





Other glass containers, easier to use, but still not easy.



Designer containers upscale and expensive, but 'prettier than easy'



Glass has the advantage of looking wonderful when the light comes through but most stores don't feature this.

What will be useful in their situation? Don't limit yourself to just one catalog though. Nearly every supply company carries a variety of jars and other containers. Prices and shipping will vary, too, so shop carefully.

England and Europe have had very nice honey containers. Perhaps someday we can have some of their innovative designs here. If you would like to see what is available, you can send for catalogs. There's a list available at the end of the article.

You will be surprised at all of the innovative containers available. Perhaps someday we will have such

an assortment here in the U.S. Perhaps beekeepers' demand will bring such containers. I found the pump container interesting for liquid honey. A few pumps and you have put liquid honey in your tea. I do not think a pump container will work for exceptionally dry honey, but I would like to try it with 16 or 17 percent honey. A pump container certainly solves the problem of a sticky mess with liquid honey.

By the way, in those catalogs you will see all kinds of clever things that will enhance a sales display. Europe,

with shops devoted only to honey and hive products, has been ahead of the U.S. in various marketing techniques. We need to catch up.

While you are doing just that, you need to keep sitting in the consumers' chair giving them what will be convenient for them (not you) and not messy. Keep your customers happy and they will keep coming back for more of your delicious honey. **EC**



The National Honey Board has just released its 'Official Marketing Kit.' This expand-



able three-ring notebook contains hundreds of pages, with more to come, covering marketing plans, an overview, recipes, NHB information, market research, target markets, business plans, regulations, pricing, packaging (including labels!), advertising, PR, POP,

direct marketing, networking, distribution, how-tos for art, logos, electronic media and keeping your mar-

ket. The book is free for the asking and updates and additions will automatically be sent out when available.

To obtain your free Marketing Kit, call the NHB at 800.553.7162, or write to them at 390 Lashley St., Longmont, CO 80501.6045.

Ann Harman is a sideline beekeeper and international marketing consultant.

PLANNING TO PLAN

Kim Flottum

The single, without-question, most useful, of greatest value promise of success in keeping bees is (drum roll here, please) *predicting the future.*

Knowing the price that honey will be selling at in October would be of value, certainly. What new pest lies just offshore, waiting to invade, and when, and what to use to stop it would have immeasurable value, and profit, for a forward seer. What will China's, Argentina's, Mexico's and South Dakota's weather be like during the next production season? Will an inexpensive, easy-to-use test for adulterated honey arrive before the Fall crop? Does the current environmental flap over burning petroleum-based scented and dyed candles herald a resurgence in beeswax based home candles? Will the WTO get its act together and pretty much squish agricultural development in all but the least developed countries? And will a mutant GMO plant, on the edge of a benign Iowa soybean field put a poisonous stranglehold on further development of that science, or be found to be the ultimate answer to the world's hungry population?

All of these questions are worthy of speculation, and best-guessing the answers will enable entrepreneurs in a variety of professions to leap tall buildings and amass power, wealth and fame. But most of us are still just trying to get a few colonies of bees from Spring to Spring without nearly as much fanfare as solving these current riddles. And though it is an entertaining game for some, and a business for others, it all still comes down to the details of knowing 'what was before, 'what is' and the 'what will be' answers. Even the guy who invented Amazon.com did his homework first.

The key word here is, of course, homework. To put a puzzle together you first need at least most of the pieces. If you have enough of them you can often either accurately guess

what's missing and fill the gap, or still get the bigger picture by going around the missing parts. But you need most of the picture first.

The big picture to colony survival is knowing what it is the bees in that colony need, when they need it, and how they get it. Solving that puzzle, however, is much more complicated than it sounds. Not unlike your truck, which only needs fuel, ignition, powertrain and tires to get you to the beeyard, any one of a thousand missing details can keep you in the driveway.

Right now hundreds of thousands of colonies are being prepared for that world-class pollination adventure in California - almonds. Feedlot beekeeping, which this almost is now and will eventually become has harnessed much of the technology that exists (read homework) to enable beekeepers to prepare a colony so it is at peak efficiency the day it is needed in the orchard. Meeting nutritional, health and environmental aspects are pretty much text book simple though not yet perfect. And even though the right food, at the right time in the right amounts, along with the medications needed to protect bees from, or cure bees of the common ailments they suffer, plus the necessary capitol to meet these obligations are all fairly straight forward, weather can still intervene and wreak havoc on the best laid plans. But even that is becoming less of a factor as mechanization for moving colonies, and weather pattern predictability improves. These beekeepers have most of the pieces to this puzzle and can fill in the gaps, or simply go around them to accomplish the task.

The debate over whether this is beekeeping or not is as irrelevant here as is the debate over feedlot dairy farming. Is milk from a pastured cow raised on a bucolic farm in Wisconsin different than that of a three-times-a-day-milked cow that lives on pavement all its life and has

never seen a blade of grass? (providing, of course, the BHT thing doesn't enter into the picture, or is given to both.) The Wisconsin farmer and the California milk producer both have the same goal - milk. The paths to that goal are very different. Just as is the path to the almond orchard for different beekeepers. One group has strived to control as many variables as possible, putting their charges on a 'predictable' timetable. The other group works with all the *variables*, predicting as many as possible from past seasons and past mistakes, and then plans accordingly.

The pros and cons of feedlot beekeeping can not be decided here, at least now. But, as stated earlier, those of us who have only a few colonies rely not so much on artificially supplying every bee's need, but rather working with the system that exists - the weather, available food, appropriate equipment and, most importantly, our available time.

Planning, then, under circumstances driven more by nature (but not completely) than by the calendar or a pollination contract date becomes less precise. Success relies, rather, on good predictive tools so that what minor interference (or assistance, depending on your point of view) we contribute can be best timed, and most easily accomplished.

February is probably the last moment for planning if you live in the far south since the season is underway with early pollen and nectar sources already producing. But even so, there is time to make adjustments, to plan a plan, and to increase your efficiency. Central states are on the cusp of getting behind, but aren't yet, while those in the north are still dreaming of the green under the snow.

For the sake of discussion, and the purpose of the article I'm going to make two assumptions (knowing full well the danger that activity can

bring). First, the goal, your goal for this season is two-fold – to maintain your bees in as healthy a condition as is possible; and second, that your intent is to make honey – not even as much honey as possible, just some.

The second assumption is that you don't have all of the time you'd like to devote to the above goals. Life, and perhaps too many colonies, often get in the way of success. That's a given more than an assumption probably.

So. Let's take a look at the calendar, and if you're lucky last year's notes, or maybe somebody else's notes, to see when bees make honey. What plant, or group of plants provide the bulk of the first surplus honey flow? This, of course varies by locale. The plants may be the same, but when they bloom is affected by where they grow. Clover in Mississippi comes on much earlier in the year than in Ohio, or Idaho. That, too, is a given. But the same plant, in the same location will bloom 'about' the same time every year. Since we've already mentioned clover (it may be white sweet, yellow sweet, Dutch, crimson or other varieties – back to your notes), let's pick an arbitrary bloom date about July 1. Now, the stage is set. It's mid-February and you've got 14 weeks to get it all together. Seems like an eternity today, doesn't it. Let's see.

Right now, though, there are a few record keepers who are literally screaming that everything's changing – blame it on global warming, El Niño or La Niña or whatever – and bloom-date data from even five years ago is worthless. I don't doubt that's true, and it's been a fairly well documented phenomenon recently. Two things we wouldn't know if somebody wasn't keeping records, and second, it's the best you can do, so you do the best you can. Back to mid-February, and the July 1 deadline, and your goals of healthy colonies, some honey and not quite

enough time.

Health. First, make a plan using that calendar you've already got out. What medications will you be applying? IPM practices dictate that perhaps you don't need every medication this Spring. Your records will indicate any Foulbrood flare-ups last year and what affect your treatments had. Do you need Terra? Or, are you applying it because. If you do use it, it has to be off no later than six weeks before your first surplus honey flow. If that is July 1, then it has to be finished mid-May at the latest. Depending on your application techniques then, when do you start? Patties, dust or syrup will all be different. Back date from mid-May the number of days or weeks it will take to properly apply and mark that on the calendar as 'the last possible date to apply Terra.

Fumidil needs to be on ASAP, so mark your calendar on the week you will begin inspections to get Fumidil-laced syrup on. Then, make sure you have it on hand. Begin feeding in March? Order the stuff now, so you have it.

