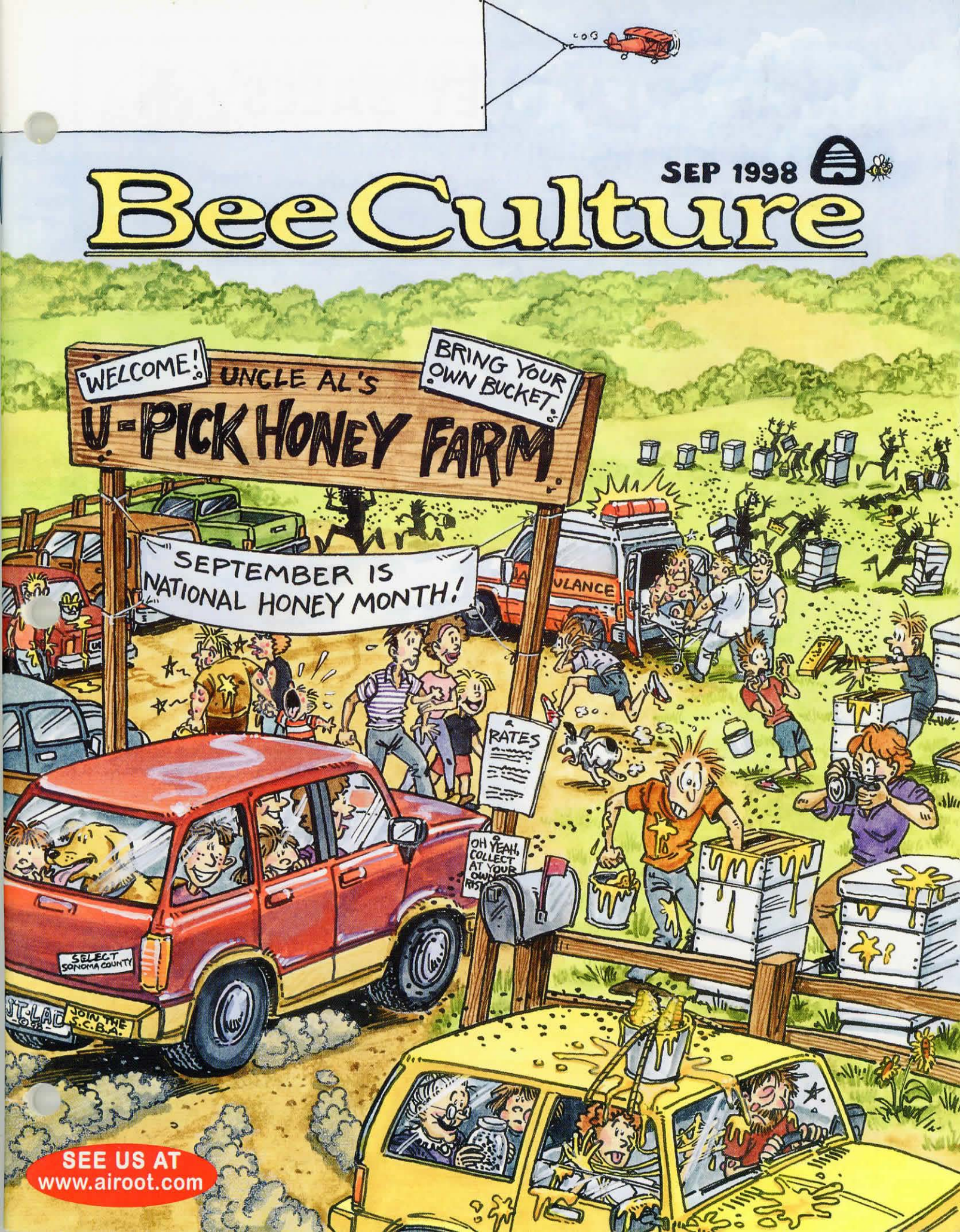
SEP 1998

Bee Culture



Bee Culture

THE MAGAZINE OF AMERICAN BEEKEEPING

SEPTEMBER 1998 VOLUME 126 NUMBER 9

FEATURES

Fred Rossman, Pg. 35

COVER

A Pick-Your-Own Honey Farm has always been an idea whose time will never come. But, imagine for a moment that it did. What better time to visit one than National Honey Month!

Since most honey users won't ever be honey harvesters, we've got information inside this month on grading honey, labeling honey, promoting honey, honey and genetic engineering, and a humorous piece on extracting honey.

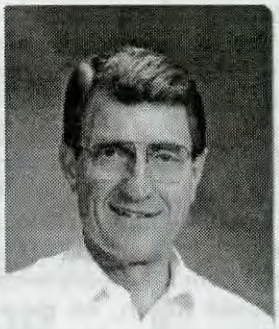
Enjoy, promote and capitalize on National Honey Month!

cover by Jonathan Taylor & Lela Dowling

DEPARTMENTS

Two *new* columns start this month – *Beekeeping In The Digital Age*, by Tom Sanford; and *Club Corner*, a primer on starting and managing a bee club. Check them out this month!

COLUMNS



JOHN ROOT
Publisher

KIM FLOTTUM
Editor

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INNER COVER

This month's issue is a natural for somebody who wants to talk about honey. Not marketing honey, the politics of honey, the production, care, distribution, threats against, history, future or price of honey, but just . . . honey.

So after a dozen years of talking about those other things in this column during National Honey Month, I thought I'd get a bit more fundamental this time and just talk about . . . honey.

I wanted to discuss colors and flavors, origins and plants, geographical differences, moisture and consistency and whatever else cropped up while looking at, tasting, smelling and feeling . . . honey.

So one evening I started to assemble my honey collection on the kitchen counter, but it soon spread to the table, the stove, sink and floor so I could actually see all that I had. I'm not an avid collector, like some I've known and read about over the years. There are those with honey from every state, those with hundreds of known (nearly pure) floral sources, some with a myriad of jars, cans, bottles and what not and many with samples from each season they collected a crop. I'm none of these. But like the bees, I gather what nature, and good people provide.

I collect honey not to just 'have' it, but because I like honey. But I can't eat it all, and even when I try, while I'm working on one sample another comes along that needs to be tried, and so there are many partially consumed bottles and jars and tubes and bears in my collection.

It's difficult to appreciate the subtle and minute differences in honey until you actually see several hundred bottles, of several hundred varieties, all together in rows and stacks and groups. If you have seen a display such as this you know what I mean. If not you have a life event yet to experience.

Anyway, once assembled, what to talk about? Color? A couple hundred bottles have a least a hundred colors, measured by a variety of scientific methods that remove all the poetry and beauty from this array. Necessary, practical, mechanical and business like I guess. But no mystery, no art, no fun.

Flavors? Every jar of honey has its own flavor. Minty. Cloying. Sweet, but a tangy aftertaste. Sharp. Strong, but a mild aftertaste. Metallic. Definitely Citrus. Fruity. Bold. Sugary, but smooth. Nearly tasteless, but a sharp aftertaste. Molasses-like. The list goes on and on and on.

I've had friends over, not aware of these differences, and had them sample five or 10, 15 or 20 different kinds of honey. Their awakening is a joy to watch. The sugar buzz they get is almost frightening however. If you try this I suggest moderation in amount, and in number. Or not. It's fun either way.

I've always wanted to get together a group of wine tasters, connisseurs if you will, and give them several varieties to try. 'Rich bouquet,' 'fine nose,' 'good body,' 'glowing aftertaste' . . . all these fine wine words would apply equally well here. Can't you just hear one of those famous wine critics . . . "Yes a nearly pure sourwood, perhaps 1993 or 1994 from northeast South Carolina or southeast North Carolina. Heated to, oh, no more than 120°, strained but not filtered and definitely not blended. Not the best year for sourwood, 1995 was better, a bit lighter and without the smoky aftertaste. But this wasn't a bad year either. Probably from a smaller producer and hand extracted and bottled. Maybe stored in a freezer for a bit since it hasn't darkened much. A bit of waxy feel on the back of the tongue, perhaps, which adds to its rustic appeal."

Well, as I sat in the kitchen late that night, pondering all this . . . colors, flavors, jars . . . I struggled for a focus. As I let my view wash over the counter, across the table, the stove and down to where I sat on the floor, the thing that grabbed my attention, that said 'me first' wasn't the golden rainbow of colors before me. It wasn't the allure of opening all those jars and sniffing the captured aroma of a million blossoms, or the thought of the most manic, probably suicidal, sugar buzz of my life. No, looking up and down and around, what caught my attention, was, quite simply, the jars. More specifically, the *labels* on the jars.

