Bee Culture

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Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

SEPTEMBER 1997 VOLUME 125 NUMBER 9

FEATURES

COVER

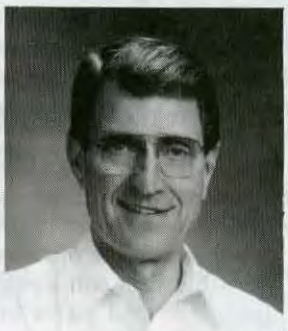
Red clover is seldom considered a good honey plant because the floret length is longer than a honey bee's tongue. This makes it difficult to reach the nectary. That's what I thought, anyway. In mid-August, a 30-acre field bloomed near my house, and I wandered over to take a few photos. 30 acres of any blooming crop is worth a picture or two. To my complete surprise the entire field was alive with foraging honey bees. Here is one of thousands of bees I watched. Sometimes you're better off going to see for yourself.

photo by Kim Flottum

DEPARTMENTS

COLUMNS

Lyman C. Root, Pg. 56



JOHN ROOT
Publisher

KIM FLOTTUM
Editor

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INNER COVER

In some quarters there has been much discussion about queens. Much more than usual. From where I sit, I hear from a lot of people about a lot of things going on – honey prices, the weather, equipment prices, politics, meetings, and this year, problems with queens.

This isn't new, but the sheer number reported this year caught me by surprise – until I had the same types of problems with our club's bees, that is.

Generally, the scenario went like this. Earlier this Summer the calls indicated that a queen would be received, but not accepted. *Lots* weren't accepted. I heard this, not only from the hobby folks, but commercial outfits, too. The queen wouldn't be released, or was superceded right after release.

Then, a bit later, queens were released OK, produced a couple of flushes of brood – good production, good patterns, then just . . . disappeared. Sometimes they were superceded, sometimes the colony went queenless; sometimes laying workers appeared, and sometimes the colony actually absconded.

Later still, queenless colonies were still showing up, but more often a new (probably a supercedure) queen was found. However, she wasn't laying, wasn't being followed, seemed to be a virgin. Often there were two, three, or five of these queens in a colony. All there, none producing.

Finally, the problems with the queens themselves seemed to take a back seat to what those colonies were doing. If a queen was producing, it tended to be, well, not spectacular. Small, spotty patterns, with little attention by nurse bees. The profile was of small populations that just never seemed to take off. And so they are now.

A hundred explanations have surfaced. Poor mating weather in the Spring. Poor nectar flows. Bad genetics. Mites, diseases, predators, BPMS, viruses, the phase of the moon.

All of these factors probably have been involved to some degree with some of the problems. And yet, there are beekeepers that have no idea why I'm writing this because they had no problems and made a good crop.

But again, the number of complaints reported to this office this year has me concerned. There was no part of the United States that seemed worse off than any other, but the North *may* have been, if only slightly. No breeder/producer was mentioned any more than any other, though some seemed to be mentioned a bit less than others. So location and source *seem* not to be factors.

Nor does the beekeeper. Raw beginners, middling hobbyists, old-timers, sideliners with years of experience, and commercial operators all reported, in their various experience-based languages, essentially the same things.

So what's going on? Maybe it's nothing. Maybe just one of those years when everything bad happens at the same time. Maybe Karma. Maybe it is the moon, or that comet that showed up earlier, or Mars. But I doubt it. Let me throw out some thoughts.

First, mating weather probably had some role here. The patterns for this are easily identified, and parts of the South did experience some crazy times this Spring.

But the later behaviors don't hold up to this explanation. It could be 'genetics.' Combinations of drones and queens producing, well, less than desirable colonies. There could be something here. With far fewer, far, far fewer feral colonies this Spring, the drone population must have been affected. If, as I suspect, there are fewer drones available, those around are supplied by the producer, and they may not be as good as he/she thinks they are. Or, placement may not be optimal for mating, or there may just be too few to accommodate thousands of virgin queens.

Another situation I suspect (and is being studied at Penn State), is that tracheal mite-infested queens are common. These mites tend not to cause noticeable problems in warmer climates so treatments may be passed up for the sake of economics. Or, the treatments may be ineffective. Whatever, infected queens come north and bang . . . they're gone.

In fact, all manner of virus problems could be creeping into queen production areas, enhanced by low-level *Varroa* mite infestations and manifesting themselves in a mated queen shipped north.

Continued on Page 44

About Queen Concerns; An Apitherapy Conference; and Pesticides.

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Bee Culture

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MAILBOX

'Raw' vs. 'Cooked'

The guest editorial in the July issue by Michael Meyer entitled 'Raw Honey Definition Needed' reminded me of a similar article quite a few years ago by Charles Mraz. He proposed that honey could be tested for enzyme activity as a way of determining if it had been overheated. I don't know the minimum temperature and time it takes to inactivate the enzymes in honey, but that would potentially be a good way to distinguish 'raw' honey from 'cooked' honey. At that time, I did a little 'playing around' in the laboratory with measuring glucose oxidase activity in honey, with the idea of using little paper disks impregnated with reagents that would turn color upon exposure to the active enzyme, but concluded that the activity of glucose oxidase was probably too low to be useful for a quick, simple indication of raw honey.

Nevertheless, that might still be a good approach for defining raw honey if an appropriate test were developed for an enzyme such as amylase, invertase or maltase, assuming that the inactivation temperature and time are appropriate for that purpose.

Mel Swanson
Carver, MN

Disappointed

Reading through the July issue of *Bee Culture* was very disappointing. The articles had no "meat" in them, that a novice like myself needs to grow on. This year (1997) will be my first full year of beekeeping. There are several new beekeepers in our county, as well. As I understand this is a growing trend, in the last year or so.

I would like to see more in-depth articles, more details, facts, etc. Many of us are very well educated, and will readily absorb such data. We need fact filled articles, by the experienced elders of beekeeping. The "hands on" type of data that contains the "do's and don'ts," of not only seasonal, but the day by day operation of an apiary.

Research topics are fascinating. Everyone must have a good grasp of the science of beekeeping, the biology and entomology of beekeeping. We need more "lab" science in articles to apply it to our methods, so we become more successful beekeepers.

Mike Lashbrook
Morton, IL

Editor's Note: *You bring up an interesting, and difficult question. Simply put, what is the purpose of this (or any, for that matter) magazine?*

Providing informative, educational, newsworthy and entertaining articles for thousands of readers, with a wide range of skills, experience and needs has been an ongoing challenge for this magazine.

A.I. Root published essentially the same letter (complete with in-depth criticisms and reviews) 120 years ago. That reader wanted more meat because he had already conquered the problems addessed in the issue in question.

Mr. Lashbrook, you, and many like you want the "hands-on" for daily and seasonal activities, research results and lab science. Meanwhile, others want commercial how-to, marketing info, very beginning how-to, politics, humor, sideline basics and some editorial on occasion.

In 12 months you will get all of these, and more. But in an average 60 pages a month, you won't get everything every month. Can't be done. Not by us, the other Bee Journals, my Woodworking magazine, my Gardening magazine or my magazine magazines.

In the meantime, take note of the many books available on our subject. These, or at least many of them, have the freedom to focus on a subject and explore it in-depth, looking at every facet of a subject.

Magazines will solve (to paraphrase Abe Lincoln) all problems for some people, some problems for all people, but not all problems for all people.

But we try, 60 pages a month, 12 months a year.

How Dry Is It?

It is dry around here. So dry that after 50 years of beekeeping I saw a first. You know these ribbons you put on a fence to mark it. Well I saw three honey bees trying to get nectar out of them.

Leo Nibert
Indiana, PA

World of Research

You address the hobby-interest and commercial. Now why not wake up to the growing field of research – The Medical World?

Are you aware that within the last five years there was a real, funded, official research – which should be all wrapped up – on Bee Venom Therapy for M.S?

Have you truly addressed why babies should not have honey?

How about pollen and allergies – not the quack stuff – but the real stuff.

And much, much more.

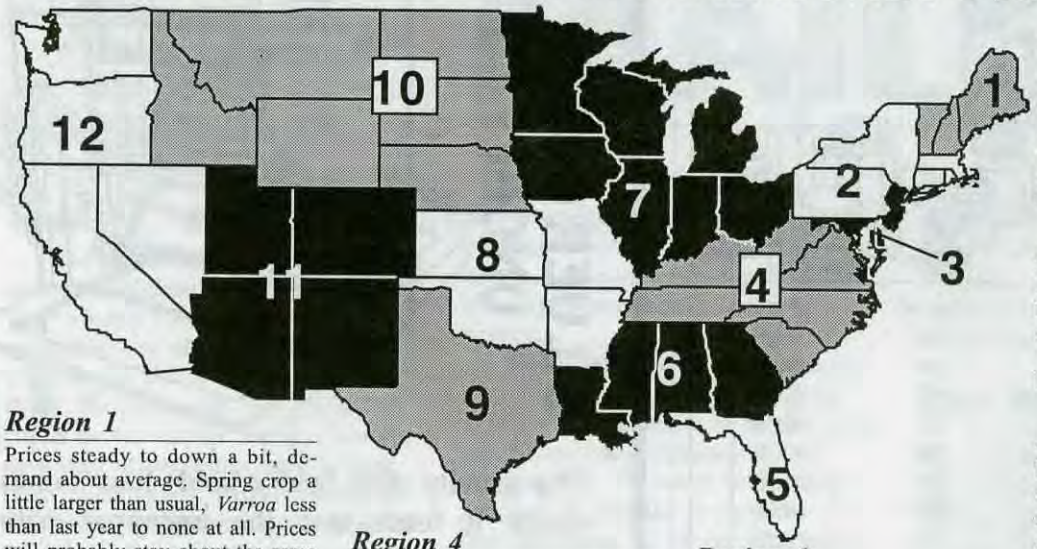
In the end this material will be another added 'sales' benefit for the honey business. Don't get so hung up on commercialism. The world does not all together rotate on the 'Big Guy.'

Big guys came from the trial, errors and successes of the 'Little Guy.'

Please don't start to build a forest without looking at some of the different trees that make up the whole forest.

Laura Rendable
Esmond, ND

SEPTEMBER – REGIONAL HONEY PRICE REPORT



Region 1

Prices steady to down a bit, demand about average. Spring crop a little larger than usual, *Varroa* less than last year to none at all. Prices will probably stay about the same to increase a little, according to reporters.

Region 2

Prices steady to down just a little since last month. Demand steady to increasing with new crop in. Spring crop larger than average generally with few reports of reduced crop. *Varroa* essentially nonexistent but some still around, and the Fall crop looks to be just about average. Prices will stay about the same for the time being.

Region 3

Wholesale prices down, retail up for the month. Demand steady to increasing somewhat. Spring crop about average, a little *Varroa* showing up, Fall crop looks about average. Prices will remain steady.

Region 4

Prices steady to down a little since last month, demand average to increasing a little for this time of year. Spring crop down this year, *Varroa* very low, and Fall crop looks only average. Prices will stay steady to increase 3-5% this season, according to reporters.

Region 5

Prices steady overall, but moving around on some products wholesale and retail. Demand steady. Short Spring crop, *Varroa* here and there, but flaring up some places. Fall crop about average and prices will remain steady to down a bit.

Region 6

Prices steady, demand mixed but more down to average than up. Spring crop mixed, but about average, *Varroa* here and there but not a problem, Fall crop looks average. Prices will stay the same to decrease, according to reporters.

Region 7

Prices up at retail, but sliding at wholesale. Demand steady to increasing a bit with new crop. Spring crop smaller than average, but spotty. *Varroa* here and there, and Fall crop looks to be average to up just a hair. Prices will remain steady to increase 5-10%.

Honey Reporters Needed In Regions 9 & 10. Call 1-800-289-7668, Ext. 3214 or 3215

Region 8

Prices up strongly since last month, especially at retail level. Demand steady to increasing. Spring crop generally great, *Varroa* low to nonexistent and prices will remain steady to rise a little.

Region 9

Prices down sharply at wholesale, but rising at retail. Demand only steady. Spring crop about average, *Varroa* nonexistent and Fall crop looks about average.

Region 10

Prices down at wholesale, way down. Producers uncertain of crop, so are unsure of future prices. Demand only moderate wholesale, weak at retail. Summer crop will make or break.

Region 11

Prices down wholesale, steady at retail while demand only steady at both. Spring crop mixed, *Varroa* populations all over the map and Fall crop outlook confused, but average at best. Prices will remain steady, according to reporters.

Region 12

Prices about steady, but moving around some at all levels. Demand steady but a few spots indicate increase. Spring crop about average overall, but definitely regional. *Varroa* showing up but not serious. Fall crop looks about average and prices will stay about the same, according to reporters.

	Reporting Regions												Summary		History	
	1	2	3	4	5	6	7	8	9	10	11	12			Last	Last
Extracted honey sold bulk to Packers or Processors													Range	Avg.	Month	Yr.
Wholesale Bulk																
60# Light	66.12	66.71	67.50	71.25	64.50	61.50	66.33	76.50	66.93	66.93	63.75	67.57	54.00-87.00	67.55	68.30	65.52
60# Amber	61.59	65.08	60.00	63.00	54.00	58.33	60.83	68.33	64.50	63.68	61.50	61.50	51.00-87.50	64.24	34.83	62.26
55 gal. Light	0.92	1.04	1.10	0.94	0.85	0.96	1.00	1.00	0.94	0.99	0.89	0.92	0.66-1.23	0.94	0.94	0.92
55 gal. Amber	0.86	0.96	0.88	0.92	0.80	0.87	0.95	0.88	0.89	0.94	0.82	0.87	0.66-1.15	0.91	0.91	0.84
Wholesale - Case Lots																
1/2# 24's	29.46	26.58	32.89	32.28	32.89	40.50	27.24	32.89	32.89	31.50	28.75	30.65	20.40-48.00	29.11	30.64	28.78
1# 24's	40.76	39.95	38.40	42.84	46.40	20.90	40.78	39.36	40.29	39.26	46.33	47.03	32.40-54.00	43.09	42.03	38.30
2# 12's	38.94	36.08	40.20	45.48	39.50	36.90	39.81	38.40	40.49	44.48	42.07	36.00	29.40-48.00	37.39	37.90	34.18
12 oz. Plas. 24's	34.74	36.39	38.40	36.44	30.50	34.20	33.93	33.60	35.98	34.58	42.17	33.79	15.56-48.00	35.44	33.86	33.52
5# 6's	38.88	43.66	46.50	45.42	39.38	39.20	35.68	39.00	41.75	43.73	37.63	36.55	31.80-52.50	41.22	**37.47**	**36.99**
Retail Honey Prices																
1/2#	1.82	1.52	2.83	2.17	1.29	1.71	1.88	1.89	2.19	1.99	2.40	1.74	1.09-2.96	1.76	1.84	1.73
12 oz. Plastic	2.19	2.18	2.50	2.39	2.23	2.31	2.15	2.18	2.22	2.32	2.50	2.19	1.59-2.99	2.22	2.21	2.11
1 lb. Glass	2.63	2.52	2.75	2.67	2.10	3.16	2.58	2.68	2.85	2.87	3.05	2.82	1.99-3.75	2.67	2.79	2.49
2 lb. Glass	4.33	4.37	4.95	4.66	3.85	4.84	4.23	4.13	4.50	4.11	4.65	4.47	3.29-6.09	4.42	4.53	4.28
3 lb. Glass	5.70	6.28	5.75	6.07	5.25	6.18	5.58	4.94	6.05	5.95	6.05	5.95	4.50-8.00	6.08	6.16	5.33
4 lb. Glass	6.65	7.31	6.49	6.91	7.50	8.50	8.68	7.49	6.59	7.49	6.49	6.40	6.00-10.25	7.74	7.55	6.97
5 lb. Glass	8.97	9.84	9.75	8.65	7.63	10.00	9.22	10.19	9.19	9.49	9.19	9.02	6.69-12.95	9.06	8.80	8.47
1# Cream	3.08	3.01	3.41	3.25	2.50	2.96	2.70	2.90	3.11	3.41	4.03	3.26	2.19-6.00	3.13	3.30	2.89
1# Comb	4.26	3.96	4.77	4.33	4.77	4.00	4.18	3.75	4.17	4.49	6.65	4.42	1.95-6.00	4.19	4.14	3.86
Round Plastic	3.66	3.06	3.00	3.42	4.76	4.00	3.11	3.74	3.96	4.16	6.25	4.06	2.60-7.50	3.86	3.81	3.50
Wax (Light)	2.77	3.14	2.00	2.33	1.98	2.93	2.23	2.25	3.07	3.19	2.30	3.36	1.75-6.00	3.04	2.66	2.48
Wax (Dark)	2.46	3.11	2.00	2.13	1.60	2.50	1.97	3.06	2.96	2.16	2.02	2.58	1.20-6.00	2.62	2.44	2.11
Poll. Fee/Col.	36.30	41.50	30.00	35.63	25.00	34.00	38.57	40.00	39.00	40.00	45.00	32.25	15.00-55.00	34.03	35.58	31.75

Roger Morse

Research Review

"Natural selection must act between *groups,* not between members of groups."

It is widely accepted that we and the plants and animals around us are what we are because of natural selection – more bluntly put, the fittest survive. However, this is generally thought of in terms of individuals. In the article I review below, it is stated and defended that groups of animals (colonies), such as we find in the social insects, may be controlled by the same guidelines. In other words, we should think of a colony not as a collection of animals but as an individual, and that colonies may face natural selection as do individuals.