Mite controls are a bit tricky. For tracheal mites you want as early a treatment as possible, but the weather dictates when formic or menthol can be applied. Your notes on the weather, maybe the Old Farmer's Almanac and NOAA can help predict when the outside temperatures are warm enough to apply

either of these so they work. It needs to be warm enough (about 60°) so they evaporate at the correct rate, but not so warm they melt

and do no good, and possibly even some harm. Check your notes, check with others, and guess if need be. But keep those daily temp records and remember your honey flow date. Allow at least a month, six weeks better to have them on and working, before the flow, and as early as pos-

sible. Grease patties can go on now if possible and stay on till it's too hot to keep them on. Then begin again in Autumn. But make them now, freeze, and you'll have them for all colonies all season.

Strips, either kind, need six to eight weeks in the colony, and off before the flow. The earlier the better since they work best when the least amount of brood is present. Did you treat last Fall? Did you do a sticky board or ether roll (or will you soon) to see if you even need to use strips? Remember your IPM rules here.

Of course your regular management scheme needs to be followed. Feeding if needed, swarm prevention (reversing, splitting) and the like. When to do these? Your available time will dictate much, or all of when you do these, but if you record this year what you did when, and make some cursory notes about the colony's condition, your timing next year may be better.

How much brood is in a colony when you look? Sealed brood? Open brood? Remember, egg – three days; open brood – six days; sealed brood – 12 days (remember that ratio 1:2:4). A properly functioning queen, and colony, should have twice as much open brood as eggs, and twice as much sealed brood as open on any given day. By the way, how much brood does a deep frame hold, on average? Considering you want a population of 35,000 to 50,000 adult bees on that July 1 date, will you get there? Yes, you need to do the math, but you only need to do it once if you have good notes.

Make a plan, keep records of how well that plan worked and next year revise the plan. What to plan in? A three-ring notebook, a spiral notebook, a stenographer's pad, or computer spreadsheet or data base what and where, even when are less important than just DOING IT somewhere. Remember you don't have all the time you want so get the high priority chores done first, then work down the line. You want healthy colonies, and some honey this Fall. And next year, maybe a bit more. Learn from your mistakes, and keep records of them. You don't have to show anybody else your records. But your bees will know. ☐

Date: 2/14/00
 Yard: Wagner's
 Hive #: 37
 Treatment: Grease
 Weather: Sunny, 50°
 Blooming: Soft Maple

PACKAGES OR NUCS

... Which Is Best?

Lloyd Spear

In the northern United States and Canada beekeeping is at a slow point now but the season is already started in the southern states (and Hawaii). This past season you may have decided to add to your hives this year, or you might be among the unfortunate who had Fall losses to *Varroa* and want to replace the hives in the Spring. When establishing, adding to or replacing a hive a beekeeper generally has the choice of making his or her own splits or purchasing a nuc or package. If a beekeeper knows he or she will need a package or nuc this Spring, it is best to place the order right now, as choice shipping dates are unlikely to be available for orders placed after that date. This article will discuss what a beekeeper should expect when purchasing a nuc or package and compare the advantages of each.

Packages

While Florida, California and a few other southern states are individually important for annual honey production, the bulk of the honey crop comes from states north of the Mason-Dixon line, where the major nectar

Introducing a package.



flows start in June or July. As the bees have to be at peak population to fully exploit the flows, it is important that new packages be started early. Several large, reputable beekeeping operations in the southern states have established first-rate facilities for producing these packages, and most are ready to begin shipping in early April.

Companies selling packages rely on repeat business and favorable word-of-mouth references. Accordingly, they take their operations seriously and deliver a high-quality product. Most have several thousand hives and nucs to properly produce the necessary queens and young worker bees and a stable and highly skilled work force. To fill customer orders, employees go to queen nucs, look for eggs to establish that she is laying, catch her and put her in a cage with several workers. This queen is approximately two weeks old and has just been mated and started laying.

While some employees are catching queens, others are making packages. To make packages, strong hives are opened, the queen found and set aside, and bees from several frames are shaken into a large, screened box. Employees continue down a row of hives in this manner, until 20-30 pounds of bees are in the box. From this box, they are shaken again into individual two- and three-pound screened boxes for shipment. To this box are added a can of feed and the queen cage, and the box is ready to be labeled and shipped.

Thus, when a beekeeper receives a package, he or she is getting a young queen that has just started laying and several thousand mostly worker bees. (There will almost certainly be a few drones as well.) The worker bees are from several hives and are of varying ages. In fact, some commercial beekeepers go to great lengths to specify that they want bees only from hive "second" shakings. This is because there is a view that the first shaking from a hive contains a disproportionate number of older, foraging bees. Young bees are preferred, as they will generally live longer than older bees.

The beekeeper then puts the package into a hive with drawn comb, foundation or a combination of both. The queen is generally released immediately and is readily accepted by the young bees in the package. Assuming the bees are properly fed and introduced onto drawn comb, the queen will generally start laying within two to three days, and the first worker bees will emerge 21 days after the first eggs are laid.

By the time the first worker bees start emerging from their cells, some percentage of the original bees

"There are several options for replacing lost colonies or expanding your operation. They all work, and they all have some disadvantages."

in the package will have died and disappeared from the hive. This is the reason commercial beekeepers try to specify that only young bees be included in the package. It is almost certain that no bees that were foraging in the South will still be alive by the time the first workers emerge, and many of the younger bees will have perished. However, the queen generally starts laying several hundred eggs a day, so two to three weeks after the first workers emerge, the hive is back to the strength of the original package. Thereafter, the population increases quickly and dramatically. Assuming the package was received and installed on April 15, the hive might not be back to the strength (in terms of number of bees) of the original package until about May 22. That reflects 23-24 days, or three-plus weeks, for the first workers to hatch (including 2-3 days for the queen to start laying) and another two weeks to replace the package bees that naturally perished. (If the beekeeper has another strong hive, adding a frame of sealed brood a few days after the package is installed will largely replace those package bees that naturally die and will enormously benefit the new hive.)

Of course, all this assumes that the queen was successfully introduced and accepted by the bees in the package. If not, the hive will gradually dwindle and eventually die.

If the package is installed early and fed well until the bees refuse further syrup, they will produce a full crop during the Summer. However, this requires a great deal of expertise, and under normal circumstances the best a beekeeper can hope for is approximately one-half of a normal crop, plus sufficient feed for overwintering.

Nucs

There are two kinds of nucs: Spring and overwintered. As they are considerably different, I will discuss them separately.

Spring nucs

These are essentially the same as splits that a beekeeper might make from his or her hives. The producer puts together three or four drawn frames consisting of capped honey, pollen, brood of all stages, worker bees and a queen. These are generally put into a travel box, with ventilation, for pickup by the beekeeper. Some producers will provide a wood nuc box, in exchange for a deposit that is refundable upon return.

Most Spring nuc producers get the worker bees for nucs just as do package bee producers, by shaking frames from various hives. The brood may or may not be from one of the same hives as the worker bees. The queens are generally purchased from producers in the South, California or Hawaii and introduced a few days

before nuc pickup.

A purchaser of a Spring nuc should understand exactly what is being purchased. For example, a three-frame nuc should contain one frame of eggs and brood and one of capped honey. The third frame should contain a generous amount of pollen. Alternatively, there could be two frames of capped honey and pollen. A four-frame nuc should contain an additional frame of sealed brood and eggs. Either size nuc should contain sufficient bees to keep the brood and eggs warm, plus a laying queen. The producer should introduce the queen at least four days before nuc delivery and then check for eggs before handing over the nuc.

The advantages of Spring nucs compared to packages are:

1. The queen is already introduced and laying. The only chance of damage is if she is somehow crushed during the transfer to the beekeeper's hive.
2. There is brood of all stages, and the hive population should not decline as the original workers die of normal circumstances. Spring nucs are generally available around May 15 in the northern part of the country and in Canada. I estimate that a strong Spring nuc picked up on May 15 will be at least two to three weeks further advanced than a two- or three-pound package delivered on April 15. If installed on drawn comb, they may produce a full crop during the Summer.

One disadvantage of Spring nucs compared to packages is that American foulbrood spores or disease might be present on the equipment, combs or brood. American foulbrood is a disease of brood, not of bees, so bees shipped in new equipment without comb or brood are free of American foulbrood.