Continued on Page 42

Plain Jane Labels

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Bee Culture

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MAILBOX

Not Big Enough

As a small beekeeper, who is basically just getting started, I am not at the point where I need a great many containers in which to put my honey for marketing. However, I am from the Midwest, and therefore have found a small niche of people who enjoy a "Homey" appearance for containers, one of these being the pint size mason jars with handles. My customers really enjoy them, as once they use their honey, they can reuse the jars as drinking glasses, or catchalls, or whatever.

I recently called Berlin packaging, with my small order, and was informed that they no longer accept these, and that I would have to order a larger quantity in order for my order to be filled. Needless to say, I was rather upset, and am now having to scramble to find these jars to fill customer orders. Thank goodness for the local retail stores, however, I have to pay far more for these containers from them, thus have to charge a little more for honey.

It is upsetting that the smaller "local" beekeepers, who are mainly supported from the locals, have to deal with frustrations of not being, "Large enough" to suit the distributor corporations. I feel as if we are being pushed aside and forgotten, just so they can make an extra buck.

If anyone knows of a company that caters to smaller beekeepers for these kinds of containers, I would like to know about them, and will probably use them. However, if I ever get to the point where I am large enough to order larger quantities at one time, I don't believe I will be ordering from Berlin.

I have also been reading up on queen rearing, and have gleaned some valuable information and would also like to see more articles on them if possible. I really enjoy reading your publication, as you provide a lot of helpful hints and things to look for in your colonies, that have saved me a lot of heartache. Keep up the good work!

Rhonda Keim
Fairfax, KS

Free Trade Response

In August's *Bee Culture*, Tom Sanford linked the appearance in North America of the small hive beetle with 'free trade' and 'globalization.' I believe that this linkage, and the comments made about the effect of 'free trade' on the potential movement of pests and diseases, need some comment.

Trade isn't yet 'free.' Agreements such as the sanitary and phytosanitary (or SPS) agreement of the World Trade Organization (WTO) and the North American Free Trade Agreement (NAFTA) haven't made trade free. They have, though, gone a long way to establishing rules for the restrictions on trade which are still in place. Over 130 countries have agreed to the obligations of the SPS agreement because they reject the alternative, whereby countries can replace the tiny quotas or huge tariffs of the past with new trade barriers based on phony science or political considerations.

Tom cites the arrival in the U.S. of tracheal mite and *Varroa* as examples of the phenomenon of globalization and its promotion of the movement of biological materials around the globe: "most certainly their coming was the result of increased movement across the world by ships and airplanes."

Authorities generally agree that *Varroa* arrived in the U.S. with illegal importations of queen bees. Smuggling is a different issue from 'free trade,' and has been going on for far longer than we've been talking about 'globalization.' It's also recognized that the tracheal mite arrived across the land border with Mexico; if a land border can't be sealed against human movements, how can honey bees be excluded?

Neither example seems to me to relate to 'globalization.' Both mite species arrived well before the GATT Uruguay Round or NAFTA changed the rules affecting international trade. Once detected in the U.S., both species spread rapidly between states through beekeeper-assisted movement.

In any case, globalization is not something that is easily reversed. In fact globalization is not a policy choice of governments or international organizations. It is the inevitable byproduct of technological advancement during a time of peace. Trade is increasing, and services and information can be provided via the internet which cannot be controlled by governments in the way we have tried to regulate trade in the past.

The challenge now is to accept the far greater movement of people and goods around the world, and support the development of scientifically sound rules to facilitate trade while protecting bee health.

Andrew Matheson
New Zealand Ministry of
Agriculture & Forestry

The SPS agreement and an explanatory booklet can be accessed from http://www.wto.org/wto/goods/sps.htm

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Another explanatory publication, from the New Zealand Ministry of Agriculture and New Zealand Ministry of Foreign Affairs and Trade, can be found at http://www.maf.govt.nz/MAFNet/agreement/sps/home.htm

Disappointed, Too!

In regards to the letter to the editor entitled "Disappointed!" in the May '98 issue, I would like to add that I also am disappointed. I have been a subscriber for about 20 years and I subscribe to find out what is happening. How is it that I don't even know what essential oils are? If there is

Continued on Next Page

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research going on at five universities on one subject, I ought to know about it! Your job isn't to decide what is good for me; your job is to get me the information so that I can decide what is good for me.

Joel K. Letvin
W. Bloomfield, MI

Editor's Note: *The use of essential oils (concentrates of oils extracted from a variety of plants – mints, herbs, trees, etc.) in beehives to control either or both mites has been, and continues to be a controversial subject. While it is legal to introduce these chemicals into a hive, the way they are used and the effectiveness of each technique, in different regions of the country and during different times of the season remain, for the most part, guesses. Some are good, others not. Thus, some people, in some places at some time have had what they consider good to excellent mite control using these chemicals in some way.*

I trust you see the problem. But what you don't see is the end result of many of these trials. No control, dead colonies, contaminated honey and wax, injured beekeepers, significant amounts of money spent on chemicals, and no good scientific data.

While there may be 20 ways to requeen a colony that work for some people, sometimes in some places, an error does not injure the beekeeper, contaminate honey or wax or cost more than $10 or so.

We are following the development in this area, have several researchers working with us on presenting an overview of this subject, and will present, when complete, probable results of using these chemicals in a prescribed manner that have been tested for region, season, chemical used and application technique.

Beekeepers everywhere make their own decisions, some legal and some not. But this magazine will not give you, knowingly, inaccurate, dangerous or illegal information with which to make those decisions.

Double Standards

How about an article describing the miticides being used in beehives in the countries that ship the bulk of the honey being imported into this country. I am sure that many products that are used are illegal to use in the U.S. According to what I read, about one third of the honey sold in the U.S. is imported, please let the beekeepers who read your magazine know of the double standards the U.S. Government uses in keeping our food supply safe.

Ray Buell

"Local" Honey

Concerning the question about "local" honey labeling in July '98 issue of this magazine. First of all I realize this is a very opinionated subject. According to the last line of the answer Richard Taylor doesn't seem too sure of his own answer.

We know the same variety of flower will produce a different honey under different weather and soil conditions. That can happen from one county to the next, let alone the whole state of Iowa.

If I told my honey customers

MAILBOX

that my local honey came 30 or 40 miles from my house they would question my values and goals. When we advertise honey as local it should be done with a buyer's viewpoint. I'm afraid a person can get carried away concerning the term "local" honey because of financial gain.

Maybe we should ask the opinions of our honey customers. After all they are the life blood for those selling honey. Are we misleading them?

Jr. Bontrager
Shipshewana, IN

Honey Sauce?

Recently a co-worker and customer brought me a 'gift' following a lunch time trip to the local KFC store. He had a biscuit with his meal and asked for honey to put on it. What he received from KFC was a packet labeled "Honey Sauce." The ingredients, as listed on the packet, are: honey, high fructose corn syrup, sugar, corn syrup, natural flavoring, and caramel color.

That's almost enough to put a sting on a drone! Adding "natural flavoring" and "caramel color" in addition to the other sugars is an action that defies understanding. Can it actually be less expensive for KFC to package this stuff? One small consolation is that the main ingredient is honey.

Gary Snydock
Oakdale, MN

Editor's Note: *The fact that honey is even included is better than no honey at all. Next time, tell KFB that you think they're cheap to dilute such a fine product, and ask if they use something other than chicken in their recipes.*

U.S. Honey, Pro & Con

Three cheers for the Joe Traynor article in the August *Bee Culture* – U.S. Honey. We all see lots of advertising for specific food industries. Some are to counteract bad reps they had previously received (eggs), others just to promote a particular state or U.S. product. I've never understood why U.S. honey industry should be different.

I'm working on my sales line for the fairs this year, "Do you know where your honey has been?" or "Know your beekeeper, know your honey." Without getting into specifics about honey contaminates, my idea is to point out the rules, regulations, and laws as to using chemicals and medications in beehives while producing honey for human consumption. Not all countries that export honey to the U.S. follow the same guidelines as the U.S., and we know that the U.S. does not inspect every bit of imported honey. Armed with this information the consumer can make a decision whether or not to take the risk of how their honey was produced and handled before it got to their table. Educated consumers will make smart choices, and if your product meets their standards you will be rewarded. Even if the law doesn't require nation of origin (I thought it was the law), consumers can demand it and make it happen.