In the case of group (colony) selection, there is a key that must be thoroughly understood: There must be natural selection between groups and not within a group. Within a group there can be no infighting or differences of opinion. And that is exactly what happens in honey bee colonies, which are the best known and understood of the social insects that operate at the group level. For example, bees in a colony never steal from each other however, robbing between colonies may take place anytime there is a shortage of food or any opportunity to do so.

To defend the thought that group selection and evolution may take place at the colony level, the author, Thomas Seeley, presents data from three experiments on the food collection process. I have reviewed some of this research earlier but not in the context of natural selection. Seeley writes, "These findings demonstrate that a colony of honey bees, like an individual bee, or a cell within a bee, is an exceedingly intricate piece of biological machinery whose parts cooperate closely for the common good."

Example 1 On a typical day, hundreds or thousands of bees leave their home to seek food. These bees go in many directions, and several miles if necessary. After each bee has collected a load, she returns to the hive, unloads her food, and returns to the field. In this manner, foragers from a colony cover a large area and collect what is available.

In the first experiment, a colony with 4,000 bees, all marked with numbered, color-coded discs was used. Approximately 10 bees were trained to each of two feeders, one about 400 yards north and the other 400 yards south of the colony. This was done in a forested area where little other food was available. The bees were trained with a weak sugar solution rich enough to attract their attention and cause them to collect it, but not enough so as to cause them to dance and attempt to recruit more bees to the feeders.

On the test day, the food at one of the sites was enriched. The results were striking. The foragers at the richer site recruited vigorously, and many more bees visited it, demonstrating that profitability is a factor in recruiting new foragers. At noon, the food sites were reversed, with the poor site receiving rich food and the quality of the food at the rich site being reduced. The results were again dramatic, with the bees at the former rich site no longer dancing and recruiting bees and those at the enriched site becoming the recruiters. "The richer the food source is, the stronger it is advertised," wrote Seeley.

Interestingly, it was found that bees ready to be recruited followed only one dancing bee. They did not waste time trying to determine which site was best by following several dancing foragers. But since foragers at the richer site danced more and for longer periods of time, the number of bees recruited to the rich site was greater, to the colonies' benefit.

Example 2 The quantity of food available varies from day to day as blooms change. Seeley shows that bees vary their degrees of acceptance depending upon what is available. If it lowers its acceptance rate when food is scarce, the colony "minimizes its probability of starvation."

To study how the dance threshold varies, a colony was taken to a forested area where only raspberries were in bloom in early July. Under these conditions, the colony gained weight, and the dance response by those trained to nearby feeding stations was low. However, in late July, after the raspberries were no longer in flower and no other food was available, the dance threshold was soon lowered.

Example 3 The last example discussed was the nectar-processing rate versus the nectar-collecting rate. Foraging honey bees do not deposit the nectar they collect in cells but give it to house bees that process it further (adding enzymes and reducing the moisture content).

What Seeley observed is that when food becomes more abundant, and foragers are more successful, they may have difficulty finding house bees to take their food for processing. How does the forager respond? She does so by performing another dance, the "tremble dance" that recruits receiver bees. This was demonstrated by again giving the bees an enriched food. Usually, foragers found a receiver bee within 20 seconds, but when the time needed to find such a bee was more than 50 seconds, most foragers responded by performing the tremble dance. BC

References:

Seeley, T. D. *Honey bee colonies are group-level adaptive units.* The American Naturalist 150: S22-S41. 1997.

Mark Winston

Extreme Beekeeping

"Severe cold and deep jungle are two difficult environments under which I have seen beekeeping, but political extremes also have impressed upon me the problems encountered by people keeping bees."

I was up visiting the Yukon in April of this year, invited by the Yukon Science Institute to present lectures on "Killer Bees" at various locations around the territory. This was not your typical "scientist presents public lectures" trip. One talk, for example, was in Haines Junction, one of the largest cities in the Yukon, population 600. The town is located in sight of the Kluane wilderness region, the largest permanently ice-covered terrain in the world outside of the two poles. Another lecture was to a fifth-grade class in a town south of the capital, Whitehorse. Walking into the classroom, I traversed halls lined with snowshoes and cross-country skis, the normal mode of transportation for kids going to school.

Everything in the Yukon is extreme. The population is extremely low; only 35,000 people in a territory that is considerably larger than New England, and 25,000 of them live in Whitehorse. Every conversation I had began with a story of a recent extreme wilderness expedition involving skiing into remote, high-avalanche areas for a week or two of back-country skiing, and ended with descriptions of plans for Summer hikes into inaccessible places, or canoe trips down river routes infested with grizzly bears and the world's largest mosquitoes. This is country where the sun barely emerges during the very long Winters and hardly ever sets in the too-short Summers, where dog-sledding is still the best way to travel between many remote villages and homesteads.

It is also home to one of the most extreme environments for beekeeping anywhere in the world. Not that southern Canada is mild; I have always been impressed by Canadian beekeepers in the central provinces of Alberta, Saskatchewan, and Manitoba, who produce enormous crops of honey in short Summer seasons, and manage to keep bees alive during long Winters. Indeed, Canada consistently holds the world's record for highest annual honey crops produced per colony, often upwards of 300 pounds *on average.* The secret to this astounding honey production is the long daylight hours in the north during the Summer, with bees beginning to work as early as 3 a.m. and not stopping until close to midnight. This hard-working ethic is coupled with magnificent acreage of honey-producing crops such as clover, alfalfa, canola, and sunflower. I have seen hives 10 supers high filled with honey, places where you can watch the pointer move upward on a scale with a hive on it as a colony gains weight during the long Summer days.

These prairie beekeepers have no problem managing their bees in the Summer, except for sore backs from lifting too many tons of honey. Winter, of course, is another story. The Canadian prairie provinces experience temperatures as low as -10° to -30° F, sometimes for months at a time, interspersed with occasional warm spells during which the bees may even start flying. The solution to the cold weather in the past was package bees, with most beekeepers killing their bees in the Fall and importing new packages the next Spring. However, border closure to bee importation from the continental United States changed all that, and our prairie beekeepers were forced into learning how to winter their bees if they wanted to stay in the business. Learn they did, with enormously inventive techniques for keeping bees alive using both indoor and outdoor wintering methods.

The achievement of our prairie beekeepers in maintaining colonies under these conditions is notable, but as extreme as these environments are, the Yukon goes further. As cold as it gets on the Canadian prairies, the Yukon is colder. As long as the Winter may be on the prairies, it is longer in the Yukon. While the prairies have considerable acreage of honey-producing crops, the Yukon has virtually no agriculture. Yet, beekeepers keep bees here, with one character I heard of claiming to produce 500 pounds of honey a year from his hives, mostly from Spring dandelion and Summer fireweed and alpine flowers. Some Yukoners put their bees in lined cellars for the Winter; others kill their bees off in the Fall and import packages from New Zealand, Hawaii, Australia, and yes, even relatively warm southern Canada in the Spring. I encountered one young female Yukon beekeeper who had just finished high school, and was planning on starting a 1,000-hive commercial beekeeping operation based on wintering some bees in the Yukon and others in southern Canada. From her determined voice and her let's-just-get-it-done atti-

Continued on Next Page

"The whole scene quickly became extreme, and surreal, as we went through hives surrounded by armed guards, with beautiful tropical mountains surrounding us, and the livelihood and possibly even the life of this poor beekeeper dependent on what I, the North American expert, thought."

EXTREME BEEKEEPING ... Cont. From Pg. 15

tude, I have no doubt that she will succeed.

This trip to the Yukon made me think of other extreme beekeeping situations I've seen, and they haven't always involved cold. One of the most difficult environments for beekeeping is the tropical South American jungle, where flowering trees are the main honey source, army ants the major cause of colony death, and the bees themselves the principal problem for beekeepers. A flowering tree can produce a lot of honey, but rain forest trees are dispersed so widely, and their nectars so dilute, that beekeeping in the jungle is not an easy task. Also, the jungle experiences a wet season of four to five months each year when little is in flower, and many colonies either die or abandon their nests to seek better forage elsewhere.

Army ants are another major beekeeping problem, with millions of marauding individuals swarming over bee colonies, wiping out the bees in prolonged attacks that can last for days. These ants are the major predators of termites, wasps, bees, and other ant species in the rain forest, but there are additional predators that can cause considerable problems for beekeepers. Giant toads sit at colony entrances, eating incoming and outgoing worker bees one by one until the toads' stomachs become engorged with thousands of bees. Anteaters with their long, sticky tongues wander into apiaries and slurp up bees, and termites munch on wooden hive bodies until the colony collapses into a pile of sawdust.

It is not surprising that the Africanized bee evolved to be so aggressive, with all the natural predators that attack these bees in their native Africa. This aggressive behavior is highly adaptive in the wild, but poses a serious problem for South American beekeepers. While there is no question that beekeeping in Latin America has survived these bees, and many colonies can be managed, others erupt in ferocious attacks by thousands of individuals within a few seconds of disturbance, a frightening and potentially life-threatening experience for even the most stalwart of beekeepers. Finding a site to place an apiary of these aggressive bees can involve negotiations as prolonged and detailed as a treaty between nations, and moving a colony of Africanized bees from one place to another requires logistical planning similar to a military campaign.

Severe cold and deep jungle are two difficult environments under which I have seen beekeeping, but political extremes also have impressed upon me the problems encountered by people keeping bees. I recall one trip I took to El Salvador during the 1970s when the leftist guerrillas were conducting a major war against the elite families who ran the country at the time. I was conducting a pre-Africanized bee survey of beekeeping in Central America, and foolishly accepted an offer from the head of one of the ruling families to visit his beekeeping *finca*, or farm. He picked me up from my hotel in the capital, San Salvador, and we convoyed into the countryside in armor-reinforced jeeps, with the lead and rear vehicles bearing machine guns and other heavy weaponry that looked to me as though it could repel a small army. We were stopped at a roadblock along the way, and as we inched past the soldiers guarding the road, I saw three headless corpses neatly lined up along the roadside, attended by wailing relatives.

We went to visit the head beekeeper when we reached the *finca*, and he took us on a tour of the hives, protected by patrols from the leader's private guards. The beekeeper obviously was terrified of his boss, and particularly because it soon became apparent that I was supposed to comment on the condition of the hives and on how well the head beekeeper was keeping the chief's bees. The whole scene quickly became extreme, and surreal, as we went through hives surrounded by armed guards, with beautiful tropical mountains surrounding us, and the livelihood and possibly even the life of this poor beekeeper dependent on what I, the North American expert, thought.

What made the situation even worse was that the colonies were in terrible condition, and the boss had no idea whether they were in good or bad shape. The beekeeper knew that the colonies were poorly kept, and from the look on his face he seemed to know that I knew it, too. Perhaps he was not given enough resources to manage them properly, or his poor management was a political act against the owner, or maybe he was just a bad beekeeper. Whatever the problem, I praised his skills, and complimented the chief on having some of the finest hives I had seen during my visit.

When we returned to San Salvador, I canceled the rest of my trip and flew out on the next available flight. I had enough of that type of extreme beekeeping; I'll take the cold, free climate of the Yukon any day. BC

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

?DO YOU KNOW?

Survival & Adaptation

Clarence Collison

Recent trips to Arizona and California reminded me of the extreme conditions under which living organisms are able to adapt to their surroundings and survive. The long periods of drought combined with intense heat forces desert organisms to conserve their meager water supply and rapidly take advantage of resources when they become available.

Bees require a constant supply of nectar and pollen during their active seasons plus sufficient quantities to store up surpluses for periods of dearth and during the winter season. This requires a succession of blooming plants during the growing season, and such situations are not to be found in all parts of the country. At certain times of the year, colonies often get only enough nectar and pollen to maintain brood rearing but insufficient quantities to store a surplus. Water is also a necessity and is generally present and available except in most desert locations, where water has to be supplied.

Take a few minutes and answer the following questions to find out how well you understand bee behavior and biology in relation to the bees ability to adapt to various conditions for survival.

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. ___ Honey bees live in all parts of the world except the extreme polar regions.
2. ___ Honey bees are indigenous to North America.
3. ___ The integument or exoskeleton of adult honey bees protects the bee from desiccation.
4. ___ Guard bees are usually not aggressive toward foreign workers that enter the hive with a load of food.
5. ___ Honey bees respond to increasing carbon dioxide levels within the hive by fanning.
6. ___ Honey bees are opportunists, robbing both honey and pollen from unprotected combs or weak colonies.
7. ___ The protein content of different pollens is highly variable, therefore a mixture of pollens from several different floral sources is necessary to provide a colony a balanced diet.
8. ___ Water is temporarily stored in the hive within the honey stomachs of hive bees and sometimes in cells of burr comb.
9. ___ The natural diet of adult worker honey bees switches from heavy reliance on honey and nectar to pollen as the bee ages.

(Multiple Choice Questions, 1 point each)

10. ___ Humidity in the hive and in a cluster of bees under normal conditions is maintained at ___ per cent.
    A. 80-90
    B. 50-60
    C. 20-30
    D. 40-50
    E. 60-70
11. ___ The minimum temperature for active foraging is approximately:
    A. 45° F
    B. 40° F
    C. 50° F
    D. 55° F
    E. 60° F
12. ___ Honeydew is often an important food source and originates from:
    A. Floral nectaries
    B. Extra-floral nectaries
    C. Plant resins
    D. Anthers
    E. Secretions of plant feeding insects
13. What are the four dietary materials supplied honey bees by pollen? (4 points).
14. Name two internal structures in adult honey bees that are involved in regulating the water balance in the blood. (2 points)
15. Name two ways in which the honey bee colony uses water. (2 points)
16. Sugars are one of the principle components of the honey bee diet. Name two ways in which honey bees use the sugars. (2 points).

Geological history indicates that bees and the flowering plants (angiosperms) have been intimately associated with each other for 60 to 100 million years. Bees have assumed the major role for pollinating the flowering plants of the world. Bees likely evolved from a wasplike ancestor and the bee's bodies and behavior have become marvelously adapted for their work. Bees have exploited the pollen niche for protein food in place of insects, spiders and other animal sources used by their wasplike ancestors.

17. Name three ways in which the bees have adapted to assume their major role as pollinators of the flowering plants. (3 points).

ANSWERS ON PAGE 45

$CASH FLOW$ MANAGEMENT

Bryan Milling

"A growing, profitable business may be in the midst of a cash flow crisis."

If this statement surprises you, then you may harbor a common misconception about the actual operation of the cash flow in a business. That misconception becomes a problem when you can't pay your bills due to an unforeseen gap in your cash flow. Indeed, neither a rising sales volume, nor a profitable operation spontaneously produces a positive cash flow.

You need the proper perspective of the cash flow process to operate your business successfully. To help orient that view, we'll use the case of Drake Sales, Inc. – a wholesaler located in Dallas, Texas. Drake's experience illustrates how the cash flow actually operates in a business and also emphasizes the danger in holding any misconception about that process.

Dan A. Drake – a dynamic salesman with little financial expertise – began Drake Sales in 1987. Although profits were slim, the business grew to a $100,000 monthly volume by the latter part of 1991.

In December of that year, Drake initiated an expansion program designed to produce a 50 percent increase in sales and place operations on a highly profitable basis.

The program was an immediate success. Sales increased from $100,000 in December, 1991 to $150,000 in January of 1992. Moreover, as the company's simplified income statement indicates, the higher volume was very profitable. It generated $15,000 in earnings in the first month.

Income Statement 1/1/92 - 1/31/92

Sales	$150,000
Cost of Sales	(105,000)
Operating Expenses	(30,000)
Earnings	$15,000

Unfortunately, Drake couldn't enjoy his success. Despite its profitability, the rapid sales increase lead to a **$25,000 negative cash flow** in the same month. In fact, by the end of January, Drake Sales was out of cash!

Two facts are especially noteworthy about this unhappy event.

First, the deficit cash flow was not the result of any extraordinary event. As you will see below, it followed naturally from predictable relationships among the major elements in the company's cash flow.

Second, the negative cash flow came as a complete surprise to Dan Drake. He had assumed that his higher volume and increased profits would automatically lead to a positive cash flow. Drake was a victim of the "fallacy of financial profits."

The fallacy of financial profits exists any time you forget that the income statement on your business is an "accrual accounting" statement, and not a cash flow statement. An accrual statement reflects standard accounting principles that require recognition of sales when they occur, and not 30 days later when you collect the accounts receivable that proceed from the sales.

Similarly, you *accrue* most expenses as incurred, although you may disburse the cash to pay these bills in the following month. (Some expenses – i.e., depreciation and amortization of prepaid items represent prior cash disbursements. These items complicate the picture presented by accrual statements even further.)

You need accrual accounting to tell you how you are doing in your business. It's the only way you can measure your performance – profit and loss – over a specific period by correctly matching revenue and expenses.

However, *accrual accounting does not reflect your actual cash flow.* Accrued sales do not represent cash receipts. Nor do accrued expenses represent cash disbursements. Thus, you can't rely on your accrual accounting statements to manage the cash flow in your business.

Confusion about these facts leads to the fallacy of financial profits and opens the door to potential financial embarrassment, such as that suffered by Dan Drake. His company did accrue a $15,000 financial profit in January, but that didn't coincide with his cash flow.

The proper view of your cash flow comes from a "cash accounting" statement.

Cash accounting reflects the actual timing of the cash flow through your business. It recognizes the timing of all cash receipts – whether from loans, cash sales, or collection of accounts receivable. It also recognizes the timing of all disbursements to pay expenses, retire accounts payable, or amortize debt.

A historical cash flow statement

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Cash Flow Management requires a clear distinction between accrual and cash flow accounting.

