
Bee Culture
SEPTEMBER 1995
GRAND CHAMPION
AGRICULTURE EXHIBIT
INDIVIDUAL COMPETITION
Gibbons
Honey
CELEBRATE SEPTEMBER
NATIONAL HONEY MONTH

Septem

COLUMNS

DEPARTMENTS

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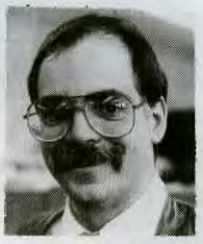
Publisher



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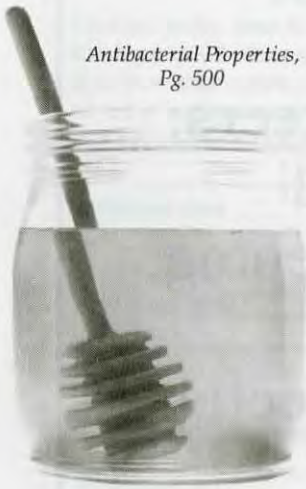
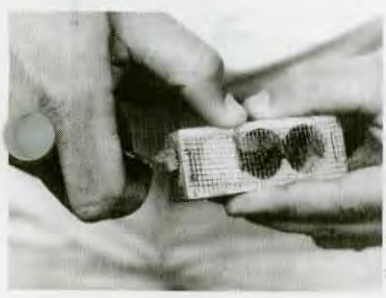
BEEAWARE, Pg. 499

FEATURES



Antibacterial Properties, Pg. 500



Requeening, Pg. 517

Cover
Aggressive marketing, an attractive package, good service and, most importantly a good product – coupled with lots of work and some good luck – can mean success. It certainly has for Sharon Gibbons. Her story on page 512.

Bee Tree, Pg. 521

INNER COVER

Just four weeks ago all of us here were deeply involved in making an EAS meeting work. For a whole week we were in Wooster, OH running registration, organizing exhibitors, directing speakers and selling books and subscriptions.

There were, of course, a whole lot of other people involved in this event, but just for the moment I'd like to talk about those few here who helped out. Dawn Feagan, who normally handles subscriptions and works with our advertisers, did a great job with both the registration paper work and helping the vendors get adjusted. And Mary Weigly, who works with advertisers and subscriptions too, was terrific at the *Bee Culture* table, selling books, subscriptions and meeting any and everyone who stopped by.

And Kathy, who makes us look good every month was the glue that kept it all together – registration, scheduling, stuffing bags and envelopes – and all the rest that makes one of these happen.

We've got good people who make the magazine work every month and last month these good folks made 600+ beekeepers at an EAS meeting feel right at home, and made it all work pretty smooth.

Dawn, Mary and Kathy – Thanks. We couldn't have done it without you.

•

This brings up, of course, the whole subject of volunteers. There aren't enough of them, are there? The EAS meeting this year had lots and lots of people helping out over the many months it took to get ready. And, we couldn't have done it without them, either.

But it keeps getting harder to entice people to work hard, stay away from family, give up other activities (some of which actually generate income), and go without things like supper or sleep when the only incentive is 'please. Not impossible, just more difficult.

The temptation, certainly, is to abuse the privilege of taking these generous souls for granted. It's easy to do, and I'm as guilty as anyone in that regard. Worse, it's even easier to lose sight of the fact that not everybody involved in whatever it is doesn't take whatever it is as seriously as you do. Don't do that. Don't wear out these fine folks. Better, become one. It's fun, really, and you get to meet an interesting class of people – people just like you.

•

Right now it's easy to comprehend, and appreciate, that familiar white five-gallon pail. You probably got that pail from a bee supply company or a bakery. When it's full of your just-harvested honey crop it weighs in at about 62 pounds, lid included.

A year ago, that pail was worth a bit over $30.00 wholesale when it was full of honey. By mid-August it was worth about $45.00. That's a healthy increase in anybody's book.

In large part the credit goes to the political machines of the American Honey Producers and the American Beekeeping Federation. They

Continued on Page 523

Good Volunteers; Virtual Beekeeping; And, a Correction

KEEP IN TOUCH

Write: Editor, 623 W. Liberty St., Medina, OH 44256
FAX: 216-725-5624
EMAIL: BCULTURE@AOL.COM

MAILBOX

Queenright Pollen Collection

In your July, 1995 issue, Richard Taylor joins several other authors who advise that bees only bring pollen into the hive when it is queenright. My experience contradicts this. On two different occasions I have returned to my hive in the early spring to find a strong colony busily foraging and bringing in pollen like mad. Subsequent inspection revealed that there was neither queen nor brood in the hive. It seems to me that foragers cannot resist the urge to forage whether their hive needs it or not.

Dan Hendricks
Mercer Island, WA

MSAA Funds BVT Research

The Multiple Sclerosis Association of America is the FIRST to fund research on Bee Venom Therapy (BVT) for those with MS.

MSAA has accepted the funding proposal of noted immunologist Dr. John Santilli for the manufacturing of bee venom extract, to be used in future clinical trials to test BVT on those with chronic progressive MS.

Realizing very little scientific data existed and the need to prevent a buildup of false hope among patients, we felt it was necessary to bring this issue to the attention of the medical profession.

We received a proposal from Dr. Santilli and working with Dr. John Richert of Georgetown medical University Center, began an initial venom immunotherapy program with a patient with a 10-year history of chronic progressive MS. The patient was unresponsive to systemic steroids and ACTH. Dr. Santilli began the bee venom injections four years ago, and is currently in remission, off all medications and has improved in many areas.

This patient case certainly could be a natural remission, however we did not want to risk a "Let's wait and see" approach.

After extensive review Dr. Santilli received final approval for funds to manufacture bee venom extract. The bee venom used will be collected by Mr. Charles Mraz, presently a source material supplier regularly inspected by the FDA.

After a manufacturing period of three to six months, Dr. Santilli should be ready for a full year's worth of formal clinical trials. The location(s) of the clinical trials has yet to be determined.

For more information on the MSAA, contact them at 7984 Olde Eight Road, Northfield, OH 44067, FAX 216-468-1510 or Phone 216-468-3400, 216-655-2828.

Therese Corrigan
Northfield, OH

Questions?

I really enjoy reading *Bee Culture*. It is a broad, balanced publication, its articles covering everything from research to "The Mailbox."

Perhaps you or your readers may be able to help with my ongoing problem of crystallizing honey. I understand how to handle crystallization after extraction, but what can be done about honey crystallized in the comb? Can I use it for winter feed in the crystallized form? Should I place it outside the hive for the bees to rob it back, or will they just re-store it in the crystallized form? Is there a way to extract it by using warm water to dissolve it, then refeeding it back as a syrup? Please help – I can't figure this one out.

Also, how do you tell when it's time to replace brood comb? Some of my brood comb is very dark and the cells look small.

Lastly, do you have an internet address? I don't see one published in *Bee Culture*.

Thanks for any help you or your readers can offer.

Dan P. Veilleux
Columbus, OH

Editor's Note: Crystallized-in-the-comb honey can be a problem. Obviously, timely extraction will avoid the problem, but that's not always possible. Removal is nearly impossible, so returning it to a colony for feed is advised. Bees will use it as feed. Be sure ample water is available to the colony.

A good rule of thumb is to replace brood comb when you can't see light through it when held up to the sun. Personally, I recommend every three years a comb should be replaced to get rid of the dirt, debris and other foreign substances wax absorbs. Some disagree with that time frame, but enough data exists to support it.

You can reach us on Email at BCULTURE@AOL.COM. I'm not as fast at answering Email as Email is in getting to me, but I do read it as often as possible.

Looking For Gallberry

I am trying to locate for purchase a shrub called Gallbery (*Ilex glabra*). I have inquired with my local agricultural extension agent and several nurseries, but they were not familiar with this species. I understand, through my reading, that this shrub is a heavy honey producer and should be hardy to the foothills of western North Carolina.

I would greatly appreciate any information that you or your readers might be able to share with me regarding this matter.

Scott Hollifield
Rt. 4 Box 848
Marion, NC 27852
704-724-4064

Moving Up

I'm 14 years old and I have been a hobbyist for about a year and a half now. I subscribed to *Bee Culture* last year. In the past few issues I have been reading about the cost of paper rising. I would be glad to pay more for your magazine. Please don't reduce the size of the issues.

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MAILBOX

I have two hives, each with one brood box and a 6½ inch super. The bees have not yet moved up into the super. Is there a way I can introduce them into the super, or will I just have to let them do it on their own?

Ryan Sullivan
Lancaster, PA

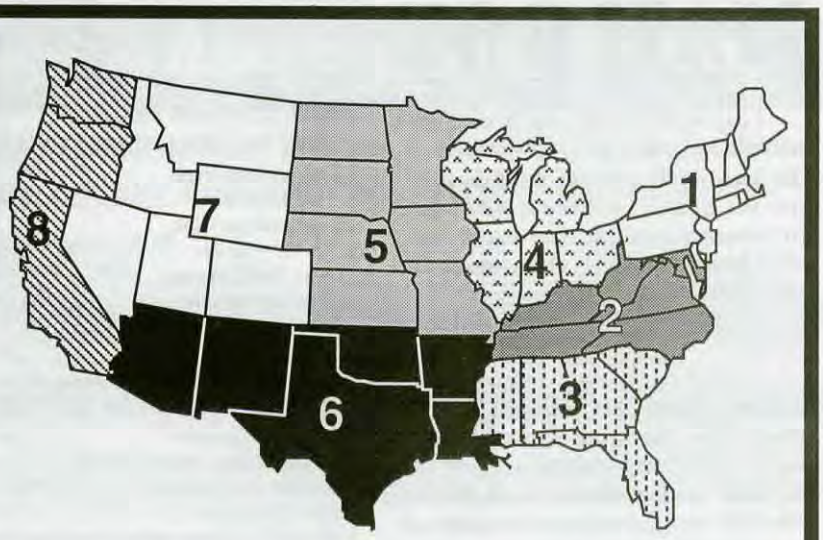
Editor's Note: The bees will move up when they need more room to store honey. A strong nectar and/or pollen flow, and an increasing population will propel expansion upward. And thanks for the kind words of encouragement.

SEPTEMBER Honey Report

SEPTEMBER 1, 1995

REPORT FEATURES

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



	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Bulk												
60# Light	45.61	48.30	47.28	46.33	59.00	38.80	47.28	46.33	35.40-60.00	46.45	43.90	43.17
60# Amber	44.19	45.09	42.61	42.40	42.61	34.17	42.61	45.07	30.00-55.00	42.82	41.80	40.97
55 gal. Light	0.58	0.49	0.66	0.63	0.60	0.56	0.66	0.58	0.48-0.90	0.60	0.62	0.54
55 gal. Amber	0.53	0.49	0.60	0.60	0.60	0.51	0.60	0.56	0.45-0.78	0.56	0.57	0.50
Wholesale - Case Lots												
1/2# 24's	23.14	28.63	20.00	19.20	19.92	22.00	22.85	22.00	18.00-42.00	23.62	23.55	22.42
1# 24's	30.85	32.54	32.00	31.87	30.36	32.43	31.25	30.53	27.60-37.90	31.89	31.48	30.69
2# 12's	28.20	30.33	29.26	29.10	26.40	28.00	30.25	30.00	24.60-33.60	29.58	29.50	29.09
12 oz. Plas. 24's	26.65	27.16	36.00	26.40	27.60	25.60	27.50	25.07	16.80-38.40	27.68	26.55	26.72
5# 6's	29.82	32.08	31.76	32.10	30.90	28.00	29.20	29.15	27.00-36.95	31.32	30.39	**30.51**
Retail Honey Prices												
1/2#	1.48	1.95	2.00	1.06	1.32	1.85	1.18	1.26	0.99-3.25	1.49	1.51	1.44
12 oz. Plastic	1.62	1.74	2.25	1.56	1.45	1.64	1.70	1.64	1.19-2.25	1.67	1.65	1.65
1 lb. Glass	1.86	1.99	2.50	1.77	1.81	1.96	1.90	1.81	1.55-2.50	1.92	1.90	1.85
2 lb. Glass	3.05	3.35	3.50	2.99	2.90	3.02	3.15	2.80	2.59-4.00	3.17	3.17	3.13
3 lb. Glass	4.19	4.91	4.50	3.79	4.11	4.24	4.50	4.31	3.79-5.25	4.40	4.33	4.29
4 lb. Glass	4.99	5.26	5.50	5.33	5.53	5.35	5.25	5.49	4.99-5.65	5.34	5.40	5.51
5 lb. Glass	6.66	7.43	6.50	6.64	7.09	6.05	6.35	6.42	5.85-8.95	6.93	7.02	6.58
1# Cream	2.22	2.68	2.31	1.66	1.96	2.83	2.15	1.82	1.09-3.50	2.33	2.49	2.22
1# Comb	3.40	3.26	3.00	3.75	2.99	4.62	3.75	3.37	1.95-5.50	3.56	3.34	2.96
Round Plastic	3.26	2.85	3.78	3.78	3.59	4.43	3.78	3.53	2.45-5.50	3.40	2.92	2.78
Wax (Light)	1.62	1.39	1.88	1.60	2.04	1.22	1.45	1.45	1.00-3.50	1.63	2.00	1.53
Wax (Dark)	1.31	1.19	1.75	1.45	1.53	0.85	1.30	1.25	0.50-2.75	1.35	1.51	1.23
Poll. Fee/Col.	29.50	22.50	27.50	32.50	30.00	12.50	35.00	33.50	12.50-55.00	31.00	32.63	29.35

REPORTER'S SURVEY

We polled our reporters this month, asking about wholesale and retail sales, payments, prices, demands, containers sold, slotting fees and home sales. These are the results.

Region 1

Prices increasing slowly as new crop comes in, demand has stayed steady for the most part, but warm weather has slowed it some. Survey indicates most paid immediately or net 30, slotting fees fairly common, about half sell in customers' containers and give a discount, 1 and 2 # most popular sizes.

Region 2

Prices steady to increasing overall, but blips show up as new crop comes in. Most paid immediately, but net 30 common in wholesale. 5-gallon most common size. Retail size most sold is 1, 2 and 5 lb. with immediate payment and net 30 expected. Slotting fees not often seen, and some give discounts own containers from home sales.

Region 3

Prices increasing as new crop moves steadily. Both wholesale and retail climbing. Sales and demand steady and should increase as shortages become apparent. Most retail sales to small outlets with 1 and 2 lb. most common, but smaller sizes popular, too. Payment at these usually immediate. Wholesale is big business here, with net 30 most common.

Region 4

Prices steady so far, but demand increasing as summer cools off. Supply should be steady as average to large crop is expected. Wholesale sales increasing now, but some expect that to slow as prices go up. All sizes popular, but 18 oz., 2 lb. and 5 lb. common on shelves. Payment is generally net 30, but net 15 also is used. Customer's containers earn a discount, up to $.15/lb. Slotting fees in big stores and with brokers increasing.

Region 5

Prices on the increase pretty much across the board, wholesale and retail. Demand steady, even with increases. Wholesale payment ranges from immediate to net 30, with 'mutual agreement' showing up on occasion. That goes from net 10 to net 90, or 10, 30 and 90 day payments. Most retail sizes are sold commonly, with 8 oz., 12 oz. plastic, and 5 lb. common. 1 lb. and 2 lb. popular too. Customer container sales not as common as in the east.

Region 6

Prices unsteady, with more decreases showing up than expected. Good crop, and steady demand make predictions difficult. Wholesale sales generally net 30, but some longer terms also show up. Barrels and pails the standard. Retail sales net 30 or immediate, with most requiring fast payment. Slotting fees uncommon in smaller outlets, but common in chains. Sales in customer containers not uncommon, with 5-20% discounts reported.

Region 7

Prices moving upward due to decreased imports and average or less crop in the region. Demand strong though so prices should continue up. Wholesale sales generally net 30 to most packers, but some longer reported. Retail sales immediate or net 10 most common, with 1 lb., 2 lb. and 12 oz plastic biggest sellers. Larger sizes handled often, though.

Region 8

Sales steady to increasing a bit with demand moving up as weather cools. prices moving up, too. Net 30 and immediate payment for bulk sales most common, same as retail. 1 lb., 3 lb. and larger common, but 8 oz. and 12 oz. in big demand in some areas. Customer discount for own containers usually given, with %'s all over the map.

? DO YOU KNOW ?

How Timely Is Your Management?

clarence collison

To make timely management decisions, it is necessary to understand the basic biology of the honey bee colony and learn to recognize subtle cues that indicate current colony conditions. Failure to observe these signals or interpret them correctly, often results in making the wrong decision. How well do you understand basic honey bee biology and colony management procedures ?

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

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

1. ____ Drone-size cells are wider and deeper than worker-size cells.
2. ____ In general, the direct transfer of food between individual bees within the colony involves the passage of food from younger bees to older bees.
3. ____ In the early spring more bees die than are emerging so the colony decreases to its minimum size for the year.
4. ____ Queen honey bees produce a greater amount of venom than worker honey bees.
5. ____ The Demaree method is a management technique used to introduce a new queen into a colony with laying workers.
6. ____ Colonies used to produce section comb honey have a strong tendency to swarm.
7. ____ All larvae within the colony receive royal jelly in the early hours of their life.
8. ____ The active ingredient or toxicant in Apistan strips is fluvalinate and it kills varroa mites as it volatilizes from the strips, acting as a fumigant.
9. ____ In the fall the broodnest should be located in the lower part of the hive.
10. Currently what is the largest commercial use of honey bee venom? (1 point).
11. Name two uses for pollen trapped from honey bee colonies. (2 points).
12. What is the primary cause of robbing in an apiary? (1 point).
13. Once robbing has started in the apiary, what should the beekeeper do to stop it. (2 points).
14. Name three uses for propolis in the honey bee colony. (3 points).
15. The current Apistan label recommends leaving the strips in the hive for 42 to 56 days. What is the primary reason, other than the pesticide label is law, for not leaving the strips in the hive longer than is recommended? (1 point).
16. Please explain why the broodless period in the winter is the recommended time to treat for varroa mites. (1 point).
17. What are the three components in Terra Brood Mix and what is it used for in colony management? (4 points).
18. What is the primary reason American foulbrood is considered to be a more serious brood disease than European foulbrood even though both are caused by a bacterium. (1 point).

ANSWERS ON PAGE 524

FUTURE THOUGHTS

steve taber

Predicting New Developments in Beekeeping

A recent article by my friend Dr. Mark Winston (May 1995) concerning three needed developments about bees brought out some ideas I have had for many years. Some of these ideas will be developed in the next few years because they will make beekeeping simpler, more enjoyable, and produce colonies that make more honey.

Breeding bees for disease and mite resistance is one idea that will help. The early work that Dr. Walter Rothenbuhler did on breeding for resistance to American Foulbrood (AFB) resulted in bees that were resistant to the disease, but they were also very fierce. One start to a tricky problem.

However, in the 20 or so years I have been involved in breeding bees for AFB resistance, I've found no relationship between resistance and temperament. The resistant bees I produced during the mid-80's were extremely gentle. This indicated, at least to me, that the genes for temperament and resistance were not closely related.