Jaci Siehl
Silverado, CA

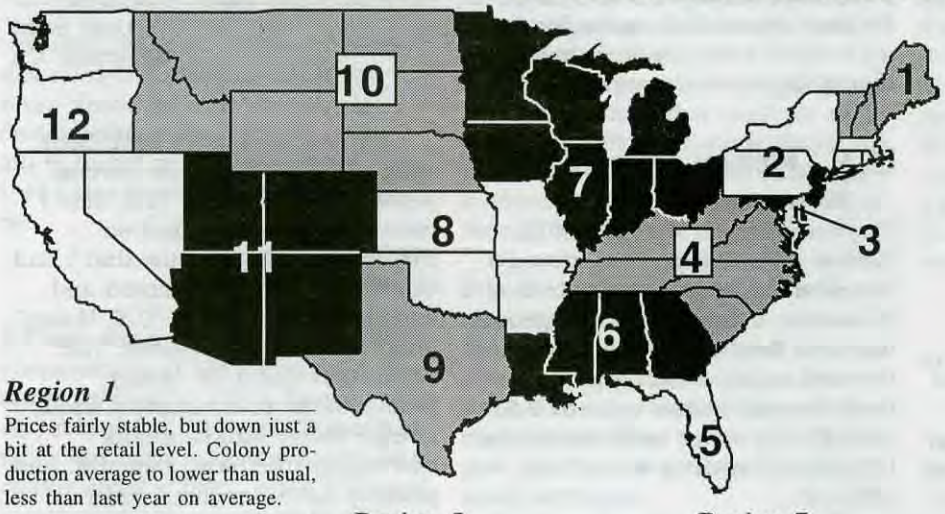
•

My husband and I have been receiving *Bee Culture* for several years, and this is the first time I have read an article that so thoroughly disgusted me that I had to write. I was disappointed and appalled by the article *"U.S. Honey"* (Aug. 1998) by Joe Traynor. The suggestion that U.S. Honey producers lie to consumers about foreign honey strikes me as thoroughly unethical, immoral, and possibly un-American. I have always believed honey producers to be special, wonderful people – upstanding and strong. The very thought that anyone should suggest that honey producers lie is terribly disturbing.

All U.S. honey producers, from the small scale (like us) to the large-scale, should look for ethical ways to increase U.S. honey sales. Better education regarding how unprocessed honey is more healthy than processed is a good start; even running positive ad campaigns would be better than lying. It would truly be a shame to see such a noble profession as honey producing to be tainted by "exploit(ing) this weakness of foreign imports to the fullest." Let the big corporations of the world deal with immoral and unethical acts – keep the honey producers out of it!

Cheryl & Chris Bernardini
Memphis, TN

SEPTEMBER – REGIONAL HONEY PRICE REPORT



Region 1

Prices fairly stable, but down just a bit at the retail level. Colony production average to lower than usual, less than last year on average.

Region 2

Prices up, a little at every level this month. Colony production in 70 lb. range, similar to or lower than last year's average but about the same to a tad higher production overall across the region.

Region 3

Prices a bit higher at bulk wholesale, but the same retail and wholesale case lots. Colony production low this year across the region and less will be produced overall.

Region 4

Prices stable at all levels this month. Colony yields vary from 20-80 lbs./colony. Most, however, are lower than last year, and predict lower output overall than last year.

Region 5

Bulk pail and barrel prices down, wholesale steady, but retail down. Mites, fires and even beetles a problem, reducing some crops. Average will be up a bit overall, buyers and seller both settled.

Region 6

Prices pretty much steady all levels since last month. Weather a strong factor for favorable crops this year, with averages up all over. But many sellers looking for buyers will increase, and affect prices it is feared.

Region 7

Pail prices up a bit, but barrel prices down. Wholesale steady but mixed and retail up a bit, but mixed, too. Weather and swarming problems this Spring, but reduced mite populations have helped an average to above crop. Buyers and sellers about even, but will see.

Region 8

Bulk prices down, wholesale up, but retail down, but not much. Weather, bad weather the big news for the early season, but far fewer mites and disease problems helped. Good to large crops will have sellers and buyers looking.

Region 9

Prices stable, if not great, since last month. Hot and dry the only weather news, reducing the crop in most places. Mites non event, and buyers will be out looking to fill orders.

Region 10

Prices fairly stable, but seem to be increasing on what's left of last season's crop, finally. Not exciting weather will keep crop average, or a bit below, and sellers will be looking for buyers, later.

Region 11

Prices, though mixed, up a bit since last month, especially wholesale. Good Spring weather helped with lots of swarms, but produced a good crop – certainly a mixed blessing.

Region 12

Prices fairly steady for all classes, but some up, some down. Demand mixed, and causing ripples. Weather the leading crop indicator here. Lots of wet weather has caused all manner of problems, but may help later.

	Reporting Regions												Summary	
	1	2	3	4	5	6	7	8	9	10	11	12		
Extracted honey sold bulk to Packers or Processors													**Range**	**Avg.**
Wholesale Bulk														
60# Light	56.30	59.33	54.00	70.38	57.08	56.00	51.23	57.08	54.00	57.08	70.00	57.00	38.00-75.00	58.23
60# Amber	55.25	60.00	55.00	61.00	56.00	54.50	49.69	54.90	53.00	56.00	65.00	55.33	36.00-75.00	57.01
55 gal. Light	0.67	0.68	0.69	0.69	0.74	0.71	0.73	0.74	0.70	0.64	0.72	0.78	0.54-1.50	0.78
55 gal. Amber	0.65	0.65	0.64	0.62	0.74	0.68	0.70	0.70	0.65	0.70	0.70	0.76	0.56-1.50	0.76
Wholesale - Case Lots														
1/2# 24's	29.78	29.72	32.51	30.31	32.51	27.83	31.47	32.51	30.00	32.51	30.50	31.87	23.65-43.20	30.68
1# 24's	43.30	44.28	43.20	44.02	45.52	41.58	44.10	38.67	48.00	44.00	50.30	45.12	32.40-60.00	44.15
2# 12's	40.50	37.56	42.60	49.13	49.95	38.50	40.38	38.33	42.00	41.00	37.60	36.50	25.00-84.00	40.84
12 oz. Plas. 24's	36.49	37.72	40.80	36.59	37.24	35.50	37.34	35.44	36.00	38.40	43.70	34.60	26.40-48.00	37.33
5# 6's	41.88	45.11	48.00	46.83	47.09	43.59	40.39	40.50	48.00	41.25	39.55	37.55	31.50-67.00	42.76
Retail Honey Prices														
1/2#	1.78	1.65	2.83	2.17	2.83	1.82	1.85	1.74	2.50	2.83	1.87	1.88	1.35-2.50	1.83
12 oz. Plastic	2.23	2.33	2.35	2.31	2.32	2.16	2.25	2.33	2.50	2.30	2.50	2.08	1.69-2.99	2.28
1 lb. Glass	2.74	2.80	2.60	2.95	2.00	2.87	2.65	2.60	3.00	2.41	3.37	2.84	2.00-4.00	2.79
2 lb. Glass	4.80	4.93	4.55	5.24	3.50	6.18	4.65	4.82	4.50	4.61	4.45	4.20	3.50-9.25	4.84
3 lb. Glass	6.37	7.29	6.75	6.66	6.84	6.18	6.53	6.37	6.00	5.69	6.45	5.56	5.00-9.00	6.52
4 lb. Glass	7.59	6.85	8.15	8.00	8.15	7.53	8.68	7.14	7.00	8.50	8.15	6.00	6.00-10.50	7.96
5 lb. Glass	9.09	10.31	9.80	9.25	9.00	8.00	8.97	10.09	9.95	8.46	9.02	8.56	2.25-15.40	9.36
1# Cream	3.32	3.59	3.87	3.43	3.87	2.88	2.99	3.63	5.75	3.00	3.89	2.78	2.49-5.75	3.37
1# Comb	4.00	4.68	3.50	3.80	4.41	4.00	3.81	3.87	6.00	4.41	4.75	3.98	1.95-7.18	4.10
Round Plastic	3.75	3.58	3.50	3.94	4.12	4.50	3.46	3.63	6.00	4.12	5.00	4.06	2.50-6.00	3.85
Wax (Light)	2.49	3.46	2.08	1.70	1.70	2.88	2.00	2.00	3.10	1.20	2.00	3.00	1.15-5.50	2.51
Wax (Dark)	2.16	2.90	2.05	1.51	1.30	2.65	1.70	1.63	2.50	1.10	1.83	2.20	0.95-5.50	2.16
Poll. Fee/Col.	36.38	39.50	31.50	37.88	30.00	33.00	37.88	37.67	20.00	39.04	39.04	38.00	20.00-60.00	37.13

Guest Editorial, by Dwight Stoller

NATIONAL HONEY BOARD ASSESSMENT

Producers will pay the new NHB assessment? Quality assurance is a waste?