CASH FLOW ... Cont. From Pg. 19

analyses actual cash flow over a specific period – for a week, or a month, or a year. A projected statement – based on historical trends – predicts future cash flow.

Had Dan Drake recognized the difference between accrual and cash flow accounting – and projected his needs accordingly – his $25,000 deficit would not have come as a surprise.

A look at Drake's cash flow statement for January illustrates that point. The statement reflects the characteristics of the major elements in the company's cash flow as follows:

1) He has $10,000 in cash on hand at the beginning of the month.
2) Accounts receivable turn in 30 days; Drake collects 100 percent of the prior month's sales. The company has no cash sales.
3) Drake purchased $105,000 in inventory in December to meet January's forecasted sales volume. To maintain his credit rating, Drake pays for every purchase within 30 days.
4) Drake needs $30,000 in cash each month to pay current and previously accrued expenses.

These elements interacted naturally to produce Drake's problem.

Cash Flow Statement
1/1/92 - 1/31/92

Beginning Cash	$ 10,000
Add: Collection of December Sales	$100,000
Total Cash Available	$110,000
Less: Operating Expenses	($ 30,000)
Payment For Purchase	($105,000)
Total Cash Required	($135,000)
Cash Deficit at 1/31/83	($ 25,000)

Thus, a $15,000 profit – measured correctly by accrual accounting – translates into a $25,000 negative cash flow. The $40,000 difference emphasizes the difference between accrual accounting and cash flow accounting.

Of course, Drake didn't actually have a deficit cash flow. Instead, he deferred $25,000 in payments due to suppliers, absorbing modest injury to his payment record.

While not disastrous, the injury was avoidable. Drake could have predicted the deficit with a simple cash flow projection, and then filled the projected gap with a bank loan, additional investment, or perhaps by accelerating collection of his accounts receivable.

Drake's experience emphasizes a primary tenet of cash flow management. That is, when you set down your financial projections, you must differentiate between accrued sales and expenses, and the timing of the actual cash flow associated with those transactions. Failure to make that distinction can lead to the financial (and personal) embarrassment of a sudden cash flow squeeze.

To underline the point, remember this example as a basic Cash Flow Concept: Cash flow management requires a clear distinction between accrual and cash flow accounting. BC

Bryan Milling is a syndicated financial analysis writer.

THE DIRTY BUSINESS OF KILLING BEES

James E. Tew

It's an odd situation. Beekeepers, by their very name, "keep" their bees alive and productive. But by becoming so familiar with their bees, and their biology, beekeepers also become very aware of how bees can be killed.

I have never known anyone who actually *enjoyed* the job of killing bees. There has never been a moment when I have been with someone who abruptly said, "Hey! Let's go find some bees and kill them!" Killing bees is always dirty business.

In a way, it's funny. Beekeepers work diligently NOT to kill bees.... "give adequate ventilation"... or ... "water those packages down" ... or ... "don't leave them closed up too long" ... and yet, all too often, something goes wrong and bees die. I've told you this story before, but it applies in this instance. Many years ago, while I was still quite new to Ohio, I was asked by the Ohio State Beekeepers' Association to bring three beehives to the Fall state meeting. The early November morning of the meeting was cold, and there was frost all over. I selected three good two-story colonies. Since the trip to the meeting site was fairly short – around 45 minutes – rather than disturb the bees by pounding on entrance closing devices or fitting folded screen wire into the entrances, I simply pulled up tufts of frozen grass and weeds and jammed the entrances closed.

As I loaded the three grass-stuffed colonies onto an open trailer, I worried about the colonies becoming too cold on the short trip, But I reassured myself that the trip was not that long, and away I went with three hives in tow. I had a few problems finding the exact place for the event, but I did find it in short order. All totaled, the trip took about an hour. I was to be there just in time for a pre-lunch "Open Hive" demonstration, and in fact, I was. When I arrived, I immediately sat the hives off - thinking to myself how smoothly this had all gone. No bees flying, no hive confusion – all was at peace. Straightaway, I snatched the grass from the opening of the first colony expecting to see a few bees fly out. Nothing. The day was warming nicely, and the sky was blue. Without much thought, I opened the remaining two colonies – each time getting no bee flight. This was puzzling. Were they still that tightly clustered? Expecting defensive bees to fly out, I gingerly opened one of the colonies – just a bit at first. Then more, to the point of removing both the outer cover and the inner cover.... Now, I don't remember a sense of horror or anger, but only one of absolute surprised disbelief. The colony was dead from overheating and suffocation. I spun around, checked another colony – dead, too. With an unconscious short prayer on my mind, I gave all my attention to the last unopened colony - "Please be there for me. People are expecting *live* bees today." It was not to be. All three colonies were dead from overheating or suffocating or some combination of both. This all happened in one hour on a morning that the temperature was around freezing. At just that moment, the beekeeper crowd - looking like a herd of cows - came ambling my way. It was an embarrassing day for me. I had accidentally killed my bees. What did I learn from all this? I learned that bees can readily be killed by suffocation or overheating.

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KILLING BEES ... Cont. From Pg. 21

Though that story describes a serious mistake, one that advanced my bee education, it was an honest error. Still, I felt terrible. Under what kind of conditions can you use your experience to intentionally kill bees and not feel terrible? Remember now . . . as though any of you could ever forget . . . honey bee populations are at their lowest in years, mites are killing feral colonies all over, honey prices are high, and honey bees are needed for pollination services. Why on earth should bees ever be killed?

Here's a troublesome example of a bee eradication situation that happened recently. A small rural church had hollow bricked columns supporting the front portico. Honey bees had taken up residence in one of them. The brick mortar was failing, thereby giving the bees several openings to the brick column. Also, bees were freely using weep holes (holes left intentionally in brick walls to allow moisture to escape) as entrances. What a solid bee hive they had found. The bees were literally unapproachable. However, on Sundays, with everyone dressed and smelling fine, the bees would fly sorties from their brick hive. They were immediately unwelcome.

What to do? Since it supported part of the roof, to open the column would have been expensive and would have required construction knowledge to restructure the whole mess. Using traditional methods that trap bees outside would only have made Sundays worse. Leaving them alone only gave the parishioners a bad attitude about all honey bees and about beekeepers who had not been helpful. With all that in mind, on Saturday morning, the decision was made to exterminate the bees. It took two spray episodes to kill the bees out. All entrance holes within the column were chinked as well as possible to keep out future swarms. There was no easy way to fill the cavity.

Having to spray the offending nest more than once is common, if not gruesome, from a bee lovers view. What often happens is that most of the adult population is killed, leaving brood of all stages. Larvae and eggs die, but in many cases much of the capped brood will emerge - especially in warm climates (92-95°F). This gives a new burst of adult bees to the devastated colony, making it look as though the colony returned from the dead. It can be as long as a week later before the call comes from the exasperated home-owner – "The bees are back!" Normally, the second spraying will finish the job. But what if it doesn't?

I was recently involved in a bee-eradication project in Alabama. A local beekeeper got a pleading phone call to come address a honey bee problem. A concerned mother reported that a bee colony had lived in the wall of their small, wood-framed, rural home for years with no ill effects. Suddenly they were getting into the house and were crawling on the floor and flying to the windows in considerable numbers. The children had been stung several times, especially a crawling child who was particularly hard hit. The parents were concerned. It was an old, well-built house but only lightly insulated. From the outside, the bees were getting in around ill-fitting weatherboard joints near a window. From there, who knows where they were going within the wall. The primary opening was about eight feet off the ground on the west side of the house. It was a good colony exhibiting lots of flight. Through the window, we could see bees on the inside of the window glass trying to get out.

Opening up the wall of a house is always a serious undertaking - especially if it is a house you don't own. The overlapping siding would have required that the weatherboarding be taken off from the eave of the house down to the nest entrance, and the trim would have to come off the windows. The wall of the house was also protected by high shrubbery, and it was hot in there. At this point, you have to make a decision. The house can be opened up with all the concomitant problems or the bees can be sprayed and things all kept much simpler. The decision to be made is based on several things.

- How difficult will it be to get the bees out? Will the house be heavily damaged? Are there multiple entrances? Are there electrical lines nearby?
- Is there a real potential for other people or animals to get stung?
- Do the people living in the house have the fortitude to tolerate a bee removal process rather than a bee kill process?
- What about the beekeeper? Do you want more colonies? Is it worth the physical risk of fighting bees, shrubbery, and the heat? The degree of beekeeping experience is important here. Sometimes it's just not worth it.

Though this might be confusing, I need to wander from this story (Story #1) for a bit to a second story. Many years ago, when I was a young, novice beekeeper, I took on a "bees in the house project." This was my very first effort at relocating bees. It was a big, old, rambling house that was abandoned and was to be razed. The demolition crew wanted the bees out before they would proceed. I was only marginally aware of what I was doing, to be honest. I asked for, and received, a few days to get the bees out.

The nest opening was about 12 feet off the ground. On a hot Summer day, I set my ladder up and climbed up to the nest entrance. My plan was simple, if not bordering on insanity. I intended to: (1) open the wall, (2) confuse the bees with smoke, (3) offer the bees a new hive body complete with frames, (4) watch all the bees move into my hive, and (5) come back later that evening and move my booty. I sincerely thought it would work. The bees sincerely thought I had lost my mind.

Though I used smoke, when I began to pull the siding off, the bees began to come out in clouds, completely ignoring my new hive body, but not ignoring my human body. They drove me from the tall, shaky ladder and ultimately they drove me from the project. A few days later, a pest control operator sprayed the bees, and that was the end of that. Why this story about a failed bee relocation caper? I was an inexperienced beekeeper who wanted more colonies. Someone more experienced would have: (1) been better prepared and more knowledgeable, (2) never accepted the project of removing the bees, or (3) would have promptly killed the bees and been done with it.

Back at the first story, the beekeeper and I reviewed the situation. The nest entrance was a little high, but not high enough to require a ladder. Individual bees

were already in the house, thereby upsetting the human occupants. It was an older house and could not easily be repaired. Finally, it was terribly hot. To open up the house and fight with a large, established colony was going to be a hot, miserable job. It would have been simple enough to plug the colony entrances and suffocate the bees, but that does not normally work. It could force more bees into the house. Forget ever using caulking compound - inside or outside the house. Bees can chew right through it. We decided to kill the bees.

We, as beekeepers, don't like to hear it, but bees in the wrong place can be real pests. We alerted the occupants of the house to the pending plan. Being wiser than we, they left for the afternoon. We sprayed the nest entrances with commonly available wasp and hornet killers. They are available at all home supply centers or garden shops. In some cases, a solution of soapy water can be used, but you must be careful not to damage the inside of the house. A few bees did die after the spraying, but heavy flight continued. It was readily apparent that we had not hit the main nest. Using a physician's stethoscope, we located the nest within the wall, drilled small holes through the outside planking, and delivered spray through the holes, but still bees were everywhere. This was dirty business. After all our time and spraying effort, we were still going to have to open up the wall. The rest of the story is predictable. Since we had sprayed insecticide already, the bees, honey, and comb could not be used. With considerable effort, we opened the wall and exposed the nest. The remainder of the bees were killed in short order. We cleaned up and repaired as best we could. Cleaning up, whether by the bee remover or homeowner, is an important part of this job. After killing a large number of bees, the comb (containing wax and honey) and dead bees remain in the cavity.During warm months those dead bees will decompose and smell, plus the comb will melt and honey will run wherever gravity allows. This mess, oozing through walls or a ceiling can be as distressing (and potentially more damaging) than the original bees to the homeowner. Remove as much of the residue as possible when finished. Then, if possible, wash the cavity to remove as much of the aroma as possible, and fill it with insulation to keep other bees from gaining access.

Frequently, pest control operators don't like to become involved in bee kill projects for all the reasons just described. Beekeepers are common sources of assistance in such instances. I have intentionally avoided the more difficult legal issues concerning this bee killing process. Such questions frequently don't have answers until a specific situation arises. Consider the following questions before trying to help someone out.

- Should you be bonded or have special insurance coverage to provide such services in your state?
- Do you need a pest control operator's license or certification? Contact your county extension office or the state department of agriculture.
- Under what conditions can you charge for your services? Again, that will vary from one state to another.
- If you are doing the job for free, are you covered by "Good Samaritan" laws that are in effect in your area?

The more you take on bee eradication projects, the more seriously you should consider these questions. Killing bees is a dirty job, but someone has to do it.BC

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Richard Bonney

Winter Prep

"Winter preparation starts in the Spring, but don't neglect it now."

Over the year, we as beekeepers tend to categorize our thinking about hive management. For instance, in the Spring we think of Spring management, and in the Summer we think of Summer management. Within each season, we have specific areas of concern. With Fall management and its corollary Winter preparation, for instance, it has been drilled into us that there are five specifics to deal with – the population level, colony health, the queen, the amount of stores, and protection from the elements. Each of these must be inspected and enhanced as necessary to ensure successful wintering. I have no quarrel with this. If you look to these things in a timely way and correct any deficiencies, your hive should be in good condition to winter well. But the important word here is timely. Certain elements of Fall management can be attended to in the Fall – October and November. With others, Fall is probably too late. We will come back to that, but first, let's examine those five specifics, recognizing that they are all interrelated.

POPULATION For much of North America, Winter is cold and harsh, sometimes extremely cold and harsh. Honey bees can cope with extremes if they have plenty to eat, are protected from the elements, and are able to establish and maintain a cluster of reasonable size – not too small, but not too large either. If the cluster is too small, the bees may not be able to generate enough heat to keep themselves warm and to allow brood rearing to go on during the Winter months. If it is too large, they may consume food stores too rapidly and not have enough to survive the Winter. We can and often do adjust that population. Population level, of course, is related to the age and quality of the queen.

THE QUEEN In order to Winter well, a colony needs a young population. That is, it needs a large percentage of its Winter bees to have been born in the late Summer and Fall. This calls for a young, vigorous queen who lays at her best rate right up until Winter nears. Admittedly, this is a lesser rate than in the Summer, but still, a good rate as compared to an older and perhaps failing queen. Fall requeening is often recommended as a standard part of preparation for Winter.

COLONY HEALTH Winter is stressful to bees. In a sense, considering their evolutionary origin, it is an unnatural environment for them. Anything stressful, whether it be with honey bees, humans, or any other organism, opens the door to disease. To endure and to enter Spring with a good population, a colony must enter Winter as stress-free as we can make them, as well as in the best of health. Part of being stress-free is being properly protected from the elements.

Uniting colonies is disruptive. Give the bees plenty of time to recover before cold weather arrives.

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Mouse guards come in many styles. Whatever you use, have it in place before the mice go house hunting.

WINTER PREP ... Cont. From Pg. 25

PROTECTION Bees are tough. Reports abound of them surviving under the most adverse conditions. But we want our bees to do more than survive; we want them to survive *and* thrive. Protection from mice, from excess moisture, from Winter wind and snow, all are important. This protection cannot be overly extreme, however. Bees must have the freedom to fly out on those Winter days when the weather allows.

STORES Food stores, in the form of honey and pollen, are important to the bees in two ways. First, honey allows them to survive. It is the fuel that provides heat in the cluster. Bees, of course, are coldblooded. They can be no warmer than their immediate environment. In the Winter their environment is the cluster within the hive. The cluster is kept warm by the actions of the bees as they shiver their flight muscles, fueled by the honey they consume.

The second way that honey and pollen are important is that by their presence in the hive, these stores allow and encourage brood rearing during the Winter months. Even in the coldest areas, bees raise brood throughout the Winter, except for a few weeks around the Winter solstice. However, they will not raise brood if they do not have food reserves. Brood rearing is necessary to replace normal ongoing Winter losses, and to allow for the early Spring buildup.

With these elements in the back of our minds, let's go back to timeliness. When do we attend to all of this? Since we are talking about Fall management and Winter preparation, then one would think that the logical time to do all of this is in the Fall. Not necessarily true. Consider first the queen.

A young queen is a positive element in successful wintering. Fall requeening, a standard practice, ensures the presence of a young queen, but Fall requeening is chancy. As the season winds down, availability from a queen breeder becomes a question. Then, there is always an element of risk when introducing a new queen. Will she be accepted? Time passes while you determine this, and if the answer is no, you must try again. Availability again becomes a question, and more time passes. Meanwhile, no eggs are being laid, eggs that would ordinarily mature to be those all important young bees who carry through the Winter to give the colony its strength in the Spring. I prefer to do my Fall requeening in August, allowing plenty of time for the process to be completed, or repeated in those occasional instances where the first try failed.

Looking again at population, here, too, timing is a consideration. If a colony is weak, perhaps too weak to Winter well, we have at least two options – combine with another colony or add frames of brood and bees taken from a stronger colony. And conversely, if a colony is too strong, as sometimes happens, we can take bees and brood to give to another colony. All of these possibilities can be upsetting to the colonies involved, at a time when their concentration should be on organizing the Winter nest. Furthermore, in the Fall, with the nectar flow ending or over, the bees are less amenable to such manipulations. Disruptions to colony life are always more readily accepted during a nectar flow. Again, I prefer August for this type of manipulation, and especially for uniting colonies. However, early September, most years, works for most of us. This allows plenty of time for the necessary reorganization of both the brood nest and the stores area, and for the removal of any extra equipment that resulted from the uniting process.