However, bees have many genes that confer resistance. Moreover, there are as many mechanisms to disease resistance as there are genes that result in undesirable temperament. I am sure some of these are "linked" which Rothenbuhler ran into. This is easy to avoid in a logical breeding program. All a breeder has to do is to consider positive results, throwing away those queens which show any negative characteristics. For most beekeepers, the most logical, and broad based breeding program is to select for superb hygienic behavior (HYG) in the queen's offspring.

To review, this is an easy selection procedure. Insert freeze-killed brood samples (two inch by two inch squares) into the brood nest. Removal of the dead brood by the bees in 48 hours or less indicates HYG bees. Bees that have the HYG genes will remove all dead brood from the brood nest regardless of how it dies – chalkbrood, EFB, stonebrood or anything else. Non-removal in four days or more indicates highly susceptible bees, or non-HYG.

Queens that produce non-HYG bees should be removed from the program. No artificial insemination is necessary, only queen rearing, and queen replacement.

I ran into an interesting situation while breeding bees resistant to chalkbrood. To inoculate a colony with this disease, macerate some chalkbrood mummies and add them to a pollen cake. Place this cake over the brood nest. In susceptible colonies there will appear, in five to 10 days from 20 to 50 chalkbrood mummies in one comb, where formerly there were none. One colony, however, reacted very differently. Every larvae in the hive was dead. All had been infected with the disease and the comb contained hundreds of chalkbrood mummies. This happened just five days after placing the contaminated pollen cake on the brood cluster. It was by far the worst infection I had ever seen.

I took photographs of the comb to document the work and went about my business. Two days later I decided I should take some more photos, got my camera, opened the hive and lo and behold – no chalkbrood! None at all!

What happened? The larvae carried the genes for extreme susceptibility to the disease, but the adult bees were extremely hygienic and had removed all of the chalkbrood mummies. It was now a clean hive. In this case resistance was the physiologic non-resistance by the larvae as well as hygienic behavior by the adult bees. One without the other didn't work.

The second point raised by Dr. Winston was finding a queen. I am sure, at least in my own mind, that it won't be long before beekeepers rarely have to find queens. Why? Because bee breeders will develop queens that can be introduced that will be accepted by the bees, will lay eggs, and eventually take over the colony. Most likely the new queen will not kill the old one, they will both lay eggs side by side.

I think this because I have seen many cases of multiple queens in colonies. For some reason or other they tolerated each other. The trick is to discover "why." Then, after we learn why, figure out how to convince the bees that it's the right thing to do. Although all the cases I have seen where there were two laying queens in the same brood nest were mother-daughter situations, I don't think that had anything to do with it.

So, Dr. Winston, that's what I think about future improvements in beekeeping. We can look forward to a bright future I think. Granted, it will take some imaginative research to solve these problems, but that's what you who do scientific bee research are hired for, isn't it? BC

Steve Taber is a retired USDA honey bee researcher now living, and breeding disease resistant bees in France. You can reach him at this address: Steve Taber, Goudous, 82370 Villebrumer, France.

WORTH THE COST?

Recombined Bees

mark winston

Polymerase Chain Reaction. Recombinant DNA. Genetic Engineering. Molecular Biology. These are the fancy terms for some new techniques in biology that are changing today's science. Behind these confusing terms is a simple concept: Current technology allows us to take the genetic material from one organism and place it into another, without using the old-fashioned method of sex. This is easiest to do with simple organisms like bacteria, but we also can take a piece of frog DNA and put it into a mouse, or a piece of human DNA and put it into a rat, or even a piece of bee DNA and put it anywhere you want. The implications are fascinating: a mouse that jumps like a frog, a rat that thinks like a person, and maybe a fly that collects honey are waiting to be created for our human benefit.

Media stories about this rapidly progressing molecular biology field would lead us to believe that the wildest of combinations are possible, and suggest that the only limits to manipulating life itself are the restrictions put on scientists by a concerned public, or perhaps more important, the funding to conduct some of these wacky gene migrations.

In theory, recombined bees could be created that might be valuable for beekeeping. For example, wouldn't you purchase a queen that produced antibiotic-secreting workers, created by taking bacterial genes that produce antibiotics and introducing them into a bee's genes? Even better, how about taking those genes that *Apis cerana* uses to groom Varroa off of bees and out of the colony, and inserting those into our western species of honey bee, *Apis mellifera*?

The possibilities are endless, and the techniques to accomplish these gene recombinations are commonly practiced by contemporary scientists. Let's say we want to create a bee that produces its own antibiotic to control American Foul Brood. First, we find a bacteria that naturally produces our desired antibiotic. Then, we make a map of the gene that controls antibiotic production in the bacteria, and follow this genetic map to cut out the gene that contains the antibiotic production code. Then, we find a vector to carry this gene into the bee, such as an otherwise harmless virus. The antibiotic code is attached to the virus, and the target bee is then infected with the virus. When the virus enters a cell of our target queen, it carries the bacterial gene to the bee's gene, where the antibiotic code can merge or *recombine* with the bee's genetic material. Voila: we now have a bee that is carrying its own machinery to produce an antibiotic, and American Foul Brood is history!

But hold on; is it really so easy, and is it so wise? Molecular biologists sometimes remind me of a tricky mechanic I used to go to. I know as much about car repairs as most beekeepers know about molecular biology, and terms like carburetor, piston, spark plug and differential mean as much to me as molecular biology terms like plasmid and polymerase chain reaction mean to you. This mechanic used to snow me with terms, coming at me hard and fast until I was convinced that my car was near death. The repairs would always take longer than he promised, cost double or triple his estimate, and never seem to work right; I invariably had to return for even more expensive repairs to fix the repairs that never solved the problem in the first place.

Molecular biology can be like that. Gene jockeys will snow you for hours about the great technology at their fingertips, the speed at which they can create a recombined organism, the low cost, and the incredible benefits that will result from their artistry. It doesn't work that way in practice, however. Yes, molecular biology has produced important scientific progress, and yes, it has become a tool in medicine and agriculture, but no: a super bee is not at our fingertips, for many reasons.

First of all, the technology is not as simple as they would lead you to believe. It requires incredible precision, and a great amount of luck, to find the right gene, cut it properly, and transfer it first to a virus vector, then into a bee. It's not hard to do this from one bacteria to another, but going into organisms like bees is an enormous jump in complexity from a bacteria.

Second, most characteristics like antibiotic production or grooming behavior are controlled by many genes, and they all need to be transferred to get the desired result. It's even more complicated because genes involved in a particular trait are found in different places, and somehow they all have to be removed

Continued on Next Page

"Molecular biology still has a long way to go before it convinces me that we're going to see a genetically engineered bee. Nevertheless, this field does have some significance for bee management."

RECOMBINED ... Cont. From Pg. 497

and transferred together.

Third, an artificially recombined bee is not necessarily better than a natural one. Take disease resistance, for example. There already are bees out there that are resistant to diseases like American Foul Brood, but they have not become popular among beekeepers because they don't produce honey very well and are fairly aggressive. The same problems could result from an artificially engineered bee. We might impart disease resistance by transferring genes from one organism to another, but such resistance may come at a cost to the rest of the bee's activities. Let's take our antibiotic-producing recombined bee again. It would be quite "expensive" for a bee's metabolism to produce antibiotics, and this engineered bee might well be resistant to AFB but not have enough energy left over to rear brood, build comb, and forage for honey.

Fourth, and perhaps most important, the artificial creation of recombined organisms is very, very expensive. Cost-benefit: you better hope for an enormous benefit, because the cost of producing recombined organisms is way out there in outer space. Molecular biology laboratories are filled with high-priced equipment, and require hordes of technicians to make the equipment work. The slightest mistake and it's back to the beginning, and mistakes are very easy to make in this high-technology field. The production of even a simple bacteria that produces an antibiotic might cost tens of millions of dollars, and getting that into a bee might take ten times the total amount of money put into bee research in a decade. It's just like an estimate to fix your car or renovate your house: triple the quoted price and the time to completion, and you're getting close to reality. Beekeeping is just too minor of an industry to justify the enormous expense to create a recombined bee.

Molecular biology still has a long way to go before it convinces me that we're going to see a genetically engineered bee. Nevertheless, this field does have some significance for bee management. Molecular biologists haven't given us a super recombined bee, but they have made some very significant contributions to beekeeping, and the impact of this area in biology will increase as the technology improves. One good example of its significance is in certification of bees as being non-Africanized. The major barrier for the United States to export bees to Canada in the future is going to be Africanized bees; Canadian beekeepers are reluctant to import queens or packages if there is even a slim possibility that they might be Africanized. Further, the current procedures to certify bees as European are not highly reliable in detecting hybrid bees. Enter molecular biology: Africanized, European and hybrid bees have characteristic gene patterns that can be readily distinguished by molecular biology techniques, and the methodology can be made simple and automated enough to provide a cost-effective and accurate system to certify bees as non-Africanized.

The cost-benefit here is much more favorable than for our recombined bee. The potential market for queens in Canada alone could easily reach $3-5 million a year, but the development expenses to complete an assembly-line type of molecular certification procedure should only cost a few hundred thousand dollars (Remember: triple my estimate, but it's still worthwhile). Even if Canada required every queen to be certified, and the test costs fifty cents per bee, it would still be economically feasible. Also, certification procedures for moving bees within the United States would benefit from a more accurate test procedure. There's money to be made here by a private company conducting certifications using molecular means, and by beekeepers selling accurately certified queens into new markets.

The problem with molecular biology is not its real or potential utility, but rather its perspective. The situation with bees is just a microcosm of a much larger issue, the seductive nature of technological change. Scientists are just like most of us; they leap head first into the newest, latest and "sexiest" methods, sometimes without thinking about whether new technology is warranted or even necessary. We tend to lost sight of the fact that technology is a tool, and sometimes the newest tools are very useful, but not when they are used largely because they are novel rather than because they are the best solution to a problem.

The honey bee examples I gave above provide some guidelines as to where molecular biology can fit into beekeeping, and where its use is overkill, and perhaps even damaging. These techniques are excellent research tools to identify types of bees for study purposes, and also are good tools to use in certification programs.

Molecular techniques are also valuable in understanding how bees function at genetic, physiological and even behavioral levels. However, old-fashioned bee breeding is still a more cost effective, and biologically effective, way of improving bee stock. Molecular biology is a tool, nothing more, and like most tools it is most effective when it's the right tool for the job, and when it's used as a tool rather than as an end in itself. So don't be confused by all the fancy terminology; if molecular biology is a hammer, and is used to drive in a nail, it will get the job done properly and cheaply. If you use a hammer to tune up your car, however, you'll end up at my mechanic's shop, and will be considerably poorer for it, and your car still won't run properly. BC

"Molecular biology is a tool, nothing more, and like most tools it is most effective when it's the right tool for the job, and when it's used as a tool rather than as an end in itself."

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

BEEAWARE – A Review

stan kain

How would you like to have your very own apicultural advisor? One backed by the experience and expertise of professional university staff, available anytime you need assistance. Your advisor would ask questions about what you observed in the beeyard, and if you were unsure would show you pictures and diagrams to assist with explanations. This advisor could assist in diagnosis, treatment and recommendations for pesticide poisoning. We all fall short of satisfactory answers from time to time, and due to insufficient input your advisor may do the same, but if this occurs, your advisor can direct you to an authority in your own state.

The beekeeping expert I'm talking about arrives at your home or business in the form of a single 3.5 inch floppy disk and resides in your computer until you have a question. This expert is the product of Pennsylvania State University and costs little more than the average hardbound book. Let me tell you about my experience with Penn State's program, "BEEAWARE."

Maryann Frazier, Penn State Entomology Department, along with Janice E. McClure, also of Penn State, and Clarence H. Collison of Mississippi State are responsible for the development of the program. "BEEAWARE" was developed to provide educational information, diagnosis and other information on the control and management of diseases, pests, predators and parasites of honey bees. While the program was initially designed in 1988-89, yearly updates keep essential information current. First developed for Pennsylvania beekeeping situations it now deals with the entire U.S.

"BEEAWARE" is available for the Apple Macintosh and MS-DOS compatible computers. Maryann asked a few questions about my IBM compatible computer so I would receive the correct disk and in less than a week, my software arrived, with a VERY complete User's Manual, a reprint from a European technical publication about the software and some extra order forms for additional copies.

Initially, "BEEAWARE" wouldn't load. Why? I didn't read the manual. This program is MEMORY HUNGRY. You need all the lower memory you can get to load it. The manual suggests you disable all TSR's (Terminal Stray Resident) programs. That means the mouse, too. Once I followed the directions, the software loaded just fine.

"BEEAWARE"
PROGRAM NAME.: Bee Aware, Version 2.0, 1994

TOPIC: Management Tool for Diagnosis and Control of Honey Bee Diseases and Pests

AUTHOR: Expert Systems Development Group
College of Agriculture
501 Ag Science & Industries Bldg.
University Park, PA 16802
(814)865-1229

PRICE: $35.00 (either version)

REQUIREMENTS, IBM COMPATIBLE SYSTEMS (Minimum Requirements)

MS-DOS 5.0 or above
1 Mb RAM
High Density Drive or Hard Drive
2.6 Mbytes available on Hard Drive EGA or VGA Graphics
DOS Loaded into High Memory
No RAM Resident Programs (TSR)
Mouse

MACINTOSH COMPUTERS (Minimum Requirements)

Macintosh Plus with two 800K disk drives or a Hard Disk Drive

"BEEAWARE" is a DOS program, not Windows®. Penn State eased the pain of DOS with easy to use buttons. One needs only to use the mouse or Tab key to push the appropriate button. The software also uses Drop Down Menu's, not unlike those used in Windows.

The Main Menu bar displays five drop down menu offerings. The Menu offerings are: FILE, EDIT, INFORMATION, DIAGNOSIS and REFERENCES. FILE allows you to set up page information for printing, and allows you to print the information currently on the screen.

EDIT allows you to reset all variables in the diagnosis section of the program. When you run the expert system and answer questions, they are stored and held by the system. This allows you to reinvestigate a problem using different scenarios. A very handy thought if you are exploring more than one approach to a problem.

INFORMATION is divided into six categories: Adult Bee Diseases, Brood Diseases, Predators, Pests, Pesticides and Parasites. Select one and a second screen appears with specific information about the topic. For instance – under Adult Bee Diseases choose Paralysis. A third screen offers buttons for "Cause," "Recommendations," "Symptoms," and "No More Information Needed." You are given the option of printing the information displayed, too.

DIAGNOSIS allows you to work toward the solution to an unknown problem. It asks you a series of questions about what you have observed. For example: "Where is the problem most visible?" a) Outside the hive, b) Entrance to the hive, c) On the bottom board, d) In the brood chamber, e) In the honey supers or f) On or between the inner and outer covers. Select the appropriate button or select HELP, which offers an exploded picture of a hive or allows you to look

Continued on page 523

THE A·N·T·I·B·A·C·T·E·R·I·A·L PROPERTIES OF HONEY

shelley armstrong — gard w otis

Introduction

The use of honey has had merit in ancient and traditional medicine for centuries. The ancient Egyptians, Assyrians, Chinese, Greeks and Romans utilized honey for the treatment of wounds and diseases of the digestive tract. In Egypt, between 2600 and 2200 B.C., honey was the most common medicine, being administered for almost 60 percent of illnesses. In the third and fourth centuries BC, Hypocrites suggested honey as a cure for pain, thirst and acute fever.

In modern cultures, honey is commonly consumed as a simple remedy for maladies such as earaches, sore throats or coughs. However, the potential applications for the medicinal use of honey are much broader than that. An examination of some of its more uncommon uses may help put into perspective the potential medicinal value of honey.

Clinical Applications

The use of honey as a topical antibacterial agent is gaining acceptance in the clinical treatment of surface infections such as ulcers, bedsores, burns, injuries and surgical wounds.

A West African study, in which the use of conventional methods of treatment had been disappointing, showed that skin grafting, surgical methods of removing dead tissue and even amputation were avoided with local application of honey to wounds. Due to its impressive results, honey is now being routinely applied to postoperative wounds, gynecological wounds and orthopedic infections at the University of Calaba teaching hospital. In addition to using honey for the previously mentioned medical conditions, an opthalmic surgeon at Rangaraya Medical College in India has been treating bacterial corneal ulcers with honey for years, with very promising results. Honey also provides a "non-stick" covering that can be easily removed from the wound area without damaging the newly regenerated tissue. Honey is known to rapidly clean up infection and promote healing. However, the mechanisms for this remain somewhat speculative.

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Benefits of Honey

With an increasing number of strains of bacteria resistant to current antibiotics, it is necessary to search for alternative but equally effective treatments. *Staphylococcus aureus* is a strain that has developed a wide resistance to many conventional antibiotics. As a result of this, it has become the major cause of wound sepsis in hospitals. In burn patients, the major cause of death is wound infection, which is also the most common impediment to wound healing. It has been demonstrated in many studies that *Staphylococcus aureus* is one of the most susceptible species to the antibacterial activity of honey. One result of antibiotic resistance is that a series of antibiotics may be required to combat some microbial infections. Many antibiotics have serious side effects that may make them an unsuitable treatment for some patients. However, honey is a "bland" treatment and may even protect the stomach against the injurious effects of other substances. As well, honey treatments are less expensive and often require less treatment time than some standard antibiotic therapies.

Antibacterial Activity

Osmotic Effect

Honey is a super-saturated solution of the monosaccharides glucose and fructose. It normally has a water content in the range of 15-21 percent. The powerful association between the sugar and the water molecules leaves little water available for the growth of microorganisms. Although some yeasts can live in honey with a high water content, causing fermentation and spoiling of the honey, the water

content in ripened honey is too low to support the growth of many bacterial species. This is a well-known phenomenon which has been recognized for many years. However, some bacteria are able to thrive in very concentrated sugar solutions containing as little as two percent water, indicating that osmotic effect alone does not explain the antibacterial properties of undiluted honey. (See Other Components section).

Acidity

Many of those who undertook studies into the antibacterial effect of honey considered the acidity of honey to be of major importance. The pH of honey is between 3.2 and 4.5, making it quite acidic (vinegar is about 4.5). This is primarily due to the gluconic acid content in the honey from the enzymatic action of the ripening of nectar. This low pH would be inhibitory to species with a peak growth pH in the range of 2.3 - 2.4. However, the buffering capacity of the body fluids coming in contact with the honey during its application will largely neutralize the effect of the acidity.

Hydrogen Peroxide

In honey, the reaction of glucose with the enzyme glucose oxidase generates hydrogen peroxide. This can only occur in honey that has been diluted, for in full strength honey, the enzyme is inactive and the honey contains no hydrogen peroxide. In most studies testing the antibacterial activity of the hydrogen peroxide in honey, the honey solution has been diluted to 50 percent or less, so that the enzyme is active and hydrogen peroxide is being produced. The involvement of hydrogen peroxide in the antibacterial activity of diluted honey is supported by the finding that a large number of the obvious inhibitory effects of honey on specific bacterial species can be eliminated by the addition of enzymes (e.g., catalase) that destroy the hydrogen peroxide. As well, exposing honey to light destroys the hydrogen peroxide and the antibacterial action of many honeys. However, the antibacterial activity of honey does not completely correlate with the rate of accumulation of hydrogen peroxide in honey, suggesting the existence of other antibacterial components present in honey.

"Many antibiotics have serious side effects that may make them an unsuitable treatment for some patients. However, honey is a "bland" treatment and may even protect . . . against the injurious effects of other substances."