The other disadvantage compared to packages is that nucs must be picked up or delivered by some means other than common carrier. Unless a beekeeper lives

Continued on Next Page

A 'temporary' nuc, suitable for transportation and short-term storage.



relatively near a nuc producer, this may mean that nucs are not a feasible alternative to add to or replace hives.

Over-wintered nucs

There are a very few producers of overwintered nucs, but they may be the most superior means of adding to or replacing hives. Overwintered nucs might be better called "mini-hives," as that is what they really are.

Producing over-wintered nucs is very time-consuming. Essentially, during the preceding Summer, the producer prepares a nuc similar to the Spring nucs described above. Usually this is stocked with a combination of drawn comb and one or two frames of foundation. The nuc is fed, at least until the foundation is well-drawn. In the Fall, the nuc is usually put on top of a normal hive for overwintering. The bottom of the nuc will have a double screen or a thin layer of plywood, and heat from the normal hive will rise and help keep the nuc warm.

The queen in this nuc will have been laying since the preceding Summer, except, perhaps, for several weeks in December and January. During February or March, she will resume laying and in May, when ready for delivery, the nuc will usually contain three or four frames of eggs and brood, plus modest honey and pollen stores. In fact, by mid-May nucs over-wintered near Albany, New York, are bursting and thinking about swarming! (Moving them to a full-depth hive and adding frames of foundation or drawn comb will delay the swarming urge.) As soon as feasible, supers have to be provided to these hives.

One advantage of overwintered nucs over either Spring nucs or packages lies in the fact that these are, in reality, mini-hives. The bees and queens are functioning as a single unit, and have been for several months. Without question, they will produce a full crop during the Summer they are purchased.

Another advantage, particularly to beekeepers in the northern part of the country, is that the beekeeper knows he is getting stock that has already successfully over-wintered, *on a minimum amount of food* (generally, four frames).

The disadvantages of overwintered nucs compared to packages are the same as those for Spring nucs. However, as the bees have been on the same comb for more than six months, the beekeeper can be more certain



A Spring nuc will be made from perhaps several colonies and a queen added shortly before it's sold.

that American foulbrood is not present. If it were, it is likely that the nuc would not be alive or the brood would be in an advanced stage of decay and the disease readily detectable. Compared to Spring nucs, there are no disadvantages.

Pricing

The producers of package bees advertise in the monthly beekeeping magazines. Prices vary based on the type of queen, the number of packages ordered and the producer. Unfortunately, shipping charges are substantial.

In 1999 a typical two-pound package price for fewer than four packages was \$35. Shipping costs from Georgia to Albany, New York were:

One package	\$10.80
Two packages	\$18.65
Three packages	\$27.00

Thus, the price per package ranged from \$44 to \$45.80.

Often beekeepers will find that a dealer or large beekeeper in his or her area will offer to truck in several hundred packages from the south and resell to others. One dealer in the Albany, New York, area did this in 1999 and sold packages for \$44 each, for pickup at his business.

Pricing for Spring nucs varies considerably based on the number of frames, quantity and area of the country. In 1999, prices from producers near Albany, New York, ranged from \$40 for three-frame nucs to \$51 for four-frame nucs. No delivery was offered.

It is difficult to find sources for overwintered nucs as considerable labor, equipment and expertise are required to produce a consistently good product. One excellent source is Kirk Webster at P.O. Box 381 Middlebury, VT 05753. In 1999, he charged \$120 for two nucs, including the modified hive he uses to raise the nucs (which may be returned for a \$20 refund). Customers were required to pick up the nucs. (Kirk usually sells out very early in the year.)

Summary

If you want to expand the number of hives or replace losses, you will probably not be disappointed regardless of whether packages, Spring or overwintered nucs are chosen. A person who has never before kept bees and who does not have access to drawn foundation might choose a Spring nuc. Compared to an overwintered nuc, it will not be as likely to swarm. Compared to a package, it will be less dependent on feeding to produce a good hive. A slightly more experienced beekeeper or one who is willing to commit to constantly feed the bees for four to six weeks or until they have fully drawn 10 frames of foundation might want to purchase packages. Unless you have several years' experience, I recommend three-pound packages as the added costs are not significant and the extra number of bees makes management considerably easier. If a reliable producer is nearby, experienced beekeepers should choose overwintered nucs, as they will usually have first-year production equal to that of a full hive. **BC**

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

bees to crop production has *increased* above the 10 year inflation rate. Stay tuned.

Last November the Animal and Plant Health Inspection Service (APHIS) and the Agricultural Research Service (ARS) released a draft of a Pest Risk Assessment: Importation of Adult Queens, Package Bees and Germplasm of Honey Bees from New Zealand. Recent trade agreements (GATT, NAFTA) obligated the U.S. (according to the document) to consider imports of honey bees from countries where 'science-based analyses indicate acceptable risk levels and/or adequate risk management tactics' The methods used to initiate, conduct, and report this pest risk assessment are consistent with guidelines provided by the United Nations Food and Agriculture Organization (FAO) and by the Office International Epizootics (OIE).

You can obtain a copy of this 18-page document if you're inclined (www.aphis.usda.gov/ppq/pr/honeybees/; or call automated fax at 301.734.3560, and request document 0512). And if you question the risk factors, methodology, and documentation there is an avenue of response available, but February 7 is the cut-off date. Send four copies of your comments to: Docket No. 99-09-1, Regulatory Analysis and Development, PPD, APHIS, Suite 3C)3, 4700 River Rd., Unit 188, Riverdale, MD 20737-1238.

Briefly, the assessors (USDA ARS and APHIS scientists) looked at the diseases present in New Zealand, those present in the U.S., and recommended that queens and package bees to be exported to the U.S. be certified as:

- The bees are a product of New Zealand.
- The bees are derived from an apiary or apiaries registered and inspected under, and otherwise complying with, the (NZ) Biosecurity Act of 1993 and any regulations made under that act.
- The brood combs in the hives from which the bees are derived showed no clinical signs of American Foulbrood on the day of collection.

Also, they found "no evidence of adverse species, subspecies or strains of honey bees that would be of concern relative to the importation of honey bee germplasm from New Zealand. Likewise (they) found no viruses or other disease organisms that posed significant risk to the import of germplasm."

I have no reason to doubt the accuracy or intent (good science, not marketing) of this report. New Zealand keeps pretty clean bees. They've been sending them to Canada for several years without reportable problems (and you know how fussy the Canadians are). Moreover, they essentially stopped imports of bees from other countries to their shores years ago and have an active and aggressive disease control program in place (see Book Reviews this month).

The bigger question, in my opinion, is what does the U.S. queen and package industry think of this competition (the foot in the door syndrome)? Since NZ has opposite seasons their packages and queens will not be ready during the primary U.S. package and queen season (their Spring is our Fall). And, even though Fall introduction can (and should) be practiced (see below), I have yet to hear of NZ Super Bees. They produce queens just like ours. And price will probably be a factor, though I don't know that yet. Still, Canadian beekeepers seem to manage with the seasonal differences and the additional costs (though not as aggressively as initially), so I suppose U.S. beekeepers will also.

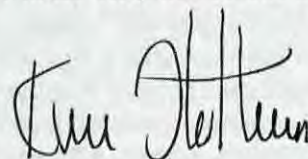
But, beekeepers who overwinter in the south (FL, GA, TX) and want queens in November and December for requeening and for splits for almond pollination will be a ready market for these queens. And for this, U.S. queen producers can't compete. Can't even come close, actually. So, instead of requeening *after* pollination (in March or April) when U.S. queens become readily available, pollinators will go into orchards with brand new, no disease, no-beetled, no-*varroaed*, no terra-resistant, no chemical-problem queens. And, according to the report, everything NZ has, we have, so there should be no surprises, right? All this will *definatly* be a marketing ploy for savvy pollinators, and for NZ queen sellers.

New Zealand isn't the first, (we can bring in bees from Canada now, and they bring in NZ bees, so who's to say we don't already have some NZ blood in our system?), of what will probably be many countries looking to get that foot in the door. Will this, like importing honey, start a rush to the bottom - in quality, in cost, and in service? NZ is probably one of the better-qualified countries to export queens here. But how about Argentine queens, or Mexican queens, or Chinese queens? And who do you call when you have a problem? (How's your long-distance Spanish, or Chinese?). Who out there has absolutely the *cheapest* queens in the world? And who will be the first country to actually *dump* queens in the U.S.? Like honey, it will be "Step right up folks get the cheapest (whatever) in the world!"