Some members of the honey industry believe that any additional National Honey Board assessment will come out of the pockets of producers and importers, not packers. Some also view investing money in a new quality assurance program as waste. I'd like to speak to both of those issues.

The new legislation calls for a reduction of the producer assessment from a penny to three-quarters of a penny per pound, and a new three-quarters of a penny per pound assessment for the packer. Our company (W. Stoller) will, without question, pay the three-quarter cent assessment to the NHB without reducing the payment to the producer. There's another way to say it . . . we would pay a producer the same price for their honey before and after the new packer assessment took effect. Actually, we would not pay a quarter penny *more* to the producer because we'd have to withhold that much less to forward to the NHB for the new producer assessment amount. My actual cost for honey, due to the new packer assessment, will increase three-quarters of a cent per pound. The same day that it did, likewise, for anyone else who can sell to the same customers that I can. All packers (and producer-packers, by the way) will be on even competitive ground. We will either absorb that cost or raise our prices to recover it, and the situation in the market at that time will dictate which way we can go. We'll have the same pressure to raise or hold our prices that our competitors will, no matter how large or small a seller of honey we are.

I know other major honey packers will take the very same position that we will, to respect the new assessment as our obligation and not even think of trying to pass it back to producers or importers. Any effort to do so would, in my opinion, be unethical. With major packers taking the responsible and ethical position to truly pay this assessment, there will be competitive pressure in the honey market for others to follow suit. If others are not trying to pass the cost back to you, why would you sell to the unscrupulous person who is?

Why do packers, like ourselves, want to pay this new assessment? The primary reason is the packers are closest to the final user marketplace and understand the critical need for an effective industry quality assurance program. Adulteration hurts us all. I can't compete with someone who would cut honey with other low-cost sweeteners, even at a very low percentage. Adulteration also artificially inflates the honey supply, depressing honey prices for producers. Along another vein, consumers are not the same today as yesterday and they'll be different yet tomorrow. Expectations continue to rise. Food manufacturers who buy your product for ingredient usage are requiring more specific quality certifications than they ever have in the past. The packers are not driving the quality assurance issue as something to create a competitive edge, or to create problems for producers. We're driving this program *to help all of us, cooperatively, deliver what the consumer is and will be demanding in the future.* Let a major negative occur associated with "honey" and it will cost us dearly. The future of our product continues to rest on our excellent image of "pure, natural and wholesome." The packers view the quality assurance program as both opportunity development and crisis avoidance for the entire industry. Any type of promotion program depends on both of those aspects.

Packers will pay the new assessment, not producers. And, they'll do it willingly, because a quality assurance program is such a wise thing for all of us to do. BC

Roger Morse

Research Review

"Bees drift from colony to colony, but their behavior is predictible"

When colonies of honey bees are close together, which is not a natural situation, foraging bees often become confused and enter a colony that is not their own. This is called drifting and is a subject that has been researched over and over again. A new paper on the subject asks if drifting bees prefer to enter a colony that consists of bees related to them or not. The answer is that it doesn't matter. "There was no difference in survival and the amount of drifting of native and foreign bees." It was also found that bees that drifted lived as long as those that did not, and there appeared to be no prejudice against them when they enter a colony other than their own.

We know that worker honey bees can see several colors distinctly. They are also able to distinguish certain designs. They use these and landmarks such as trees, bushes, rocks and other objects to orient themselves and to find their own hive. Their color and design senses are not as well-defined as our own, but they are reasonably good. A beekeeper who uses all of these factors in an apiary can reduce drifting to a considerable degree.

If you visit an apiary belonging to a commercial beekeeper, you will often see that the colonies are close together and painted the same color, making them look very much alike. There is obviously a great deal of drifting under these circumstances. If you ask a commercial beekeeper why he does not do something to reduce drifting, you will probably get a vague answer to the effect that it doesn't matter, and this seems to be true. If a bee leaves her own hive and returns with a load of nectar or pollen to another hive, her own colony is the loser, but insofar as the beekeeper is concerned, it doesn't matter as far as the total production from an apiary is concerned. The paper I list below does confirm that "more bees drift from a center colony to end colonies of a row than vice versa." This may mean that end colonies produce more honey.

So, should you be concerned about drifting and try to do something to reduce it? The answer is yes, but not insofar as honey production is concerned. Drifting appears to be one of the chief ways in which diseases, such as American foulbrood, are transmitted from one colony to the next. Also, when supersedure occurs and a new queen takes over the colony, there is always danger that she may enter the wrong colony after one of her mating flights and be killed.

What to do? Painting supers, bottomboards and covers different colors will help to reduce drifting. The color you use is not important. Whereas bees see only four colors distinctly, any color will look different to them. You may paint different designs on the supers next to the entrances, and this, too, will reduce drifting, but it is too time-consuming to be practical. Planting small trees or bushes between colonies will provide landmarks, but this, too, is usually impractical.

Pfeiffer, K.J. and K. Crailsheim. Drifting of honeybees. *Insectes Sociaux 45: 151-167. 1998.*

The Length of a Bee's Life

Once they start to forage, a worker honey bee lives long enough to take an average of only 32 trips to the field. Records from an approximately 20,000-bee colony show that over a period of 89 days, 3.16 percent of the bees that left the hive did not return. I found these data in a little-known and rarely cited 1925 Cornell doctoral thesis. I suspect the reason these data are not widely known (or quoted) is simply the fact that it is difficult to believe that a hard-working honey bee would live for such a short period of time. In our own lives, we believe that hard work is rewarded, and maybe so, but in the life of a honey bee, hard work results in an early death.

However, in a paper I reviewed in this column in July 1997, and using much more sophisticated methods, Professor Visscher and one of his students at the University of California in Riverside also showed that the average life span of a foraging bee was short, only 7.7 days, with a range of two to 17. Predators such as spiders, dragonflies, robber flies, birds and others are the chief problems and cause of death.

There were several other interesting facts to be gleaned from this 1925 study. For example, in April, bees started to forage when the temperature was 12 to 14°C (54 to 57°F) but in May it was 16 to 18°C (61 to 64°F). The author writes, "On dull days this temperature was usually 2°C (4°F) higher" – "a strong colony commencing flight at a lower temperature than does a weak one." It was found that under honey flow

conditions, the total number of bees exiting a colony was three to four times as great as at other times. Also, maximum flight occurred several hours earlier than during a dearth. This information was learned long before research on the dance language and its effect on colony life was published. "Of the 65,178 bees lost from all causes, 1.63 percent died in the hive." In other words, most foraging worker bees work until they die from whatever the cause may be and usually die in the field.

This research was done using a two-story (10-frame) hive with a one-year-old queen that headed a colony with about five pounds of bees. The data were obtained using 14 exit and 14 entrance gates fixed at the colony entrance that recorded the number of ingoing and outgoing flights. The author acknowledges that the gate apparatus was not perfect and appeared to work better on some days than it did on others. In this study, the average forager carried about 25.3 milligrams of nectar (and/or pollen) when she returned to the hive, which is about one-third of her own weight.

I happened on the paper I cite below while reading the other papers written by Dr. Lundie. He was the author of the excellent 1940 paper on the biology of the African small hive beetle that was found in Florida a few months ago and that has caused considerable worry there.BC

Lundie, A.E. *The flight activities of the honeybee.* United States Department of Agriculture Department Bulletin No. 1328. 38 pages. May 1925.

?DO YOU KNOW?

Honey Bee Pests & Predators

Clarence Collison
Mississippi State University

Recently I had the opportunity to travel north to participate in the Eastern Apicultural Society beekeeping short course and annual conference. It was an excellent meeting and while I was up there I had the opportunity to work several colonies of bees. While working these bees, we found some to have the symptoms of the so called parasitic mite syndrome. In addition, we saw the effects of an extremely wet summer in that we found several serious cases of chalkbrood, as well. How familiar are you with these two problems as well as other bee diseases that can negatively impact colony development? Please take a few minutes and answer the following questions to determine how well you understand this important area.