Other Components

It is well documented that the antibacterial properties of honey are the result of a combination of many characteristics, and not the effect of one specific attribute. It has been demonstrated that the osmolarity in honey is not the only explanation for its antibacterial activity. Bacteria have differing ranges of inhibition due to osmolarity; many are completely inhibited at water concentrations of 12 percent to two percent, while some actually thrive with their maximum growth at two percent water. For example, *Staphylococcus aureus* has an exceptionally high tolerance to a medium with a very low water concentration, yet it is one of the most susceptible species to the antibacterial effects of honey suggesting that other factors are acting on the bacteria.

Another indication that the antibacterial properties of honey are due to more than its high sugar content is the comparison between treatment with real, unprocessed honey and "artificial honey". Artificial honey is a solution of sugars in the same proportions as found in typical honey. Many experiments have proven that, although sugar did somewhat inhibit microbial growth in some bacterial species, the degree of inhibition with a sugar solution is much less than the inhibition evident with the use of honey as a treatment. Therefore, it can be concluded that osmolarity is only one of the factors influencing the antibacterial activity of honey, and the degree to which osmolarity is effective depends on the sensitivity of the bacterial species involved.

Direct evidence for the existence of additional antibacterial components in honey is obvious when it is treated with catalase to remove the hydrogen peroxide, yet it still continues to decrease the growth of certain bacterial species. High levels of non-peroxide antibacterial activity were found in Manuka honey from New Zealand to which catalase had been added. It has been suggested that using Manuka honey as a form of treatment may eliminate the need for supplementation with conventional antibiotics. The increased bactericidal activity in Manuka honey is thought to be due to floral components of the Manuka tree present in the honey.

Dr. K. Yusoff (personal communication) of the University of Malaya has recently investigated the antibacterial properties of Malaysian honeys produced by *Apis cerana*. Honey diluted to 20-50 percent (volume/volume) inhibited growth in eight different pathogenic bacteria. Some of the growth inhibition was due to factors other than hydrogen peroxide. Of particular interest are some of the organic compounds in the honey. Several of these have been isolated, purified and identified and their antibiotic properties studied. (Full disclosure of these results is awaiting publication.) These studies suggest that some of the previously unexplained antibacterial properties of honey may be due to these organic compounds present. This discovery is particularly exciting because it

Continued on Next Page

"It is well documented that the antibacterial properties of honey are the result of a combination of many characteristics, and not the effect of one specific attribute."

ANTIBACTERIAL ... Cont. From Pg. 501

opens a new frontier for understanding the antibacterial properties of honey.

It has also been postulated that other hive products may contribute to the medicinal and antibacterial properties in honey. Pollen in honey may be of antibacterial benefit, several antibacterial agents in propolis have been identified, and beeswax is known to contain heat-stable, water-soluble antibacterial agent.

Conclusion

Honey has been proven convincingly to have a powerful antibacterial effect against a broad spectrum of microorganisms. However, the potential therapeutic utilization of this natural product has barely begun. Although the mechanisms of the antibacterial action of honeys are somewhat unclear and require further investigation, it is time for this "traditional remedy" to be carefully examined by the medical community. BC

References:

Allen, K.L., P.C. Molan & G.M. Reif. 1991. *A survey of the antibacterial activity of some New Zealand honeys.* Journ. of Pharmacy & Pharmacology 43(12): 817-822.

Crane, E. 1980. *A Book of Honey.* Oxford University Press, Oxford.

Efem, S.E.E., K.T. Udoh & C.I. Iwara. 1992. *The antimicrobial spectrum of honey & its clinical significance.* Infection 20(4): 227-229.

Molan, P.C. 1992. *The antibacterial activity of honey 1. The nature of the antibacterial activity.* Bee World 73(1): 5-28.

Molan, P.C. 1992. *The antibacterial activity of honey 2. Variation in the potency of the antibacterial activity.* Bee World 73(2): 59-76.

Molan, P.C. and K.M. Russell. 1988. *Non-peroxide antibacterial activity in some New Zealand honeys.* Journal of Apicultural Research: International Bee Research Association 27(1): 62-67.

Russell, K.M., P.C. Molan, A.L. Wilkins & P.T. Holland. 1990. *Identification of some antibacterial constituents of New Zealand Manuka honey.* Journal of Agr. & Food Chemistry 38(1): 10-13.

Somal, N. Al., K.E. Coley, P.C. Molan & B.H. Hancock. 1994. *Susceptibility of* Helicobacterplylori *to the antibacterial activity of Manuka honey.* Journ. of The Royal Society of Medicine 87(2): 9-12.

Willix, D.J., P.C. Molan & C.G. Harfoot. 1992. *A comparison of the sensitivity of wound-infecting species of bacteria to the antibacterial activity of Manuka honey & other honey.* Journal of Applied Bacteriology 73(5): 388-394.

Zumla, A. & A. Lulat. 1989. *Honey – a remedy rediscovered.* Journal of The Royal Society of Medicine 82(7): 384-385.

. . . And Pollen, Too ?

franjo goluza

Bee pollen is one of mankind's most nutritious food sources. Athletes from all over the world have used it for decades to reduce degenerative conditions and boost athletic performance. Remember Mohammed Ali? Well, that former heavyweight boxing champion of the world took pollen pellets during his illustrious career. He knew bee pollen packed a punch. Wham!

Bee pollen has at least, " 96 active nutrients, including 22 amino acids, 27 mineral salts, 16 vitamins (including B-12), trace elements, fatty acids, hormones and enzymes "

U.S.-born track star Steve Riddick certainly knew that, and he took advantage of it. "The fastest man on earth," as he came to be known, dropped bee pollen in milk shakes and vegetable juice to help him win the most coveted prize in sports: the Olympic Gold Medal (1976).

Harry McCarthy author of "How Bee Pollen Shows Aging" says, "Pollen boosts an athletes's performance further and much more safely than any "pep pill" in existence." (And, because it's all-natural, it won't get you sent home in disgrace. If only Ben Johnson, the Canadian track star stripped of his Gold Medal for steroid use in the 1988 Olympics knew that!)

Other well-known athletes, like Finland's Lasse Viren, Gold Medalist in the 5,000 and 10,000 meter track event at the 1972 Munich Olympics, ate pollen pellets regularly. In fact, he'd pop them into his mouth an hour before an event or practice, throw them into fruit juice, spread them with honey on bread and even sprinkle them on his morning cereal. Wherever Lasse went, his pollen was sure to follow. And best of all, adds Finnish Track Coach, Antti Lananaki, "There have been no negative results since we have been supplying pollen to our athletes."

Francis Huber, renowned German Naturalist, once said that bee pollen "was the greatest body-builder on earth. In fact, honey bee pollen should be the cornerstone for every diet " he added.

"One pound of pollen is comparable to 15 pounds of fruits and veggies "

Of course, he's right you know. Cladua Hoehne is managing editor of Country Health Magazine. She writes, "One pound of pollen is comparable in its nutritional value to about 15 pounds of fresh vegetables, salads and fruits or in regard to its proteins with about five pounds of beef. Thirty-two grams, or two flat tablespoons of pollen would cover the daily requirements of a person in regard to essential proteins." Smile now if you're a vegetarian.

Anyway you shake it (allergics aside), whether it's over cereal on a dreary, rain-soaked morning, or into a cool drink after a hard day's work in the bee yard, honey bee pollen pellets will invigorate and strengthen you, perhaps, even change your life! Who is to say? You may, as has been rumored, live to 150 years of age like the Georgian beekeepers of the former U.S.S.R. Now these people know the power of pollen.

Franjo Goluza keeps bees and collects pollen from his home in Victoria, B.C. Canada.

OBSERVATION HIVES

dewey caron

Part IX

thomas webster

Beeswax

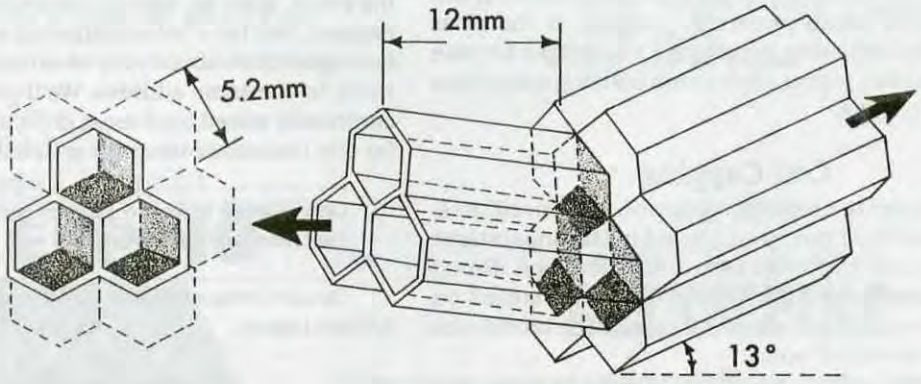
The observation hive permits us to closely examine the basic structure of the beehive – the beeswax comb. Bees produce the wax and build the comb to supply their basic domestic structural needs. They are quite precise in their nest.

Once bees find a suitable sheltered, darkened nest cavity, they manufacture beeswax and mold it into several parallel ***beeswax combs.*** Most of the comb consists of ***worker cells.*** The cells are six-sided (hexagons) and have a three part bottom pyramidal portion. Cells face both directions from a central midrib that provides important comb strength. Worker cells are used to rear worker bees and for storage of honey and pollen. They average about five cells per linear inch.

Bees also store ***pollen*** in the cells. Pollen varies in color depending on floral source. Bees only fill the beeswax cells about 3/4ths full with pollen. A glaze of honey is usually placed over the pollen but the pollen is clearly visible. Pollen cells are not covered with a wax capping.

There are often unusual sized and shaped ***transition cells*** in beeswax comb. Sometimes the unusual shapes are completely filled in with wax. Unusual cells are seldom utilized. Such cells frequently occur near the top of a comb where it attaches to the top bar of the frame or in areas between worker and drone cells.

One final cell type to be seen in a bee colony is the



Bees also construct some ***drone cells*** in their comb. Drone cells are larger than worker cells but are still six sided and otherwise similar to worker cells. Drone cells are used to raise drones and can be used for honey storage. Drone cells average about four per linear inch. When in a feral nest, bees build about 15% of the comb area in drone size cells.

The worker and drone cells may be empty, filled with brood or filled with honey or pollen. Ripening honey may completely or only partially fill the cell. When a cell is filled and the nectar fully ripened into honey, the cell is covered over with a beeswax cap. Only new wax is used to cover cells of honey and the cell capping is light in color. Some colonies place cappings directly on the honey, giving a 'wet' look. If the bees leave any air space between the wax and the honey it allows the wax to stay white. Of course, it may become watery looking with age, too. Brood cells are covered with wax and some debris. It quickly darkens with use. Honey cells may be deeper and more upward sloping when built naturally in a bee tree.

queen cell. Queen cells hang vertically rather than horizontal, as in the case of worker or drone cells. Queen cells when completed are peanut shaped and textured. Queen cells develop during colony queen replacement behaviors. They start as ***queen cups.*** Queen cups are cup-like, as the name suggests, and they usually are found at the lower margin of the comb but they may also extend from the comb face. They are oriented with the open portion hanging vertically downward.

Bees may place extra pieces of comb between the parallel combs of beeswax. This ***burr and brace comb*** serves to strengthen comb and prevent it from moving about. The bees can use the extra wax, which usually still has the distinct six-sided cell structure, as ladders to climb about in their hive. In the natural nest, comb is attached at the tops and sides but not along the lower margin. Along the sides, the bees leave intermittent passage ways. These holes permit crossing from one face to the other by bees – otherwise each comb would

be a continuous curtain of beeswax cells. Sometimes bees leave passage holes in the middle or edges of their comb. You will see burr comb attached to the face of the observation hive.

In the normal beehive, the beeswax combs are parallel. In an observation beehive, we isolate one single comb. Can you see all these types of cells in your observation hive? Can you determine what the cells are being used for? Earlier in this series we recommended you map and follow the seasonal development of your beehive. Have the honey filled cells increased? Follow some individual cells over one to three months. How long does a cell with pollen stores remain with pollen? Map an area, using a clear plastic overlay, where there currently is a mixture of brood, pollen and nectar filled cells. Update your overlay every week. Can you see differences over time? What are the reasons for the changes?

If you have an observation hive of more than one frame you can remove the frame from the uppermost section and allow the bees to build beeswax comb in this area. This should be done only when the colony has good flight, lots of natural food resources and a strong population. Feeding sugar syrup will help the bees and result in faster comb construction.

Map the beeswax comb the bees build in the empty portion. You should be able to see bees join in chains to secrete wax. The comb building progress from attaching points of wax to completing comb can be followed in your observation hive. Do not expect them to build their comb preferably parallel to the glass walls. Under favorable conditions you might be able to have the bees repeat their comb building more than once in your hive.

Cell Capping

In addition to comb construction, bees need beeswax to cap cells of honey and brood in the pupal stage. The honey cell cappings are totally new wax. Brood cells are capped with a mixture of old wax, stored on the outer rims of the individual cells of the brood area and newly secreted wax.

Cappings of honey and brood cells is done in a highly irregular manner. You can follow the process by marking individual cells and watching the progress of cell capping. Determine how many bees participate and how long it takes for the capping task to be completed. You will need to observe more than one cell. Expect differences between cells of honey and pupal cells.

Once adult worker bees emerge from a brood cell, the remains of the capping must be removed and the cell cleaned so the queen can lay another egg in the cell. How long does it take for a new adult to chew through the wax capping and emerge: Does she get any help? How many bees trim the cell capping? How long does it take for the remains of old capping to be removed and cells readied for the queen to lay another egg in the cell?

All these observations will be very difficult, especially in observation hives with lots of bees. When trying to observe individual cells be sure you have them marked well so when you take your eyes away or leave the observation post for a break you can return to the same cell to continue your data collection.

Additional Literature

Introductory chapters of excellent books that describe how to use beeswax to make candles and other wax items have information on the biology of beeswax. Three good ones are Coggshall & Morse (Beeswax), Berthold (Beeswax Crafting) or Brown (Beeswax). A more thorough treatment of beeswax is "Honey bees and Wax" by H.R. Hepburn, published by Springer-Verlag, Berlin and New York, 205 pp.

We are interested in all experiences and adventures with observation hives. Please send a 'short' letter to Dr. Tom Webster, Community Research Service, Kentucky State University, Frankfort, KY 40601, describing yours. Also, we haven't covered everything that can happen, nor have we anticipated every problem. If you have questions about your observation hive please send them to the same address. We'll put together the most commonly asked (and most difficult to solve) questions for the December wrap-up article. BC

Dewey Caron is Professor & Extension Specialist in apiculture at The University of Delaware.

Thomas C. Webster is a researcher & Extension Specialist in apiculture at KY State University.

Coming Soon

October – Preparing For Winter
November – Survey of Working Observation Hives (see below)
December – Wrap-up and Observations, plus comon problems and solutions

Let's Hear From You

We are interested in all experiences and adventures with observation hives. Please send a 'short' letter to Dr. Tom Webster, Community Research Service, Kentucky State University, Frankfort, KY 40601 describing yours. Also, we haven't covered everything that can happen, nor have we anticipated every problem. If you have questions about your observation hive please send them to the same address. We'll put together the most commonly asked (and most difficult to solve) questions for the December wrap-up article.

CROCKETT HONEY

Arizona's Largest Local Packer

lynn tilton

At only 2.5 million pounds a year, Crockett Honey Company, in Tempe, Arizona, is considered a fairly small packer. But, with 53 years' experience, Crockett also is recognized as a firm with plenty of seniority.

"Bill Crockett founded the company in 1942," explains Harold Nipper, current president and owner. "Joe Steward bought out the company in 1966 so he could get into packing. I went to work for Joe, then bought the packing company in 1982."

Nipper, 49, admits that like other smaller packers, he got his start as a beekeeper. We operated 2,500 colonies for several years. I sold those in 1984 so I could concentrate on packing," he continues. The bee-less hiatus lasted a scant four years. Today, Nipper, in partnership with Gaylann Harper, the number two man in the plant's crew, manages 1,200 colonies – most of them more than 200 miles from the packing plant.

"We're primarily after pollen," he continues. "That's why I don't move my bees around, but keep them yarded in locations south of Interstate-10 and near New Mexico, as well as below Tucson."

Pollen production averages 25-30 pounds per hive. Like many others, Nipper and Harper wholesale to C.C. Pollen, which is headquartered in Scottsdale, a few miles north of the plant, and to Nature's Nectar, located in Tempe. Honey production averages 60 pounds.

On the plant side, Nipper reports that chain stores account for 50 percent of his sales, with club stores taking 20 percent of annual production, while restaurants

". . . but we still manage 1,200 colonies . . ."

and institutions account for another 20 percent. The final 10 percent is sold to bakeries.

When asked how he succeeds in marketing his production, Harold replied, "We rely on broker reps as our sales force. In fact, I don't do any direct sales to supermarkets without being accompanied by the sales rep."

Harold emphasizes that the broker's rep is essential to the smaller packer. "Frankly, I can't afford to take the time to do all the selling myself, and Crockett's not large enough to afford a full-time rep. Brokers' representatives are already known, they're friendly with buyers and can take the time to socialize with our customers. It's a system that works for us."

Nipper then warned that crucial to success is getting the right broker's representative. "It's still pretty much trial-and-error. You can check out references until you're blue in the face, but the proof is in performance."

For Nipper, the initial contract will be limited to six months to a year. "I went the broker route 12 years ago, and I changed reps four times in just two years. Now, we've been with the same firm, Gene Sanford and Associates in Phoenix, since then."

What does he look for in a broker? "I want a rep who seems to be responsive to my concerns, easy to reach and not so large that we're not important to him. Yet, he must be large enough to take care of our account."

But, Nipper says, it's vital that the packer ensure he always has a quality product to offer his contracts. "Together, Gaylann and I have 60 years of experience in beekeeping. We know that the packer must be aware of the beekeepers' floral sources."

Fortunately for Crockett Honey Company, there are but two bad floral sources. " Saltcedar honey is not table grade, and we get quite a bit of that."

Saltcedar is blended to be sold to the bakery portion of the business. But the real caution in this desert country is the Century plant, a cactus that takes many years to set bloom, hence the name. "Nectar from the Century plant is dynamite. I always feed that to the bees. It tastes like a skunk smells, but worse."

Unlike saltcedar, it can't be blended for sale. "Five gallons will ruin 30 barrels of honey. Even at that dilution it still tastes so bad you won't eat it."

On the other hand, the premium sources for honey include mesquite, catclaw and citrus. "Mesquite and catclaw tend to bloom at the same time, so a beekeeper will get a blend. It's light, pleasant, mild, good tasting and commands the highest price with this packer. Citrus is also water white, mild and pleasant. But demand is not as good as for desert blossoms like mesquite and catclaw."

This packer credits geography for citrus placing merely third. "We have a lot of orange trees, but the Southwest customer leans toward desert plants."

He adds a packer must be aware of such marketplace factors when buying honey, or selling. He must know what his customers need, hence the need for a terrific broker. "Brokers' reps are the eyes and ears of the business, but the packer must also be aware of his competition's price fluctuations and promotion allowances."

Promotion is essential. Crockett produces 13 retail items, and two are on a promo allowance at all times. "We use 5 percent of gross sales for promotions, and rotate among the items."