That imported queen prices, and quality, will begin to get cheaper is a given. What will happen to the regulations guarding the borders against this onslaught, though, is anyone's guess. If the regulatory quality-control for imported honey (or most fruit, vegetables or meat) during the past few years is any indication, however, expect, what, 4-legged bugs?

My cynicism shows, here, I know. But we sit on the biggest and best beekeeping market in the Universe, for a while longer anyway. And, like every other product sold here, everybody everywhere wants a piece of the action.

Remember March for the Pollination Report, but in the meantime keep your smoker lit, your hive tool sharp, and your eyes and ears open for honey bees with a definite down-under buzz. They will be out there.



Beekeeping In Yunnan, China

Technology is changing the face of beekeeping here.

Stephen Petersen

My face was glued to the window as the bus bumped along a country road in China's southern Yunnan Province. We were passing through the small village of Tan Cheu, some 30-40 kilometers east of Yunnan's capital, Kunming. I spotted a log hive secured under the eaves of a house we were passing.

"Pheung! Pheung!" I cried out. That's Thai for "Bees! Bees!" – at least that's what I was trying to say. In Thai, a tonal language in which I was struggling to order a meal and find a place to sleep, I could have been hollering (with just a slight change in tone) either "Guns! Guns!" or "Stomach! Stomach!" In any case, it was enough to bring the bus to a halt only 100 meters past the spot where I'd seen the bees. Frankly, hollering "Bees!" is not sufficient reason to stop a bus in China (perhaps "Guns!" would), but I was on a tour with 17 Thai beekeepers from the Northern Thailand Beekeepers Association. This tour was a linguistic challenge for me, but several of the Thais spoke Chinese – probably due to the fact that some had come from Taiwan in the early 1980s to take part in Thailand's apicultural boom.

We doubled back to where I'd spotted the rustic hives and struck up a conversation with the Chinese beekeeper, Chew Ee Koon. I gleaned bits and pieces of the conversation translated from Chinese to Thai to English for my benefit. Mr. Chew keeps nine colonies of *Apis cerana*, the Eastern Hive Bee, in rustic hives. Although some of the colonies were in Langstroth-appearing boxes, they did not have movable frames, so they were no different from the six or seven hollow logs slung from his house walls. The colonies were the strongest *A. cerana* colonies I'd seen in Asia. He'd been feeding sugar water to build up the colonies in anticipation of the end-of-the-year

honey flow. For the last couple of years, honey yields had been low due to drought and poor forage conditions – he hadn't been able to take any honey off the colonies. Normally a rustic hive might yield only three to six kilos of honey (seven to 15 pounds), but with his strong colonies (provided they don't swarm – another dilemma with rustic hives), he anticipated a harvest of 10 kilos per colony if the forage and weather cooperated.

Yunnan Province boasts the largest concentration of *Apis cerana* in the world – between 800,000 and one million managed colonies, plus a large feral population. In addition to the *A. cerana*, Yunnan is home to several other species of honey bees including the Giant Asian Bees (*A. dorsata* and *A. laboriosa*), the two species of Dwarf Asian Bees (*A. florea* and *A. andreniformis*), stingless bees of the *Trigona* genus and the imported European honey bee (*A. mellifera*). Many of the ethnic minorities (in fact the Han or Chinese are in the minority in Yunnan – the bulk of the inhabitants are from the numerous minorities) do some honey hunting especially of *A. dorsata* and *A. laboriosa*, the Giant Asian Bees.

The "modernization" of the beekeeping industry, i.e., the transfer of *A. cerana* colonies from rustic hives to modern movable-frame hives, has increased honey production in Yunnan from *A. cerana* colonies. In 1990, the honey production was 4,600 metric tons; by 1998, this had increased to 6,000 tons due to increased management skills and techniques. Using these new methods of *A. cerana* beekeeping, the average per colony yield has increased from five to 10 kilos per hive to 15 to 25 kilos per hive.

Since 1992, there has been a "new era" in Yunnan beekeeping – together with *A. cerana* colony management innovations and the in-

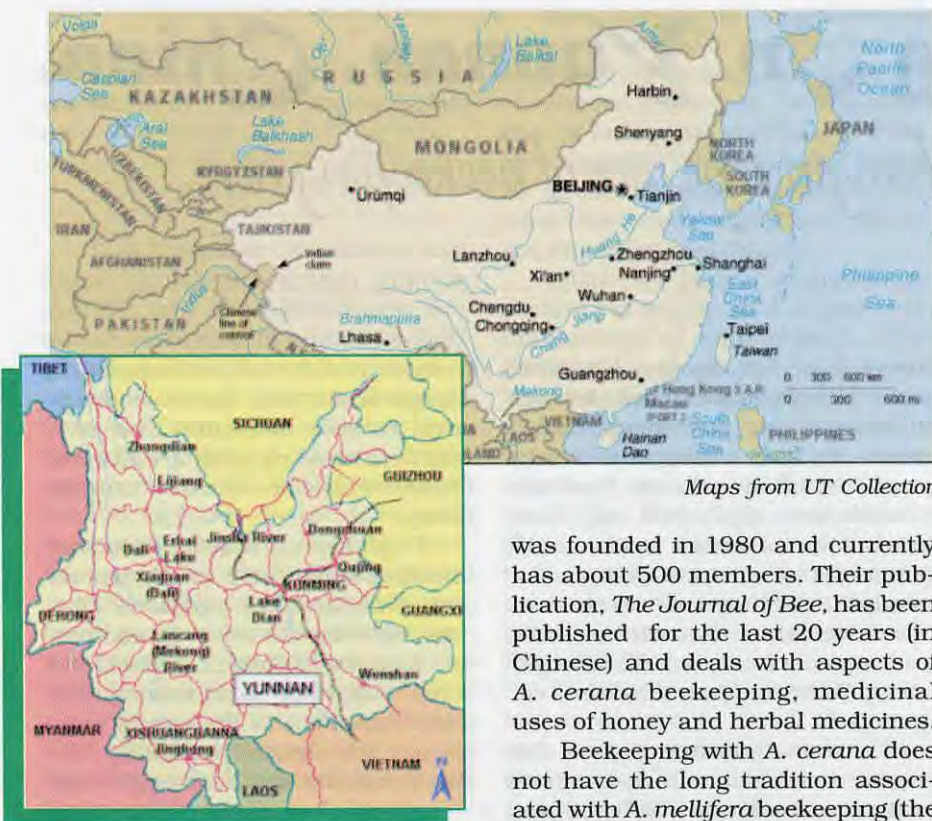
roduction of *A. mellifera* colonies on a larger scale, there has been an upsurge in new companies and joint ventures dealing with traditional Chinese medicines and new uses for honey.

I'd picked up a nasty bronchial infection somewhere in my travels and turned to some traditional Chinese medicine for relief. In addition to a long list of medicinal plants (all listed with their Latin names), the main ingredient of the syrupy concoction was *Apis cerana* honey. We also spent time at a burn center and

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Typical log hive attached to building, top; modern hive, below.





Maps from UT Collection

was founded in 1980 and currently has about 500 members. Their publication, *The Journal of Bee*, has been published for the last 20 years (in Chinese) and deals with aspects of *A. cerana* beekeeping, medicinal uses of honey and herbal medicines.

Beekeeping with *A. cerana* does not have the long tradition associated with *A. mellifera* beekeeping (the Egyptians managed bees about 4,500 years ago along the Nile River). Beekeeping in China is said to have begun about A.D. 500 according to Dr. Eva Crane in her book *The History of Beekeeping*. Honey hunting of feral colonies has been practiced for

"Pheung! Pheung!" I cried out. That's Thai for "Bees! Bees!" - at least that's what I was trying to say.

much longer, exploiting the resources of the large, single-comb species such as *A. dorsata* and *A. laboriosa*. These activities are still carried out today over most of Asia, but loss of habitat, competition from the introduced *A. mellifera* species, increased hunting pressures and pesticide use have made wild honey harder to come by and may be threatening the biodiversity of bees in Asia.