Colony health is an ever present concern, and here we have two specific areas of attention – diseases and mites. Presumably, each of us has already established a routine for dealing with such diseases as foulbrood and nosema, within the framework of our own personal philosophy of colony health care – preventive or remedial. Either we do or we don't treat for these diseases, and Fall is one of the appropriate times for such treatment, after the honey is off and preferably while the bees still have flying weather. In the good old days (remember them?) many beekeepers gave no thought to medication unless evidence of disease was actually seen, while others treated routinely twice a year as a preventive measure. Today, preventive treatment is becoming more and more the norm as we work to keep our colonies healthy and unstressed in the presence of mites.

Mites, of course, are everywhere, and there is little choice but to treat against them, even in a year such as

this, when mite levels appear to be low. Inevitably, mite populations will rebound. Although most beekeepers are actively working to control the mites, we don't yet have proven treatments to bring this problem under complete control. Then, even though we may re-establish any number of healthy colonies with low levels of mite infestation, we still have feral colonies to consider. The number of feral colonies is down, way down, but eventually, our kept colonies will swarm and the number of feral colonies will go up, at least for awhile. They will be mite-infested and an ever present threat to our own colonies.

But no matter what our personal philosophy may be about treatment, we should not think about colony health only in the Spring and Fall. It is imperative to think of it throughout the active season, establish our routine, and take appropriate steps in the Fall within the framework of that routine.

What about stores? Even here we cannot leave everything until Fall. Nectar flows have their ups and downs; colonies have their ups and downs. A colony might not be doing well in the early season, or the weather may adversely affect the nectar flow. Population may lag, and honey production may suffer. A tendency often is to ride out such adversities, allowing the colony to catch up as best it can. Even if the season improves and nectar flows pick up, often the colony can't catch up because of the lagging population, and with the arrival of Fall we may be faced with the need to feed heavily.

Traditionally, most beekeepers have been reluctant to feed an overwintered colony at any time except Spring and Fall. Feeding during the active season is felt by some to be a negative reflection on their capability as beekeepers, or it may simply be a belief that the bees can take care of themselves. In fact, one school of thought is that bees need never be fed, Spring, Fall, or any time.

My own belief is that bees should be fed when they need it. If a colony, whether new or overwintered, is not thriving during the active season, June, July, or whenever, a couple of gallons of syrup can make an immense difference, acting as a stimulus and confidence builder for the bees. The expense is negligible, and the return is high. In the worst case, you may save the life of the colony in the coming Winter. In the best case, you may increase the honey crop significantly. And, you may reduce or eliminate the need for feeding in the Fall.

This leaves us with one final area of concern – hive protection. Even here, timeliness is a concern. Mice have their own calendar, and they plan ahead. It is not unusual for a beekeeper, preparing to install a mouse guard but doing it a little late, to find that a mouse has already moved into the hive and established a nest. Mice are not likely to invade an active hive when the bees are still flying and foraging, but once cool weather sets in and nectar flows slack off, the mice begin to make their move. Anticipate them. I often have mouse guards in place well before the nectar flow is over. Double-check, too. Before placing that mouse guard, no matter how early or late in the season, take a slender stick that will reach to the rear of the bottomboard and reach in to sweep it back and forth. You may be surprised to have a mouse jump out, and you certainly don't want to trap it in there behind the newly installed mouse guard.

When the honey supers are removed, this hive will be very crowded. It is a good candidate to give up bees or brood to a weaker colony.

So, Fall is upon us, but since your management style is not compartmentalized, Fall management may very well be about complete. Just check the stores level, medicate as appropriate, see to insulation and ventilation, and you're done. BC

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BK-ECONOMICS + Smart Marketing = A Computer Program for

BUSINESS SUCCESS

Gloria DeGrandi-Hoffman — Kathy Heasley — Mark Templin

To run a successful beekeeping business, you must know honey bee biology and sound colony management techniques. However, considering only the apicultural end of beekeeping is not enough to insure success. Beekeepers also must formulate financial plans and marketing strategies, and learn how to manage their cash flow. Even those who have been keeping bees most of their lives can easily lose their business if they are not prepared for years when the honey crop is poor or Winter losses are severe. Without proper planning, it is easy to overextend your resources and create poor cash flow, which can cause the demise of a beekeeping operation.

The Carl Hayden Bee Research Center has released a computer program called BK-ECONOMICS created specifically for beekeepers to track business expenses and profit margins. The program is free of charge and can either be downloaded directly from the Laboratory's home page (http://gears.tucson.ars.ag.gov) or is available upon request. BK-ECONOMICS requires 8 mb of RAM and runs on Macintosh or Windows platforms. In a previous article, we described the workings of the BK-ECONOMICS program and showed how all aspects of a beekeeping business can be included in the estimates of total expenses and projected profit margins (DeGrandi-Hoffman et al. 1996). In this article, we present basic business and marketing strategies that can help a beekeeping business increase profits and maintain a positive cash flow. We then demonstrate how BK-ECONOMICS can be a tool for implementing these strategies.

The Fundamentals of Business and Marketing

In today's ultracompetitive business world, what makes the difference between products that sell and those that just sit on the shelf? The answer is simple. Successful companies know how to make themselves and their products stand out in an ever-growing, highly competitive crowd. They know who their customers are, what they want, and how to communicate with them once they have their ear. The companies have a message to convey, and they say it clearly and often.

To succeed in business today, you must know your customers and their needs. Then, products must be developed that meet those needs. The benefits of those products must be communicated clearly and often through the media your customer is likely to use. It sounds simple, but it is surprising how many companies, large and small, do not understand or follow this common sense logic.

All Marketing and Business Strategies Start With Knowing Your Customer

As beekeepers, you may have several customers, including: those who buy honey by the barrel at a wholesale price for use in processed food (wholesaler), and consumers who buy your prepackaged product directly from you or through a retail store or catalog. There are many more outlets for your products, but what is important is to understand that each customer has different reasons for wanting your product. Table 1 provides some examples. The two customer types (wholesaler and consumer) will learn about the products through different media, buy your product at different places, and be willing to pay a different price for the same product, based on need and perceived value. Understanding who you are selling to is Step 1 in developing an effective marketing program. Step 2 is developing products that meet your customers' needs.

Developing Products For Your Customers

We now will focus on selling your honey to consumers through retail stores and catalogs. Unlike wholesale customers who want honey by the barrel, most consumers are going to want honey that comes in a variety of flavors, pack-

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Table 1. Types of customers that buy honey, and their reasons for purchasing

Customer Type	Reasons for Buying Your Honey
Wholesaler – Buys raw honey in bulk for processed food production, etc.	Low cost, quantity available, close proximity, high quality, flavor, etc.
Consumers – Those who buy directly from the beekeeper or through retail stores or catalogs	Nice bottle, appealing label, flavor, high perceived value, staple or necessity, nice gift item, etc.

age sizes, and styles to meet their needs. Large families will want larger bottles, smaller families will want smaller bottles. Families that like variety will want sampler packages. People shopping for a unique Christmas gift might want a holiday gift basket that contains honey decoratively packaged with other gift items. Tourists looking for that perfect regional souvenir may want a sampler of regional honeys.

As you can see, there are many ways to package honey. It is your customers' need for economy, convenience, variety, uniqueness, etc., that determine what form your product takes. However, developing products without a channel through which to sell them is a recipe for disaster. So, as you are targeting customers and understanding their needs, you must also be identifying the places they go to satisfy those needs.

For the remainder of this article, we will focus our attention on two fictional products: the Christmas Honey Gift Basket which contains two eight-ounce jars of honey, two beeswax candles and a box of wafer crackers in a large basket tied with holiday cellophane and a bow. The second product is the Southwest Desert Honey Sampler which contains three four-ounce jars of honey (Citrus, Acacia, and Mesquite) in a recycled gift box tied with raffia and dried chilies.

Table 2. Costs for items in the Christmas Gift Basket and the Southwest Desert Honey Sampler

Christmas Gift Basket	
2 Decorator glass jars (8 oz.)	$0.70
2 Beeswax candles	$2.00/pair
Imported wafer crackers	$1.00/box
1 Wholesale gift basket	$2.30
Packaging and bows	$1.00
Shipping goods to catalog company	$2.00
Promotion	$0.50
Total cost of goods/basket	**$9.50**
Total cost/basket x 400 =	**$3800.00**
Southwest Desert Honey Sampler	
3 Decorator glass jars (4 oz.)	$0.45
Recycled cardboard box	$0.25
Packaging and raffia	$0.25
Shipping goods to retailer	$2.00
Promotion	$0.25
Total cost of goods/sampler	**$3.20**
Total cost/sampler x 1600 =	**$5120.00**

Make Your Product Easy to Find

You may have an excellent product with high perceived value, but if your target customer can't find a location at which to purchase it, you won't sell very many. For example, if you are trying to sell the Christmas Gift Basket described above in a store that sells toys, you probably will sell very few, no matter how good the value is. Matching your products to the appropriate distribution channels is critical to success.

As you are determining the needs of the target customer and developing a product to satisfy those needs, you must also determine where that customer is likely to purchase the product you are developing. For example, the Christmas Gift Basket would be perfect for distribution in holiday gift catalogs. Other channels might be retail specialty grocery stores, gift shops, or even, if your quantities are large enough and costs low enough, through club stores. On the other hand, the Southwest Desert Honey Sampler is ideal for a resort or tourist area gift shop.

So now we see the relationship between what our customers need and where they shop to fill those needs. But what about cost? It costs something to put the Christmas Gift Basket together, and there are costs for advertising in catalogs. How do we know what to charge for a product and still make a profit in the process? That's Step 4 in the process of bringing a product to market: Making sure the price is right.

Make Sure the Price is Right

Pricing your product is one of the variables that seems the easiest to determine because it is quantitative by nature. Generally the mathematical formula for pricing a product takes into account:

- the cost of goods to produce it (cost of goods)
- the costs involved in promoting and selling it (promotion)
- a percentage of the cost for operating expenses such as salaries, benefits, etc. (overhead)
- the amount needed to continue in business (profit)

The price of the item minus all the associated costs to produce it is your profit margin.

The price of your honey and other hive products can be established only after first calculating the total cost of producing them. The BK-

Table 3. Costs involved in the collection and sale of Southwest Desert Bee Pollen

Southwest Desert Bee Pollen	
Decorator jars (4 oz.) for pollen	$0.09
Message sheet about Southwst Desert Bee Pollen	$0.05
Shipping to customer	$1.75
Promotion	$0.10
Total cost of goods/jar	**$2.00**
Total cost of product x 1200 =	**$2400.00**

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Figure 1 – First Pricing Scenario

Expenses

Packaging	$8,920.00
Hive Equipment Etc.	$475.00
Transportation	$43.00
Employment	$2,704
Insurance Policies	$240.00
Total Expenses	**$12,382.00**

Income

From Honey

Gift Basket 400 x $12.10 =	$4,840.00
Sampler 1600 x $9.10 =	$14,560.00
=	$19,400.00

Profit

Income	$19,400.00
Expenses	$12,382.00
	$7,018.00

Figure 2 – Second Pricing Scenario

Expenses

Packaging	$11,320.00
Hive Equipment Etc.	$725.00
Transportation	$43.00
Employment	$2,704
Insurance Policies	$240.00
Total Expenses	**$15,032.00**

Income

From Honey

Gift Basket 400 x $9.78 =	$3,912.00
Sampler 1600 x $7.33 =	$11,728.00
=	$15,640.00

From Pollen

300 lbs x $21.30/lb. =	$6,390.00

Profit

Income	$22,030.00
Expenses	$15,032.00
	$6,998.00

ECONOMICS software helps beekeepers establish pricing scenarios to maximize profits because it combines all the costs in your beekeeping operation, and projects your profit margins based upon the prices you set for your products. Let's set up some cost and pricing figures for our two gift products using BK-ECONOMICS and see how we can reach our desired profit margin. We'll start with the Christmas Honey Gift Basket, which is sold through holiday stores and catalogs. Table 2 shows all the costs that were entered into the BK-ECONOMICS program. Next, we'll set some prices for the Christmas Gift Basket.

Since the Christmas Gift Basket is a seasonal product, we dedicated 25 percent of the total honey crop to this item. The remaining 75 percent of the honey crop will be used for the Southwest Desert Honey Sampler. In the first BK-ECONOMICS run we entered all the costs involved in a typical sideline beekeeping operation with 20 colonies (Figure 1). The costs involved with packaging and distributing our products also are included (Table 2). Our business costs us $12,382 per year to run. Each colony averages about 80 pounds of honey per year. We want to make $7,000 in profit from the 20 colonies.

Because the Christmas Gift Basket uses 25 percent of the honey crop, we will attempt to cover a quarter of all costs and projected profits with this item. To accomplish this, we must make at least $4,846 from the Christmas Gift Basket ([$12,382 + $7,000] x 0.25 = $4,846). Since each gift basket uses one pound of honey, we can make 400 baskets with a quarter of the honey crop ([80 lbs./colony x 20 colonies] x 0.25 = 400 lbs.). If we need to generate $4,846 from 400 gift baskets, each basket must have a wholesale price of $12.10. All costs involved in creating this product already have been incorporated into the estimated price. Therefore, the cost of our honey per pound must be $12.10 to cover all expenses. I enter this figure into the BK-ECONOMICS program.

We repeated the procedure described above to set the price of the Desert Honey Sampler. Costs for packaging are shown in Table 2. Our goal is to cover 75 percent of the total expenses and projected profits with this item. Therefore, we must make $14,537 from the Honey Sampler ([$12,382 + $7,000] x 0.75 = $14,537). Because the sampler contains a total of 12 ounces of honey and there is 1200 pounds of honey remaining after using 25 percent of the honey crop for the Christmas Gift Basket, we can make 1,600 Honey Samplers. If we must make $14,537 from 1,600 Honey Samplers, each Sampler must sell at the wholesale price of $9.10. The price per pound for the honey that is used in the Honey Sampler is $12.10. We ran the BK-ECONOMICS program with the price per pound for the honey added to the HONEY PRODUCTION screen to check our calculations. The program projects that we will make $7,000 profit with this pricing scheme. Without the BK-ECONOMICS program, we would have to repeat our number crunching at least one more time by hand to be sure our calculations are correct.

The two pricing scenarios tell us that the Christmas Honey Gift Basket will have to sell wholesale for $12.10 and the Southwest Desert Sampler for $9.10 in order to make the desired profit. The next question we must ask is: Will the market support this kind of pricing? Remember, the retail price is at least twice the wholesale price. This means the Christmas Gift Basket will sell for about $25 and the Honey Sampler for about $20. The cost of competing products is below these retail prices, and the value added perception for our products may not

be great enough to warrant a higher price. Consequently, this pricing from the market perspective will not work. That leaves us with four options:

1) Reduce costs by finding or negotiating better prices for materials that go into the product.

2) Increase the value of the items in the basket by adding more low-cost/high perceived value items that would warrant a higher price.

3) Find a different catalog or outlet that has a more affluent client base which expects the higher pricing.

4) Re-evaluate profit requirements and lower them if possible.

We have chosen Option 4 and reduced the expected profits from honey sales from $7,000 to $5,000. We decided to make up the $2,000 difference by creating another product, packaged Southwest Desert Honey Bee Pollen. We purchased 10 pollen traps ($25 per trap) and added $250 into our expenses under Hive Equipment, Etc. (Figure 2). The pollen will be packaged in four-ounce jars, so the cost of the jars also was added to the total expenses. In our area, we can obtain 300 pounds of pollen per year from the 20 colonies.

We ran the BK-ECONOMICS program again with the additional expenses for the jars and pollen traps to find the new value for our total expenses (Figure 2). This value is now $15,032. Since we want to make $5,000 from honey and $2,000 from the pollen sales, we must recalculate the prices of the Christmas Gift Basket and Honey Sampler. Again, the plan is to use 25 percent of the honey crop for the Christmas Gift Baskets, and 75 percent for the Honey Samplers. We want to cover about 71 percent of the total costs and projected profits ($5,000/$7,000 = 0.71) with honey and 29 percent ($2,000/$7,000 = 0.29) with pollen. Consequently, we must make $15,643 from honey sales ([$15,032 + $7,000] x 0.71 = $15,643) and $6,390.00 from pollen ([$15,032 + $7,000] x 0.29 = $6,390). Sales of the Christmas Gift Baskets will cover 25 percent of our income from honey, so we must make $3,911 from 400 Christmas Baskets ($15,643 x 0.25 = $3,911). The wholesale price for the Christmas Baskets is now $9.78 ($3,911/400 baskets = $9.78). Likewise, the Honey Samplers must cover 75 percent of our costs and projected profits, so we must generate $11,733 from this item ($15,643 x 0.75 = $11,733). Hence, the wholesale price of the Honey Sampler is $7.33 ($11,733/1,600 samplers). With this pricing scenario the cost of our honey per pound for the Christmas Gift Basket and the Desert Honey Sampler is $9.78. These prices will generate retail prices through a catalog or store of about $20 for the Christmas Gift Basket, and $14 for the Honey Sampler.

Next, we must get the price for the pollen. We need to cover 29 percent of our total expenses and projected profits with pollen so we must make $6,390 from 300 pounds of pollen ([$15,032 + $7,000] x 0.29 = $6,390). Therefore, the wholesale price of our pollen is $21.30/lb. ($6,390/300 lbs = $21.30/lb) We will sell the pollen wholesale for $5.35/4 oz jar. We ran BK-ECONOMICS with the new pricing scenarios, and obtained an estimate of projected profits of $7,000.