A good rep helps to convince supermarket clients to give Crockett top billing. "We're the largest local packer in the Arizona market, and eye level on the shelf is our display objective," Harold explains, frankly adding that sometimes it's a tug of war for shelf space.

Complicating that is the supermarket's requirement for a slotting allowance for any new products in the store. "Slotting allowances start at $2,500." The strategy Crockett employs is to offer new supermarkets 10 per-

The entire Crockett Honey Company staff. First row, from left, Rick Bittner, Dave Chapman, Brent Soubie. From left, second row, Christine Harper, Clayton Hatch, Gaylann Harper, Harold Nipper, Linda Nipper.

cent off invoice until that allowance is satisfied. "And we give a free case of product for each store."

For this reason, Harold cautions anyone desiring to become a packer to "go into it with enough financial backing. The slotting allowance is a fact of life. In Los Angeles, for example, a 300-store chain has a slotting allowance of $10,000."

Fortunately for Crockett, many stores don't require a slotting allowance from Crockett because Crockett is Arizona's oldest and largest packer and has good name recognition with the store's customers. "We've been on the shelf for decades; we're sort of grandfathered in. We're in 350 stores in Arizona, but any packer new to the market has to spend a lot of money up front."

After more than a half-century, though, Crockett realizes it still has more Arizona market to penetrate. Annual growth is a modest five percent. "Our sales don't keep up with population growth because of outside competition," he explains.

Harold then offered other smaller packers this advice: maintain your labeling. All your material must emphasize your local honeys. Buy from local suppliers and distribute to local stores. "The local flare with Crockett has meant a whole lot for me. 'Local' is something no outside competition can take away from you."

The talk returned to working with a broker to ensure ongoing marketing success. "Work with a broker who will return your phone calls *promptly*. At least 85 percent of all the work you do marketing honey is on the phone. Good brokers are busy, but not too busy to return calls."

At the same time, the packer must be considerate of the time constraints of the broker's rep. "When you're with him, keep the small talk to a minimum. Talk strictly business. The only reason you're face to face is to talk business, so get to the meat of the subject quickly.

"Chain store buyers are busy, too, yet be ready to talk about the buyer's golf game if he wants."

When dealing with buyers and brokers, this veteran honey marketer emphasized, "These men are professional. They've heard every pitch you can imagine. Don't try to exaggerate the virtues of what you're selling, yet cover all the virtues."

Harold paused, then warned, "Don't ever get caught not telling them the truth – even when you feel honesty will hurt. They will respect you all the more for being truthful, even when it hurts."

Harold Nipper then continued explaining how the packer and broker can be successful partners in getting the packaged goods out of the plant and into the hands of the customer. "If there is no new business to cover, my broker will call me about once a month. He'll ask me if there are any issues I want to discuss. Then he'll bring up his issues."

As with any other enterprise, open, honest, clear communication is essential to long-term success.

One example was when the rep called to tell Harold that a very large chain store was unhappy with its current private-label honey supplier. "The rep arranged an appointment for me with that chain's buyer. Now, a large deal like that isn't closed quickly. We're still in the preliminary stages; each of us is testing whether we think we can comfortably work together with a long-term contract. I've given them samples and prices."

And this leads to price strategy. Harold keeps profitable by doing monthly price surveys. "I visit two or three stores, checking on shelf prices. My broker mails or faxes

Continued on Next Page

Harold & Linda Nipper

Brent Soubie loads honey on the delivery truck.

CROCKETT HONEY ... Cont. From Pg 409

the competition's price list that he's gotten from the local food distributor or from public information out of a price book."

Crockett's strategy is to stay in the middle of the price range. This ensures they don't get suddenly priced out of the market, nor is their price so cheap there's a temptation to blend down their product.

"Only national brands can command the highest price. Those on the low end, the bottom feeders, are here today, gone tomorrow. Cheap honey is a bad experience for everybody."

He then cited the quality of Chinese honey, noting that too many packers adjusted their expectations to meet that lower-quality honey. "In the long run, it hurt them and it hurt the honey industry," he avows.

Harold emphasizes that he tried Chinese honey, but used it only for blending for bakery use. Even before the 141 percent import duty became a fact of life, Harold decided to stick with closer sources.

When it comes to marketing to supermarkets, a big concern for that segment is quality control. "A packer must be sure he's buying only from legal producers, those who have kept their bees free of chemical contamination. We're diligently scrambling for more efficient methods to ensure purity, that the honey we buy is free from contamination."

Efforts to ensure a safe product include sampling every purchase, getting a lab analysis. "Put lot numbers on everything before you buy; then there will be no surprises when you pack."

Crockett also encourages the user to contact the packer directly should the honey be less than satisfactory. "Our records give us the source of the complaint. Because we keep records on everything, we've never had a general recall." He added, "We've never had a positive lab result on a packed random sample."

Harold then emphasized that it's easier for a small packer to police his honey sources than it is for someone packing 20-25 million pounds a year. "We're also dealing with a core of long-term suppliers. Some have been with us 30 years."

He then noted that with 20 percent of production sold to club stores, he handles that segment of the market personally. "The first rule is that the club store will get the best possible price before they're through negotiating. A club store will sell five times more honey than a large high-volume supermarket. Some club store clients sell 2,500 pounds of honey a week.

"In fact, one club store will probably sell as much honey as a 30-store supermarket chain. They mark it up just 8-10 percent, compared with the standard supermarket margin of 35-40 percent. So, price is a major factor."

When it comes to restaurants and food service suppliers, Harold Nipper sees continued growth in that segment of the buying public. "There's an ongoing increase in the demand for honey in schools and restaurants. Supermarket honey growth has been somewhat flat here in Arizona, but food service use is growing 7-8 percent per year."

Harold credits the National Honey Board for this success. "They've done great work in efforts to generate more usage for honey in general, but particularly in food service. Part of the increase has come as a result of the demise of federal programs that used to give honey to schools and prisons."

Harold also calls on his larger bakery customers himself. That's because bakeries are high-volume, low-profit customers. "The profit is so low I don't pursue that market as vigorously as I do the other segments. Bakeries demand both high quality and low price. We used to sell them our dark honeys, but the specs have become so tight that lighter blends are needed."

When it comes to price, bakeries are the most sensitive. "I've lost business over a quarter of a cent a pound."

Harold then explained that critical to any packer's success is his crew. Efficiency of production and quality of the pack are two essential ingredients for a packer to continue successful. "We can't afford much in the way of benefits, so we start our people at $7 per hour. As we retire our debt, we hope to start offering incentive bonuses." He laughs, "In some years, I wish I could get some back!"

One of the benefits, though, is that each worker may take home a two-pound jar of his favorite honey. "Pilferage has never been a problem here," Harold frankly declares.

As he looks to the future, Harold Nipper notes that the Phoenix metro area, now some two million persons, is predicted to double in the next 10 years. "We're confident we'll continue to grow, continue to be profitable, and continue to be dominant in our home market."

Crockett also continues to look at new types of containers, seeking those that will enhance the appeal, whether that customer is in the supermarket, in a club store or in food service. "We strive to make sure that packaging fits our customers' needs. For example, a six-pound container of honey won't sell in a supermarket where most honey buyers want a plastic container they can put on the breakfast table, but it will in a club store when that customer is into baking or has his own restaurant."

In sum, Crockett Honey Company plans to continue to use the experience gained during the past 53 years to help ensure that Arizona's oldest and largest honey packer continues winning even more markets. BC

Lynn Tilton is a free lance writer, who lives in Herford, AZ.

McLure's

New Hampshire's Largest Packer

roger morse

New England's largest honey packer is located just off Interstate 93 in Littleton, in northern New Hampshire. David McLure's plant lies north of "The Old Man of the Mountain," New Hampshire's well-known mountaintop stone face. This is a place where an interstate highway (93) becomes two lanes because of the narrow valley floor and the fear that dynamiting to widen the road might shake the craggy mountain face.

The McLure family has been in the maple syrup business for many generations. A July 1, 1902, copy of the *Progressive Farmer*, framed in Dave's office, describes the family's maple syrup harvesting activities, which had been ongoing for several generations at that time. Today, there are 20 to 30 employees, depending on the season. The combined annual production of honey and maple syrup is about six million pounds.

Packing and selling honey, in addition to maple syrup, started in the early 1970s. When Dave McLure was discharged from the Air Force in 1976, he formed a partnership with his father, a local school teacher, and for the next three years, they packed honey and maple syrup in their home's basement before building their first packing plant.

I visited the McLure plant, which has only recently added its third major building. The three adjoining buildings, with about 22,000 square feet of working area, are all on the same floor level. The offices are upstairs in the first building.

McLure's Plant has just added its third building.

The honey is received in 55-gallon barrels, while the maple syrup is brought to the plant in 30-gallon barrels. They are stacked three or more high in an unheated warehouse where they are kept cool. Storing honey for several months can be a problem and despite statements that honey has a long life and is indestructible, it does age and change in chemical composition.

Summertime temperatures seldom go above 80°F in northern Littleton, and both the honey and maple syrup stay in good condition at these lower temperatures. It is necessary to cool honey storage buildings further south in the United States, which is one advantage of being so far north. High summer temperatures can cause honey to darken and have a burned flavor. Hot metal buildings in the South can obviously cause problems.

There are separate storage tanks and packing lines for the honey and the maple syrup in the McLure plant.

Barrels of honey, which is usually crystallized, are placed upside down in a newly constructed, heated, elevated room. The barrels are placed over the top of a series of hot water-containing pipes that are about six inches apart. As the crystallized honey is warmed, it slips from the barrels, still in partially crystallized form, into one of three tanks below. The room will hold 36 barrels (approximately 23,000 pounds) at one time but there are three tanks underneath so that one may liquefy six, nine, 21 or the whole 36 barrels at one time. Stainless steel, hot water-heated coils in the bottom of the tanks help to liquefy the honey further. At this point, diatomaceous earth is added, and the honey is filtered and then bottled.

Recent changes include adding tamper-resistant safety seals that cover the jar caps. Many packers are adding this feature in their lines in order to make consumers more comfortable. McLure also has a line of crystallized honey that is becoming increasingly popular.

Plastic honey bears are becoming more important in honey sales in the McLure operation. Other packers have reported the same fact to me. Children, especially, like the bears, while adults like the no-drip feature. BC

Gibbons Honey

From Two Colonies — To WalMart

kristin baird

Every year when August rolls around, Sharon Gibbons falls prey to "Fair Fever." Although she promises her husband, John, every spring that she won't enter her Gibbons Bee Farm honey in the Missouri State Fair, there's something that "overwhelms" her during extraction and draws her to Sedalia from her suburban St. Louis home.

It has paid off. Having won the Grand Champion Ribbon in 1988 – and three other years since then – Sharon has established a good name for her Gibbons Bee Farm products. And those credentials – bolstered by good packaging, service and marketing – have made Sharon one of Missouri's foremost honey packagers and one of the nation's few female commercial beekeepers.

With 400 hives and sales of 100-plus barrels of honey a year, Sharon has come a long way since her husband – despite his intense dislike for bees – gave her two hives as a birthday present in 1981. With John's support and a fortunate mix of good luck and lessons learned, Sharon gradually grew from a hobby beekeeper to a pro-

fessional.

Among the first lessons Sharon learned was the need to establish a product identity. When she first started selling honey to mom and pop stores and consignment shops in the early 1980s, she felt she was being treated as "just another beekeeper with honey to sell."

So, despite the prohibitive cost, Sharon hired an artist to design a label and a business card. The result: a "country feeling," round brown-paper label with a picture of a honey bear drawn in darker brown ink. She used those labels for her standard queenline jars.

"The label gave me an identity," Sharon said. "I felt good about my product, and I looked professional." The country image clicked with buyers at craft shows and owners of small country gift shops, and Sharon found her market expanding.

She responded by expanding her product line – with the inspirations coming from the most unusual places. When the family car broke down during a vacation in Wisconsin in 1986, Sharon visited a local honey farm and came back charged with new ideas about packaging and products. She developed honey popcorn and, after some experimentation, created six flavors of creamed honeys: strawberry, raspberry, apricot, peach, black walnut and pecan. When packaged in a new bailed-top candy jar the creamed honey supplemented her country look and appeal – and opened the doors to previously untapped markets.

"People in Missouri didn't know what creamed honey was," Sharon said. "There was no creamed honey on grocery shelves. So my sales increased dramatically with the expanded line of products. Instead of ordering a couple of cases, a store will order a case of each flavor. And because the market price for liquid honey is low, creamed honey brings the price up."

The creamed honeys also opened up the gift basket market to Sharon. With orders from gift basket companies for thousands of crates of honey, Sharon hired her first employee and decided to try her hand at the direct mail order business.

That effort got a big boost when Gibbons Bee Farm honey was among the products selected for the *Best of Missouri Farms* catalog, published by the University of Missouri-Columbia and University Extension.

"That catalog was distributed all over the state," Sharon said. "Stores are eager to have Missouri products. It put me in the spotlight. And anything approved by the university has great credibility When the photo from the catalog went nationwide (it was picked up by the news wire service and several big city newspapers), it helped develop my mail-order clientele. I still have regular customers from around the country who happened to see the story."

Things started falling into place quickly after that. Because Sharon's company had to be health inspected for inclusion in the *Best of Missouri Farms* catalog, she became eligible for cost-share funds from the Department of Agriculture marketing program. In 1988, Sharon entered her first Missouri State Fair and was named Grand Champion. When her insurance company recommended that she consider tamper-proof packaging for honey, Sharon put her Grand Champion ribbon to good use, creating a blue and gold sticker version that she placed as a seal over the lids of liquid honey jars.

"The gold ribbon was a way to advertise that the product was better," said Sharon. "The honey was a prize winner, a champion. And the sticker was something tamper-proof over the liquid honey. It was the first change I had made. Only the bear on the label had given me an identity, and it didn't show up on store shelves that well. The blue-gold label changed that."

Other changes soon followed. With more than 100 hives and the demand for even more honey, Sharon had outgrown her honey house on her farm in Steelville, about 90 miles south of St. Louis. And she had no luck securing a bigger farm in the same area. "The Steelville Bank wouldn't take the risk," Sharon said. "I was a woman, and I was a farmer."

As luck had it, she met another beekeeper who was selling his Rocheport farm and his hives – all 30 acres and all 325 hives.

"I needed the building and the beehives," Sharon said. "At that point, I either had to buy honey or increase the workload." So in one fell swoop, Sharon increased her capac-

Continued on Next Page

The whole operation is housed in this modest building.

GIBBONS ... Cont. From 513

Preparing to make candles at St. John's Russian Orthodox Church.

One of Sharon's products has taken on a heavenly purpose, thanks to a St. Louis-area Russian Orthodox Church.

Mother Anna and Mother Christina, the nuns of St. John's Russian Orthodox Church, in House Springs, MO, use beeswax bought from Sharon and other honey producers to make hand-dipped candles. In fact, the two sisters made 140,000 candles last year, which they sold to Orthodox churches throughout the country.

"In the Orthodox church, we use as many natural products as we can," says Mother Anna. "For example, we use olive oil in the vigil lamps. And we use beeswax instead of paraffin to make candles. The products are pure, and you want the purest, the best, when you're honoring God."

The nuns took up candlemaking 10 years ago as a means to support the church and their adjoining monastery. Because candles are frequently used in Orthodox services and to offer prayers, there is a constant demand – and a special market niche. The sisters built their clientele from churches whose five to 50-pound monthly orders were too small for big candle companies to bother with and whose need for custom-made candles they could fill.

"We vary our candle sizes 1/16" diameter and 1/2" in length," said Mother Anna. "The customers can get exactly the size they want."

What started out as "trial and error" is now a regular small business. Working with a one-price-fits-all system, the sisters charge customers by the pound for the candles they order. Sizes vary from 9-inch tall, 3/16-inch wide reading tapers to special-order 26-inch candles. The sisters also buy candle stubs from their clients to supplement their beeswax supply.

Despite the ever-increasing orders during Eastertime and little time to fill the orders because of the heavy church service schedule, Mother Anna's enthusiasm never wanes. She lifts a 30-pound block of beeswax and walks out to the back porch which overlooks the rolling hills of the Missouri landscape. She closes her eyes and inhales, smelling the slight trace of clover from the wax. She smiles.

"You have to go outside to appreciate it," Mother Anna says. "You get so overwhelmed by the smell of the candles and wax inside."

"Inside" is the bottom floor of the convent, which serves double duty as a candle factory and a Sunday school. Measuring all of eight feet by 10 feet, the workroom consists of a 55-gallon drum of hot wax, a hot plate for remelting odd candle ends, a drying rack and a pulley system designed by a parishioner for dipping the candles.

With such close quarters, Mother Anna usually finds herself doing several things at once. As one rack of candles dries from a dipping, she cuts another rack of candles and cleans off the soft, warm wax from the rack ends. Despite the pace, she never rushes, lest the quality of the candles be compromised.

"You've got to remember the importance that candle has," says Mother Anna. "You've got to make sure it doesn't drip or burn irregularly so it's not a distraction to the prayers."

ity for honey – and her work force – by 300 percent.

Then came an even bigger change. Sharon had been working full-time, then part-time as a dental hygienist on top of her beekeeping work. "You can't handle 400 hives and work 40 hours," Sharon said. Right when she started wrestling with the decision to become a professional beekeeper or to keep the day job, the question was answered for her.

"I broke my hand and decided, this is meant to be" Sharon said. "Beekeeping became a full-time profession."

With that leap, Sharon began utilizing all of the resources available to her. She became involved with AgriMissouri, a division of the Missouri Department of Agriculture that promotes Missouri-made products. With AgriMissouri grants, she developed a brochure, a photo of her products and a color label for her creamed honeys. Each label features a soft pastel drawing of the type of fruit inside the honey.

"The label did wonders," Sharon said. "They are country, yet definitive, with a soft look to them. The label and the pictures increased sales tremendously."

Sharon's contacts also increased with her involvement in the Missouri Beekeepers Association. After serving as newsletter editor and vice-president, she is now serving a two-year term as president and networks with beekeepers statewide.

When Sharon became the Missouri representative to the National Honey Board's nominations committee, she began reaping multiple benefits. As the local media contact for the Honey Board, Sharon fields

calls from area television and newspaper reporters whenever a story pertaining to bees arises. At national conventions, she tackles questions from fellow beekeepers through her lectures on marketing and business techniques.

And when the National Honey Board chose St. Louis as one of three test cities for a pilot project to prove that honey could sell profitably in the produce departments of major grocery store chains, Sharon's honey was snatched up by Schnucks Supermarkets. She is in 17 of the chain's 83 stores.

Once she got that "in," Sharon took her displays and her services one notch higher. She developed custom display stands – some from shelving units, some from window shutters with boards across the slats as shelves – that further caught the eye of Schnucks buyers.

"One day, I got a call from a particular buyer," Sharon said. "He said, I like your displays. When did you get new products? Well, I hadn't gotten new products, but I had done something different. The display took her product from something he had never noticed to something that knocked him out."

She also prides herself on fast service in filling the stores' orders. "What I have to offer stores is great service," Sharon said. "It is critical that we do the best we can do and get the orders out as fast as we can. I don't want to get to the point where I can't fill an order for four or five weeks. Clients won't tolerate it."