While the northern Thai beekeepers were visiting the apicultural college, the students had the opportunity to hear and learn a little about beekeeping outside China. Professor Siriwat Wongsiri from the Bee Research Department at Chulalongkorn University in Bangkok spoke on the importance of honey bee biodiversity in Asia. He also extended an invitation to the

students, faculty and researchers at Yunnan Agricultural University to attend the Asian Apicultural Association/International Bee Research Association conference to be held in Chiang Mai, Thailand, in March 2000. This conference (from March 19-25) will bring together scientists, development specialists, researchers and producers from all over Asia to focus on bees in Asia as we enter the next millennium. Workshops during, and tours before and after the conference, will allow participants the chance to see what's new as well as traditional in Asian apiculture. The Chinese plan to send a large delegation to Chiang Mai and will also be the hosts for the next conference in 2002.

Jan Van Hoof, an ex-pat Dutchman, recently retired from beekeeping in New Zealand, spoke on New Zealand honey production and beekeeping. I gave a brief talk on the trials and tribulations of keeping bees in Alaska's interior. The students were full of questions mainly having to do with production costs and sale volumes. I mentioned the great retail price we get for our Alaskan honey (\$5.50/pound or about \$12/kilo), and when it was translated into Chinese there was an audible gasp from the audience.

Chinese medicine center where honey played an important role in treatments.

Yunnan is rich in its floral diversity - more than 10,000 species of plants, many of which are important to bees, have been noted in the province. Because of this rich floral diversity and the mild climate, more than 100,000 colonies of *A. mellifera* are brought to Yunnan each year for overwintering from all over China.

The provincial capital, Kunming, is a clean, modern, bustling metropolis and home of the Yunnan Agricultural University and Apicultural Research Center. Our group of Northern Thai beekeepers visited the center for an afternoon of introductions, speeches and countless cups of green Chinese tea.

The Apicultural Technician Program, established in 1985, currently enrolls about 100 students in a three-year program. After their training, students are posted all over southwest China passing on their skills in beekeeping extension programs. Some students stay on at the university for further research into areas such as selection of stocks for increased honey production, queen rearing with *A. cerana*, medicinal uses of honey and disease study. The Yunnan Apicultural Association

With my next comments on production costs (e.g., pkg. bees \$60/pkg., sugar \$0.40/lb etc.), high freight costs, short Summer season and long Winters (seven months), there were nods of understanding.

During the four-day tour I gained a brief insight into *A. cerana* beekeeping and made some valuable contacts. I was also able to pick up some beekeeping books and literature in Chinese - information for my Chinese friends in the Malaysian Cameron highlands which, after a few weeks in Thailand looking for bees (or guns or stomachs depending on the tone!), was to be my next stop. ☺

Stephen Petersen is an Alaskan beekeeper currently touring Asia looking at the biodiversity of honey bees in Asia and escaping the Alaskan Winter.

You Can Make This

HIVE STAND

it's stable, level and inexpensive

Lonnie Funderburg

Better ideas start with a good idea and improve on it. After I had used two 12-inch concrete blocks for several years as a hive stand, a friend pointed out to me how handy it is to have a stand for two hives together. His proposed hive stand was just like the stand presented in a recent article by Dr. Jim Tew. While using the suggested hive stand, I had difficulty making it stable on uneven ground. I had seen pictures of stands and stands at other beekeepers' yards. With these examples and a bit of inspiration at the lumber yard, I came up with the following plan for a simple hive stand foundation that costs very little in materials and labor, yet it is strong and stable. I have used this method for two years.

Of course the stand must be able to hold the weight of two hives, and it should be level. This level requirement is what got me started thinking about how to level the stand without rocks, bricks or blocks of wood. The building supply where I buy the pressure-treated lumber for the hive stand I build, (see pictures), which is almost identical to the stand Dr. Tew builds, gives me the pieces of pressure-treated wood used to band the bundles together. These pieces of wood keep the metal bands from cutting into the salable wood. They are about four feet long and about 1-1/2 inches square in section. I cut a point on one end and square the other end of each stake to make it easy to drive them into the ground. These four stakes are the key to leveling the base for the hive stand.

I drive these stakes into the ground in pairs about 16 inches

apart with another pair about five feet away in an arrangement approximating a rectangle. The exact location of the stakes is not critical; however, they must stick out of the ground enough to be fastened to the 2 x 4s. You should have in mind the direction you want your hives to face. I use a nine-pound sledge hammer and drive the stakes down one to two feet depending on how hard the ground is. It is important that each stake be driven deep enough that it will not be forced any deeper while supporting the weight of two beehives. This means I drive the stake until just before the end splits from blows of the hammer. You got it - sometimes I have to drive a second stake. But they didn't cost me anything. So, think about how heavy your two colonies will be just before you take off your honey crop. Between each pair I fasten a

nearly horizontal pressure-treated 2 x 4 about 20 inches long which I slope from back to front about 1/4". This provides for the slight slope of the bottomboard to prevent rain from running into the hive. Dr. Tew suggests fastening a 3/4" strip to the back of the hive stand. If so, the 2 x 4s could be mounted level. The two horizontal 2 x 4s are leveled with each other with a line level. This means that one 2 x 4 is usually on the ground, and the other is off the ground by whatever it takes to make the stand level from end to end. I fasten the 2 x 4s to the stakes with two 3" galvanized deck screws at each stake. Of course a couple of cordless drill/drivers come in handy to make this connection. I pre-drill the 2 x 4 for the deck screws so that they will pull the 2 x 4 up tight against the stake. This is important. You don't want the deck screws to bend. These

Continued on Next Page

Detail showing how top 2 x 4 platform is constructed for strength and stability.





The base is made of stakes driven into the ground with a horizontal 2 x 4 support screwed or bolted so it is level.

two 2 x 4s are as close to the ground as I can put them. The location of the 2 x 4 x 20" pieces is important since this levels the stand from side to side and slopes the stand from back to front. Then I saw off the stakes even with the 2 x 4. This provides me with a level, stable foundation for the hive stand. Because the stakes are driven well into the ground and everything is fastened with screws, the foundation for the hive stand is very strong.

Onto these two 2 x 4s I place the hive stand which Dr. Tew suggests. My stand is eight feet long and 17 inches outside front to back. I cut four pressure-treated 2 x 4s 14 inches long and fasten them between two eight-foot 2 x 4s just where I will place the hives. I feel this provides more support for the bottomboard. The stand is fastened together and fastened to the foundation with the same deck screws. I have used two 2 x 8s as the stand on the foundation just described. They work well. The stand constructed of 2 x 4s works just as well

and costs much less. The 2 x 4 turned on edge may be stronger than a 2 x 8 laid flat. On this stand I place two hives about 16 inches from each end. This provides a space on both sides of each hive to place frames as they are examined.

I have found it very convenient to have my hives in pairs. The adjacent hive is a handy place for my smoker. I usually place any surplus supers on the stand between the two colonies, then place the examined frames on the space at the end of the stand. Another advantage to having the stand slightly above the ground is the ease of cleaning grass away from the hive stand. This stand is large enough for three colonies if you need a place to put an extra colony or nuc temporarily.

It is a good idea to assemble the

hive stand in the shop. It is also a good idea to construct the foundation in the Winter, if the ground isn't frozen, or before there are bees in the area. I have added a stand to a yard without any problem while there was a honey flow, however. With a little planning, I lay out the yard and put in the hive stand foundations before I move any bees into the yard. Although I have not yet abandoned a site, if I do, everything except the four stakes can be removed since it is only screwed together.

The four stakes cost only the time to collect at the lumber yard. The two 2 x 4 x 20s cost about 78 cents. The screws were left over from repairing my deck. This is minimal cost to make a good hive stand a little better. **BC**

Lonnie Funderburg is a sideline beekeeper with about 20 colonies. He's been keeping bees for 10 years and lives in Oneonta, Alabama.

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Richard Taylor

Bee Talk

“Simplicity should be your rule.”

Old people like me are notoriously set in their ways. The old ways of doing things usually seem to me the best. I wouldn't even know how to turn on a computer, and all the technology that has arisen around this invention – the internet, email, and all that – is totally foreign to me. I have no intention of changing. The way I've been doing things all my life is good enough for me.

People tell me that all this new technology saves lots of time, but I don't believe it. It consumes lots of time. It has simply made life hectic for those who are caught up in it. Some people, I am told, spend hours at a time on the internet. And email, so far as I can see, simply produces mountains of junk. There was a time when people, even those in high places, took lots of time and care in composing their letters, and those letters were not only wonderful to read, they were also worth preserving. Anyone can read today the correspondence of Thomas Jefferson or William James and be rewarded for the sheer literary quality.