To determine the best price for a product, look at the market and ask yourself, "Is the price in line with other products of similar value?" If not, adjust the price and check out your new projected profit margin. The nice thing about the BK-ECONOMICS software is that you are able to test numerous production and pricing models quickly and easily to help you determine the scenario that gets you the revenue and profits you need to sustain and grow a viable business. Once the pricing is determined, and the product is ready for market, you'll need to develop and implement a communication plan to promote the product and tell the world.

Communication is the Key to Success

It has been said a good idea is just that, an idea until someone knows about it. Then it becomes reality. Well, that axiom especially holds true when it comes to marketing a product. Many companies stop short both with resources and energy after they develop a new product line. However, this is the time when they should be pouring it on so that potential customers will become aware of the new products. Just as your customers will not be able to buy your product if they cannot find it in the places they usually shop, they will not buy your product if they do not know it exists.

How do you tell your customers about your product? Again, look to your target customers for clues as to where they go for information about similar products. Let's look at an example. The Southwest Desert Honey Sampler is sold in regional gift shops and through our company's World Wide Web site. So how do we tell the customer about this product and our two ways to buy it?

For retail sales, there are actually two customers that you need to tell about this product. First, you need to promote this product to the retailer. This may be done face to face or with a brochure showing detailed product descriptions, quality photos of all your product offerings, and information about your company. This establishes credibility and confidence in the retailer's mind that he or she is dealing with a dependable professional. Another method is by attending gift industry trade shows, talking with people there about your product line, and giving them the brochure described above. Samples of your products at the show are a must. With know-how, luck, and good salesmanship, you will have a handful of retail customers who want to carry the Southwest Desert Honey Sampler and perhaps other products in the same "Southwest Desert" line. Brochures and travel are, certainly, promotional costs.

When it comes to letting the customer know about the Southwest Desert Honey Sampler you are selling through gift shops, the shop owner will do all the work of getting customers to the store. That's one reason why they work on 100 percent markup. Communicating is expensive. It is your job, however, to make your product jump off the shelf when the customer enters the store. That is accomplished through packaging that is eye-catching and labeling that sells your product. For a product like the Southwest Desert Honey Sampler, the packaging should be earthy and the labeling tout natural ingredients. It should tell a bit about the nature of the Southwest desert and the purity of

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BUSINESS ... Cont. From Pg. 31

the air, water, and honey harvested from these pristine surroundings.

For the Southwest Desert Honey Sampler sold using the World Wide Web site, it is your job to bring the customer to your "virtual storefront." You can use many of the same tactics you would use to attract people to a store on the street and several new electronic methods. Here are few methods available to you:

- Direct Mail Catalog – A multipage direct mail catalog that includes high-quality product photos and product descriptions. It is sent to those on a mailing list qualified as people with a tendency to buy these types of food gift items.
- Public Relations – Various magazines are always looking for gift ideas for special holiday issues, etc. Developing stories and product announcements, sending them to the publication with photographs, and then following up with samples of the products, and a personal phone call can help you get free coverage in local and national magazines.
- Advertising – Small display ads in the back sections of popular women's magazines have high readership and can promote high sales.
- Internet Links – Develop electronic links from public search engines that help people find information about your site. In other words, when someone types 'honey' as a keyword into a search engine, your company's web site appears as a result.
- Related Site Links – Link with other sites containing gift ideas, bee information, or places of interest in the Southwest.
- Internet Banner Advertising – Buy banner ads on related web sites that are targeted to people who are buying gifts or even those just interested in honey.
- Search Engine Advertising – Your banner ad or alphabetical special listing comes up on the search engine when someone types the word 'honey' as a keyword into the search engine.

The web site itself should reflect your overall company and product image. Remember, consistency in the logo for your company and the image you want to project are essential. For Southwest Desert Honey, you'll want the site to look earthy and natural, just like the boxes and labels packaging your product. The best way to see image development in action is to explore the World Wide Web and see for yourself how successful companies have made their web sites extensions of their own images.

Marketing is the act of developing a relationship with customers by understanding their needs, and delivering the products they want. It is also important to know how to communicate with your customers. The final and most important aspect of marketing is letting customers know about your products openly, honestly, and often. Without effective communication, all the other facets of product development and marketing matter very little. BC

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FAST FRAME REMOVAL

Klaus Nowottnick

When I visit other beekeepers I always look around in their business, and often I find a new idea or invention. Such points of view I try to procure for other beekeepers for their own use.

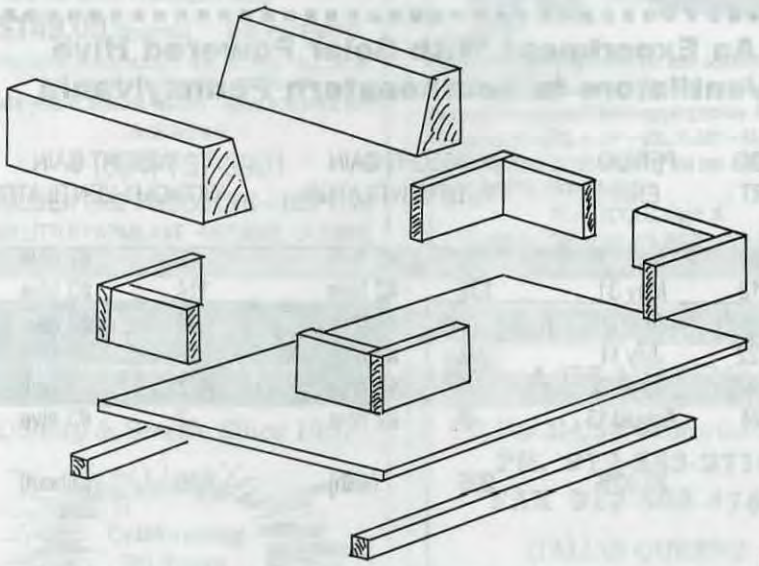
In March, 1996, I made a journey across Florida and had the great luck to meet Alexander Denes, who is Hungarian, living for many years in Romania. His beekeeping operation is one of the finest I ever saw. Most of his tools and equipment are self-made and of filigree style. It is clear, this man is not only an excellent beekeeper but a skillful craftsman, too. He has a good education and has had many good experiences in his life. Together with his skillful hands and a sharp mind he was able to master life.

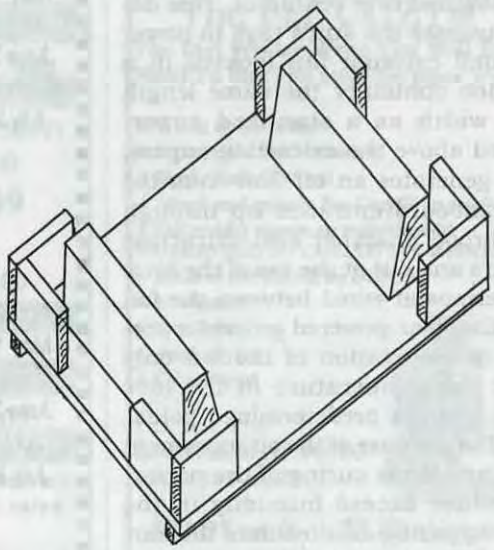
Besides the fine and precisely constructed hive boxes, I saw a lot of other equipment, which was of similar quality. During his honey extraction work I noted a simple device that eased the work extremely. I immediately called it the "Denes Honey Comb Servant."

Utilization and construction

This equipment helps to remove the frames from the supers easily. Generally, frames are fastened to the box with propolis and wax. Removing each frame with a hive tool takes much time. With the "Denes Honey Comb Servant" frame removal is a piece of cake. The super, filled with full frames is placed on the top of the "Servant" and pressed down. The two wooden blocks at the bottom push the frames up from the super and they pop out the top. Now every frame can be removed easily for uncapping. The tool has, on each corner, an angled construction to adjust the pressed-down super. The space between the angles and the wooden block should give enough space for the wall thickness of the super and a little more. The whole tool is made of pine wood planks and squared timbers. The bottom is about one inch or a bit thicker. At both sides of the underside of the bottom, he has fitted two bars.

I like the "Denes Honey Comb Servant," and I think this tool should be an indispensable part of every beekeeping operation. I have tried to explain the self-making by the drawings, and I hope it is easy enough for all of you. I have consciously avoided giving exact measurements, because every beekeeper can use his own, depending upon his super measures. BC





A Hobby Beekeeper Evaluates The Solar Powered Hive Ventilator

Walter G. Arader

The western suburbs of the Philadelphia area (Delaware, Montgomery, and Chester counties) enjoy a nectar surplus generally for seven weeks, usually from May 15 to July 5. The main sources of nectar are the mature trees of the area, predominantly tulip poplar (*Tulipfera lirodendrum*), black locust (*Robinea pseudoacacia*), linden (*Tilia americana*), and holly (*Ilex opaca*). While certain arboreta (Morris, Ashwood, and others) contain significant stands of Evodia (*Evodia danillia*) and sourwood (*Oxydendrum arboretum*) and Japanese Scholar Pagoda tree (*Sophora japonica*), nectar from these sources rarely produces a surplus, as they occur well after the main honey flow.

Fall honey flows have occurred, but are rare and unusual events. Intense development of the area has eliminated most of the formerly abundant wild aster and goldenrod. Those homeowners that don't want dandelions in the Spring don't want goldenrod in the Fall.

In this nectar environment, an attempt was made to evaluate the usefulness and efficiency of the solar-powered hive ventilator. This device utilizes the sun's rays to power a small exhaust fan located in a wooden container the same length and width as a standard super, placed above the extracting supers, that generates an air flow from the bottomboard entrance up through the brood chamber and extracting supers and out at the top of the hive. A thermostat wired between the fan and the solar-powered generator permits the operation of the fan only after the temperature in the hive rises above a predetermined point.

The purpose of the air movement is to speed the curing of the nectar, to reduce excess humidity in the hive occurring as a result of the curing of the nectar, and to reduce or eliminate the necessity of the fanning actions of the bees. Fanning consumes stores and shortens the nectar gathering availability of the worker bee.

To conduct the test, two hives of approximately equal weight and strength were selected and mounted on separate platform scales. For the daily readings, which were always taken after dark, the weight of wooden ware, stores, and bees was zeroed out and only the net daily increase was recorded. Each hive had been started one year earlier from three-pound packages with Italian queens from Drew Apiaries. Each hive had produced a surplus of approximately 60 pounds the previous season. There was no indication of supercedure or swarming.

The plan of the experiment was to place the solar ventilator on one hive (Hive Number One) for a period of three weeks, then remove it and place in on Hive Number Two for the following three weeks. This rotation was then continued for the balance of the season for approximately five months, or May through September. The purpose of the rotation was to cancel out any variation that might exist in the productivity of the two populations.

The results of the experiment for the 1996 season are illustrated in the table. Generally the test results showed a 22 percent increase in hive weight for the hives with the ventilators in place. Most of the increase occurred during the height of the main honey flow. Both hives pro-

An Experiment With Solar Powered Hive Ventilators in Southeastern Pennsylvania

PERIOD START	PERIOD END	WEIGHT GAIN WITH VENTILATOR		WEIGHT GAIN WITHOUT VENTILATOR	
April 24	May 11	10	#3 hive	19	#2 hive
May 13	May 31	132	#2 hive	114	#3 hive
June 1	June 21	71	#3 hive	44	#2 hive
June 22	July 11	-3	#2 hive	15	#3 hive
July 4	July 23	4	#3 hive	-17	#2 hive
July 24	August 13	-9	#2 hive	-7	#3 hive
	22.02%	205	(with)	168	(without)
		NUMBER TWO HIVE		NUMBER THREE HIVE	
April 24	May 11	19	without	10	with
May 13	May 31	132	with	114	without
June 1	June 21	44	without	71	with
June 22	July 11	-3	with	15	without
July 4	July 23	-17	without	4	with
July 24	August 13	-9	with	-7	without
	-19.81%	166	#2 hive	207	#3 hive

duced a surplus of 75 pounds. With the ventilators in place, the hive weight was 205 pounds versus the increase without the ventilators of 168 pounds, an increase of 37 pounds, or 22 percent over the entire season. However, for the period May 13 through June 21, the hive weights were 203 and 158, an increase of 45 pounds or 24.5 percent.

From this *very small sample test of one ventilator,* a tentative conclusion follows that the device would pay for itself over a three-year period through greater honey production.

The ventilator was removed in October. Both hives, which were subsequently treated with Apistan and Terramycin survived the mild 1996-1997 Winter in good shape and will participate in a continuing experiment using four solar ventilators and eight hives for the 1997 season. BC

EDITOR'S COMMENTS

The value of this article is not so much in the numbers generated, primarily because, as the author states, of the very small sample size, but rather in the fact that an attempt was made to quantify the difference this piece of equipment makes in a particular location.

All beekeepers should evaluate their equipment and decide whether some piece is worth the money *to them,* at their location and using their management style. Very little equipment research is conducted anymore at the University or other unbiased level, and the only recourse beekeepers have is to go by the advertisements they read, or the blurbs manufacturers put in their catalogs.

Field trials were the norm for many years. "How did it work for a hobby beekeeper in Ohio," or, "was it worth the money for a commercial operator in South Dakota" could not be answered unless tried by hobby, or commercial beekeepers in real world situations.

The author plans on expanding this study. We hope he uses a research design that can be duplicated by others in different locations, and that will produce numbers that can be evaluated at least somewhat statistically by anyone wanting to try the equipment.

For a fundamental research design that will produce results you can be confident in, and that doesn't need sophisticated or elaborate statistical analysis, see *Bee Culture* June and July, 1996, "Do Your Own Research." We will be happy to send a photocopy of those articles if you send a stamped, self-addressed envelope to: Research, 623 W. Liberty St., Medina, OH 44256. They are also available on our web page, in the Archived Articles section. That address is www.airoot.com.

Five Great Ideas For
MORE MEMBERS

Linda Batt

The number of hobby beekeepers has decreased over the last five years. Ed Weiss, the author of the *Queen and I,* and Mark Berninghausen, a New York state bee inspector, both feel that disease and the cost of the hobby are critical factors in the declining number of backyard beehives.

"The environment needs more bees," Weiss said when he was voicing his concern about this trend to me several months ago. I thought about the fruit trees, flowers, and gardens in my rural area which has only our three hives to handle all the work. My environment certainly does need more hobby keepers so I started thinking about the problem. After all, I was a public relations person for 15 years, so selling an idea is right up my alley.

Commercial keepers are generally too busy for the "sell." I decided, after thinking the matter over, that getting people interested in the hobby would be best done through the clubs and keepers' associations. The meetings of these groups are friendly, no pressure gatherings. Members are probably a mix of hobbyists and commercial keepers, and there's a wealth of knowledge sitting in each chair in the room.

I used my background in public relations to come up with these suggestions for filling a few more chairs at those monthly meetings.

ADVERTISE YOUR MEETINGS AND STRESS THAT THE PUBLIC IS INVITED. All papers print news releases about local events for free. Ask a club member with a computer to take responsibility for sending in a release before each meeting. That person can type a standard form into the computer, save that information, and then just make slight changes each month. The release can be as simple as this:

News Release
For Immediate Release (date)

(Your town) Dr. Gordon Smith, professor of entomology at Collins College, will speak on the reproductive cycle of bees at the monthly meeting of the Fairfield County Beekeepers Association, Monday, March 12, at 7 p.m. in room 312 of the Town Hall. The public is invited.

Dr. Smith will show slides of queens and of bee frames that house the eggs laid by the queen. A queen may lay as many as 2,000 eggs a day. The reproductive rate as affected by season, health of the queen, and available food supplies will be part of Smith's lecture.

For further information, contact Ed Fleming at 555-3469.

This is just a fictitious sample of a meeting announcement to give you the idea, but your announcement should have some of the same elements. Begin with the speaker, the activity, or the event that will take place at the meeting. If there are several activities planned for the evening, always begin with the one that might interest people in your community. Be sure the date, the time, and the place of the meeting are in the first sentence or two. Also make sure you include the fact that the public is invited and add the fact that no admission is charged if you think guests might wonder about cost.

If all this information is in the first couple of sentences, an editor can cut all the rest of your release and just use the clip in a calendar of events, but just in case he has more paper space to fill, give him another couple of paragraphs about the evening. Always close with a contact number.

Remember that this is a press release; it says so at the top. Press releases can be sent to multiple papers at once, and you should mail the announcement to all publications in your area. Every time.

Your release will have a better chance of being printed if it's sent to the right person at the paper. That's usually the news editor, but the best approach is to place a call. If you look in the Yellow Pages under "newspapers," you'll find the listings for all the publications in your area. Dial the general number and ask for the newsroom. Say you want to send in a meeting announcement and ask how to address the envelope. With a computer, the names and addresses can be stored and just printed out on the envelopes each month.

If the person given the assignment of publicizing your events doesn't want to make the calls, simply address the envelope, News Editor, Naugatuck Daily News, 12 Constitution Avenue, Wilmont, CT 06709.

Timing is everything in the news business. If the paper is a weekly, you need to mail out the release at *least two weeks before the event.* If the paper is a daily, give the publication your information *about a week prior to the meeting date.*

Newspapers are not the only way to get the message about a meeting out to the public. Public service announcements by radio stations are also great ways to be heard. Radio announcements of this kind are very short, so you might want to send the station only the first paragraph of your news release.

It's also almost a must to make a few calls before sending out public service announcements. Phone the station and ask for the program director. Ask this person about the station's policy on public service announce-

Continued on Next Page

MORE MEMBERS ... Cont. From Pg. 37

ments. Each station may want a different format. One radio station I dealt with would only take the announcement if it arrived 10 days in advance of the event and if the information was printed on a 3x5 card.