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

1. ___ Colonies with the parasitic mite syndrome have both *Varroa* and tracheal mites present.
2. ___ American foulbrood is considered to be a stress disease since outbreaks are seasonal.
3. ___ A capping scratcher is often used to sample a colony for tracheal mites.
4. ___ Chalkbrood disease affects only honey bees.
5. ___ The highest infection levels of nosema disease are normally found in the fall of the year.
6. ___ *Varroa* mites are believed to vector some honey bee viruses.
7. ___ Tracheal mites are associated with worker and drone honey bees but not queens.
8. ___ Chalkbrood is a stress related disease.
9. ___ In the United States, no chemotherapeutic agent is registered for use against chalkbrood.
10. ___ *Varroa* mites have a greater impact on Africanized honey bees than on European honey bees.
11. ___ Diseased larvae associated with the bee parasitic mite syndrome form scales that strongly adhere to the cell wall.
12. ___ Death from chalkbrood normally occurs after the brood cell is capped.

(Multiple Choice Questions, 1 point each)

13. ___ Chalkbrood was first found in the United States in:
    A. 1984
    B. 1987
    C. 1951
    D. 1976
    E. 1968
14. ___ The so called "Ropy Condition" is associated with:
    A. Bee Parasitic Mite Syndrome
    B. European Foulbrood
    C. American Foulbrood
    D. Sacbrood Disease
    E. Chalkbrood
15. ___ Dead larvae/prepupae that are uniformly light brown in color are associated with which two diseases/conditions:
    A. European Foulbrood
    B. Sacbrood
    C. Bee Parasitic Mite Syndrome
    D. Chalkbrood
    E. American Foulbrood
16. ___ In Canada there are two products registered for *Varroa* mite control in honey bee colonies.
    A. Amitraz & Apistan
    B. Mavrik & Formic Acid
    C. Formic Acid & Apistan
    D. Amitraz & Fluvalinate
    E. Apistan & Mavrik
17. What condition is required before *Ascosphaera apis*, the causative agent of chalkbrood disease forms brownish-green fruiting bodies known as spore cysts on the mummy? (1 point)
18. Name two types of moth larvae that can damage stored beekeeping combs. (2 points)
19. What two beekeeping pests/diseases have recently shown evidence that they are beginning to develop resistance against the chemicals that are normally used in their treatment programs? Name the pests and chemical products. (4 points)
20. Please explain why vegetable oil patties are believed to be effective in suppressing tracheal mite populations within honey bee colonies. (1 point)

ANSWERS ON PAGE 44

Mark Winston

First Times

"I hate to be the one to deliver the news, but one thing does stand out from my contacts with beekeepers worldwide: North American beekeepers, on average, know less about bees than equivalent beekeepers from other countries."

We all fondly remember our "first times." I can vividly recall the first time I drove our family car on my own (my father had proclaimed that I wasn't ready yet, but he was out of town, and Mom handed me the keys one morning and said "Why don't you drive to school today? . . .), my first kiss (it was during the Summer, in a mosquito-infested field, and her mother asked her the next day where she had been to get so many mosquito bites . . .), my first . . .O.K., I think we can stop here.

I also remember my first beekeeping experiences. My first glimpse into a hive took place when I was 25, about to go off to South America to study killer bees, and a friend opened his hive to show me what it was like inside. The first time I caught a swarm was in Kansas, when I was left to attend my supervisor's bees in the Spring while he was away in Utah on sabbatical, and of course a few colonies swarmed. And I remember my first experience with American foulbrood. I had established our Simon Fraser University apiaries the year before, and an alert student noticed a few funny cells that Spring, which turned out to be AFB. I asked her to dig a hole so we could burn and bury the infected hive, and she took me seriously. When I got out to the apiary, I found her in the hole, well over her head, and still digging.

This early experience with AFB came back to me the other day, because in the last few years we've had increasing problems in our university apiaries with American foulbrood. The reasons are numerous: We keep bees in an area where there is intense hobby beekeeping and AFB remains a common problem in nearby apiaries; I have up to 10 inexperienced students working every summer who spread AFB more than they need to; we have a lot of old comb and equipment. I think, though, that the most important reason for our AFB outbreak is that we, like most North American beekeepers, have been masking the symptoms of AFB by using Terramycin treatments for four to six months each year, on a 10-day rotation except for during the Winter and honey flow periods, and AFB erupts whenever we take the bees off their drugs.

Most of us in Canada and the United States use Terramycin to varying degrees. If you live in a rural area without other beekeepers in close proximity, you probably don't need to use it as often as we do, but there are few places in North America where bees are kept that Terramycin is not a common component of a beekeeping operation. My familiarity with Terramycin here at home lulled me into thinking it has to be that way. As I've had more opportunities to travel and meet beekeepers around the world, I've discovered that our extensive North American addiction to antibiotics in bee management is not shared by beekeepers worldwide.

Take New Zealand, for example. Granted, they don't have European foulbrood in New Zealand; they have only AFB to deal with. Nevertheless, Terramycin is not legal in New Zealand, and few if any beekeepers use it illegally. Instead, they have an extensive, aggressive and highly trained extension service that inspects hives and burns colonies immediately if AFB is found. What is remarkable about this system is that it is privately run and funded by beekeepers, and they keep AFB down to levels of one percent colony infestation and below. In fact, they have begun an ambitious campaign to eradicate AFB from New Zealand entirely by an even more aggressive inspection and burning campaign. Having seen the level of skill of the average New Zealand beekeeper, and their commitment to avoiding antibiotics, I give them an even chance of success.

I thought this system was unique in the world, but I just returned from a trip to Britain where I saw a similar antibiotic-averse system in action. Both European and American foulbrood are found in the United Kingdom, and instead of banning antibiotics, they allow their use by prescription only, and then solely for an EFB infection. As in New Zealand, they have an extensive inspection service that covers the country, with a central laboratory to confirm disease identifications made in the field. If AFB is found, the inspector returns to burn the hives. If EFB is found, a veterinar-

Continued on Next Page

"Beekeepers in North America have moved away from cooperation and regulation, and are unusually independent among beekeepers worldwide in their belief that they have a right to keep bees any way they choose."

ian dispenses only enough Terramycin to deal with the infection, and the inspector insures it is used properly by the beekeeper.

What makes this system work is the high degree of compliance throughout the country, the extraordinary level of beekeeping knowledge of the typical British beekeeper, and the considerable expertise, professionalism and dedication of the inspectors employed by the government-administered inspection service. I found the British National Bee Unit's published description of their own activities more than accurate: "We have a system of first-class home-based regional bee inspectors who recruit, train and manage seasonal inspectors according to local need. They are kept up-to-date by a sophisticated computer database network which they use to target their work more effectively . . . and assist the beekeeping sector to become self-sufficient in controlling the serious bee diseases by providing information, training, and a direct, practical link with Ministry of Agriculture bee health programs."

Why can't we manage AFB in North America with a similar inspection-based program? One excuse I often hear is expense. It is unlikely that government will even maintain the funds that go into inspection and regulation of bee diseases today, let alone increase them. However, if you consider what beekeepers pay for Terramycin each year, perhaps a beekeeper-funded system is not out of the question. It costs us about $2 (U.S.) annually for Terramycin per colony, and if I multiply that by the 650,000 colonies in Canada today, that comes to $1.3 million a year across the country. For the United States, that's about $6 million a year. Suppose beekeepers went cold-turkey from Terramycin, and put the funds spent on antibiotics into an aggressive inspection service instead? With that level of funding, in addition to what is already put into employing state and provincial beekeeping personnel, I am confident that we could adopt a system similar to that of Britain, where inspectors working along with trained and licensed beekeepers could inspect most hives each year, burn where necessary, and dispense Terramycin by prescription for EFB infections. Their budget in England comes to less than $2 a hive, and there's no reason we can't meet the same budget.

Another barrier to a countrywide extension service is migratory beekeeping, which is not much of an impediment in Canada, but would be an issue in the United States. Here, too, I don't think the problem is hard to solve. Each migratory hive has a home state where they Winter, and inspections at home prior to leaving, followed by an inspection before coming home would cover the problem of jurisdiction nicely. This type of system would require a national level of coordination because of the many states involved, but I find it difficult to believe that a sophisticated country like the U.S. couldn't deal with the minimal logistics necessary to manage such a system.