Life was once so simple. Now it is hectic. True, lots more gets done, but at a dear price. People have given up their time, their leisure, their interest in doing fewer things but doing them well. I remember when, at the end of the day, people all up and down the street would go sit on their front porches and talk. Who would have time for that now? Time is the most precious thing there is, the only thing that is utterly irreplaceable, and people have given it up in their headlong drive for time-saving technologies.

What has all this got to do with

beekeeping? Well, quite a bit.

It is, I think, one of the great blessings of this wonderful craft that the beekeeper today can still pursue it pretty much the way beekeepers were doing things at the turn of the last century. We have not been overwhelmed by bigness the way every other branch of agriculture has. You can't keep chickens on a small scale any more, not if you want to make a profit. Egg farms have taken over, long, windowless buildings where chickens are crowded into cages and eggs moved along, I suppose, by conveyer belts. I'm not sure of that, for I have never been in one of these, and would be depressed by the sight if I ever were. When I was a kid every farm had its hen house, and villagers, too, kept chickens. Try to do that today and you won't be able to pay for the chicken feed with what you get.

The family farm has gone the way of the hen house. I don't have any

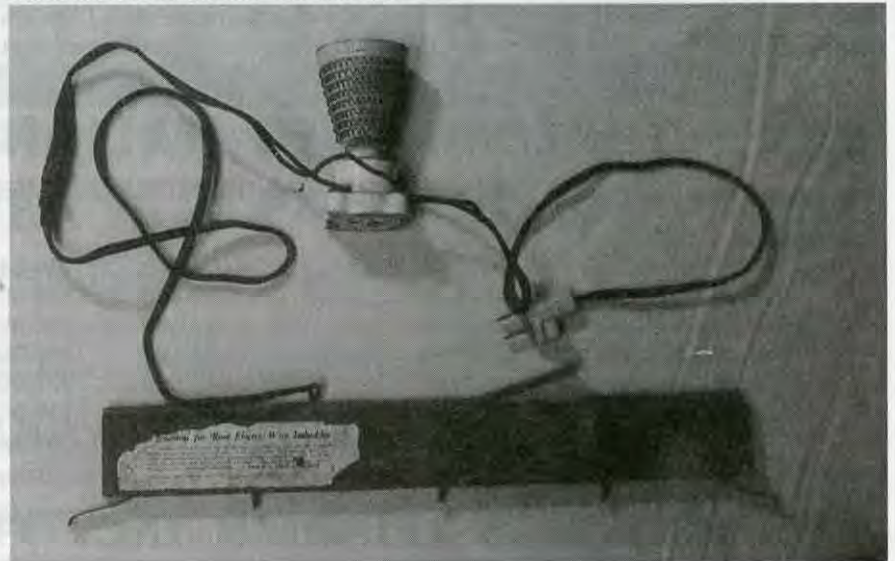
idea who owns the fields around here. They are leased to corporations. In the Spring large machines appear and the fields are planted. Then in the Fall even larger machines arrive, along with trucks, and in a few hours the fields are harvested and the trucks loaded. The people who lived in the old farm house where I now live gained their livelihood from these fields. There were still the remains of a smoke house out back when I came. The stone foundation of a barn remains.

Is all this a mark of progress? Certainly not in improving the lives of rural people. They try to keep up by getting bigger and bigger, only to find that their costs keep rising while prices keep falling. A lengthy study of this that I recently read said that the sun is setting on farmers. They probably work harder than any other class of laborers, and are rewarded least.

But here's the bright side. Bee-

Continued on Next Page

Richard's wire embedder that cost \$1.





This is my homemade bottler, made from a barrel, a simple stand and a valve. Many tons of honey have gone through this simple device.

required no wiring of frames. It seemed to me to be just an added complexity. The old way was good enough for me. And, with the help of an expert welder, I made my own bottler, also shown here. We cut down a small drum, coated the inside real good, and fitted the valve onto it. That didn't cost much. I could easily bottle up a hundred pounds of honey in an hour, and I couldn't guess how many tons of honey have gone through this home-made device. It is as old as my wire embedder, and I'm pretty proud of it.

I got a fresh appreciation of my simple bottling device when, many years ago, I visited a large honey packing plant. They had a big machine there, of enormous complexity, which filled the jars and then spun the caps around and screwed them on. As I stood watching, the machine smashed one of the jars. What a mess – crushed glass all mixed up with sticky honey. They had to shut everything down while they cleaned it up. I couldn't help thinking that they might have done better, and saved some money, with a couple of bottlers like mine.

You can make money keeping bees, even on a small scale, and, what is more important, you can do it without cluttering up your life and going into debt with all sorts of equipment that will give you lots of headaches. Even better, you need not forfeit to bigness and modern technology the most precious thing of all, which is time – the time to reflect, and be the kind of human being you want to be. **EC**

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

keepers are spared this fate. You can keep bees on the same scale that your grandparents might have, and still make money. It is one of the few crafts where simplicity still pays. You cannot get rich keeping bees, but I do have a friend who, single-handed, makes a decent living at it, and has a rich, full life.

One strong and healthy person can, with no hired help, tend up to 300 colonies very profitably. It is a perfect sideline for a teacher, with Summers off. You don't need expensive machinery. Much of the equipment you can make yourself. And you don't need to own, or even rent, the land you put your bees on. I used to have several far-flung beeyards, and I simply gave the land owners some honey every Fall.

Thus, the beekeeper can keep things simple. Indeed, simplicity should be your rule. There are vir-

tually no costs of feeding. The bees forage far and wide and, except under special circumstances, sustain themselves. You need no permission from the owners of those acres where your bees forage, and you won't be hit with rising feed costs, or land costs. And, unlike virtually every other agricultural commodity, the price of honey has not, at the retail level anyway, gone too far south.

I love the simplicity. I govern my whole life by that principle. For most of my life I kept bees much the way people once kept chickens, on a small scale, and it has always been profitable. It was over 40 years ago that I bought my wire embedder, pictured here, second hand, for one dollar, and I could not even begin to estimate the number of frames in which I have embedded the foundation, using this simple tool. I always avoided the fancy foundation that

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?Do You Know? Answers

1. **True** Food transmission between worker honey bees is a form of communication concerning the availability of food and water. In addition to functioning as a distribution system for nutrients in the colony, the behavior also serves as a medium for transmitting pheromones important for the life and cohesion of the colony.
2. **True** Adult bees can maintain themselves over an extended period of time on a carbohydrate source (honey or sugar) but the development of body tissue, muscles, and glands such as the brood food glands depends upon adequate amounts of protein (pollen or a suitable substitute) in the honey bee's diet.
3. **False** Honey bee workers forage for food not according to their own needs, but in response to the needs of the colony. When nectar collecting is in progress, the foragers return to the hive with their nectar load and transmit it to younger house bees. Their acceptance by the house bees gauges the nectar demand. If they are quickly relieved of their nectar loads, they are stimulated to forage for more, or to even recruit other foragers to the same flower resource. If delivery times are long, eagerness for collecting dramatically decreases.
4. **True** Members of a honey bee colony are able to recognize their own nestmates and distinguish them from visitors from other colonies. Worker bees use volatile odors in discerning related drones and workers.
5. **True** Hundreds of bees participate in the construction of a single cell; an individual worker may be active as little as half a minute. When comb is under construction, bees cluster in a curtain-like arrangement, called festooning. Many bees hang quietly producing wax scales while others are actively adding wax and shaping cell walls.
6. **True** Canola, which includes

- both Argentine and Polish types of rapeseed are excellent nectar producers and potential honey sources. The honey, however, may crystallize rapidly in the comb before the beekeeper has a chance to extract it.
7. **False** The presence of American foulbrood in a colony is not a direct indication of poor colony management. In fact, strong well managed colonies have a greater chance of picking up the disease than weak colonies since they have a larger field force. As the infection weakens a colony, the colony can no longer defend itself against robbers from strong colonies in the area. The first line of defense in protecting your colonies is your ability to detect and recognize the early symptoms of American foulbrood. Failure to detect or recognize the disease would be the only way one could be accused of poor management.
8. B) American Foulbrood
9. D) American Foulbrood
10. A) Termites
11. D) Proboscis
12. B) Apis florea
13. A) Five
14. E) Deer Ticks
15. Reasons for requeening colonies are:
 - A. Reduce the swarming tendency.
 - B. Increase the chances of winter survival.
 - C. Control of some bee diseases, i.e. sacbrood, European foulbrood.