Since this requires more work than just changing a few lines in a news release, radio might be used to publicize the really interesting speakers or larger events. If you're having an event that has lots of human interest, say someone showing how to build observation hives, you can even call in the local TV news crew. Just phone the station, ask for the news director, tell that person about your event, and then follow up the call with a letter to the station.

Getting the public to meetings will stimulate interest and might get a few new hives in your community, but there are other ways to educate and interest the public in the beekeeping hobby.

Interest children in the hobby. My husband Don first got interested in beekeeping because of a Scout project. He was helping out with our local troop when one of the boys wanted to earn the Beekeeping merit badge. It was his job to find a beekeeper who would teach the boy what he needed to earn the badge. He found a friendly, knowledgeable man down the road from us, and since the child had no transportation, my husband delivered the Scout to the mentor and his hives. Don learned along with the Scout. The child ended up with a badge, and we ended up with a new hobby.

That's a relatively long story to make a short point. Your club can generate new members and educate the public by linking up with youth organizations in your area.

You can probably find the name of your local Scout leader or 4-H mentor in the paper. They will usually be mentioned along with some recent project. If you don't see any publicity, look up "Boy Scouts of America" in the white pages of the phone book. The area council number will be listed, and you can offer your assistance with the merit badge on this wider level. (The beekeeping merit badge is no longer available, but an insect badge is, and beekeeping is part of that.) The 4-H contact person can usually be reached through the county agricultural extension office, and you can speak with the science teacher by calling the school secretary and asking to be put in touch with the right person.

If one of your members is a teacher or likes to interact with young people, encourage him or her to be available as the education contact person. He or she may be called on frequently or almost never, but at least your club has offered to share the expertise of its members with youngsters.

Remember, if a child gets interested, a parent is almost always dragged into the scene. New colonies might just sprout up.

Exhibit at local fairs. There's a fair just about everywhere in this country, even in relatively populated areas. Fair organizers are always looking for attractions. Get your club members interested in making a display and setting up a booth at the fair. The display can be simple: supers, honey-filled frames, jars of product, photos. After all, bees are really interesting.

At one booth I visited at a fair, keepers had brought along frames of honey and a hand extractor. Children got to put frames into the extractor, then turn the handle and spin out the product. There was a line to do the task I usually have to perform all by myself, and I thought there was one pretty smart beekeeper manning that booth. Anyway, hands-on usually means interest-engaged.

Call your local chamber of commerce for fair days and the phone number of the organizers. Just in this area alone, there are one town and two country fairs spaced throughout the Summer and Fall months.

A display designed and stored at some keeper's home will likely be brought out for other occasions too. A chamber of commerce day, a town promotional, an agricultural event are all possible chances for promoting beekeeping with a booth.

Sell the idea of backyard bees to women and get them active in the club. When Don decided on this hobby, I said, "fine, but don't ask me to go near that project." Now I extract the honey, cook with it, and use it for all sorts of home remedies. I'm sure the bees make my vegetables grow. In fact, I think I like the hobby as much as my husband does. It's really not hard to sell the idea of bees to women. Try some of these tactics.

Your club might sponsor a meeting on pollination and invite the town's garden club. Or for a change of pace, your group might focus on food for one evening and sponsor a dinner with recipes that use honey. From appetizers right through to desserts, honey could be in the cooking. The gourmet club in town might join you in sponsoring the evening. How about home remedies? Could you find an expert to speak on the antibacterial properties of honey and invite the local health food co-op members?

These meeting ideas are likely to draw in more women and interest a new crowd of people in beekeeping, and that's just what we want.

I've saved the simplest idea for last.

Encourage club members to share their hobby with friends. We have an extra bee suit, complete with veil and gloves. If a friend is curious, Don has him or her visit the next time the hive needs some attention and takes the person right out among the bees. Even if it doesn't sell the friend on the idea of beekeeping, it does send him away better informed.

Your club might plan a bring-a-friend function around some speaker who has a general draw. Or you could plan a very intellectual evening and ask members to bring friends specifically interested in increasing their knowledge of bees and beekeeping: science teachers, agricultural experts, local foresters, apple growers, and others whose work touches on the subject in some way. More people at meetings might translate to more hives at local homes.

The steps I've outlined will definitely increase public knowledge about bees. After a good introduction to the insects, I can't imagine anyone not wanting a hive. Our efforts could help solve the dwindling number of hobby keepers and add to the number of bees out there flying in our environment. BC

Linda Batt is a hobby beekeeper, and avid recruiter, from Rensselaer Falls, NY, and an occasional contributor to these pages.

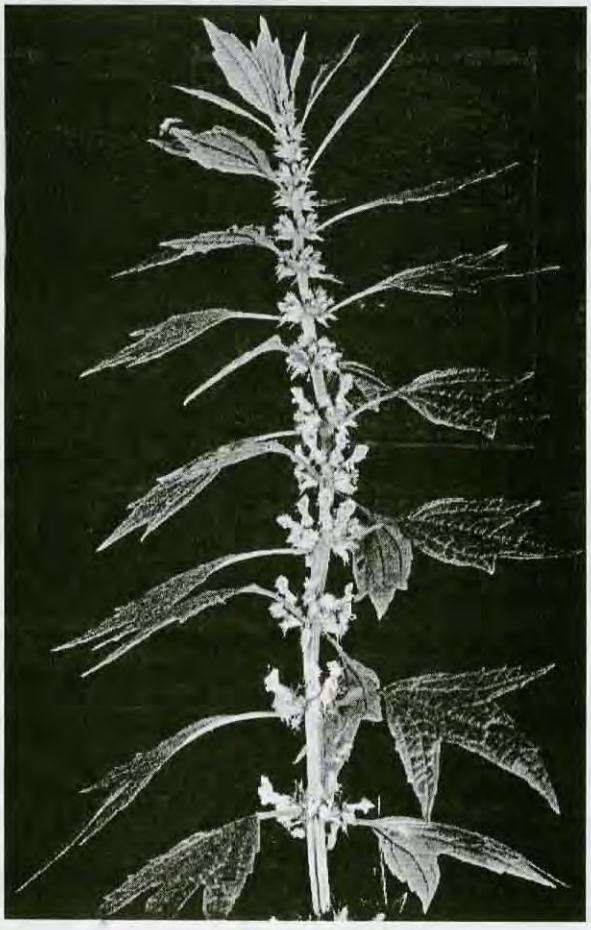
This Month's Honey Plant Is

M·O·T·H·E·R·W·O·R·T

B.A. Stringer

"Motherwort is one of the best honey plants that I have ever seen. It begins blooming here in the mountains early in May, and even by November 5, you can still find my bees working on it. . . . Drought has no effect upon it. The honey from it is a light orange color." So wrote Mr. Otis A. Griffith of Scholten, Missouri, in 1911, in his letter to *Gleanings in Bee Culture* describing this honey plant which had caught his attention.

Motherwort, *Leonurus cardiaca*, is a tall, perennial herb of the mint family which is native to central Asia. It is very common in parts of Europe, where it is considered a good honey source, "better than phacelia, borage, and sweet clover as a nectar plant." The plant is valuable because of its long flowering period, from early Summer to frost, and also for the copious secretion of nectar throughout the bloom. The nectar sugar concentration has been measured at 39-44 percent, and the plants are described as 'covered with bees while blooming.' The honey is light or pale yellow in color and has a good flavor.



Motherwort has naturalized widely in North America and may be a common weed along roadsides and in waste areas. The roots are persistent, lending the plant tolerance to adverse conditions. A relative of catnip, Motherwort grows in clumps and bears prickly, two-lipped flowers in small, dense clusters in the axils of the leaves. A report in 1914 stated that the plant was worked freely by bees when most other plants failed to yield anything.

Sometimes cultivated in the flower garden, Motherwort has attractive palmate lower leaves and long-stemmed, elongated upper leaves with three points. These leaves are borne opposite each other on the stem and have a very obvious network of veins. The flowers are white or lilac, and only about one-quarter of an inch long, so they are easily accessible to honey bees. While nectar is freely gathered, bees do not usually collect the white pollen.

In lore, Motherwort is known as the herb of life, and gives rise to the counsel "Drink Motherwort and live to be a source of continuous astonishment and grief to waiting heirs!" Herbalists advised that the plant "cured melancholy, strengthened the heart, and made the soul merry." The botanical name *Leonurus* means 'like a lion's tail,' presumably referring to the flower stalk, while *cardiaca* is the name of a bitter tasting syrup or conserve made from the plant, supposedly good for the heart. Herbal medicine also made use of the powdered plant for gynecological complaints and "to make women joyful mothers of children, and settle their womb." More recently, the tops and leaves have been used widely for nervous complaints, diseases of women, and many chronic disorders.

If you wish to cultivate Motherwort, you may find plants at your local nursery, or seeds may be obtained from De Young Nursery, Rt. 1, Box 76, Stark, Kansas 66775. BC

B.A. Stringer grows bees, and bee plants near her home in Blodgett, Oregon.

The Joy Of LOWTECH

Howard Scott

One of the reasons I love keeping bees is the low-tech (computerless) nature of the craft. That's not to say that the activity doesn't involve knowledge and understanding and even some technology. It does. But the tools and science evolve from pragmatic observation. As a result, beekeeping is a tangible pursuit, unlike the virtual reality of the high-tech age.

I guess I ought to confess. I hate high-tech. The world of computers seems like so many square heads walking around and bumping into each other. Computer conversations are so glib and jargon-laden (megabytes, RAM capacity, output imaging, Internet cruising) that I tune out of discussions. Moreover, the media hype that comes out – 'Windows 95 will change your life,' 'Internet access puts the world at your fingertips' – so dispirits me that I recall one of the saddest books of all time, *1984*, in which Winston Smith confronts Big Brother. Paradoxically, I am a user, pushing out these words on an IBM 386, 65 megabyte computer.

Beekeeping is anti-computer, not because of any philosophical dislike, but because the activity is hands-on, eyes-on, ears-on, and nose-on, and not given to computer-generated solutions. Moreover, there's an inexactitude in the pursuit that computers aren't comfortable with. That is to say, computers run by linear thought processes, while bees certainly do not, and beekeepers rarely do. At the heart – or rather the chip – of a computer is binary logic. At the heart of a bee is buzzy logic. The two are as incompatible as a fish and an orange. Computers make decisions. Beekeepers rely on seat-of-the-pants hunches. Computers do not require real work, unless you consider moving a mouse and punching keys legitimate effort. Beekeeping requires manual labor – lifting heavy boxes, constructing equipment, spinning the extractor. Computer action takes place in an amorphous non-space. Beekeeping is local. If the soil is acidic, the color of honey will be affected. If there is low precipitation, then the harvest is affected.

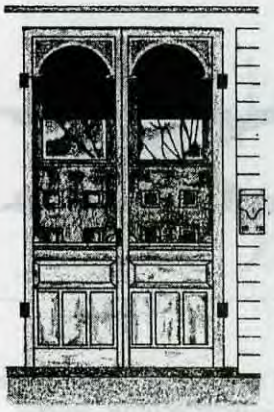
Truth is, I would rather be out in the bee yard than on the Internet. One is the real world, and the other is the artificial world of screen-space, which, to my mind, offers the passivity and illusion of television. Boring! In the real world, I can breath fresh air, smell honey, and bend my knees. In the artificial world, it's just the soft cushion below and the arid taste of air conditioning. In the real world, I can make judgments by using my senses – by touching, smelling, feeling, and observing a hive. In the white screen world, I use only my head. In the real world, I never get that logy, sucked-out feeling, because there's always life abuzzing – which is something you can't turn off.

Likewise, I prefer conversations with beekeepers to those with computer techies. Beekeepers are direct and plain-spoken, while techies speak in computer-ese. Their talk is so jargon-laden that it often sounds like double talk. Beekeepers focus on goals, while computer hacks emphasize technique. While not rocket scientists, we beekeepers know that computer-generated beehive models and spanking new smokers with computerized heating elements do not make a good bee season: Surplus honey does. It seems that a techie's heart really lies in the dazzle and the dexterity of his tool. Often, these wizards of the mouse lose track of what they are trying to accomplish, or worse, the object becomes a secondary consideration. Finally, computer mavens often tend to think of themselves as world-shattering geniuses. Beekeepers, on the other hand, never (well, hardly ever) consider themselves wise. At best, in a good year, they will feel the satisfaction of being in harmony with nature.

Harmony – that's what's missing in the world of high-tech. Beekeepers know that, in order to survive, they must work in conjunction with nature, must be its hand-maidens, so to speak. Computer hacks answer to no one but themselves. After all, the computer turns out perfect copy, accurate statistical analyses, and resplendent color graphs 100 percent of the time. With CD-ROMs, the computer provides unlimited information. Moreover, computer hacks can create their own worlds, punch up their own rules, and call it reality.

As a final point, let me ask: If the computer is so omnipotent, why isn't man rich, why isn't the divorce rate down, why aren't children driven to learn, and why aren't diseases being cured? At least, we beekeepers can offer the world a great soul-soothing food: Honey. BC

Howard Scott avoids computers, and seeks out beekeepers from his home in Pembroke, Massachusetts. He is an occasional contributor to these pages.



Ann Harman

Home Harmony

September Is Honey Month. Celebrate!

It's time for a celebration! For what? Surely you haven't forgotten - it's National Honey Month! Summer is over, the bees are preparing for Winter, and by this time you probably have your year's supply of honey ready to use. Please plan ahead a little bit. You will need to use some honey in the holiday months ahead. Those recipes will come later in the year.

September gives us a monthlong celebration of honey with lots of opportunities to introduce people to the pleasures of cooking with honey. Birthday parties, potluck suppers, casual meals with friends, and cookouts with the barbecue grill are just some of the endless opportunities to use honey. Remember to give honey recipes to your friends and relatives. Just be sure they have some of your honey to cook with.

If you are having a beekeepers' association meeting this month, honey refreshments would be in order. You could also easily organize a honey recipe trade. Each person coming to the meeting can bring a favorite honey recipe. I'll leave the details to you, but each person could end up with practically a honey cookbook. You might want to have a honey cookery contest and let the beekeepers vote for their favorites. The contest entries would actually be the refreshments for the meeting.

It is not always necessary to use huge quantities of honey in a recipe to appreciate the benefits. Some dishes, such as meats, are not supposed to be sweet. But it is also nice to have quick breads and cakes that use larger quantities of honey.

BANANA FROTHY

The best way to start this month's celebration is at breakfast time. This refreshing morning drink is quick to make so there's no excuse about not having time.

1 banana
2 tablespoons honey
1 cup milk
2 tablespoons orange juice

Combine all ingredients in the container of an electric blender; process mixture until frothy. Serve immediately. Serves 2.

A Honey Cook Book
A. I. Root Co.

PEACH MINT CHUTNEY

Recipes for fish that call for honey are few and far between. Warm up the grill and prepare your favorite fish. You will enjoy this chutney recipe served with it.

1 clove garlic, minced or pressed
1 shallot, minced
2 teaspoons olive oil
2 peaches, peeled and diced
1 jalapeño pepper, seeded and chopped
1 teaspoon grated fresh ginger
1 tablespoon fresh mint, chopped
1/4 cup honey
1/4 cup cider vinegar
1/4 teaspoon salt

Sauté garlic and shallot in oil for 5 minutes. Add peaches and jalapeños; cook for 3 minutes. Add remaining ingredients. Cook and simmer over medium-low heat for 5 minutes. Refrigerate until chilled. Serve on the side with grilled fish. Makes 2 cups.

Savory Seafood Recipes
National Fisheries Institute

HONEY LIME MARINATED PORK TENDERLOIN

This next recipe would be a wonderful one to serve friends. Invite them over for a barbecue. Serve some rolls and a salad for a simple but delicious meal.

1/3 cup lime juice
1/4 cup olive oil or vegetable oil
1 teaspoon coarsely ground pepper
1/2 teaspoon salt
1/2 teaspoon cumin
1/8 teaspoon cayenne pepper
2 tablespoons honey
1 tablespoon country-style Dijon mustard
1 teaspoon finely minced or pressed garlic
1 teaspoon grated lime peel
2 pork tenderloins – 3/4-pound each

While grill is heating, in medium bowl stir together all ingredients except tenderloins. Pierce tenderloins all over with fork. Place tenderloins in plastic food bag. Pour inmarinade and seal. Let stand 20 minutes, turning occasionally. Remove tenderloins from marinade. Reserve marinade. Grill tenderloins, basting with marinade and turning occasionally for 15 or 20 minutes or until done. Let stand 10 minutes. Meanwhile in 1-quart saucepan, cook remaining marinade over medium heat until mixture comes to a full boil (2 to 3 minutes). Slice on the diagonal. Serve with marinade. Serves 6.

Treasury Of Country Heritage Meals And Recipes
Land O' Lakes

HONEY CORN STICKS

These cornbread sticks can accompany the pork tenderloins.

1 cup unsifted flour
1 tablespoon baking powder
1 cup milk
2 tablespoons honey
1/4 cup fresh chives or 4 teaspoons dried
1 cup yellow cornmeal

1/2 teaspoon salt
1 egg or 2 egg whites
1 tablespoon butter or margarine

Heat cast-iron corn ear pan and grease. Combine dry ingredients. Mix egg, honey, milk, margarine, and chives. Stir into flour mix, blend well, and fill molds almost full. Bake at 425° for 15 minutes.

Cooking With Honey
Marge Davenport

QUICK NUT BREAD WITH WHEAT GERM

This next recipe will make a prize-winning quick bread and definitely deserves to be used in celebration of National Honey Month. It is moist, crunchy, and quite rich.