A third problem with weaning ourselves off antibiotics is beekeeper attitudes, and this is the most serious roadblock on the path to reducing antibiotic use. Beekeepers in North America have moved away from cooperation and regulation, and are unusually independent among beekeepers worldwide in their belief that they have a right to keep bees any way they choose. Perhaps so, but I doubt that there has been a divine dispensation to overuse antibiotics, and perhaps we need to think a bit more carefully about the common good rather than submitting to suspicion about communally organized regulation. If you don't want government to run your life, fine; set up your own regulatory system, independently funded and administered. We're beginning to do that with bee research, and there's no reason that the same strategy can't be followed with other components of the beekeeping industry.

A final problem with setting up an inspection and regulatory service that attempts to transcend antibiotics is that it requires well-trained beekeepers, especially on subjects concerning bee diseases and parasites. I hate to be the one to deliver the news, but one thing does stand out from my contacts with beekeepers worldwide: North American beekeepers, on average, know less about bees than equivalent beekeepers from other countries. It is seductive to believe that we know bees well because of the ease at which hobby and commercial beekeeping can be conducted here in North America, and of course there are many North American beekeepers who are highly knowledgeable about bees and beekeeping. Nevertheless, our beekeeping colleagues around the world seem to me to be better-read, attend meetings more regularly, and take courses in advanced beekeeping topics more frequently than we do in the United States and Canada. An effective service to control AFB and EFB with minimal antibiotic use would require considerably more expertise on the part of the average North American beekeeper than is currently evident, and we would have to put some effort into upgrading our industry and our hobbyists to achieve that objective.

Like many things I write, I don't expect most of this to happen, but it's worth a bit of thought and discussion. We like to think of ourselves as leading the world in everything, but in the area of antibiotics and foulbrood diseases I think we've fallen well behind beekeepers in some other parts of the world. Who knows – Perhaps at least some of our North American jurisdictions might take a stab at reducing antibiotic use. After all, there's a first time for everything. BC

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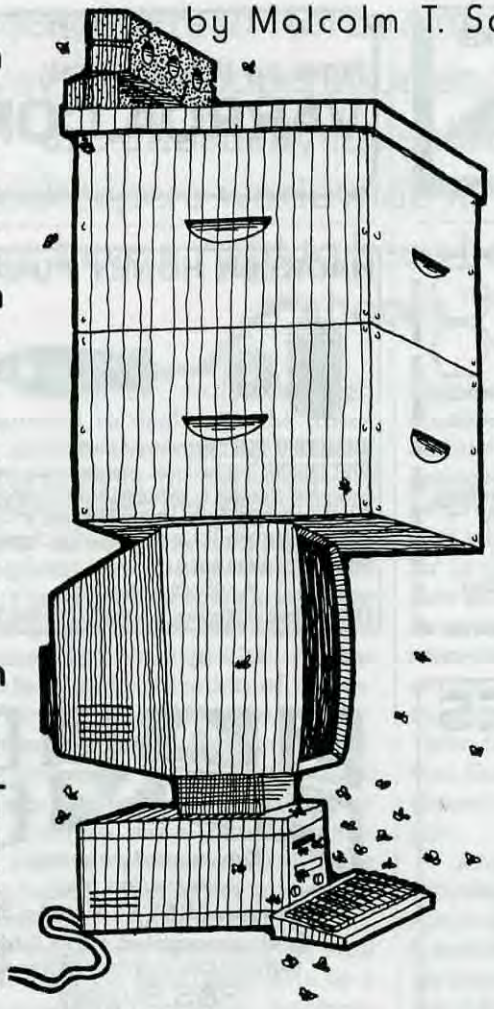
Beekeeping In The Digital Age

by Malcolm T. Sanford

THE URL

The Digital Age's Virtual Address



The URL is one of those infernal acronyms that has become a pervasive part of society over the last half-decade. Increasingly it is seen on billboards and television, in movie theaters, the local newspaper and other media – even the cover of this magazine. Even though recognized as a new presence, it has little significance for those not directly involved. Because it is beginning to be seen everywhere, this may result in at best a "ho-hum" reaction. That's too bad, because this little acronym will assume more and more importance in people's future lives in the digital age.

URL means "uniform resource locator." It unifies several Internet protocols, like those associated with electronic newsgroups (USENET), FTP, Gopher, and a focus of this column, the World Wide Web. Don't let the technical jargon throw you. Simply think of the URL as an address, rather like the one where you live and receive mail. Instead of a physical address, however, the URL points to locations in what many now call "cyberspace," or the "virtual" world. Let's look at a generalized example: http://.../~my account (a place on a computer)/my_file (information in that account or place). I'll bet most recognized the http:// immediately. Did you know it meant an Internet address?

Most people know the word "Internet" by now, but depending on their level of understanding, the name can conjure up any image from the ridiculous to the sublime. It is a worldwide network of computers connected by telephones and other communication techology, nothing more and nothing less. The URL is an address that makes it possible to deliver all kinds of information in digital form across the Internet, or "information superhighway." At first, only text, such as financial documents in banking and real estate and personal and business messages called electronic mail (e-mail), was sent over the Internet, and this is still a major use. Text alone is important, but not very compelling. Later, however, came the ability to transfer graphics, video and sound (music and voice) over the Internet. This has resulted in what is now known as the World Wide Web, or simply the "Web."

The Internet has been around a long time, relatively speaking; it has a history worth several columns in itself. The World Wide Web, however, was born only in 1990 as a means of exchanging documents among scientists across the Internet. It employs a certain set of instructions called Hypertext Transfer Protocol (HTTP). That's the origin of the http:// that begins any URL. HTTP signifies use of Hypertext Markup Language or HTML. This language is recognized by all kinds of digital computers because it uses the standard character set called ASCII. It also enables transfer of graphics, music and voice, and can be quickly learned by most people with little or no training in computer programming. This easy-to-implement language with the ability to incorporate multimedia, along with continuous development of the Internet, has unleashed an avalanche of creative activity in information dissemination.

The root source of all this folderol is the digital computer, a machine that has the ability to reduce most of what we know and, perhaps in the future, even who we are, into a series of ones and zeros. Hooked together into a meganetwork of computers worldwide via telephones and other pathways, the Internet has become the equivalent of a world nervous system or brain. The World Wide Web, using a single set of instructions (HTML) that all computers on the Internet can read, has opened the door to the "global information village." But there can be no information exchange without an address. Thus, the URL becomes a metaphor for, as well as an integral part of, this communication's revolution. Its creative deployment makes it more apparent every day what the digital age has wrought. The purpose of this series of columns is to show how this also adds a large dimension to production and dissemination of beekeeping information. BC

Malcolm T. Sanford is the Extension specialist in Apiculture for the state of Florida. He publishes the electronic and traditional newsletter, APIS: http://www.ifas.ufl.edu/~mts/apishtm/apis.htm

CANOLA

THOSE YELLOW FIELDS ARE CHANGING

Kenn Tuckey

I should have written this article five years ago. It would have been shorter and much easier to research. The idea came to me during a conversation with one of Alberta's larger beekeepers, who admitted that he had poor knowledge of the differences between all those good-looking fields he chased with his bees.

I knew there were differences and that canola had been derived from rapeseed. However, since I don't deal with it frequently, I have had trouble remembering the associations. For years I have had this information written in my appointment calendars:

Argentine ⟷ Napus ⟷ Self-fertile ⟷ Most honey
Polish ⟷ Campestris ⟷ Cross-pollinated

That way, when people were talking about Polish and napus canola, I knew they were talking about two different things. Also, if a farmer had napus canola, I could tell that I would probably benefit more from the relationship than he would. And now I understand they are calling Campestris by the name rapa! Also napus is known as rapeseed (or swede rape in Europe), and rapa is known as turnip rape.

Now, however, we also have hybrid canolas, synthetic canolas, herbicide-tolerant canolas and transgenic canolas, which aren't necessarily the same, and things are much more confusing. An added complication is the reluctance or refusal of some markets to accept honey that may be from transgenic plants.

AS I UNDERSTAND IT – after a lot of help from several people . . .

Canola

Perhaps because corn and soybeans were already providing a plentiful source of high-quality vegetable oil to the United States, the acceptance and development of rapeseed and canola varieties proceeded much more quickly in Canada than in the United States. Further, rapeseed could be grown in many parts of Canada that were unsuitable for growing corn and soybeans. Recently there has been a marked increase in interest in canola in some parts of the United States.

The plants we are concerned with are all part of the *Brassica* genus. Rapeseed (*Brassica napus* or Argentine – the original Canadian seed stock came from Argentina) was produced during World War II to assist in the war effort, but after that interest and production waned.