- D. Production of larger forager populations to increase honey yields.
- E. Improve colony temperament.
16. Finding the old queen and killing or removing her from the colony to be requeened.
17. Collecting and eating pollen. Manipulating wax and building comb. Cleaning the hive, picking up debris. Fighting enemies of the hive. Gathering and working propolis. To support the proboscis.
18. Age of the worker bee
Needs of the colony
19. Honey will generally be stored above and on each side of the area in which brood is reared. A ring of pollen, 1-2 inches wide is generally found between the brood and honey.

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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Questions?

When To Move?

I need to move my seven colonies about 200 feet. Should I wait until Winter, when the colonies will be less strong?

**Harry Drennan
Houston, TX**

It is very difficult to move bees less than a mile during the warm season, because all the field bees fly back to the original location. Winter, or, better yet, early Spring, when most of the field bees have died off, would be the best time.

Is It Too Cold?

Is it safe to move colonies when the temperature is only 20 or 30 degrees?

**Mitchell Drinnon
Sneedville, TN**

It is safe, so far as the bees are concerned, provided the hives are individually screened properly. Even at this low temperatures bees can become active if disturbed and start flying out, very cross, and they are unable to get back to the hive.

Dead Hive

We have two hives, one of which was strong and the other weak. We began to feed both of them sugar syrup in February. When I checked at the end of the month the weaker hive was dead, even though it had capped honey. There was granular material in the lower super. What was that? Both colonies had been treated for mites, and there was no evidence of wax moths or other problems. What happened?

**Thomas & Lori Banning
Plymouth, MA**

I think you made the very common mistake of feeding sugar syrup out of season, when there is no nectar for the bees to gather, and when there is a weak hive in the apiary. Under these conditions the stronger colonies, discovering the presence of syrup over the other hives,

rob out the sugar feeders of the weaker colonies, demoralizing them to the point that they die off. The beekeeper, seeing bees coming and going at the entrance of the weaker hive, assumes that these are bees of that colony, when in fact they are robbers taking from the feeder. The granular material you saw was, if white, granulated honey crystals without significance.

Evodia

**Are Evodia trees self-pollinating?
Name withheld**

This was, to me, a mystery for a long time. Many people have reported to me that their Evodias bloom but never produce seed. My own Evodia blooms and produces abundant seed, so I thought it must be self-pollinating, there being no other Evodias for miles around, I thought. But then my horticulturist companion, Connie Bright, discovered that a tree out back, which I planted years ago thinking it was a Vitex, is an Evodia tree, and minute examination of its

flower disclosed that it is male! Mystery solved! Evodias are bisexual.

No Locust

I want to get some Locust trees growing in my yard, but I have had no luck planting the seed pods. They never germinate. How can I do this?

**Steve Childress
Cedar Bluff, VA**

You can't get Locust seedlings by planting the seed pods. You have to get the seeds out of the pods, by crushing the pods or putting them through a coffee grinder, and then they must be planted in the Fall, because they need conditioning by cold. The seeds are very slow to germinate - usually two or three years - and only about a fourth will germinate even then. Still, it is worth doing, if you have the patience.

Questions are welcomed. Address: Dr. Richard Taylor, Box 352, Interlaken, New York 14847 enclosing a stamped envelope for response.

Answers!

Richard Taylor

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GLEANNINGS

FEBRUARY, 2000 • ALL THE NEWS THAT FITS

Wellmark Somewhere In The Mix NOVARTIS MERGES

Novartis, the Swiss pharmaceutical company, and AstraZeneca, the British-Swedish drug company announced December 2 that they would spin off and merge their agricultural-chemical units. The proposed merger, subject to regulatory approvals, would form the only company in the world dedicated solely to crop protection, biotechnology and seeds.

Novartis Crop Protection and Seeds businesses and Zeneca Agrochemicals plan to create Syngenta AG, a new company. The two existing ag chemical segments had combined sales in 1998 of 7.9 billion.

If anti-trust hurdles are cleared and shareholders approve, Syngenta, headquartered in Basel, Switzerland, will be listed on the Swiss, London, New York and Stockholm stock exchanges.

Heinz Imhof, currently head of Novartis Agribusiness will become chairman of Syngenta while Michael Pragnell, presently CEO of Zeneca Agrochemicals, will be CEO.

Representatives from both companies said the merger is not expected to be completed until the

second half of this year and that growers can expect little change in the near future.

"Customers for the time being will see little change. We're still operating as two independent companies," said Kay Carter, director of public affairs for crop protection for Novartis.

Analysts have been predicting the spin-off of Novartis' chemical business that had seen sales hurt by the global downturn in the farm sector that has pushed agricultural commodity prices to 20-year lows. Analysts now predict this merger of Novartis and Zeneca will create a wave of similar deals to consolidate and spin off agribusinesses, in moves away from the life-sciences model for big firms.

The rising controversy over genetically modified seeds and foods has also affected the industry. The environmental group Greenpeace says the merger proposal was created to put genetically modified crops into a separate company after some public rejection of these crops, an assertion company representatives deny. *From Vegetable Growers*

AM. FARMERS, RANCHERS & BEEKEEPERS TRUSTED

If you're looking for people in whom the general public has deep trust and confidence, look to American farmers, ranchers (and beekeepers). If you're looking for a group for whom the public has a general skepticism and distrust, then it's animal rightists, especially those attacking animal agriculture. So says a national consumer opinion survey sponsored by the Animal Industry Foundation (AIF).

"The results of the survey don't surprise anyone who appreciates the contribution to our quality of life made by animal agriculture," said Steve Kopperud, AIF president.

"Our polls show consistently over the years that the public trusts and values American farmers, ranchers (and beekeepers) and the important job they do so well. At the same time, animal rightists repeatedly prove themselves to be out of touch with the public at large on just about every level."

Eighty-eight percent of the American public thinks American farmers and ranchers "do a good job of producing healthy food at reasonable prices," according to the AIF poll conducted in late 1998 and released last Summer.

TENNESSEE HONORS



Marlene Thomas

The Tennessee Beekeepers Association (TBA) held their Annual Convention at the James Ward Agricultural Center in Lebanon, TN on October 29 & 30, 1999. Joe C. Dunn, Middle Tennessee Executive Vice-President presented to Dwight Tew, President, an oak gavel made by Henry Russell of Antioch, TN. The gavel will be used at all future meetings of the Association.

Francis Moore, Clinton, TN, was awarded Life Membership in the Association in recognition of his many years of service to the beekeepers within the state.

Marlene Thomas, Kingston, TN, was recognized with the Tennessee Beekeeper of the Year Award. She was instrumental in the development of the Tennessee Beekeepers Association formed from the two prior legacy organizations within the state. She is a Past President and currently serves as Editor of the



Dwight Tew

newsletter, The Hive Tool. She was also President of EAS for 1999 and as such brought their annual convention to Tennessee for the first time. She spends a great deal of her time interacting with fellow beekeepers and the public, with a common thread, the honeybee. She was not only a guest speaker at many local beekeeping associations this past year but could be found in classrooms educating our youth and at civic organizations extolling the virtues of honey bees and pollination. She is ACBA's Secretary/Treasurer and Editor of their newsletter, Hivetalk.

Special recognition was given to Paul Mallory and Marlene Thomas for their efforts in forming the Tennessee Beekeepers Association and to Dwight Tew for his dedication to spreading word about our organization and building a solid base of membership.

NC 2000 CALENDAR READY

The N.C. State Beekeepers Association's 2000 calendar is ready. It is an 8.5x22 inch publication with the typical daily calendar format on the lower half and a special page of beekeeping information above each of the months. It has a pre-punched hole for hanging. It shows the major honey plants



blooming dates in the NC area, dates for major national and regional bee meetings, holidays and more. The calendar is a benefit of membership in the NCSBA (dues \$15.00), but any one can buy one for \$6.00 which includes postage. Send a check payable to the NCSBA to NC Beekeepers, Box 7626, NC State University, Raleigh, NC 27695-7626.