1 egg
1/3 cup honey
1/4 cup melted butter
1/2 cup buttermilk or sour milk
1/4 teaspoon almond extract
1/4 teaspoon vanilla
1/2 cup slivered almonds
1/2 cup ground walnuts or pecans
1 cup unbleached white flour
1-1/2 teaspoons baking powder
1/2 teaspoon baking soda
1 teaspoon salt
1/4 cup wheat germ

In a large mixing bowl, beat egg; add honey, butter, buttermilk, almond extract, and vanilla. Beat again. Stir in nuts. Sift together flour, baking powder, soda, and salt. Mix in wheat germ. Combine wet and dry ingredients, stirring just enough to mix thoroughly. Pour into 8x4x2-1/2-inch buttered loaf pan. Bake at 350° 45 minutes or until center feels springy when pressed. Cool bread in pan 10 minutes. Remove and cool on wire rack. Makes 1 loaf.

The Garden Way Bread Book
Ellen Foscue Johnson

HONEY CHOCOLATE CAKE

No celebration would be complete without a fancy cake. Or perhaps there is a family birthday this month that calls for a delicious cake made with honey. Here's a recipe that uses lots of honey.

2 cups sifted cake flour
1-1/2 teaspoons soda
1/2 teaspoon salt
1/2 cup butter or margarine
1-1/4 cups honey (one pound if you drain the jar well)
2 eggs, unbeaten
3 squares unsweetened chocolate, melted
2/3 cup water
1 teaspoon vanilla

Sift flour, then measure. Sift dry ingredients together. Cream shortening, add honey gradually, by tablespoons at first, beating very hard after each addition to keep mixture thick. Add 1/4 of the flour and beat until smooth. Add eggs, one at a time, beating after each. Add chocolate and blend. Add remaining flour in thirds, alternately with water, beating very well after each addition. Add vanilla. Bake in two greased 9-inch layer pans in 350° oven about 35 minutes. Spread with a cream cheese frosting or your favorite.

Baker's Favorite Chocolate Recipes

To make a really grand honey celebration, try to use honey in one way every day.

INNER ... Cont. From Pg. 6

Take that another step. For several years, we have been putting all manner of chemicals into our hives, some legal, some not. Initially, these chemicals may have only a mite-suppressing effect, but what happens long-term? What residues are in the wax these queens are reared on? What effect do these residues have on a virgin queen in a mating nuc? A newly mated queen? On drones? On the workers taking care of them? Minute amounts of these chemicals (and lots of others, like essential oils) may be playing havoc with some aspect of queen development, or behavior or . . . well, who knows?

And what about the interaction of these chemicals with a newly introduced queen once it arrives at its destination? Does continued exposure, via a strip or contaminated brood combs have an effect?

Then, of course, there was the swarming behavior this year. More than in years, more than in memory. But what is a 'normal' swarm year? And how many (what percentage) new queens 'normally' swarm? Do these chemicals prematurely age a queen? Cause massive and disruptive pheromone distribution problems in a colony?

Think about this a minute. Apistan, Fumidil-B, grease patties, essential oil strips, terra, plastic frames and foundation, poorly mated queens, sterility-challenged drones, poor weather, not-quite-in-time management, viruses, BPMS, American and European foulbrood, and a whole lot of new beekeepers this year, all descending at the same time.

Perhaps I'm overreacting. Perhaps it's just that kind of year. I'd like to think so, but there's too much, it seems, to let it go at that.

Something, probably several somethings are afoot. And we need some answers – from queen producers, queen users, and from the scientific community. Especially this last group.

What is going on?

•

The American Apitherapy Society held a knowledge review course this past July in Pennsylvania. Apitherapy is a subject you don't read about much in this magazine. There's a reason for that. Primarily it's because it's not beekeeping. But then neither is selling honey, really. Or writing news releases, or running a beekeeping club.

However, apitherapy is a mystery. People don't know why it does what it does. Nor do they know why, for some people, it has excellent results, for some, only mediocre results, and for others, little or no effect. Some things are known, but it's a hard subject to quantify, to measure.

There is no doubt that bee venom, when applied to some people for some ailments, has spectacular results. There is also no doubt that for other people with the same ailment, bee venom has not been beneficial. This dichotomous effect – very good or no good – has led to the natural development of two camps – believers, and everyone-else.

The everyone-else group is by far the largest and is comprised essentially of two kinds of people. The first are those who tend to be insect-wary – probably wildlife-in-general wary. "No way am I gonna let those bees near me" is a common response. Some of these people, however, do have a change of heart when, as a last resort for finding relief from a particular problem, are convinced by a believer that, "What can it hurt?" Then, when (and if) some relief is gained, they become believers. In fact, like many who quit smoking, they become strong supporters, almost militant in their beliefs. Past cautions are soon forgotten.

Another group of everyone-else are those who tend toward 'hard science' – double-blind, replicated, and repeatable experiments resulting in data so convincing that it cannot be debated. "Show me the numbers" is this group's motto. Common arguments from this camp regarding recorded successes include 'unknown causes' (the sufferer would have gotten better anyway); or 'patient desire' (No matter what treatment was used, the patient wanted [willed?] to improve, and bee venom was as good as anything else.)

Hard science advocates don't often become believers because they seldom, if ever, explore the possibilities. Bee venom therapy is difficult to measure, so why bother? A replicated, repeatable research project would be expensive, and probably not even possible. End of story.

Believers, too, adhere to different philosophies. Some, probably the greatest number, have observed some benefit and are willing to share what they know (sometimes with little or no experience). That is, they are willing and able partners in a stinging. But often they are quiet, humble, and in no way attention grabbing. They just do it.

There are also believers who are *really* believers. They can't find enough opportunities to promote the benefits of this activity. Some occasionally stir the pot to attract attention to apitherapy, and themselves. One wonders if this isn't simply a vehicle for attention. I hope not.

And, there are even some 'hard science' types in this crowd. Even without reams of empirical data, they continue to help those who request it, all the while compiling what data they can, expanding both their skills and knowledge and relaying that information to anyone interested.

Finally, there are those who have been the direct recipients of this technique and have personally experienced dramatic reversals in their physical or mental deterioration. 'A miracle' is the usual phrase, from them, their families, and the medical establishment that had been unsuccessful in gaining the same result.

These groups or subgroups of believers, and everyone-else, are often at odds with each other, and because hard data (rather than end results) is difficult to come by the arguments tend toward the inane, the insane, and sometimes the silly, with no real winners.

Over the years, however, there have been a few of the believers who have not wandered or wavered in their beliefs. Lifetimes of results, measurable or not, have convinced them they are on the right track. "It doesn't hurt anymore," or "I can walk again," or "I slept the whole night," are enough 'data' for them. That data is hard to argue against.

Charles Mraz is one of these. There are others, certainly. Their work, no matter the criticism, the ridicule, or the praise, has gone on, expanded, and finally gained enough

Continued on Page 48

?Do You Know? Answers

1. **True** Honey bees are found wherever climatic circumstances make its existence possible. Its adaptability is quite astonishing; its habitat extends from the equator to beyond the Arctic Circle. Only the extreme polar regions are unsuitable for honey bees.
2. **False** Honey bees are not native to North America. They originated in Europe, Africa and the Near East. Honey bees accompanied man on most of his major migrations, and the early settlers in each part of the New World took hives of bees with them. Records of the establishment of honey bees in North America do not start until 1638.
3. **True** The integument or exoskeleton of adult honey bees is not permeable to water and is covered with a waxy layer, thus protects the bee from desiccation.
4. **True** Guard bees generally will not be aggressive toward foreign worker bees that accidentally enter the hive with a load of food. Upon returning from a successful foraging trip, the stranger walks into the hive without hesitation and when intercepted by guards, it rarely stops and submits to examination.
5. **True** As the carbon dioxide level increases in the hive, honey bees respond proportionally with fanning behavior.
6. **False** Robbing is the stealing of nectar and honey, not pollen, by bees from other colonies. Robbing may be started in an apiary, at any time when there is no nectar flow in progress, by the beekeeper leaving combs of honey exposed or having colonies open for too long during manipulations.
7. **True** Pollen is rich in protein, which serves as the building material for growth and tissue repair. The amount of protein in pollen from various floral sources, however, is no means uniform and may range from approximately 7 to 35 percent protein. Some pollen sources lack in some of the essential nutrients required for brood production by honey bees. Since the food value of pollen from different sources is highly variable, a pollen mixture from several different sources is needed to provide all of the essential nutrients.
8. **True** Honey bees collect water at all times of the year when weather conditions will allow them to fly and when there is not a heavy honey flow in progress. Water is temporarily stored in the hive in the honey stomachs of numerous bees of the colony. These reservoir bees remain quite inactive and stay close to the brood area. Water is also deposited on the top bars in small cell-like enclosures generally made of old wax and propolis. It is also deposited in the cells of burr comb and in the indentations of the brood cappings.
9. **False** During the first 5 or 6 days of adult life, worker bees consume large amounts of pollen to obtain the protein and amino acids required to complete growth and development. If young adult worker bees do not consume needed proteins, their brood food glands will not develop completely and their royal jelly will not support normal growth and development of larvae or egg production in the adult queen. The requirement for protein decreases when worker bees discontinue nursing activities (between 10th to 14th day of adult life). Subsequently, the chief dietary constituent becomes carbohydrates obtained from nectars and honey.
10. D) 40-50 per cent
11. D) 55° F
12. E) Secretions of plant feeding insects
13. Proteins (amino acids)
    Fats or lipids
    Vitamins
    Minerals
14. Malpighian Tubules
    Rectum
15. Honey bee colonies use water to regulate the temperature (cooling) and maintain optimum humidity within the hive, as a diluent for thick honey, and to liquefy crystallized honey. Water is also needed in their own diet and to raise brood. The water requirement is quite extensive, especially in the spring when a large amount of larval food must be secreted by nurse bees.
16. Provides the bee with energy to power its bodily functions. Used to produce heat to keep the colony warm. Raw material for the formation of chitin, the structural substance of the exoskeleton.
    Secretion of beeswax for the construction of comb.
17. Bees have evolved:
    Branched hairs that pick up and hold pollen grains
    Proboscis that is able to remove nectar from flowers
    Ability to distinguish flowers by odor and color
    Honey stomach for carrying nectar
    Hind legs fitted for packing/ transporting pollen pellets
    Specialized behavior for communicating direction and distance

There were a possible 25 points in the test this month. Check the table below to determine how well you did. If you scored less than 12 points, do not be discouraged. Keep reading and studying- you will do better in the future.

Number Of Points Correct
25-18 Excellent
17-15 Good
14-12 Fair

Richard Taylor

Bee Talk

"The main requirement (for sprouting *Evodia* seeds), I have concluded, is patience."

I want to talk about two completely unrelated things this time. I don't like to do that, but neither of the things I have in mind is worth giving it the full amount of space, so I'm going to toss them in together.

First, then, the Evodias. Last Fall and Winter, as I have noted, I mailed out hundreds of packets of seeds from the Chinese (or Korean – I don't know which) Evodia tree that grows in my yard. Known also as the "Bee Bee Tree," it is a spectacular honey plant which has a dense and long-lasting bloom in late Summer. Apart from a few reports of failure, I did not know whether the recipients of these seeds had been successful in getting them to germinate. Now, however, in response to my recent request, I have many reports of success, along with a number of failures, and I am able to draw some conclusions.

Most failures seem to have resulted simply from not waiting long enough. These seeds are slow to germinate, even under the best conditions. Those that fall from my tree into the prepared flower bed below do not produce their first seedlings until late May, and some of the seedlings do not appear until June. By mid-July the flower bed is a dense carpet of seedlings, hundreds of them. Many people who had received these seeds, it now appears, gave up when, come Spring, none had sprouted.

A long period of cold conditioning is important, I think, and so I had urged storing the seeds in a freezer or refrigerator in case they could not be planted outside in the Fall or Winter. On the other hand, Mr. Patrick Grennan, here in New York, did not thus condition his seeds, and he got a 50 percent germination. Indeed, I had one report of seeds germinating, in a room with high humidity, soon after they had arrived in the mail, and this astonished me. Ms. Sally Mills, in Pennsylvania, has suggested that these seeds may need special soil conditions, and in particular that, like many other seeds, they may require the presence of what are called *gibberalins,* which are produced by certain fungi. But Mr. Donald Young, in Indiana, had good luck sprouting them in composted tree bark, and other readers reported success using starter mixes.

So what I have concluded is that the main requirement is patience. Give them time, and they should sprout. If my tree blooms again this Summer, as I expect it to, then I shall again gather seeds and offer them to readers in October. Do not, please, send any requests until you see my very specific instructions for getting them, in the October issue. And please do not write to ask me to mail those seedlings in my flower bed. I would have no idea how to do that.

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The other thing I want to bring up, totally unconnected with the foregoing, is that one of my recent bee talks in this magazine got badly mangled, apparently by a computer, so that some of it got left out altogether and some was rendered nonsensical. I don't know whether anyone noticed this, but of course it upset me. So now I'm going to straighten that out.

I was talking about the joyful condition known as bee fever. Someone afflicted with bee fever tends to see everything within the context of bees. It is an incurable malady, to which some people, like myself, are highly susceptible, while others are totally immune. I have seen people whose lives were changed and greatly enriched by their discovery of the joys of beekeeping. Honey bees become their obsession. This is the mark of bee fever.

Bee fever, I noted, seems to come and go in cycles, and there seems to be something of an epidemic of it right now. Bee supply people tell me they can hardly keep up with the demand, and new people keep coming to bee meetings, many of them young people. Quite a change from a few years ago, when all the faces there seemed old and familiar, and in ever declining numbers. This is a mystery, because all this upsurge comes just when the publicity about honey bees has been uniformly discouraging – mites and all that. A friend of mine advertised in the local shopping guide for help with his bees, stating that it would be hard work and low pay, and he got 19 responses, all but two of them from women. I was reminded of how, a few years ago, at a very dark point in my life, I inserted in this magazine what I thought was a thinly disguised ad for a wife, and was deluged with responses, all of them from men. Two were from Russia and one from China. These readers were so blinded by their bee fever that they completely missed the point of the ad. All they saw was the word "beekeeper."

There. That, for whatever it may be worth, is how it should have read. I suppose computers are wonderful things but it is very hard to reason with them when they mess up. BC

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

Questions? Answers!

Richard Taylor

Kill or Not Kill?

Q **You say that you never requeen your colonies, and yet you recommend requeening in the Spring rather than in the Fall. Which is it?**

Unknown

A I think that regular requeening is a good idea, provided you do not mind killing the old queens, have a foolproof method, and the time to do it. I would find it very difficult to kill a queen bee, even if I had time for all this.

When To Reduce?

Q **My two colonies are each in a full-depth hive, the top chamber being filled with honey. I want to reduce them to single-story hives for comb honey next Spring. Should I simply remove the top stories in August and set them off to one side for the bees to clean the honey out of them? I can think of no other way to get the honey into single-story hives.**

Les Wasserman
Virginia Beach, VA

A That would be needless work and would create a feeding frenzy in your apiary. Much better to overwinter the bees as they are, in two full-depth stories, and then, come Spring, reduce them to a single story, getting as much of the brood as you can into the single story. You can then introduce packages or swarms to the two stories you have left over, thus either doubling the size of your apiary, or sell them for a nice price.

Side by Side?

Q **I was told that you should use nine frames instead of 10, so I inserted four frames of foundation and five of drawn comb in a hive, alternating them so that the foundation was between two drawn combs. Now I find that the bees are just drawing the drawn comb out more, making the combs very thick, and disregarding the foundation. Should I have put all the foundation to one side and the drawn combs on the other side?**

Harold Gatlin
Crete, IL

A You have learned an important lesson the hard way. Frames of foundation must always be all together, never alternated with drawn comb. The best way to get foundation drawn is by swarms, or over a strong colony. If you put foundation in a super with drawn combs, have the drawn combs to the sides and the foundation in the center. And yes, nine combs are better than 10, but if using foundation, start with all 10.

Honey Too Thin!

Q **I recently extracted five gallons of honey from two supers, and it is watery thin. Why is that? And is the honey all right to use?**

Rick Werford
Moorestown, NJ

A Honey becomes thin when it is exposed to moist air. The moisture is absorbed by the honey, even through the cappings. The commonest causes of thin honey are: extracting it in a damp place, such as a basement; storing it under conditions of moisture – for example, leaving supers in an outbuilding during a prolonged wet spell; and extracting honey from combs that are not capped over, that is, before the honey has become ripened in the combs.

Decontamination - AFB

Q **My twenty-some colonies were destroyed by AFB and mites, and I want to decontaminate and restore the equipment. What do you think of the following plan? (1) Melt down all the comb. (2) Load all wooden equipment into a rented trailer and take it to a body shop where they can bake it in one of their ovens. (3) Use a different trailer to haul it to a new storage site and bag it until ready for use. (4) Launder all clothing in hot bleach water and soap, and discard all gloves. (5) Hire a voodoo priest to dance over the whole mess. With respect to (1), is melted wax still contaminated? Can it be sold?**

Al Hodge
Detroit, MI

A Your (5) seems like a good idea, but otherwise, you are overdoing things. Melted down wax is perfectly safe. Wooden equipment can be made safe by lightly scorching out the insides, as described in most bee books. The frames are probably not worth saving. Clothing can just be put through the family wash, and gloves scrubbed with strong soap. Your bees were probably killed by mites, which do not contaminate equipment. If you had AFB, then the only thing you need to worry about is the wooden equipment, because a colony needs exposure to thousands of spores over a period of time in order to get AFB.