How she does fill those orders is through a home-grown, time-tested production line. At the farm in Rocheport, two college students extract and bottle the honey. In the basement of Sharon's home, a mother-and-daughter team and another woman package the individual orders. Sharon takes orders by phone and spot-checks the orders on their way out the door. "It is my name, my product," she said.

Of course, John is a constant source of strength and support, helping out with deliveries and patiently tolerating many a late dinner because of Sharon's dawn-to-dusk schedule.

"When he gets phone calls, he tells them I am out 'bee-ing' Sharon said.

The Gibbons' "Queen B"-mobile has racked up many miles on deliveries and during the two-hour drive between the farm and the house.

"It has taken three years to figure out this plan of organization," Sharon said. "I thought I could do it myself, but I can't. We are still doing it different from a commercial beekeeper, yet we're not a family business."

That in-between size still allows Sharon to keep her hand in almost all aspects of her company, from working the hives and extraction to packaging, sales and promotion. "Most people don't realize I'm the beekeeper," Sharon said. "Very few women beekeepers have as many responsibilities as I do."

Most of her summer weekends are taken up by shows and conventions of various sizes. One week, it's the annual Best of Missouri Market at the Missouri Botanical Garden. The next week, it's a turn-of-the-century German fair for which she has been selected to demonstrate – in turn-of-the century dress – the art of beekeeping. Following that is the Grocers Show at Lake of the Ozarks. Another weekend, it is an AgriMissouri display in Silver Dollar City in Branson. All of the shows have paid off in one way or another: a full-color picture of her honey jar in the *St. Louis Post-Dispatch*; a loyal following of customers who return year after year; an order for honey from Silver Dollar City; a break into other supermarket chains, including the WalMart Supercenters in Missouri. And, recently, her honey was used by master chefs from around the country for the prestigious Friends of James Beard benefit dinner in New York.

Sharon feels fortunate that her company has evolved as it did.

"Many honey producers are having problems right now," Sharon said. "They do not know how to market."

And marketing sometimes means using some of the most basic resources wisely. Sharon has gained countless customers just by listing her company in the Yellow Pages. "You wouldn't believe the business I have gotten from people who found me in the phone book," she said. Since Gibbons Bee Farm is the only company listed under "Honey," the listing has given Sharon a virtual monopoly.

Getting kosher approval for her products opened up yet another consistent market. "I got a call from the owner of a store that carries my products, and he was desperate for kosher honey," Sharon said. "I didn't have kosher approval. So he had a rabbi come over and look at my facilities and grant the kosher blessing."

Sharon still keeps bees – 400 colonies.

Sharon continues to look for more opportunities. She has commissioned a broker to market her products to new outlets. She's also looking for a warehouse in which she can centralize her operations and experiment with new products. She has introduced a new product every year, this year's being a honey mustard salad dressing she is marketing through the produce section of local grocery stores.

"I've been working on it for three years," Sharon said. Her final recipe contains 27 percent honey.

Through all of the growth and change, one thing remains constant for Sharon – her appearance at the state fair. Last year, despite a severely sprained leg and a splint from ankle to thigh, Sharon hobbled around the dusty fairgrounds, visiting with old friends and purveying the honey ice cream sold by the Missouri Beekeepers Association. And as the next fair draws nearer, you can rest assured Gibbons Bee Farm honey will make another run for the blue ribbon. BC

Kristin Baird is a free lance agricultural writer from St. Louis, MO. She has profiled The Gibbons operation for a variety of magazines and newspapers.

FALL REQUEENING
Better Late Than Never

roger morse

I cannot think of a single piece of advice, a new technique or tool, or anything else in the past 50 years that tells me how to better requeen a colony than what my father taught me when I was a teenager. However, there has been a great deal of research supported with ample statistics, that tells me **why** I should requeen each year. And, I have a better understanding of why things go wrong because of research on the subject. However, when I requeen my own colonies I use the same methods I have always used.

I rarely raise my own queens, though I am increasingly encouraging beekeepers to do so. I usually buy caged queens that have five or six workers in the cage that are shipped to me through the mail. I have found no differences in queen acceptance among the various wooden and plastic queen cages that have been developed.

Requeening – Any Time

First select a frame that is about half full of mostly capped brood from a strong colony. Place this frame, and a frame that is half to two thirds full of honey side by side in the middle of an empty super. I place this super on the top of an old-fashioned wooden inner cover that has the hole in the center covered with two pieces of window screening, one above and one below the hole. These two pieces of screening are far enough apart that the bees in the two units cannot feed or contact each other. Cut away an inch wide piece of the top rim of the inner cover to make an entrance to this super. Make this entrance on one side, not in the front, of the inner cover to reduce entrance confusion.

Then, the bees on about four frames from the center of the brood nest of the parent colony are shaken into the super. Shake bees from the brood frames because they are most likely to be young bees and they do a better job of feeding and protecting the new queen than will older bees. If the frames of brood and honey taken are covered with bees you can shake fewer bees into the new unit.

In the next step, the queen cage, *candy end up*, is placed perpendicularly between the frame with the brood and the frame with the honey. In this way the screened face of the queen cage is fully exposed to the bees in the new colony. The super is filled with empty combs and the cover put in place. This new colony, with the inner cover as a bottom board, is placed on top of the colony from which the two frames containing the brood and the honey, were removed. While the bees in the two units cannot feed one another, heat from the larger parent colony below will rise into the new colony above.

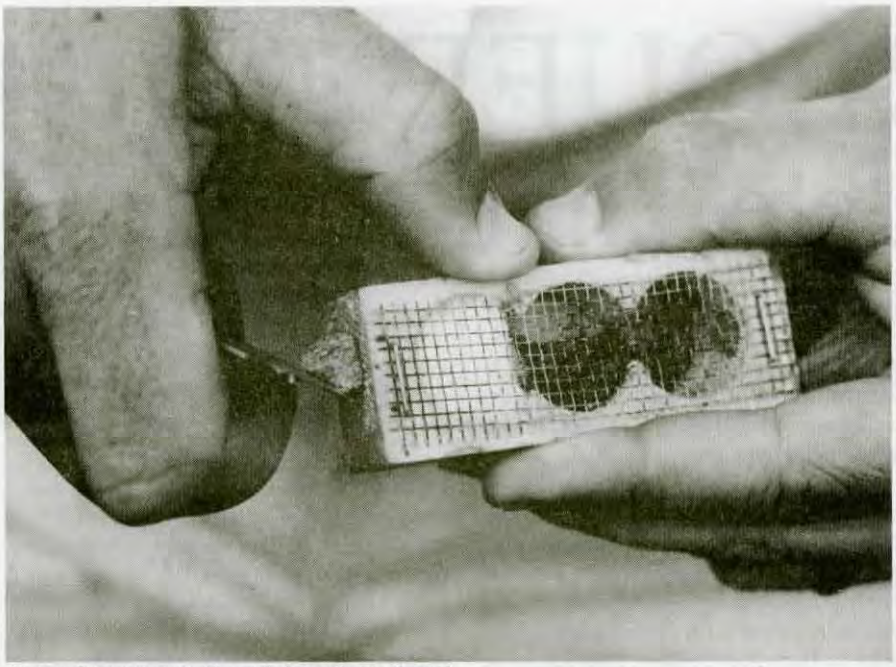
You can also use this technique to start a new colony or to remove brood from a strong colony as a swarm control measure in the spring. This method of making a new colony works any time of year, and under a variety of weather and honey flow conditions. It's generally a good idea to make up new colonies only from strong colonies.

After you've started the new colony, place two dark, drawn but empty combs in the center of the brood nest of the colony below the inner cover to replace the two combs raised above. This relieves congestion and gives the queen below ample room in which to lay for several days. It is a good swarm prevention technique.

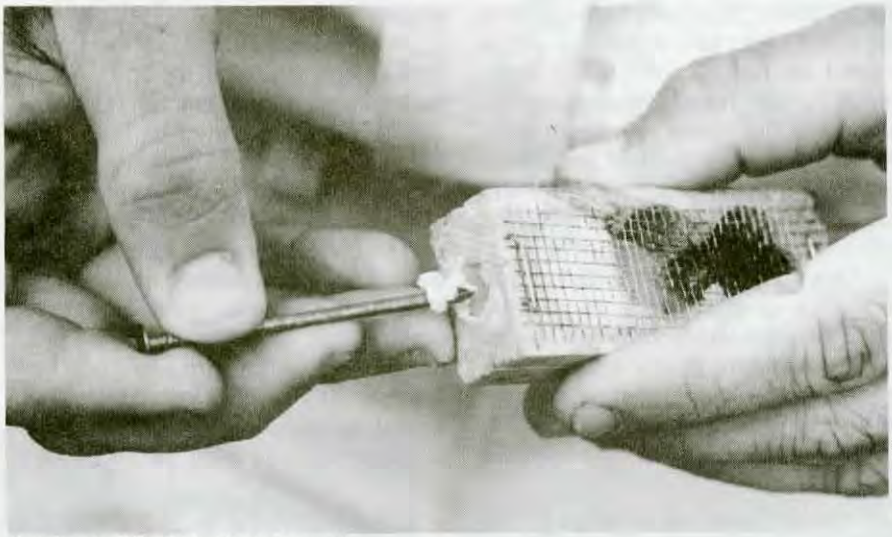
Yes, many of the older bees in the new colony will take flight and drift back into the parent colony. However, this isn't at all bad, since it is the older bees that are more aggressive toward a queen that is foreign to them. New queens can be damaged and have parts of their legs and antennae removed by older, biting, and aggressive bees. Young bees do not recognize if their queen is young or old, foreign or not and usually treat all queens with care. If you make this introduction on a cool day, or there is a light rain or mist, you may not

Continued on Next Page

A screened inner cover used to seperate new from old.



Remember to remove the cork from the candy end.



Remove, or at least puncture the candy.

REQUEENING ... Cont. From Pg. 517

need to add so many bees to the new colony because fewer will drift back due to the weather. It is also possible to stuff some green grass in the entrance of the new colony (the cut lid of the inner cover) to delay flight for a day or so. Green grass will dry out and the bees can remove it after a day.

Finding The Old Queen

It is safest to search the parent colony and to find the old queen before splitting out the brood, honey, and bees to make this new colony. It is also time-consuming. Many beekeepers who use the technique look over the frames of bees to be removed, and if they do not see the queen they proceed. That is certainly the fastest way to proceed, but it is dangerous. If the old queen is not seen and is accidentally placed above the inner cover the young queen will probably be killed. Then the colony below must rear a new queen, which weakens it in the process and it probably will not be a honey producer that season. In other words, there is no good substitute for finding the queen in the parent colony.

Sugar Candy

Bees in a new colony such as the one just 'built' lose the memory of their old queen after about 24 hours. Thus, the new queen should not be released from her cage in less than a day. But the goal is to get the queen released as soon as possible after that time and to force the new colony to start brood rearing. It's best to have the bees release the queen, not for us to reenter the colony to do so. Young queens are more flighty and are more likely to be balled if the colony is disturbed too much. When disturbed, worker bees more than about two weeks old will sometimes bite and cling to a queen not their own. This is called balling; balling is not necessarily a killing process but queens may lose feet, legs and/or antennae while they are being held.

You can remove up to two-thirds of the candy in the queen cage but by most is usually suggested that a small nail hole should be made through the candy to facilitate the bees eating it away. Queen cage candies vary in their hardness and thus the speed with which bees can remove them varies, which makes giving advise on how much sugar candy to remove difficult.

Checking In

Check the new colonies about four to seven days after the new queen is introduced. The time depends on the weather, your schedule and a certain amount of paranoia. Look for eggs and make certain there are enough bees to cover the brood. That's all there is to it. Keep the colony open for as short a period of time as possible as young queens are easily disturbed and could be balled. The cohesion of a normally functioning colony hasn't quite set in yet.

The Next Step?

If you made this colony in early spring, you may proceed in one of two ways. You can lift the new colony off and place it onto its own bottom board. It will grow to be a new colony that will produce honey the following year (or the same year if you were early enough and it was a good year). Or, you may use it to requeen the old, parent colony from which the bees and brood were taken.

If you wish to requeen the old parent colony, wait about a month after you made the new colony. Then, search the parent colony for the old queen, kill and discard her. It serves no useful purpose to leave the body of the dead queen in the hive so that the bees know when she is dead

though many beekeepers have said this is helpful. There are no data to support the idea that this practice has any merit.

You can make the job of finding the old queen easier by placing a super of drawn combs on top of the parent colony, and under the new colony about a week or 10 days before hunting for the old queen. After the new super is in place the queen will usually move upward into it and lay eggs and there will be fewer bees and less congested circumstances under which to search for the queen. After killing the queen, remove the inner cover and substitute a single piece of newspaper with four to six long slits cut in it. The bees will remove the paper over a period of 24 to 36 hours and thus bring the bees in the two units together slowly. There will be almost no fighting between the two. The new queen will usually be accepted and the colony is requeened. This is a time-proven and nearly always successful technique.

Autumn Arrivals

If you wish to increase your colony numbers you may split out a new colony in the spring and allow it to grow to maturity. You can then split out a second new colony from the original parent colony in July or early August and requeen the old colony, using the technique outlined above, in late August or early September. This usually has little adverse effect on honey production by the parent colony. The earlier this is done in the fall the better as the young queen has more time to rear the young bees needed for winter.

Things That Don't Work

Several shortcuts to the above method of requeening have been suggested. Some of these work sometimes for a variety of reasons but mostly because if there is a moderate or good honey flow you can do several things that you cannot do at other times.

During a honey flow bees pay less attention to guarding and protecting their queen. As an example, what happens if you place a queen cage with a new queen in a colony with an old queen? The answer is that the new queen is killed by the workers. Honey bees recognize their own queen for 12 to 24 hours after she is removed.

Place cage (plastic or wood) in center of brood nest so the screen is exposed to bees, not frames, and be sure to keep the candy end up. Check again in four to seven days.

If a new queen is introduced while the old queen is present she is recognized, by odor, as being foreign.

It has also been suggested that you might place ripe queen cells in a colony you want to requeen and the new queen that emerges will take over the colony. There have been several good research studies on that question and the outcome from all indicates the success rate is too low for the technique to be recommended.

Dunking queens to be introduced in honey is said to make an introduction easier but there are no data to support that suggestion, either. Likewise, using excessive smoke on a colony to confuse the bees has been suggested as a requeening aid but it does not, and the success rate (under controlled conditions) is low. Driving the bees out of a colony and onto the ground with a repellent, finding and killing the old queen and substituting a new one has been suggested but beekeepers report that the success rate is low with that method, too.

Requeen Now?

The advantages of fall requeening are numerous. From a practical standpoint, queens are less expensive this time of year, and, they have had ample opportunity to mate and to have been checked by the supplier. If you purchase a queen now you'll most likely get one that has been checked out thoroughly.

Moreover, a new, young queen will begin laying soon, producing a good supply of young bees to go into winter, when all queens slow or stop producing brood. This makes for a good population for spring buildup.

This, of course, is the weakest link in the procedure. If, for whatever reason, the new queen doesn't take, a costly delay in winter-bee production could occur. The insurance is that, if the above procedure is used, the parent and new colonies can be reunited for an overwintering unit.

The most daunting task, at least for some, is finding and killing the queen in the parent colony. The parent is at or near its peak seasonal population, increasing the difficulty of finding the queen. One easy way to isolate her is to separate your two deep brood boxes with queen excluders, and, after a day or so, checking for eggs. Then isolate her to at least one box. The rest, as they say, is patience, and luck.

All in all, invigorating a colony with a new queen in late summer or fall is a smart management practice. New blood, more bees and a better spring – what could be better?BC

Roger Morse is Professor and Extension Specialist in Apiculture at Cornell University in Ithaca, NY. He is a regular contributor to Bee Culture on a variety of subjects.

BEE TREE

doc & james earl hester

A Recollection of Autumn Days Gone By . . .

Bees were more plentiful in days past than they are now. For that reason, we occasionally got a chance to take a "bee tree."

The honey from a bee tree was usually taken during daylight hours in the early fall when work on the farm was kind of slack. Since the honey found in the bee tree was used to sustain the bees during the winter, we always took the honey early enough to give the bees time to make more before winter. Earlier, one of us had discovered the tree in the woods while walking through with his ears open and hearing the bees buzzing overhead. There was usually too much foliage to see them very well.

Bees tended to gather around a spring or a well back then, from say the early 1920s to the middle 1940s. A friend used to have pretty good luck locating bee trees by determining the direction the bees took after leaving the water.

Although never plentiful, bee trees could be found in the woods on occasion. What we sought to do was drive the bees away from the bee tree with a smoke gun and remove the honey from the hollow space inside.

Bees tended to come to the well for water in the middle of the day. So we usually walked through the woods to take the honey before we went back to work in the afternoon.

Taking a bee tree did not require a lot of equipment. About the only things needed were a smoke gun, ax, crosscut saw, some wool and a clean pan. We wore no special clothing in taking a bee tree. In fact, we carried

BEE TREE ... Cont. From Pg. 521

along no protection of any kind to prevent bee stings. Most men wore overalls in those days, along with long-sleeved shirts. A few wore khaki pants, however, especially those who had served in World War I, and this constituted the only "protective" clothing we wore.

Walking through the woods to the spot where the tree had been discovered, we would first determine whether the tree needed to be cut or not. If the small hole leading to where the honey was stored inside was close enough to the ground so that the honey could be reached while bending or standing, then the tree would not have to be cut. But if the entrance was too high to be reached from the ground, then the tree would be cut.

When it was decided that a tree needed to be cut, two men would be needed to use the crosscut saw, one at each end. Usually the tree was a foot or more in diameter, but two experienced men were usually able to saw it down in a few minutes.

Whether the tree was left standing or sawed down, the entrance to the hollow space where the honey was stored had to be enlarged. This was done with an ax, with the required space being about a foot square. But before a larger space was chopped out to get to the honey, the bees had to be removed with the aid of a smoke gun.

Rarely were any bees killed in taking a bee tree. Usually, they were smoked out of the tree, and they would retire to a safe distance on their own. But the smoke gun had to be kept going during the course of the entire operation or the bees would come back.

Filled with wool items such as old socks or pieces of a sweater, which were then set afire, the smoke gun acted like a bellows and gave off a great deal of smoke. The smoke sometimes caused the bees to leave their previous home and seek another, especially if the tree was cut.

Since no special equipment except the smoke gun was used for protection taking a bee tree often resulted in a few bee stings for several people. Either wet chewing tobacco was placed on the sting to ease the pain or the stings were left alone.

Being afraid of bees or not seemed to determine how many times a person was stung. A man on our farm by the name of Uncle Alex, had no fear of them whatsoever, and he never got stung, while my brother, who was filled with fear, got stung all the time. It was said that bee stings had a curative effect on rheumatism (arthritis). I wasn't sure I believed that, but since I hadn't fully recovered from my last bout, I didn't mind getting stung as much as most people.

Once the entrance to where the honey was stored was enlarged, the honey was removed. This took only a short time, with one of us using his hand to reach in and bring out the honey, a little at the time, and place it in the pan. While the honey was being removed, all of us tended to use our fingers to sample small pieces.

The amount of honey taken from a bee tree depended on the number of bees in the tree and how long they had been there. The larger the number of bees and the longer they had been in the tree, the more honey the tree would yield. Sometimes, we got as much as a dishpan full, and other times, less. We probably averaged between 15 and 20 pounds or more from each tree.