SUPPORT BEES FOR DEVELOPMENT

What is "Bees for Development"? This non-profit organization was founded in 1993 in Monmouth, UK by Dr. Nicola Bradbear and Helen Jackson. It specializes in promoting sustainable, simple beekeeping for small scale beekeepers. Special help is provided for those people in poor and remote areas of the world, who start to build up beekeeping as a resource for additional income. When ever possible this help is provided free of charges.

What does "Bees for Development" do? It promotes sustainable simple beekeeping by organizing training, expert advice and assisting projects. They assist people by making beekeeping information and contacts available, without charge wherever possible. They publish the award winning magazine Beekeeping & Development.

How is "Bees for Development" financed? The work is supported by subscriptions to Beekeeping & Development and by donations. There is no membership scheme with a fixed annual fee, although people arrange regular donations to

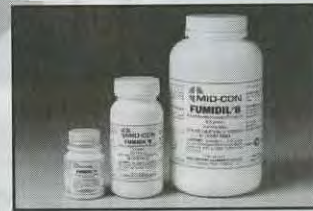
support the work. They highly depend upon funding from donors and charities to support the larger project.

How can you support the work of "Bees for Development"? Any funding is welcomed. Your next beekeeper meeting is suitable to collect funds. An ever growing list of poor beekeepers or schools need sponsored subscriptions to the journal Beekeeping & Development (one subscription is \$US35 per year).

More information about "Bees for Development" can be found at www.planbee.org.uk. To contact the organization: Bees for Development, Troy, Monmouth, NP5 AB, UK, ph. +44 (0) 16007 13648, FAX +44 (0) 16007 16167, email: busy@planbee.org.uk

Also for help and information contact Dr. Otto Boecking, Institut für Landwirtschaftliche, Zoologie und Bienenkunde der Universität, Melbweg 42, 53127 Bonn, ph. +49 228 91019 - 22. FAX +49 228 91019 - 30, email: O.Boecking@uni-bonn.de

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APIMONDIA 1999

John Gates, Apiculture Specialist, B.C. Ministry of Agriculture & Food, Vernon, B.C. Canada, phone 604.260.3015, john.gates@gems9.gov.bc.ca

In British Columbia Canada, many commercial beekeepers rent their honey bee colonies to pollinate crops. Although pollination receipts may sometimes represent over half of a beekeeper's income it is probably safe to say that most beekeepers have not done an in-depth economic analysis of pollination to determine the true costs of providing pollination services or to make pricing decisions. In 1999 with help from beekeepers, the B.C. Ministry of Agriculture, as part of its Planning For Profit series, produced a contribution margin analysis outlining the cash costs of providing pollination in the Okanagan Valley, the center of B.C.'s tree fruit industry.

Cash costs however, are just part of the picture when it comes to making decisions regarding pollination. Other economic factors should be considered. Pollination often oc-

curs at a time of year when beekeepers have opportunities to derive income from other beekeeping operations such as queen rearing, nucleus and package bee production, or less often, pollen and royal jelly production. Profitability of these other options should be examined to determine if pollination is the best income source for that time of year.

Costs of pollination should also include a value representing impact on other beekeeping activities. If pollination occurs early in the Spring, beekeepers and their staff may not have sufficient time to adequately carry out essential management operations such as requeening, queen production, and swarm control. Some risk assessment should also be done when evaluating pollination. Damage from pesticides, damage to bees and equipment during transportation, pest and disease transmission among various beekeeping operations under crowded pollination conditions should all be considered.

Pricing decisions must also be

based, at least in part, on the level of service rendered. If the service consists merely of delivering a specified number of hives, fees may be minimal. If however, the beekeeper offers a more complete package of services, pollination fees should reflect the extra work. Beekeepers may become involved in determining the needs of the particular crop, suggesting solutions to the grower i.e. supplemental compatible pollen or pollenizer varieties, hive siting, timing and may even be involved in assessing the results to recommend changes, if required, in subsequent years. As the grower's *pollination consultant*, the beekeeper should be familiar with the most recent pollination literature and should educate the grower as much as possible. A grower's main objective is to profitably produce a large, high quality crop. For many crops optimum bee pollination is essential to achieving this goal. Many good growers are willing to pay a premium for a full package of pollination services.

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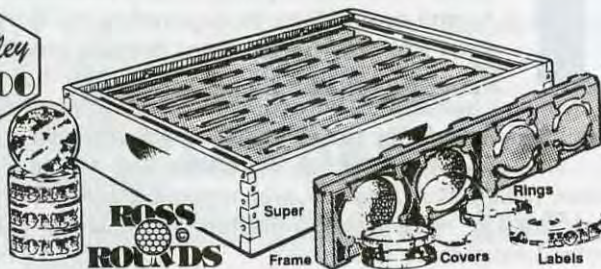
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The tip of the shovel plunges deep into saturated ground. A good deal of force is required to pry the pile of muck away from earth. A sucking noise is created by its displacement. Water fills back into the hole. Fertile soil is dropped beside it. The action is repeated until enough room has been created for the root ball of a pussy willow tree.

This is a rite of Spring. My father and I have been planting these pollen-rich trees in and around beeyards for years. We seek out the wettest soil available, allowing the pussy willow's water-loving roots to flourish.

The trees we plant this year will become the building blocks of strong hives in years to come. One of the earliest sources of pollen in the Northeast, pussy willow trees are essential to the circle of life. Pollen is the most basic element which allows human life to be possible. It fertilizes the fruits and vegetables upon which humans rely and the grains and grasses that we feed our livestock.

A wide variety of pollen vectors exist in nature. Wind, insects and some birds spread pollen to the ovaries of female flowers, thus giving rise to a new cycle of life. As beekeepers, we all know that honey bees are the most important pollinators. They pollinate nearly all of the fruits and vegetables we eat. Honey bees are essential to human survival, and pussy willow trees factor into honey bee survival.

I think of the importance of what we are doing as I place the young tree into the ground. Paying special attention to detail, we cover its roots with nutrient-rich soil. I pack it down firmly, first with the back of the shovel and then with my feet. Water seeps out of the ground, touching the leather of my boots. We step back to admire a job well-done. We do not discuss it, but we both know that we are part of something very important. I look toward the nearby hives. Next Spring they will seek out the trees we have just planted.

I consider the blossoming of pussy willow trees to be a milestone in the beekeeper's Spring. Colonies have struggled to survive the long, hard Winter, and late March is a critical time. Honey and pollen reserves are low. Pollen is in demand to build a strong population before we move the bees into local orchards. A plentiful source is needed immediately.

By the first week in April, the struggle has paid off. Pollen from pussy willows provides the protein to build the population. Workers can be found by the hundreds in individual trees and by the thousands where groups of our trees reside. Weather permitting, they transport the precious pollen back to hives where hungry larvae are developing.

In the coming weeks, more plants will begin to offer pollen and nectar. A variety of wildflowers are out depending on the region. Wild cherry trees soon blossom, dotting the landscape. When I see cherry trees blossom, I know that the colonies are "out of the woods." Populations are strengthening. The strongest hives are even putting away some honey.

With the help of our pussy willows, and other wild plants, our bees are ready for pollination of local orchards. We begin by moving 10 or 12 hives into the plums and apricots, then another 10 or 12 into the cherries. The early days of pollinating are fairly relaxed. We move them in gradually as needed until 30 or so hives are busy pollinating. Then one day, the apples come into

bloom. Our growers want us to move the remainder of the 130 hives into their orchards that night, seemingly insurmountable task when moving hives by hand using pickup trucks rather than flatbed trailers and forklifts. The growers don't get every hive that night. After a couple days, however, our bees are pollinating apples that will be consumed statewide. Thanks to my father's bees, local residents will enjoy fresh apples, apple cider, pies and other apple products that they purchase from area grocery stores and farm markets.

Some of the apples even make their way as far as New York City where they will be sold at corner stores and markets to people seeking a healthy snack. Little do they know that the apple they are eating came from a flower that was pollinated by a bee that was raised on the pollen gleaned from a pussy willow tree that I helped plant. It is a beautiful cycle to be a part of and one that all beekeepers should be proud of.

Nature provides a perfect system for all life. With the absence of wild colonies and burgeoning human populations, beekeepers have become an increasingly important part of that system. Though our efforts may go unrecognized by many, beekeepers see it when they enter their yards each Spring. While working on your hives this Spring, take a moment to reflect on your place in the natural cycle and celebrate the Rites of Spring.

Rites Of Spring

Shawn Kime

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