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

INNER ... Cont. From Pg. 44

acceptance by the everyone-else crowd that funding is being sent to do 'hard science' research. Some in the medical community are finally listening to the practitioners and the healed. More and more people are considering apitherapy as a viable first treatment *and* as an acceptable alternative to conventional medical procedures.

This still isn't beekeeping. But because honey bees are involved, beekeepers are involved, and are increasingly being asked, "What gives with this apitherapy stuff?"

I'm not going to pretend to explain here 'what gives.' I don't know. In fact, my 'hard science' background biases most of my observations. But a stern lecture from a good friend convinced me to lay aside those prejudices and be a reporter – that pipeline from story to listener I so often describe.

I attended that knowledge review course in Pennsylvania in July – to see 'what gives' with this group. I wasn't disappointed. There were, with the possible exception of myself, 75 or so believers present. And there were members from all the camps of the believers. Some were interested, curious to learn more. Some were long-time practitioners, eager to share experiences, techniques, and each other's company. And there were the hard-core believers, too. Together, the groups gave a good picture of 'what gives.'

Many ailments have been explored using apitherapy as a relief. I don't know them all. Rheumatoid arthritis is the most commonly mentioned disorder, but multiple sclerosis is the star at the moment. There are a host of others that have been successfully treated. But a caution here: Not all people are successful candidates for treatment.

I strongly urge you, if you are interested in knowing more about this subject, to contact those who are practicing and knowledgeable, more so than I am anyway. The American Apitherapy Society is the group to contact. They, or those who run it seem to be well-schooled in the craft, and have cool heads to boot. They publish a good newsletter, hold regular meetings, and are truly interested in obtaining the recognition they feel they deserve – with the public, and with the traditional medical community.

Contact them at: 5370 Carmel Road, Hillsboro, OH 45133, Ph. (973) 466-9214.

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Meteorologists are getting excited (which in itself is probably an event) about the impending arrival of the next *El Niño*, the freak weather anomaly that will change the way almost all of us Winter bees this year. Warmer than average in some parts of the north, wetter than average in the gulf and who knows in parts of the west. It's too early to tell but keep your ears tuned to the Weather Channel and whatever news magazines you can tap to see what will happen in your area. Don't forget the Internet, either.

Basically, more food, higher ground and hunkered down are the preparations, according to the experts, and my dim memory of 1982-83, the last time we had one of these. Be prepared.

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Pesticides have once again become so onerous a problem for beekeepers as to attract both regional and even national attention. Earlier this year Washington growers banged heads with some migratory beekeepers over the use of certain chemicals in the orchards there. Some migratory people pulled out of the area to escape the problem.

Alfalfa weevil, grasshoppers and other pests have caused more than average problems out West this year, too. Spraying for control has killed bees. Careless applications, apparently, killed more.

In the northeast problems have surfaced with orchard floor management, pesticide sprays and honey bees. This has been an on-again, off-again problem there for years, and this year it's on-again.

In the southeast, continuing problems with some crops have not eased and colony losses continue, in spite of monitoring, complaints, and even legal actions.

Down south, spraying for medflys has caused some localized, but significant losses and no recourse seems available. And those bees not caught by medfly sprays got nailed by mosquito sprays. Nowhere to hide, it seems.

To further complicate matters, there is a push by some state regulators to have pesticide labels changed to relax even further the restrictions on protecting foraging honey bees. Their claim is that current labels are unenforceable. The EPA is reviewing the current and proposed guidelines this Summer (they may even be done, now). Rather than deal with one small issue – protecting honey bees – regulators seem intent on protecting crop producers. The EPA seems a bit more lenient though. But it's still David and Goliath, and Goliath will probably win.

There are some things that can be done. Contacting your state's pesticide regulatory agency (usually a sub-unit of your state's Department of Agriculture, but it may be independent), or even the Federal EPA people with your concerns will at least put them on notice. Let them know that pesticide labels should not be relaxed relative to honey bees and their safety.

And, take some precautions. Know the crops in your area that are likely to be sprayed, and when it will occur, and what with. If reasonable, confine, restrict or move bees. If not, don't put them there. Yes, the label says bees shouldn't be sprayed – it's the law. But realistically, can your bees afford to be right, dead right?

I'm not selling out here. Bees must be protected, and those who violate the label should be punished. In fact, labels should be *strengthened* to offer even more protection. Killing bees needlessly is criminal.

But be careful what you wish for. Strong enforcement for label adherence doesn't stop at the edge of a field. It knows no boundaries, and the inside of a hive is fair game for the pesticide police.

All labels, for *all* pesticides should be followed. What's good for Farmer Fred is good for Beekeeper Bob. Keep hypocrisy out of this problem. It will come back to haunt us.

Kim Flottum

Gleanings

SEPTEMBER, 1997 • ALL THE NEWS THAT FITS

Queen Symposium Featured
'98 ABF MEETS IN COLORADO

Planning is underway for the 1998 American Beekeeping Federation convention, which is set for January 14-18 in the shadow of Pikes Peak in Colorado Springs.

The convention will include meetings of the ABF, the American Association of Professional Apiculturists (AAPA), the National Honey Packers and Dealers Association (NHPDA), and the newly re-organized honey Bee Committee of the American Farm Bureau Federation.

With all these groups meeting, the four days will be packed full of business and information; however, the ABF always finds time for fun, and this time will be no exception. For the ski enthusiasts, there will be a pre-convention ski trip to Breckenridge, a premier Winter fun destination located two hours northwest of Colorado Springs. The ski group will arrive in Colorado Springs on Saturday, January 10, for a three-night, three-day stay. Then, the action moves to Colorado Springs. The weather in Colorado Springs promises to be cold, but clear; Colorado Springs gets very little snow.

The AAPA will stage its American Bee Research Conference (ABRC) during the ABF convention this year. The main activities will be on Friday, January 16. Some ABRC research papers will be presented on the main ABF program; others will be presented to the ABRC sessions. All persons attending the convention will be able to participate in any session.

The Farm Bureau's Honey Bee Committee has been re-activated after several years of in-activity. It will meet at a time to be determined during the convention. The NHPDA will hold its traditional sessions during this week.

A highlight of the main ABF program will be a special **Symposium on Queen Production and Use** on Thursday, January 15. Speakers will look at this all-important member of the honey bee family from the aspects of biology (scientists), production (breeders), and use (beekeepers). They will explore production, problems, and the opportunities of queens, queen producers and queen users.

For more information from ABF, P.O. Box 1038, Jesup, GA 31598; ph. 912-427-4233; fax 912-427-8447, e-mail: tfore@beta.jesupnet.com; or internet: htpp://www.abfnet.org.

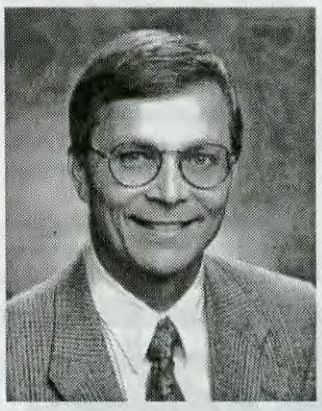
WHAT'S FOR DINNER

New recipe cards from the Honey Board help you answer that question with six delicious, easy-to-prepare ideas. Three 3" x 5" perforated recipe cards are presented on 8½" x 9¾" handouts. Each recipe card has two taste-tempting entree recipes and photographs.

The handouts are ready now for your use in promotions or to accompany your honey products. Beekeeping associations and assessment-paying supporters of the National Honey Board can order up to 500 recipe handouts per year free of charge. Additional handouts are available at five cents each.

To order handouts, call the National Honey Board toll-free at (800) 553-7162.

FIRST AAPA AWARD



The American Association of Professional Apiculturists selected Dr. John R. Harbo as it's first recipient of the Award for Apicultural Excellence. The presentation was made in conjunction with the joint banquet of the many organizations that met with the American Honey Producers Association last Winter.

Members of the Award Committee selected John for this honor based on his impressive range and productivity in the area of apicultural research, conducted at the USDA/ARS Honey Bee Laboratory in Baton Rouge, Louisiana. Some of his findings include:

1. elevated temperatures are lethal to tracheal mites in a range that can be tolerated by adult bees. This information coincides with observations that tracheal mites are less problematic in the hot desert southwest, but very damaging in colder climates.

2. honey bee semen can be collected, mixed, diluted in a suitable cryoprotectant and stored in liquid nitrogen. Coincidentally with this study, john determined what types of damage can result when virgin queens are inseminated with frozen sperm – mosaic males to totally sterile F_1 queens, similar to effects caused by gamma irradiation or being fed mutagens.

In total, John has published in excess of 60 scientific articles and 17 abstracts. The quality and quantity of John's work is exemplary in the field of apiculture.

THE RUSSIANS ARE COMING

The USDA Honey Bee Breeding, Genetics and Physiology Laboratory received approval from federal and state regulators to import honey bees from Primoye Territory in the Far East of Russia. The stock has demonstrated potential of withstanding infestation by *Varroa jacobsoni* when left untreated with miticides. July 1, 1997 100 queens from Russia were installed in colonies at a USDA Honey Bee Quarantine Station on Grand Terre Island, LA. Colonies of four different commercial bee stocks are in place so USDA scientists can best assess any disease problems that might affect different bee types dissimilarity. The imported queens will be maintained within hives by excluders. The colonies will be inspected weekly during the six-month quarantine, with federal and state regulators making inspections at eight weeks and six months. Release of bees from quarantine will be allowed only upon joint approval by the USDA, Animal and Plant Health Inspection Service, and the LA State Dept. of Agriculture and Forestry.

NHB Celebrates
NATIONAL HONEY MONTH

September is National Honey Month and it's a perfect opportunity for you to promote your business. The Honey Board can help you by providing a press kit, also known as a media kit. Each kit contains several honey/beekeeping information sheets, honey recipes and a honey recipe photograph – all packaged in a nice colorful folder. For your free press kit, contact Jami Yanoski at (800) 553-7162.

To customize this kit, you may provide background sheets on your company, your company brochure and include copies of any prior press coverage you've received.

To identify media contacts, local libraries carry one or more of the following publications, which contain media contact information. Make sure you're using an up-to-date edition. In addition, there are regional directories.

- Bacon's Newspaper-Magazine Directory - 2 volumes
- Bacon's Radio-TV-Cable Director - 2 volumes
- Editor and Publisher International yearbook
- Gale Directory of Publications
- Newsletters in Print
- Oxbridge Directory of newsletters
- Standard Rate & Data Service
- Ulrich's International Periodicals Directory
- Working press of the Nation
- Writer's Market

Some Editors may use the Honey Month Press Kit information almost as it is written. Most, however, will contact you for additional information so they can write the story in a way that meets the needs of their audience. Similarly, radio and TV stations will call because they prefer to have you show or tell about your beekeeping and honey business.

You can also offer the National Honey Board as a contact for additional information or recipes. Let us know if we can help!

25% Wasted
USDA FOOD SURVEY

More than one-fourth of all the food produced in the United States is wasted, according to a new USDA study, the first of its kind in 20 years to examine and quantify food loss. Agriculture Secretary Dan Glickman released the USDA study (July 1) at the annual meeting of Second Harvest, the largest domestic charitable relief organization in the country. Glickman said, "Whenever I speak about the importance of food recovery and gleaning, people always ask me, How much food is really wasted? Until now, the only estimates were 20 years old. This study is significant for defining the problem of food waste today," The study, conducted by USDA's Economic Research Service, found that in 1995 about 96 billion pounds of food, or 27 percent of the 356 billion pounds of the food available for human consumption in the United States, were lost at the retail, consumer and food service levels.

NEW BRUNSWICK FUNDS POLLINATION

Honey bees are essential for the pollination of New Brunswick's multi-million dollar wild blueberry crop. In June, over 5,000 colonies of honey bees were transported to blueberry fields for pollination. Without this honey bee service there would be a serious loss of production. Blueberry fields require at least one hive of honey bees per acre for minimum production. With 9,000 acres in production each year and an expansion rate of 1,000 new acres of blueberries per year there is a potential for a shortage of honey bees.

This rapidly expanding blueberry industry has created a demand for more honey bee colonies.

In an effort to assist beekeepers to expand their operation to meet the needs of the blueberry industry, the New Brunswick Dept. of Agriculture and Rural Development (NBDARD) has announced a new initiative. A pilot project is now under way in which several partners have come together to offer financial assistance for expansion of the beekeeping industry. For approved applicants, the NBDARD and the Regional Development Commission will assist with a five-year buy-down of interest payment on loans for apiary expansion. As well the Farm Credit Corp. is offering $400,000 in financing with a five-year deferral of principal repayment. It is hoped that the number of colonies of honey bees will expand by 1,000 over the next year. If the response to the project is good it is anticipated this pilot project will be extended for a longer term.

This new approach to facilitate financing is an interesting concept and a positive move towards assisting the beekeeping industry. For more information about the honey bee initiative contact Heather Clay, Provincial Apiarist NBDARD, P.O. Box 6,000, Fredericton, E3B 5H1.

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Lyman C. Root was born in St. Lawrence Co., NY, December 19, 1840. The better part of his education was obtained in "brush college;" but before entering this he had two terms in the academy, two in St. Lawrence University, and a course in Eastman's Business College, where he graduated in 1865. The eight years following he was with Mr. Quinby, for the last five years his partner. It was his high privilege to be associated with him during what may be called the transition period of modern beekeeping; during the time of the most rapid changes from box to frame hives; the time of the dissemination of the Italian bee, the introduction of the honey-extractor, the invention of the Quinby bee-smoker, the adoption of the one-comb section, and the perfecting of the new Quinby frame and hive. The various experiments that ended in the adoption of comb foundation were then in progress, and Mr. Quinby could have had no young man with him more enthusiastic and more helpful than the energetic L.C. Root, who released him from business cares, and gave him the needed leisure for study and invention. These were golden days for Mr. Quinby, well improved; and for Mr. Root nothing less, as he recalls the results obtained. Their supply-business rapidly grew to large proportions, and it was common for them to buy from three to five hundred colonies in box hives in the Spring, transfer them to the new hive, and sell them to their customers in the different states. This necessitated a very large amount of exhausting work; but at this time Mr. Root knew nothing of sparing himself, and often did in one day what the average man would have taken two days for accomplishing.

In 1873 it was discovered that a rest was needed, and in the Fall of that year he retired from the partnership and moved to Mohawk. But it seems impossible for a man of his temperament to rest, and we shortly find him extending his bee-business, going out in the early morning with his assistants to a beeyard half a dozen miles away, and returning late at night with from two to three or more thousand pounds of extracted honey – the same process to be repeated the next day.

After the death of Mr. Quinby, Mr. Root took his supply-business. To all of this must be added his literary work as regular contributor to the *American Agriculturist* and the *Country Gentleman,* with frequent articles to all the bee journals of the country; his presidency of the North American Bee Society, and of the Northeastern Association, with his long and laborious exertions in establishing the latter, and finally his re-writing Mr. Quinby's book – a task on which he expended a greater amount of careful, conscientious work, and which caused him greater anxiety, than though it had been entirely his own. For this last work Mr. Root was peculiarly fitted by his long residence with Mr. Quinby, and knowledge of his methods.

In keeping bees Mr. Root has preferred to raise extracted honey, and to keep about 40 colonies in a yard. His crop was usually as much per yard as his neighbors' who kept twice the number in a place. The most of this success was due to skillful manipulations, improved honey gatherers, and wise selection of location; but after subtracting all these there probably remains something to be credited to moderate-sized yards. One Fall he put into the cellar at the Hildreth yard 40 stocks, took the same out in the Spring without the loss of a single colony, and produced from them 9,727 pounds of extracted honey, 4,103 pounds of which was gathered in just seven days. Is better evidence needed that the author of the *New Beekeeping* is a practical beekeeper?

Mr. Root takes an active part in every good work in the community in which he lives, and he is ready to make any possible sacrifice in working to elevate humanity. He takes great interest in temperance work, and has been an active member of the Good Templars since 1865. My first knowledge of Mr. Root came from his making a 10-mile trip and back after dark, over almost impassable roads, to our little village, for the purpose of organizing a lodge of Good Templars. Mr. Quinby and himself were two of those who voted the first Prohibition ticket in St. Johnsville, and he has been an active supporter of that part ever since.

In 1869 he was married to Mr. Quinby's only daughter, and his home is one in which intelligence, refinement and happiness reside. I never met any one who appreciates his home, family, and friends, more than does Mr. Root. His wife has been a true helpmate to him; and in the re-writing of Mr. Quinby's book she took a prominent part in the composition of the same – a service she had also rendered her father in his last revision. Mrs. Root has had entire charge of the education of their two daughters, the elder of whom has just passed from the home instruction into the high school, while the younger will take another year to graduate in the home course.

There are very few men who have had the large and varied experience with bees such as has fallen to the lot of Mr. Root. I suppose all such could be counted upon the fingers of one hand, for there is no branch of bee culture, either theoretical or practical, with which he is not familiar. He has been an extensive producer of both comb and extracted honey; is thoroughly familiar with the details of a large supply-business, including the purchasing of bees in box hives, and transferring and Italianizing the same; the rearing and shipping of queens, together with a large experimental knowledge and a large experience as writer and author. For the past year he has resided at the seashore, and, his numerous friends will be glad to learn, with health much improved; and we all unite in wishing that he may be spared to the beekeeping fraternity for many years.

P.H. Elwood, Gleanings, June, 1888

Lyman C. Root

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