Once the honey was removed from the tree, it was taken to the house and divided in equal portions among those taking part. The individual portions were put in jars and used as sort of a special treat following breakfast and supper.

Honey taken from a bee tree was not as good as that taken from the gums that dotted the countryside, even in those days. But the extra-dark spots could be thrown away or saved for some of the animals back at the house and the rest used to satisfy the sweet tooth of almost everyone.

Bees were said to be valuable for crops, and almost every farmer in those days had several gums. It was not unusual to hear a swarm of bees pass overhead back then, and several times, I have seen a swarm perched on a limb somewhere. And they often ended up in a hollow, in a tree, waiting for us to come again. BC

Doc and James Earl Hester still look for bee trees near their home in Hurdle Mills, NC.

BEEAWARE ... Cont. From Pg. 499

at a large Glossary of Beekeeping terms.

Once a diagnosis is made, "BEE AWARE" offers an explanation, such as, "The symptoms strongly indicate pesticide poisoning, and prompts for more information, an explanation, a new diagnosis or exit.

REFERENCE offers names and addresses of state Apiary Inspectors and Apiary Inspectors of Canadian provinces in an instant. Plus, definitions of technical terms used in the program and in beekeeping in general.

TOXICITY is worth the price of the entire program if you are concerned about commonly used pesticides and their relative toxicity to honey bees. The tables are updated regularly, as is the "BEEAWARE" software system. If pesticide application is a concern, the recommendations for pesticide application and protection for your bees is worthwhile.

"BEEAWARE" has illustrations included to assist in recognition of bee pests – wax moth (actual size and enlarged) with many others. Veteran beekeepers can always use a, "second opinion," and hobbyists will find "BEEAWARE" a reliable tool to both study beekeeping problems and to evaluate the well-being of their colonies.

Maryann and the "BEEAWARE" team are there to assist with any technical problems. In fact, they want to know about any problems you encounter with the software, which is updated regularly and minor problems are corrected with new versions.

Is "BEEAWARE" perfect? Is there anything I didn't like about it? Of course! I've yet to find the perfect program. So what would I like to see? Well, for openers, I would like to see "BEEAWARE" in Windows format for PC's. And there are a few minor programming problems. In the User's Manual, it says that errors may occur while running the program. Errors have a five digit code and Penn State would like you to copy down any of these that appear. It will assist them in making corrections. An Error Report form is included, so you may contact Penn State regarding your experiences. Have I encountered errors? Yes. A few times. While running the program, a Run-Time Error appears, resetting the program back to the DOS prompt. It doesn't crash the system or anything such as that. I merely restart the program and all is fine. This is the most significant complaint I can muster up against "BEEAWARE." Not bad.

The future of "BEEAWARE." I think a version is currently under study which will use a CD-ROM, so you can actually see photographs and compare them with conditions in the colony. Of course, this would be superior to the current drawings. I am quite pleased with the drawings, for the moment. The software I am using is Version 2.0, 1994.

Stan Kain raises bees, and works with his computer from his home in Bolivar, MO. You can reach him at 763 E. 420th Rd., Bolivar, MO 65613, or EMail at Stankain@tyrell.net.

INNER ... Cont. From Pg. 484

pulled of an international coup.

But they still need help in the financial area. You can help. Especially now that you have a little extra to work with. They've earned it. You owe it. Give 'em a hand.

•

When I worked for Extension one of the things I did was fill in for the regular guy who answered all the 'bug' calls the University received. They get a lot because who else you gonna call?

Most were pretty predictable. Ants in the kitchen, firewood bugs all over, yard and garden pests, yellow jackets. But what made the job interesting were those that weren't.

For those, you had to reconstruct the situation, identify the pest and recommend a solution – by talking to someone who usually hated bugs and wanted a quick and easy answer. You sometimes felt like Sherlock Holmes.

I still do that kind of thing, sometimes. Answer calls about ailing colonies or what-next management queries. It requires the same things – reconstruct the situation, identify the question, and recommend solution options.

To do that requires a bit of "What have you already done?" "Why do you think something's wrong?", and "Here are some things you might try, depending on what you have available."

It's as close to 'virtual' beekeeping as you can get. You gain some familiarity with the props, get a feel for what's going on and actually step into that scene for a moment and 'keep bees' This is an easy way to do that. No sweat, no pain.

That doesn't mean there's no challenge. Every call is a learning experience, and ammunition for the next.

Those computer games don't even come close.

CORRECTION

Yes. There was a strangeness about last month's cover photo and caption. We did a last minute photo change, and a not-quite-in-time caption change. The photo was of an Actinomerous flower, (commonly called Golden Honey Plant), not a mustard. Actinomerous flowers are very abundant this time of year, and are very attractive to honey bees. The flowers are not all that exciting, but when grouped along a stream bank or in other moist, sandy places (where they commonly grow) they can be very dramatic.

It's not that we didn't like the mustard photo or anything, we just decided to change. Sorry. O.K.?

Kim Flottum

?Do You Know Answers?

1. **True** Drone-size brood cells are wider and deeper than worker size cells. Since drones are larger than workers, they require a larger cell to complete their development. Drone-size cells measure four to the linear inch, worker-size cells five. The depth of the drone cell is increased by the bullet shaped cappings.
2. **False** Individuals receive food from bees that are on average older than those they give it to and receive it from. This is because food passes through a colony from the older foragers, to younger bees in the broodnest.
3. **True** In early spring an average colony is relatively small and contains a little brood. Only a small percentage of the workers have been reared during the winter. Most adults are old-overwintered bees that will probably survive only a few days of continuous foraging. During this period more bees die than emerge, so the colony decreases to its minimum size for the year. However, this spring decline is only temporary and soon young bees emerge fast enough for the population to expand.
4. **True** Older worker honey bees will normally have 100-300 micrograms of venom stored in their venom sac. In comparison, a young queen will have approximately 700 micrograms of venom.
5. **False** The Demaree method is a technique used to stop swarming. The queen is separated from most of the brood within the hive which results in two separate brood areas, thus relieving congestion, the primary cause of swarming.
6. **True** In order to produce section-comb honey, only the strongest colonies should be used. These colonies should reach their peak of strength as near the beginning of the honeyflow as possible. At the start of the honeyflow, each colony is reduced to a single hive body when the first comb honey super is provided. When a strong colony is reduced to a single hive body and only a single super, it is an invitation to swarm and the swarming impulse will continue until the congestion is relieved.
7. **True** During the first two to three days of larval life, regardless of caste, each larva is mass fed large quantities of royal jelly. As this mass feeding period comes to a close, the quality of the brood food changes, impacting caste determination and rate of development.
8. **False** The toxicant or active ingredient in Apistan Strips is fluvalinate, a synthetic pyrethroid. Fluvalinate is a contact poison that works when bees walk on strip and pick up a tiny amount of the active ingredient which in turn kills mites when they come in contact with it.
9. **True** In the fall, the broodnest of the colony should be located in the lower area of the hive, since the winter cluster will slowly eat its way upward during the winter. If the cluster does not start at the bottom of the food stores, then it will reach the top of the hive before the end of winter and starve to death.
10. The largest commercial use of honey bee venom is currently the desensitizing of individuals who are allergic to bee stings.
11. Trapping of pollen from honey bee colonies is done for two reasons: To feed back to bees when colonies have a shortage of protein. To sell for human consumption.
12. The primary cause of robbing in an apiary is the exposure of nectar, honey or some form of sugar during a nectar dearth.
13. In order to stop robbing in the apiary once it has started, all hive manipulations should cease. Reduce the entrances and seal all cracks or openings in the hive(s) being robbed and in the weaker colonies in the apiary. A reduced entrance should make it easier for the bees to defend their hive. Stuffing handfuls of grass into the hive entrance is a quick way to reduce colony entrances when regular reducers are not available.
14. Propolis is used by honey bees to: Reduce the hive entrance and fill cracks and crevices. Varnish the hive interior (waterproofing). Cover objects within the hive that are too large to remove, such as a dead mouse. Strengthen the wax cells used for brood rearing and food storage.
15. Leaving Apistan Strips on the colonies longer than is recommended on the label is, first, a violation of the EPA pesticide laws. Second, such a practice will increase the probability of *Varroa* mites developing resistance to fluvalinate, the only acaricide currently registered in the United States for *Varroa* mite control and detection. Exposing the mites to a dosage that is less than the lethal dosage level and continuous exposure will increase selection pressure for resistance.
16. *Varroa* mite treatments during the broodless period in the winter are the most effective since all female mites will be found on the adult honey bees. When brood is present in the hive, 80% of the female mites will be found in capped brood cells where mite reproduction occurs and not exposed to the Apistan Strips.
17. Terra Brood Mix is composed of sugar, soy flour, and Terramycin. It is used as an aid for preventing American foulbrood and European foulbrood.
18. American foulbrood is considered to be more serious than European foulbrood since the bacterium causing American foulbrood produces spores, whereas, no spores are associated with European foulbrood. The spores can remain viable indefinitely on beekeeping equipment, thus once the equipment is contaminated with spores, the colony is exposed to continuous disease pressure.

There were a possible 25 points in the test this month. Check 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

HOME HARMONY

ann harman

Holiday Recipes

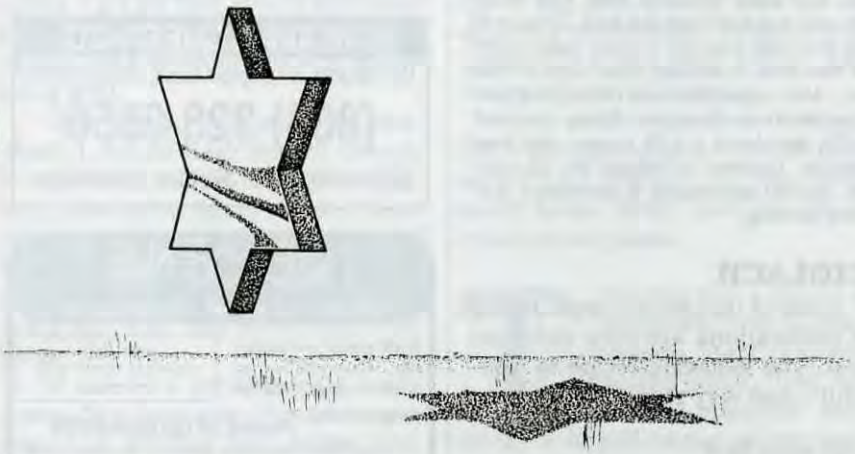
Honey has been a feature of many of the world's religions for millennia. This month many will be celebrating Rosh Hashanah, followed by Yom Kippur. Although Rosh Hashanah begins the seventh month, called Tishrei, of the Jewish lunar calendar, the term means "Beginning of the Year" Tishrei commemorates the month in which God created the world.

Rosh Hashanah marks the beginning of the period of God's annual judgment of humanity – who will live and who will die during the coming year. During this period, a spirit of optimism prevails. The faithful, who are praying for repentance, make amends for acts committed during the past year. Prayers are also offered for forgiveness, for a long life and for a good – sweet – year to come.

One of the traditional rituals during this time is the blowing of the shofar or ram's horn as a "wake-up call" for repenting and reminding one of current issues that influence lives. The sound of the shofar is impressive, but blowing the ram's horn is difficult. Even experienced shofar blowers have to try several times to achieve the right sound.

Another observance, according to God's ordinance, is that honey be served at all Rosh Hashanah meals and that slices of apples be dipped into honey. A special prayer for Rosh Hashanah is given: "May it be Thy will, O Lord, Our God, to grant us a year that is good and is sweet."

Although an assortment of foods can be served during the week between Rosh Hashanah and Yom Kippur, several foods are traditional. One is the braided bread known as Challah. For the holidays the braid is frequently decorated with bread "cut outs" of designs, flowers, or animals. However, you can bake it plain any day of the year!



CHALLAH

1/2 cup warm water (105-115°)
1 teaspoon honey
2 tablespoons dry yeast (2 packets)
10 tablespoons very warm water
3 eggs, room temperature
7-1/2 tablespoons vegetable oil
1/2 cup honey
1-1/2 tablespoons salt
6 cups flour (in 3-cup batches)

Glaze:
1 egg, beaten
1 tablespoon cold water
Optional: 1 teaspoon sugar and poppy or sesame seeds

Put the 1/2 cup water, teaspoon honey and yeast in small bowl. Stir to dissolve yeast. Leave in a warm place until bubbly. Mix the 10 tablespoons water, eggs and oil in a small bowl. In a mixing bowl, stir the honey, salt and first 3 cups of flour. Add yeast mixture. Let stand for a minute before adding egg mixture. Beat until smooth. Add second batch of flour and mix until moistened and for an additional minute. Knead until smooth, shiny and elastic, about 10 minutes. Transfer dough to an oiled bowl and turn to coat with oil. Let rise in a warm place until **at least** double in bulk, about 1-1/2 hours. Punch down and allow a second rise to double, about one hour. Punch dough down again and place on floured board. Divide into thirds. Cover two with a towel. Take one piece and divide this into thirds. Make a 12-inch "snake" or rolled strip with each piece. Braid strips together and place on a lightly oiled and floured baking sheet. Use the other two parts to make 2 additional loaves. Cover and allow another (third) rise to double, about one hour. Mix glaze. Paint loaves gently with glaze. If you wish you can sprinkle sugar or poppy or sesame seeds or you can decorate with bread cut outs before glazing. Bake at 325¡ oven for about 25 minutes or until bronzed. A tap on the bottom sounds hollow. Remove from oven and let stand 5 minutes before transferring to racks to cool. Makes 3 loaves

The Georgetown Day School Country Market Day Cookbook

This next recipe is for a traditional loaf cake with a modern touch – instant coffee. The subtle coffee flavor blends very well with the assortment of spices. The almond decoration is traditional.

UGAT DVASH

This loaf cake is frequently served with unsalted butter.

Continued on Next Page

HOME ... Cont. From Pg. 525

1/4 cup + 1 teaspoon vegetable oil
2-1/4 cups flour
1/4 cup raisins
1/4 cup chopped candied orange peel
3 egg yolks
3/4 cup honey
1/3 cup sugar
2 teaspoons finely grated lemon peel
4-1/2 teaspoons instant coffee dissolved in 1 tablespoon boiling water
1 teaspoon baking powder
1/4 teaspoon baking soda
1/4 teaspoon cinnamon
1/4 teaspoon allspice
pinch ground cloves
1/4 teaspoon salt
3 egg whites
1/2 cup sliced blanched almonds

Use the 1 teaspoon oil to grease a loaf pan 9X5X3. Sprinkle with 2 tablespoons of the flour; shake to spread evenly. Remove excess flour. Combine raisins and orange peel, add 2 tablespoons flour, shake to coat fruit. Beat egg yolks until frothy. Beat in remaining 1/4 cup oil, honey, sugar, lemon peel, coffee. Combine remaining 2 cups of flour with spices, baking powder and baking soda. Sift into batter, 1/4 cup at a time, beating well after each addition. Stir in raisins and orange peel. In separate bowl beat egg whites until peaks form. Fold whites into batter. Pour into loaf pan. Decorate top with almonds. Bake at 325¡ for 1 hour 15 minutes. Cool in pan 4 5 min. Run knife around pan, turn cake out onto rack to cool. Makes 1 loaf cake

Middle Eastern Cooking
by Harry Nickles, Time-Life

Many holiday recipes get passed down in families from one generation to the next. The origin of such recipes is totally lost and, in fact, the original may have been changed by each person wh· used it. The next recipes could simply be referenced as "Traditional Family Recipes"

VEGETABLE MIX

This recipe has no particular proportion of ingredients. I was told that the amounts could vary and also that you could add other vegetables if you wished. No matter – it's quick and easy and delicious any time of year.

carrots
sweet potatoes
canned pineapple chunks
honey
butter
pinch salt
wine optional
nuts optional

Cut carrots into 1-inch pieces. Peel and cut sweet potatoes into 1-inch pieces. Drain pineapple and mix juice with honey, pinch of salt, and wine, if used. Mix this sauce with vegetables and put in baking pan. Sprinkle with nuts and dot with butter. Roast slowly, turning often until vegetables are done. Add pineapple chunks when almost done.

TZIMMES WITH MEAT AND VEGETABLES

Even meat recipes contain a little honey. This recipe is for a stew that uses beef. However, you can substitute lamb. Instead of sweet potato you can use cubes of pumpkin or winter squash.

3 pounds brisket or chuck
3 teaspoons salt
1/2 teaspoon freshly ground pepper
2 onions, chopped
3 tablespoons flour
3 4 cups boiling water (can substitute 1 cup wine for 1 cup water) quantity of water depends on quantity of vegetables
4 tablespoons honey
8 carrots, quartered
2 sweet potatoes, peeled and quartered
2/3 cup pitted prunes, quartered

Cut meat into cubes. Mix together pepper and 2 teaspoons of the salt. Rub thoroughly all over meat. Meat can be browned in skillet if desired. Place meat in casserole or Dutch oven. Brown onions over low heat. Add flour and mix well. Add water while stirring and heat to a boil. Cover and cook over low heat for 1 hour. Add honey and mix well. If adding wine, add at this point. Add vegetables and remaining salt. Add mixture to the meat. Bake, covered, at 375¡ for about 1-1/2 hours until beef is tender. Uncover to brown for 15 minutes. Adjust seasoning if necessary just before serving.

TEIGLACH

Some of the sweets eaten during the celebrations are very rich and sweet. The following recipe is wonderful – and very rich and sweet.

2 cups sifted flour
1/2 teaspoon salt
1/2 teaspoon baking powder
2 eggs, beaten
3 tablespoons vegetable oil
1 cup honey
1/2 cup brown sugar
1/2 teaspoon powdered ginger
1 cup nuts
1 cup candied fruit (optional)

Sift together flour, salt and baking powder. Make a well in the center of dry ingredients. Put beaten eggs and oil in well and mix until soft dough forms. Knead until smooth. Roll pieces between hands into strips the thickness of a pencil. Cut into 1/2-inch pieces. Put pieces on greased cookie sheet. Bake at 375º for a short time. Shake frequently until delicately browned. Remove from oven.

Place honey, sugar and ginger in a pan and bring to a boil. Cook over low heat for 10 minutes. Add the baked pastry and nuts and candied fruit if used. Cook, stirring constantly with wooden spoon, for about 5 minutes. Wet board with icy cold water. Wet hands also! Spread mixture on board until it cools. Shape into small clusters or one mound.

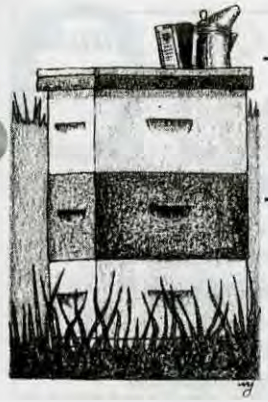
POPPY SEED FILLING

The following recipe is for a filling to be used with a strudel, a Danish, in a jelly roll type of cake, small tarts, and between two cookies.

1/2 cup milk
1/2 cup honey
2 tablespoons sugar
1 pound ground poppy seeds
1/4 cup raisins
2 teaspoons grated lemon rind
4 tablespoons melted butter

Mix all ingredients except raisins and lemon rind in a saucepan. Cook over low heat until thick, about 5 minutes. Add raisins and lemon rind. Mix and cool.