In the 1950s breeding programs for "Argentine" rapeseed began at Saskatoon, Saskatchewan, at Winnipeg, Manitoba, and at the University of Alberta in Edmonton, Alberta. Breeding programs for turnip rapeseed (*B. campestris* or *B. rapa* or Polish - the original seed stocks

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"In Alberta it is now impossible to certify non-transgenic honey, and this will soon be the case over most of Canada and the U.S. These transgenic plants meet the needs of the modern farmer and they are not going to give them up to please us."

came from Poland) were started somewhat later at the Agriculture Canada stations at Beaverlodge, Alberta and Indian Head, Saskatchewan.

Early breeding programs concentrated on improved yields, lodging resistance, maturity, disease resistance, etc. Researchers soon turned to efforts to reduce or eliminate erucic acid and glucosinolates – erucic acid to improve the oil by reducing health problems and glucosinolates to improve the meal for animal nutrition.

Two new low-erucic cultivars were released in 1971 and a concerted effort was made to switch the whole industry over to this new seed. Apparently the switch was 86 percent completed by 1973. By 1974, Tower (*B. napus)* was developed – the first "double low" (low erucic and low glucosinolate) seed – and was given a new name – CANOLA. In 1975 Candle (*B. rapus*) joined the CANOLA family. By 1980 CANOLA was the standard "rapeseed" for Canada – about 10 years ahead of other countries.

Not all of those yellow fields are the double low canolas mentioned above. Brassica cultivars have been developed for specialty needs. Brassicas with high erucic acid, others with low linolenic acid or high oleic acid or high palmitic acid are all specialty types of canola grown. As an example, *B. juncea* (mustard) is grown in the drier parts of southern Alberta and in the irrigation districts. There are about 145,000 acres of these yellow, brown and oriental mustards seeded each year. This seems like a lot of mustard but pales in comparison to the 4,000,000 acres of canola seeded in 1997 – about 16 percent of all field crops seeded in Alberta that year. Alberta canola acreage for 1998 is expected to be about 4,400,000 acres with approximately a third being transgenic canola. For some regions canola and transgenic canola are very important.

When a farmer decides to grow canola, he or she is faced with a whole smorgasbord of choices. There are now over 200 canola varieties that have been recommended for registration in western Canada. The canola industry in eastern Canada is relatively small, with only about 50,000 to 60,000 acres and it has a smaller selection of varieties. There are very few eastern varieties registered for use in the west. Even though there are a large number of varieties registered, only 20 to 25 varieties account for the majority of the canola acreage.

Herbicide tolerant, synthetic, hybrid and transgenic canolas

These subjects seem to be very thoroughly intertwined. In 1978 a strain of *B. rapa* was found growing in Quebec cornfields that had been sprayed with triazine herbicides. By 1984 this herbicide resistance had been bred into OAC Triton. This was the first **htc** (herbicide-tolerant canola) and it was developed using conventional breeding methods. Since then, several htc lines have been developed using genes from other plants or organisms – in other words, *transgenic* canolas. Two examples of these latter are the Liberty Link and the Round-up® Ready lines. Another line – Pursuit or Odyssey Smart – was produced by forcing the canola to mutate. Thus Smart canola is also htc but not transgenic. Upwards of 50 percent of the canola acreage seeded in 1998 will be herbicide tolerant.

Several companies have produced hybrid canola lines that are very popular. Some of the lines appear to have been developed using normal breeding methods and others have used transgenic methods. As an example, Zeneca Seeds and PGS – Plant Genetics Systems (now owned by AgrEvo) in southern Alberta are two companies that have many thousands of honey bee colonies under contract. The honey bees are required to move the pollen from the male lines to the female, male sterile, lines so that hybrid canola seeds can be produced.

Some companies also offer synthetic canolas. In this system a number of strains are selected for desirable qualities and maintained for future use. Many plants of all these strains are grown together in the same field and allowed to open-pollinate. The resulting seed is then grown as production seed. Periodically the synthetic canola has to be reconstituted by going back to the originally selected strains.

These normal hybrid and hybrid transgenic lines are very effective for Alberta conditions and are gaining wide acceptance by Alberta farmers. As mentioned above, approximately one-third of the canola grown in Alberta is expected to be transgenic. If that is the case, transgenic canolas will be so widespread that it will be virtually impossible to claim that any honey produced in Alberta after the canola starts to bloom is free of transgenic sources.

The popularity of these new transgenic canolas, and other transgenic plants, has very definite implications for beekeepers. Some markets are resisting the purchase of any honey that may originate from transgenic plants. For most beekeepers there is very little opportunity to certify that a specific drum of honey meets the criterion of **no** honey from transgenic plants. If you are keeping bees in an area where absolutely no honey-yielding transgenic plants are grown, you may be able to give such a certification. However, those areas are getting smaller and smaller each year. If transgenic plants were grown even once, you can't be sure there aren't some volunteer plants around that your bees are visiting. If you gather a honey crop from "clean" plants after a flow from transgenic plants, you can't be sure your honey is "clean" – the bees may have moved honey up from the brood chambers. In Alberta it is now impossible to certify non-transgenic honey, and this will soon be the case over most of Canada and the United States. These transgenic plants meet the needs of the modern farmer and they are not going to give them up

to please us.

What is the difference? What is the flap all about? Scientists will tell you that honey is straight carbohydrate and there is no genetic material in the honey that can have any possible effect on anyone. That may be, and probably is so, but if the customer is asking for something else, his wishes have to be considered. It could be that this current reluctance on the part of honey customers will disappear in the near future as transgenic plants become more common worldwide. I understand that Liberty Link transgenics have been approved by the European Union, but it could still be some time before the individual countries, some of which are objecting to our honey, approve them. If this happens, surely their objections will have to be muted. It is projected by one of the major companies involved in this transgenic field that there will be over 30 million acres, worldwide, of transgenic crops sown in 1998 with the majority of these being soybean, corn, cotton and canola. Of course, the bulk of these acres will be in North America - outside the area where we are trying to sell some of this honey.

Bees, beekeepers and canola

It is very difficult to obtain any information about the effect honey bees have on seed yields for standard fields of canola or on honey yields from the two species of canola. It seems that the canola industry is little interested in these questions and the beekeeping industry is more involved with other pressing research priorities.

Two studies were drawn to my attention. In 1976 the United States Department of Agriculture issued *Insect Pollination of Cultivated Crop Plants* by S.E. McGregor. This publication has since taken on almost mystical proportions by people interested in crop pollination. On page 316 McGregor quotes many studies dealing with *B. napus* and *B. rapa*. There seems to be a certain amount of conflict between some of the papers, but on balance it seems clear that the yield of *B. rapa* (campestris, Polish, turnip rape) will increase by up to a third if there are colonies of honey bees adjacent to the field. Some increase in yield from bee-pollinated *B. napus* can be expected, but the increase may not be statistically significant. Thanks to *Bee Culture*, this publication has recently become available online at http://www.airoot.com/beeculture/book/index.htm. Other research studies have shown that, on *B. napus*, honey bees can increase seed size and improve uniformity of maturity even though there is little increase in yield. The pollination recommendations ranged around one colony of honey bees per acre of canola. Since this seldom occurs when beekeepers are after honey, it is possible that beekeepers are not providing as much assistance to canola farmers as we could or like to think we do.

In the early 1980's Dr. Tibor Szabo of Canada Agriculture did work on the nectar secretion of *B. napus* and *B. rapa canolas*. The *B. napus* varieties produced approximately twice as much nectar as the *B. rapa* varieties and so presumably, would also produce more honey during the course of the season.

New notes to myself

So, after learning all this, what am I going to write in my appointment calendar?

Argentine ⇢ *napus* ⇢ Rapeseed ⇢ Self-fertile ⇢ Most honey
Polish ⇢ *rapa* - campestris ⇢ Turnip Rape ⇢ Cross-pollinated

Very little has changed. The basics are still the same. I just hope that I can remember that any of them can be transgenic or synthetic or hybrid or htc or any combination up to all four conditions!

Thanks

I mentioned at the start that I had help from several people. Thank you to Phil Thomas and Dr. Stan Blade of Alberta Agriculture, Food and Rural Development, who made sure I didn't have any glaring errors and helped fill in blanks. Thanks to Dr. Art Davis at the University of Saskatchewan who chased down some references for me. Representatives of Zeneca and AgrEvo were very helpful in explaining the breeding processes their companies used. The Internet even proved helpful. BC

Kenn Tuckey is a graduate of the Ontario Agricultural College in Guelph, Ontario. He was a sideline and commercial beekeeper for 25 years. He is now Provincial Apiculturist for Alberta Agriculture, Food and Rural Development.