Even if you do not celebrate Rosh Hashanah, with these recipes you can celebrate man's oldest and most revered sweet – honey. It will make any year sweet.



BEE TALK

richard taylor

"There's a very good reason to use story and a half hives for raising comb honey."

Many years ago a beekeeper living on Long Island, known as Propolis Pete, wrote a monthly column for this magazine called "Live and Learn" That is a very apt title, suggesting, with truth, that living with bees year after year you never stop learning new things. And, if you pay attention, you learn things that you would never pick up from the bee books. I got my first hive of bees sixty years ago and I've read a lot of bee books, but every year I pick up something new.

One thing I learned this year, which I should have known enough to figure out before, was about getting pollen in the honey supers. I suppose I shouldn't feel too stupid about that, because a very well known expert in apiculture once asked me, years ago, why that sometimes happens.

It can be a problem with comb honey. You have some beautiful sections and, holding them to the light, you see that there are plugs of pollen in some of the cells, rendering them unsaleable. The pollen usually tastes terrible when you bite into it and someone not knowing what it is throws the honey away in disgust.

Why, when I'm taking the comb honey from a stack of supers, do I every once in a while come to one with pollen plugs scattered here and there? It's because that super was too close to the brood nest. Simple as that.

The last two or three years, sometimes running short on supers, I've been experimenting with single-story hives. I discovered that these, if good and heavy in the Fall, winter over as well as my regular story-and-a-half hives, and I get just as much honey from them, so I've been recommending this for comb honey beekeeping. But now I've learned my lesson. The first super on such a hive is very apt to have lots of sections ruined by pollen plugs.

And it makes sense, doesn't it? The bees pack the pollen into the combs right above their brood, storing the honey mostly above the band of pollen. So if your super is right on top of the brood, well, what do you expect? I should have foreseen that. Lesson: Use story-and-a-half hives for getting comb honey.

One reason that you "live and learn" by keeping bees is that the seasons are all different, as I have noted many times. Every year has its instructive surprises.

This year was a dandy for surprises. I never saw a season start out with such a boom. I was harvesting beautiful comb honey a month ahead of the usual schedule, had run out of supers, and then I got a real big scare. My closest beekeeper friend told me he had been extracting and came across the worst honey he had ever tasted. This terrified me. Was I getting it too? It is not easy to sample comb honey. I could have supers of the same bad honey and not even know it. So the next time I went to one of my apiaries to put on the bee escapes, I took along a spoon to get samples from the broken burr combs. Relief! They all tasted delicious.

So I got my friend to set aside a jar of this awful honey so I could sample it myself next time I was up that way. I found that, though a bit unusual, it was just fine - really quite a good honey. I had all my family try it and my in-laws too, and everyone liked it.

Now when you get honey like that, which your customers are going to find quite different from what they expected, the thing to do is put a little explanatory label on it. This particular honey probably came from the wild mustard and maybe the dandelions since we had a strong flow about that time. If a little label to that effect is put on the jars, then next year there will be people wanting to get it again. But of course you've got to make sure that the honey is really okay. No explanatory label will redeem a honey that, in fact, has a bad flavor. Fortunately, such honeys are not very common.

Ah! But the real surprise was still to come! This same beekeeper friend was summoned a few days ago to deal with a swarm. When he got there he found that this "swarm" was, in fact, a lot of bees busily humming in a sycamore tree. What could that all be about? Sycamores are not a nectar source; there was no kind of bloom there. Honey dew! The bees were licking honey dew from the leaves! And my friend went home to find the same thing happening in his pear tree. This was just when we should have been getting our basswood flow, which is the one we really count on every year. But the basswoods had all just dried up. The buds never opened. The prolonged dry spell and heat had done it. And now, apparently, the bees were getting honey dew, a very bad turn of events.

Honey dew, though seldom downright inedible, is never very

Continued on Next Page

BEE TALK... Cont. From Pg. 527

good, at least in these parts. It isn't really honey, since it does not come from the nectaries of flowers, as honey, by definition, does. But it gets into honey. And I don't want to be harvesting supers of comb honey that are solid honey dew.

Well, I've got a pretty good harvest already of really beautiful comb honey and I'm not going to let myself lose sleep worrying whether my bees are filling the supers with honey dew. Bees are very unpredictable and full of surprises. Maybe, like the bad honey I was sort of expecting to get but didn't, the honey dew scare will also turn out to be groundless. I'm just not going to hazard a guess on that one. We take what we get and generally, what we get is, along with a few surprises, pretty wonderful.

Richard Taylor raises bees, and comb honey, and writes beekeeping books from his home near Interlaken, NY.

Questions?

Questions are welcomed. Address: Dr. Richard Taylor, Box 352, Interlaken, New York 14847 NOT MEDINA, and enclose a stamped envelope for a direct reply.

Overwintering Stories

Q **This Spring I captured six swarms but did not have enough equipment to give them all a second story. Now two of them, from which I harvested honey in shallow supers, are in single full-depth hives. They both are very heavy, but can I winter them that way? Or should I combine them into one two-story hive?**

Art Shick
Sharon Center, OH

A If they are very heavy, and thus amply supplied with stores, they should winter just fine in single-story hives. Many of my hives go through the Winter this way. However, since your question arrived in mid-July, I should add that the Autumn honey flow is still to come and I would suggest that you give each colony one of those shallow supers to fill up, which you can then harvest or leave for the bees, to get really powerful colonies in the Spring.

Overwintering Inside

Q **Our Winters are very severe up here. Has anyone tried wintering bees in greenhouses? I should think this would be cheaper than trucking them to Florida.**

John Lasell
Franklin, ME

A The purpose to moving bees South in the Winter is not to provide them with warmth for wintering. Bees easily withstand bitter cold if not subjected to other stress such as wind. The reason for moving bees South is to get an early start on the season by taking advantage of the earlier Spring, building the colonies up to early honey-getting strength and, usually, making splits, nucs, and even a honey crop.

A five dollar bill goes this month to Todd Farmer for a very good question.

Q **I leave the honey from the Fall flow for the bees to winter on. We have good Fall flows here, and I can't help but think that the bees could get more honey from them than they do if they had supers to store it in. How then, would it be to have an excluder on the hive in the Fall, with a super over that, so that after the bees had gotten all the honey they could store in the hive itself, they would still have room to store any surplus? My thinking is that they would store below the excluder first, thus giving themselves ample Winter stores.**

Todd Farmer
Williamsport, MD

A You have a very good point here indeed. In fact, I have used excluders for just this purpose when I was producing extracted honey. I would not want comb honey from Fall flows that had been stored over an excluder. But I noticed years ago that hives on which I had used excluders went into Winter much heavier than the others, confirming just the point you are making. If you supered for the Fall flow without any excluder, then you would get more honey in the supers, but the bees would have less to winter on. But if you super over an excluder, then the bees are pretty sure to get all the honey they need for Winter and you will still get some honey in the super to harvest.

Beeswax Value

Q **I save all beeswax, whether from cappings, burr comb, old dark brood combs, whatever. Wax from old combs and the like is very dark and mixed with propolis and so on and I have been told that it is not worth saving. Is there a way to clean it up?**

Louis A. Matej
Tacoma, WA

A You are right to save it. Even dark wax with propolis and impurities in it is valuable. Bee supply companies will pay almost as much for this wax as they do for light cappings wax. I melt old combs, a few at a time, in a solar wax melter. They can also be melted in a tub of hot water (with care not to start a fire) and the slum gum, as it is called, scraped off the bottom when the cake of wax has hardened. Don't worry about it if the wax is dark and mingled with impurities. It is still valuable.

Contamination

Q **Can Terra or Apistan contaminate the combs so that the wax that is eventually salvaged from them by melting them would be contaminated?**

George Bashette
Mystic, CT

A Terra will not contaminate the combs. Beeswax can absorb the fluvalinate in Apistan strips, but I do not believe this is a problem because these strips are inserted into the brood nest and relatively little beeswax comes from brood combs, most of it coming from cappings which would not be affected. However, this sussgets that timely replacement of brood com bs is in order, so that buildup does not occur. This will protect the wax, and the bees who live on it.

Continued on Next Page

Q & A ... Cont. From Pg. 529

Sun-Wax

Q I read in the current edition of *ABC and XYZ* that "beeswax to be sun bleached may be flaked or exposed as a liquid in shallow stainless steel pans. At one time it was popular to bleach exposed beeswax in greenhouses." Have you ever tried this?

Andy Moore
Sweetwater, TX

A I have never seen any point in bleaching beeswax, since the natural yellow is to me more attractive than white, but I know that exposure to sunlight does bleach it. It takes a long time and the wax must be thin so that the sunlight can penetrate it. The reason for stainless steel is that beeswax soon becomes discolored by contact with most metals such as iron, copper, etc.

Treating Colonies

Q I have been advised that menthol and Apistan strips should be used in the hives in July and August for control of tracheal mites and Varroa. Is this correct?

Robert McFarland Lacy
Shade Gap, PA

A If you use menthol then yes, it must be used during warm weather (after honey supers are removed) but there are warm enough days for this in September. However, I have never used it and expert beekeepers I know who have tried it no longer use it. Tracheal mites seem to be a big problem some years but not as others, and they are usually not a problem at all during the warm summer months when the bees are flying almost every day. My own practice is to just restore any colony killed by tracheal mites by giving the hive a few combs of brood and bees, plus new queen from my stronger colonies early in the Spring, or using three-pound package bees. As for Apistan strips, these do not at all require warm weather to be effective. The common practice is to use them in the Fall, after honey has been harvested.

Answers!

Richard Taylor

Gleanings

SEPTEMBER, 1995 • ALL THE NEWS THAT FITS

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FROM LAB TO FARM

Agricultural research is one area in which congress has made only modest cuts so far. That's fortunate, for it's hard to think of any area in which science will have a more direct impact on people's lives here and throughout the world.

The world's population is now around 5.7 billion. In 30 years it will very probably be well over eight billion, an increase of almost one-half, nearly all of it in the poor countries. The crops to feed those people will be grown on the same land that's being used today and with the same sources of water. The difference will have to be provided by technology.

In agriculture, the world has grown accustomed to rapid advances in technology and productivity. For centuries the pessimists have warned that rising populations must inevitably bring starvation and catastrophe. To the contrary, food consumption per capita has steadily risen – not only in the rich countries with heavily mechanized farming but in the poor ones as well. About one out of six people worldwide is still chronically underfed, but that proportion has been falling steadily in recent decades. India, a poor country with 16 percent of the planet's population but only 2.3 percent of its land, is now self-sufficient in grain.

All of this progress is the result of advances in science and technology. But, as the World Resources Institute pointed out in a survey last year, worldwide spending on agricultural research slowed down in the past decade. Correspondingly, while crop yields are still improving, their rate of growth is also slowing. There are limits to the usefulness of chemical fertilizers and pesticides, some of which – particularly in the developing countries – have become threats to the health of farmers.

It doesn't mean that a crisis is necessarily arising or that the world faces an inescapable ecological disaster. But it certainly means that the need for new ideas about farming and new techniques is no less pressing than it's ever been. Some of the necessary research is being carried out by agricultural businesses. But the structure of agriculture, fragmented among millions of small operators, makes a large public role unavoidable.

In this country the partnership between farmers and researchers supported by state and federal money has created the present level of productivity at which three percent of the population feeds the other 97 percent and generates an enormous flow of exports as well. The United States provides the world not only with food but with the technical skill to produce it better. The need for more of both can be read in those population figures.

Reprinted from The Washington Post, August 5, 1995.

SUGAR QUOTA SET

The 1996 U.S. tariff rate quota (TRQ) for raw cane sugar has been set by the U.S. Department of Agriculture. The fiscal year TRQ for raw cane sugar is 1,117,195 metric tons. A TRQ of 22,000 metric tons was also established for specialty sugar and sugar with a sucrose content of 99.5 degrees or more. The TRQ's become effective October 1 and are for sugar allowed to enter the U.S. customs territory at the low-duty rate. Certificates of quota eligibility are authorized to cover entry of sugar that is produced in the country having a TRQ allocation. They are not authorized to cover transshipped sugar or sugar produced in a third country and then exported into a country with a sugar TRQ.

U.S. Beekeepers 1, China 0

CHINA AGREES TO LIMITS

The U.S. honey industry received a pleasant surprise on August 2 when the U.S. Government suspended an ongoing investigation into unfairly traded honey imports from the People's Republic of China (PRC) in exchange for the PRC agreeing to honey export limits and pricing restrictions.

Under the agreement signed by both governments, the U.S. suspends the investigation started on October 3, 1994, when the American Beekeeping Federation, Inc., and the American Honey Producers Association filed a petition alleging that unfairly priced imports from the PRC were injuring the domestic industry. Although not concluded, that investigation had resulted in a preliminary determination of dumping, or selling at less than fair value, and the preliminary assessment of dumping margins averaged at 144.61 percent.

In exchange for the U.S. suspending the dumping investigation, the PRC Government agreed to limit the volume of honey exported from China to 43.9 million pounds per year, a significant reduction from the 77 and 65 million pounds exported in 1993 and 1994, respectively. PRC also agreed to a price floor policy for each of the five different tariff classifications of honey. Application of these price floors will require a substantial increase in the prices of honey from the PRC than prevailed in recent years.

Representatives of the U.S. honey industry praised the agreement negotiated by the U.S. Department of Commerce. Richard Adee, President of the American Honey Producers Association stated, "The domestic industry is optimistic that the volume and price restrictions contained in the suspension agreement will restore stability to the U.S. honey market and permit a return to reasonable price levels."

David Sundberg, president of the American Beekeeping Federation, noted that the industry was "very pleased" with the terms of the agreement and that the "U.S. honey industry will work closely with the Commerce Department and Customs to ensure compliance with the agreement." The agreement contains strong anticircumvention provisions designed to ensure that Chinese exporters cannot circumvent the quota and price limitations by selling excessive amounts of honey from current inventories or by transshipping honey through third countries.

The ABF and AHPA jointly have more than 2,000 members who are responsible for more than 75% of all commercial honey production in the United States.

Pollination Market, Too

CHERRY MKT. INCREASES

Export opportunities for U.S. sweet cherries just got better with the opening of the South African market. Administrator of USDA's Foreign Agricultural Service Gus Schumacher says the first shipment has already landed, presenting U.S. growers of sweet cherries and other stone fruit with a new and potentially lucrative market. An agreement to lift a restriction on imports of U.S. stone fruits was concluded and the first shipment of sweet cherries reached South Africa on July 2. Although weather problems in some U.S. areas will reduce sales this year, higher export prices could offset the reduction in tonnage, says Schumacher. He says the demand for U.S. sweet cherries (and the pollination required to produce them) continues to expand.

NATIONAL HONEY BOARD NEWS YOU CAN USE

New Vice Chair, Sec/Treas and Exec Members, too

Randy Johnson Elected Chairman

At the National Honey Board's annual meeting in Colorado Springs held in June, Randy Johnson, Nampa, Idaho, was elected as the new chairman of the Board. Johnson is a beekeeper with 20 years of experience in the honey industry. His company, Honeygold Corporation, manages 7,500 colonies of honey bees for crop pollination and honey production.

Doug McGinnis, Edgewater, FL, was elected vice chairman. McGinnis' company, Tropical Blossom Honey Company, Inc., has been in the honey business since 1940. McGinnis packs Florida honey varieties including orange blossom, tropical wildflower and tupelo for the specialty and gift trade and the company exports to over 20 countries throughout the world.

Bert Belliston, Heyburn, Idaho was elected secretary/treasurer. Belliston has worked as a beekeeper for over 20 years. Along with his partner Gary Belliston, Belliston manages 6,000 honey bee colonies in Idaho and Utah for honey production.

Two additional Board members, Larry Krause, Riverton, WY, and John Miller, Gackle, ND were elected to serve along with Johnson, McGinnis and Belliston on the Board's five-member Executive Committee. Krause is a third-generation beekeeper and has worked in the honey industry for 27 years. His company, Wind River Honey Company, manages 2,800 bee colonies for migratory pollination and honey production. Miller is a fourth-generation beekeeper and has worked in the family business for 20 years. Millers manages over 12,000 honey bee colonies in seven states.

"Primary responsibility for the integrity and performance of the Board is in the hands of the Executive Committee," said Randy Johnson. "As chairman, I'm pleased to work with such a dedicated and experienced group of honey industry leaders."

Honey Month Media Kits Available

Honey is a miracle of nature and National Honey Month is a perfect time to share the magic with newspapers and radio/television stations across the country.

"All year, the National Honey Board works with the media through news releases, press kits, special mailings and interviews to spread the word about honey, but National Honey Month is a very special publicity opportunity for the honey industry," said Mary Humann, marketing director for the National Honey Board.

Join the National Honey Board in celebrating National Honey Month. All new press kits were developed for 1995 with colorful honey information sheets, honey recipes and photographs.

"Smaller papers and local radio stations are always looking for fun and interesting stories," said Humann. "Contact your local media to pitch a story about your honey business during National Honey Month." To order your National Honey Month press kit, please call Tracy Baker at 800-553-7162.

Board, Nominations Committee Meets In Phoenix, Az, In October

The National Honey Board and the National Honey Nominations Committee will hold their fall meetings at the Orange Tree Conference Center in Phoenix, AZ, Oct. 5-7.

The Honey Board's agenda will include approving the budget for its 1996 marketing plans. "This is the final stage in the Board's work to develop the 1996 plans," said Randy Johnson, chairman of the National Honey Board. "The process began in January with the evaluation of 1995 programs. Plans for 1996 were developed by each program committee and proposed plans were presented to the Board in June," Johnson explained. The Board has four standing program committees: Advertising and Consumer Information, Product Research/Food Technology, International Market Development and Industry Relations. Presentations of the 1996 marketing plans are scheduled for Thursday, Oct. 5, program committees will meet on Oct. 6 and the Board meeting will be held on Saturday morning, Oct. 7.

The annual meeting of the National Honey Nominations Committee will follow the Honey Board meeting on Saturday afternoon. "There will be four positions on the National Honey Board that need to be filled in 1996," said Reg Wilbanks, chairman of the National Honey Nominations Committee. Each state has been invited to send a representative to this meeting. All expenses for this meeting are paid for Committee members. "Nominations Committee representatives play a vital role in the operations of the National Honey Board," said Wilbanks. "Board members are not paid for their services, even though their personal and professional lives are interrupted for several weeks every year. Nominations Committee representatives are responsible for insuring that conscientious and dedicated industry leaders are nominated to the Board."

All beekeepers and other interested industry members are invited to attend the fall meetings. For a complete agenda or other meeting details, please call Tina Tindall at the National Honey Board office, 800-553-7162.

Honey Board and MN Beekeepers Sponsor Business Management Seminar In December

The National Honey Board, the Minnesota Honey Producers Association and Dr. Marla Spivak, assistant professor and extension entomologist from the University of Minnesota have teamed up to offer a business management program for honey producers, producer/packers and packers this December. Program attendees will participate in a series of seminars covering developing specialty honey products for the upscale market, doing business in the 1990s and beyond, conducting successful honey promotions, comparing successful management systems and more!

Edward D. Barlow, president of Creating the Future, Inc. is the keynote speaker for the program. Barlow is a sought-after lecturer who has worked with business and industry, government, associations, education and agriculture leadership. He is recognized for his ability to relate influences of a changing world to a variety of industries.

The program will be held at the Crown Sterling Suites adjacent to the Minneapolis airport the first weekend in December 1995. It's not necessary to be a member of the Minnesota Honey producers to attend. For information, call Conrad Legatt, Vice President, Minnesota Honey Producers Association at 612-252-9963 (evenings) or call Sherry Jennings at the National Honey Board 1-800-553-7162.

FARM SIZE AND NUMBERS UPDATED FOR 1995

FARM LAND AT 972 MILLION ACRES, UNCHANGED FROM 1994. SMALL FARMS INCREASED IN NUMBER.

FARMS UP, SIZE DOWN
USDA DATA FROM 1985 - 1995

Year	Number of Farms, 1,000s	Land in Farms, Acres	Average Farm Size, Acres
1985	2,293	1,012,073	441
1986	2,250	1,005,333	447
1987	2,213	998,923	451
1988	2,201	994,423	452
1989	2,175	990,723	456
1990	2,146	986,850	460
1991	2,117	981,736	464
1992	2,108	978,503	464
1993	2,083	976,463	469
1994	2,065	973,403	471
1995	2,073	972,253	469

1/ A farm is any establishment from which $1,000 or more of agricultural products were sold or would normally be sold during the year.

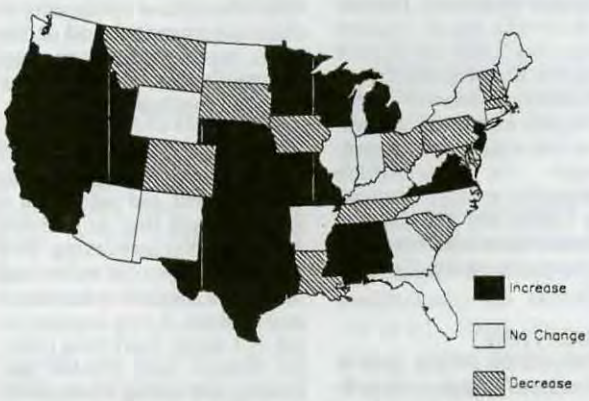
1995 showed the first increase in number of farms over a previous year in the past 10. This is due, for the most part, to an increase in the number of hobby farms, generating little income per year.

The number of farms in the United States in 1995 is estimated at 2.07 million, up less than half a percent from 1994. Total land in farms is 972 million acres. Virtually unchanged from last year.

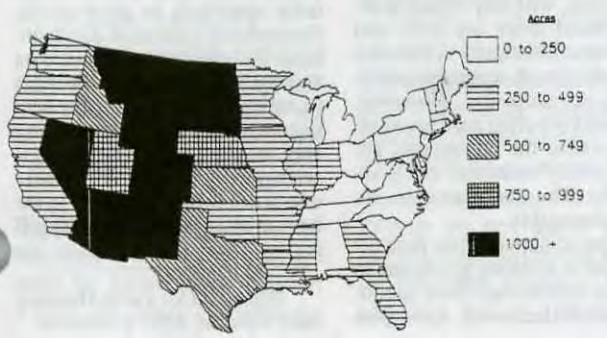
The west had the largest percentage increase (1.0%) from 1994 at about 2200 farms. Meanwhile, the northcentral region had the biggest increase at 5000 farms, or about a half percent.

A farm is defined as any establisment from which $1,000 or more of agricultural products were sold or would normally be sold during the year.

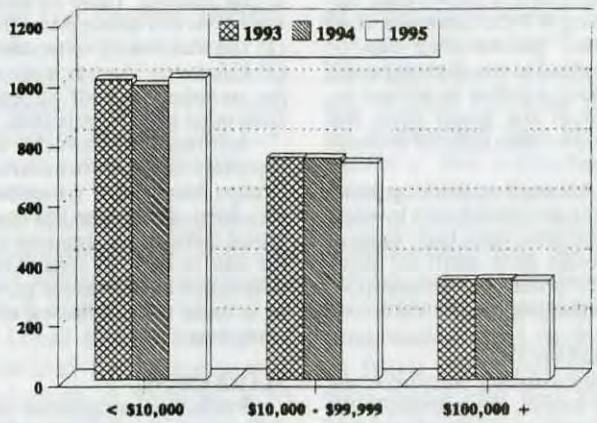
Change in Number of Farms Since 1994



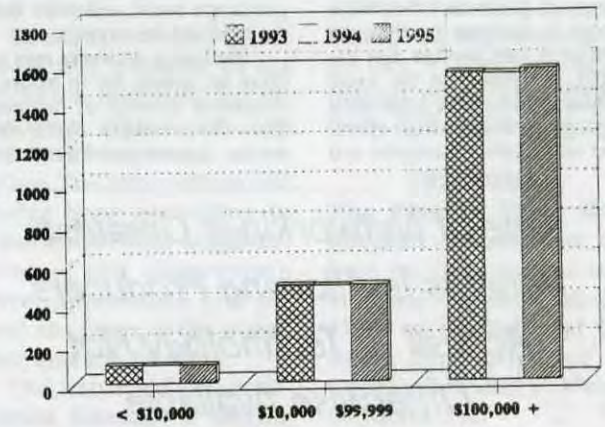
Average Farm Size - June 1995



U.S Number of Farms by Sales Class Gross Value of Sales, 1993-95



U.S. Average Farm Size by Sales Class Gross Value of Sales, 1993-95



1995-96 Almond Crop Down Significantly

Weather Primarily To Blame

The objective forecast for the 1995-96 almond crop year is 310 million meat pounds, according to the California Agricultural Statistics Service (CASS). This forecast is based on an estimated 390,000 bearing acres.

The official announcement was made in early July at the Modesto office of the Almond Board of California, which funds the forecast. Gary Nelson and Jennifer Van Court of CASS said the forecast is down 28 percent from May's subjective forecast of 430 million pounds and down 58 percent from last year's crop of 730 million pounds.

"Warm temperatures led to an early bloom," reported Gary nelson of CASS. "Heavy rain and winds during the bloom period resulted in bloom loss and pollination problems. Tree conditions and nut sets vary within the orchards, while nut sizes range from normal to large. The cool, wet weather in March slowed development of the crop and it is now behind normal."

The sampling, conducted between June 1 and June 20, involved 1,596 trees in 798 orchards.

California Almond Production, Farm Price & Value

Crop Year	Production (1000 lbs)	Farm Price	Farm Value
1989-90	488,508	$1.02	$480,930
1990-91	656,189	0.93	597,990
1991-92	458,928	1.19	564,179
1992-93	545,902	1.30	691,340
1993-94	488,254	1.90	911,430
1994-95	733,000	1.30	951,600
1995-96	310,000	------	----------

Sources: the Almond Board of California; Blue Diamond Growers

NETWORKING - A CONCEPT REBORN

The concept of cooperating to compete has been reborn. The modern term is networking. According to John Lawrence, Iowa State, "Networking can be thought of as two or more people working together to achieve individual and group goals that would be more difficult to obtain alone."

Although networking possibilities are limited only by one's imagination, three basic types of networks have merit for many honey producers: information, marketing and prod" tion.

INFORMATION

Information Networks, the least formal, are potentially the most important type of network. Access to information and the ability to turn information into usable knowledge is becoming increasingly important. Information networks are typically groups of producers that have enough in common that they can learn from one another. For example, producers in the same geographic area have a common language to compare their operations and identify strengths and weaknesses. They also can share ideas on how they handled a particular problem. These networks operate on two simple principles: (1) You learn from your mistakes. (2) Life is too short to make all the mistakes yourself so learn from other peoples' mistakes.

Information networks are typically loosely structured. Groups may charge a membership fee to sort out the less committed individuals. They may use the fees to bring in consultants or speakers to address the group or to cover part of the cost of a study tour.

MARKETING

Producers may generate cost savings by networking with other producers to capture economies, in volume sales and purchases. For example, a beekeeper may not be large enough to buy HFCS by the tanker load, but a group of producers could, and share both the load and the savings.

Marketing networks may require an annual fee to insure a minimum amount of business from the members. Some networks require confidentiality statements to prevent members from taking the network price to another buyer or seller to try to get a matching bid outside the network.

PRODUCTION

Production networks are usually formal business arrangements. They typically require joint ownership of assets such as facilities or equipment. Production networks try to capture proven technologies that may not be possible for the individual.

Production networks typically require a financial commitment at first and a long term commitment to participate throughoutthe network. Because of the complexity of financing production networks, members should seek the advice of professionals.

EVALUATION

Networking's basic goal is for producers to gain access to markets, information, finance and technology. According to Lawrence, with any business arrangement there are pros and cons, and ultimately economics will drive the decision. Networking is no exception. However, networks are often hard to evaluate because the advantages are often purely economic and measurable. The disadvantages are often intangible.

One of networkings greatest benefits is allowing producers to capture technology they cannot access on their own. Examples include group marketing in tankload lots, multi-site processing facilities, and pooling labor and management.

Networking requires vision, leadership and commitment. Networks also require long term commitment that may require producers to forgo some short term gains. Successful networking often depends on the performance of its individual members. Some producers do not trust their neighbor to deliver the goods. Others do not want the responsibility of their fellow member's future in addition to their own. Often formalized agreements include checks and balances or contracts, but they require increased communication, business structure, and overhead.

SUMMARY

A network fits some producers quite will and others not at all. Producers may gain several advantages via networking. They may capture proven technology that is not possible or feasible to access alone. It may improve input and output marketing potential through more efficient purchasing and selling transactions. Most importantly networks allow producers to incorporate a systems approach to production. Networking's potential disadvantages include greater reliance on and commitment to other people (a trait uncommon in the beekeeping industry). Networking may require formalized business arrangement that results in more overhead. It may also lead to the loss of local markets and suppliers.

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One of Networkings Greatest Benefits Is Allowing Producers Access To Technology Not Otherwise Available

CALENDAR

♦BEEKEEPING TOURS♦

Australia: Trevor Bryant, beekeeping host and lecturer, will lead a comprehensive beekeeping tour of Australia January 25 - February 7 1996. The tour will focus on beekeeping in New South Wales, the region surrounding Sydney.

England: The National Honey Show in London extends a warm invitation to North American beekeepers to attend what has been described as one of the best honey shows in the world. Come to England, meet British beekeepers, show your wax and honey, hear the lectures and see the best in bee books and products. The hosts for this trip will be Eric Ward, Orpington Beekeeping Association, and Mary Fisher, publicity chairperson of the 64th national Honey Show.

For information on tours contact: Global Nature Tours, P.O. Box 555, Upper Marlboro, MD 20773-0555, Ph. (301) 627-4777 FAX. (301) 627-9754.

♦INTERNATIONAL♦

The International Arab Beekeepers Congress will hold their first meeting Aug. 16-19, 1996 at the Aquarium Hotel in Jounieh, Lebanon. Research reports will be presented. The meeting will be held under the auspices of the Lebanese ministre of agriculture and the Ministry of Environment.

For information, contact Rashid Yazbek, P.O. Box 90-1404 Jdeidet Beirut, Lebanon. Tel: 01-890644 FAX: (961) 1888678.

International Conference on Bee Products will be held in Israel May 26-30, 1996 at Dan Panorama Hotel & Convention Center, Tel Aviv, Israel.

For reservations or information, contact: Ms. Hagar Saad Dan Knassim Ltd., Exhibition Dept., P.O. Box 1931, Ramat-Gan 52118, Israe, Ph. 972-3-6133340, FAX. 972-3-6133341.

The Seventh Int. Symposium on Pollination will be in Lethbridge, Alberta, Canada, June 23-28, 1996.

For information contact K.W. Richards, Lethbridge Research Ctr., Lethbridge, Alberta, Canada T1J 4B1, Ph. (403) 327-4561. FAX (403) 382-3156.

♦ALABAMA♦

The Alabama Beekeepers Association will hold their annual meeting Sept. 16 - 17 at the Comfort Inn on Hwy. 31 in Birmingham.

Guest speakers include Dr. Jim Tew, Apiculture Specialist, University of Ohio; Steve Forrest of Brushy Mtn. Bee Supply; George Imirie, Certified Master Beekeeper, Rockville, MD and Ann Harman, Certified Master Beekeeper and columnist for *Bee Culture*.

For details contact Frank W. Little, 5728 Belle Ridge Trail, Irondale, AL 35210, 205-956-0526.

♦ARKANSAS♦

The Arkansas Beekeepers Association is its annual conference for November 10 & 11, 1995. The meeting is going to be held in North Little Rock at the Ramada Inn at 120 West Pershing Boulevard.

Hotel reservations should be made either through the Ramada's 1-800-228-2828 number or the direct line at 501-758-1851. Make sure you mention that you are with the group to get good hotel prices. For conference preregistration contact: Richard Coy, Treas. 109 Margie St. Brookland, AR 72417

♦CALIFORNIA♦

California State Beekeepers Association will hold its 106th annual convention November 13-17 1995 at Harrah's Hotel and Casino in South Lake Tahoe. We would like to extend a warm welcome to all beekeepers and anyone interested to attend our convention. Last year we had a great time visiting with our fellow beekeepers, listening to guest speakers, and entertainment. many took advantage of the many ski resorts in the area, and for those who felt lucky, the casinos. Plan to join us and bring yor family as there is plenty to do for all.

For more information contact CSBA Secretary Kathi Brandi, at 1518 Paradise Lane, Los Banos, CA 93635 (209) 826-8065.

The Los Angeles County Fair will be held Sept. 8 - Oct. 1. Hives are sure to appear when bees begin buzzing around the L.A. County Fair at Fairplex in Pomona. Decked in yellow and black stripes, bees will start arriving early September as part of this year's Bees and Honey exhibit.

Local hobby and commercial beekeepers will converge at Fairplex 4 to take part in various bee and honey competitions. Fairgoers looking for a little sting can attend these exhibits, throughout the 24-day event.

Beekeepers and their hives will compete in six divisions, including a competition which pits top colonies against each other. The competition will judge bees according to cleanliness and organization of the observation hive, appearance and social structure of the queen bee and her workers.

The extracted honey division features a tasting and judging competition of the honey form commonly used as a sugar replacement. Divided into classes based upon where the bees drink their nectar, the extracted honey is judged on criteria such as aroma, body, color and clearness.

The competition will hghlight other fruits of their labor, including chunk or cut comb honey, creamed or crystallized honey, design and structure of the extracting frame, pollen, beeswax and comb honey.

Sweeter than the honey is the possible prize money. Winning entries can earn cash awards of more than $1,000. "A Honey of a Trophy" will be given to the hobby and commercial winners who win the most ribbons. Past winners include Sandra Davall of Palm Desert and Vinciana's Natural Honey of Huntington Beach.

According to Roy Davis, Bees and Honey coordinator, visitors can also take an interactive part in the exhibits. Bee enthusiasts can taste the golden sweetener and nibble on the mouth-watering honeycombs. Fairgoers without a sweet tooth can peruse the observation hives enclosed in thick glass and apiarists-to-be can test their bee knowledge by identifying the citizens of these intricate colonies.

Come see what all the buzz is about at the 69th edition of the L.A. County Fair, to be held from Sept. 8 - Oct. 1. For more information, contact Fairplex at (909) 623-3111.

♦FLORIDA♦

The Florida State Beekeepers Association will hold its 75th annual convention October 26-28, 1995 at the Admiral Inn near the entrance of Cyprus Gardens in Winter Gardens, FL.

Display Index

Not My Favorite Thing...

howard scott

The job of extracting honey is messy, back-numbing, and dangerous. It's not something I look forward to every September, but when the time comes, I push through it quickly, as if the honey might disappear and I'd be left empty-handed.

First, I examine the hive and see that the honey supers are capped. Then I go up the street, and ask the girls – two women beekeepers in their 50s – to borrow their extractor and hot knife. They're always so far behind, they don't get to the task until mid-November, so there's never any problem. I put the extractor on my newspaper-lined dining room floor, plug in the hot knife, set it on a stainless steel tray, lug up the honey supers, and bring up the boxes of assorted jars I've been saving throughout the year. We're ready to roll.

The work is done in the house – as opposed to the basement – because I want the effort to be a 'we' project. If my wife and ten-year-old daughter won't help, they can at least experience my groans, curses and complaints at close range. Actually, my daughter will usually turn the extractor a few rotations before she get "exhausted." Every so often, at my prodding, she'll fill in. My wife starts out helping, but almost always becomes offended at my side-of-the-mouth grumblings, and ends with, "It's your hobby. I don't ask you to help me knit a sweater, do I?"

Frame by frame, I cut the caps off the cells. Sometimes, I make a smooth cut, peeling off two-thirds of the frame. And sometimes, I gouge too deep, so that a thick flow of honey puddles up, and I have to start all over again. Sometimes, the capping is uneven, and I have to burn the patches. When I get two frames in the extractor, I place one foot on the spigot, and spin the handle. Slow, fast, faster are my three speeds. My wife claims speed is not essential to getting all the honey out. But I am convinced that proper extraction demands rapid, extended motion – the faster the better – which means I am humped over the flywheel for several minutes at a time, turning the crank until I can't take it anymore. When I let it spin on its own accord, the extractor makes a whirring noise, not unlike the din of a busy beehive. On more than one occasion, the handle has come off and clattered against the wall, almost decapitating one of my pets. Although I've never gotten a hand caught in the spinning mechanism, I do realize how easy it is for industrial accidents to happen. When one side is done, I reverse the frames, and spin some more.

When the extractor fills up close to the bottom of the frames, I hoist the machine onto a chair, and open the spigot, letting the honey flow through a strainer into a jar. When one jar fills, I close the spigot, remove a jar, and replace it with a new one. At first, I'm very careful not to lose any honey, but after a while, I become slapstick, and let globs dribble down bottles, drop onto the floor, remain clogged in strainers, and find its way into my mouth on sucked fingers.

After a short while, my back is straining, my turning arm hurts, my body is crusted with dirt and perspiration, and my hands are so gunked with sticky honey that any contact creates a Velcro-like adhesion. There are grease smears, lumps of honey, dead bees, and wax particles on the floor, wainscotted woodwork, and me. Often, I'll run out of jars, and must scrounge around the house for empty containers I could use as temporary vessels. Once when I went up to the hardware store to purchase a case of mason jars, my fingers couldn't pull out any bills, causing all the boys there to christen me "Slick." To this day, when I walk in, someone yells out, "Hey, Slick, got any honey money for us."

With two hives, I have anywhere from 20 to 40 honey frames to process. And depending on my mood, strength, and family cooperation, I might complete the work in one night or two. I never let it go beyond a week because I can't stand the mess. Besides, when I visit my brother-in-law in Vermont in December, and see his extractor with two still-uncapped frames sitting on the coffee table, I can kid him about lolly-gagging with an honest conscience.

I know I have other options – purchase an electric extractor, give the frames to my bee supplier to do the job for me, do a little at a time downstairs over the winter – but somehow – I want to do it myself, want to wipe away the drops of sweat pouring down my brow, want to feel my fingers crimping from churning – as though I were guilty of not doing my share in creating this golden harvest, and this were penitence.

After cleaning up the mess, immersing myself in a hot bath, and washing out the extractor, I get my real reward. I stare at the rich golden-hued jars – true pleasure for all that hard effort.

About the time you'll be reading this, I'll be at it again.