CLUB CORNER

by Howland Blackiston

Building A Board

This is the first in a series of articles that should be of interest to local and even regional bee clubs and associations. They provide a forum for sharing experiences and teaching new methods.

Putting a successful bee club together is no small task. It involves a lot of effort, cooperation of its membership, and a good deal of organizational know-how. "Club Corner" is designed to provide some helpful ideas to bee clubs all across the country. Collectively, the series of articles is intended to provide a roadmap for launching successful efforts in your existing association, or you can use these helpful hints to launch a new bee club.

Members of The Back Yard Beekeeping Association have written the articles in this series. Founded in 1993, the BYBA has grown to 150 members from Fairfield and Litchfield Counties (Connecticut) and Westchester County (New York).

Additional articles in the series will address a variety of topics designed to help launch and manage a healthy and successful bee club, and help meet the ever-changing needs of the membership.

Can you have a bee club without establishing a formal board of directors? Sure. But if a club's goal is to grow and remain responsive to the changing needs of the membership, the organization will want lots of hands-on assistance. That help is best accomplished by tapping into the creativity of an energetic group of directors.

Getting things done

With any club, there's plenty to do: securing guest speakers; setting up the meeting room; providing refreshments; preparing mailings; writing the newsletter; managing the finances; and so on. It seems that in almost any club, it's a relatively few individuals who do most of the work. Establishing a board of directors is a way to formalize and legitimatize the work of those members eager to get things done.

Provide guidance for the club's president

There's a lot of collective experience in the room when board members put their heads together. Our club's board represents over 300 years of beekeeping wisdom, plus centuries of accumulated know-how in organizational issues. That leads to some mighty helpful advice for the club's president. A club's board should be prepared to offer consultation, advice and criticism.

Leverage the memberships' creativity and expertise

Any bee club consists of members with all kinds of professions, interests and talents. That's a terrific thing, because much of that can be put to good use within a club. You'll certainly need legal advice. You'll need someone to keep the books. You'll need someone to write press releases and newsletters. You'll need someone to design posters, brochures and displays. Make a list of all the critical activities of running the organization, and then try to match these tasks with the talents available from the membership. The key word here is "balance." Assemble a board with a diverse range of experience and individual talents.

Ideal Size

The size of the club membership will dictate the size of the board. Our club started with 16 board members. Our membership was around 100 at that time. But as our membership grew, the board's ability to get things done became constrained.

The solution was simple. We needed more board members. And so I asked the membership to amend our bylaws to increase the number of directors from 16 to 24. Now things started to fly!

When determining the ideal size of your club's board, the following guidelines may be helpful:

Membership	Board
30	5
50	8
100	16
150	24

What does a director do?

Essentially, the board runs the club's business. That includes creating policy, planning events, overseeing administrative and financial issues, and generally ensuring that the club's activities meet the needs of

the membership. It's helpful to publish a statement of responsibility for board members. This will help explain what's expected of new board members, and provide ongoing guidance for each director. Here's an example of such a statement:

"The Board of Directors determines the general objectives, goals and philosophies of the organization; and manages the club's activities toward the accomplishment of its mission."

Organizing the board and its committees

A good way to get everyone involved is to create committees – each committee to focus on a key activity or goal for the club. Assign a chairperson for each, and have them select a few others to work on the committee. This approach focuses the board's activities on the most strategic issues. It ensures that everyone has a job to do, and it's an effective way to get meaningful results. Make certain every committee has a clearly stated objective and a specific time frame for completing its work. Here are two examples:

- **Membership Committee**: By January 1999, develop and conduct a survey of the membership to determine the services, activities and programming of greatest interest to members. We will use this information as a guide in developing upcoming events, activities and community services.

- **Mentor Program Committee**: By our next meeting, deliver a written plan for the creation of a formal "mentoring program" for our membership. Include a statement of objectives, and a projected time frame for implementing a Mentor Program within our organization.

We have several committees in place. Each committee chair gives an informal report at our board meetings. Here's a listing of our committees:

- *Programming*
- *Public Relations*
- *Research*
- *Newsletter*
- *Lending Library*
- *Web Site*
- *Hospitality*
- *Outreach Program*
- *Farmers Market*
- *Finance*
- *Adopt a Nature Center*
- *Membership*

Organizing Board Meetings

Of course, you will need a place to meet. A local library, business office or grange might be appropriate. Periodic meetings should be scheduled on the same day, hour and in the same place every time. That predictability will help avoid confusion and clashing dates.

We meet on the first Tuesday of every month (except in July, August and December). Meeting frequently is vital for a newly established club (there's much to be done in the early stages), and even helpful for any club which is engaged in many projects and activities.

The president should publish and distribute an agenda in advance of the meeting. In our case, e-mail technology has been a mighty handy way of keeping in touch with each other (90 percent of our directors have an e-mail address).

The agenda should include the topics to be discussed; who will lead the discussion; the time allocated for that topic; and a specific objective or outcome (what's the intended result of having discussed the topic). Here's an actual example:

> ***1) New Member Handbook.*** *Diane will distribute the price quotes we have received from various printers. Our objective: discuss bids, select preferred vendor, agree on quantity to be printed, and vote on whether to proceed with the printing of a new member handbook.*

It is likely that there will be reoccurring agenda topics (subjects that will be addressed every time you meet). The following is an example of the standard topics we discuss at each of our board meetings:

- *Review and adjust agenda*
- *Review and approve the minutes from the last meeting*
- *Financial and membership report*
- *Programming update (Is everything set for our next guest speaker?)*
- *Reports from all committee chairs*
- *Agree on a raffle item for our next general meeting*
- *Present other business not contained in the agenda*
- *Confirm the date, time and place for our next board meeting*

Legal Details

Our club's bylaws spell out the detail behind the organization of our board:

Officers

Section 1: All officers will be elected at the Annual Meeting of the membership. The nominee receiving the most votes will be elected to that office.

Section 2: The officers of this association will include a president, a vice-president/program chairman, a secretary and a treasurer. These officers will serve for one year or until their successors are elected and qualified.

Board of Directors

Section 1: The board of directors will consist of the officers, the immediate past president and up to 25 directors elected from the membership-at-large. The Fairfield County Agricultural Agent or his/her representative may be invited by the board to join as a director. The board may appoint science advisors as non-voting ex officio members of the board.

Continued on Next Page

CLUB CORNER ... Cont. From Pg. 25

Section 2: Directors will be elected at the Annual Meeting by majority vote.

Section 3: In the event of a vacancy on the board, the board may appoint a replacement to serve until the next Annual Meeting.

Section 4: Officers and directors will serve voluntarily and will not get any compensation.

Section 5: The board may hold as many meetings as called by the president or by any two members of the board. Notice of a regular or special meeting will be given to each director at least seventy-two (72) hours prior to the meeting. Six (6) members constitute a quorum of the board.

Section 6: A nominating committee, as appointed by the board, will nominate candidates for election for all officers and directors. In addition, nominations may come from the general membership.

Section 7: The board will have overall responsibility for the management of the association.

Section 8: Each year the board will prepare a balanced budget for the next fiscal year for approval by the membership at the Annual Meeting.

Communicate Results

As any board member knows, there's a lot that goes on between general meetings. But club members can be unaware that their ideas and concerns are being addressed. They can be uncertain what the board actually does for the membership. Don't let that be the case. Make sure everyone in the club knows who the directors are. Identify board members on the name badges used at general meetings. Publish their names, addresses and telephone numbers in every newsletter. Have committee chairs present progress reports at the general meetings. The club's newsletter should provide an ongoing update of what was discussed and decided at the last board meeting. (I've been using my "president's letter" column for this purpose.)

The key word here is "communicate." Make sure the entire membership knows what the board is up to. Make certain that there is a method in place for the membership to provide continual feedback to its board. BC

Howland Blackiston is president of the Back Yard Beekeeping Association. He has been a hobby beekeeper for 14 years. When not tending to his six hives in Weston, Connecticut, Howland is president and co-founder of Juran Institute, Inc. — international consultants in how organizations manage the quality of products and services. You are welcome to contact Howland at hblackiston@juran.com

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For additional information on The Back Yard Beekeepers Association, or to share an idea for an upcoming article, visit the BYBA web site: www.fairfieldweb.com/byba

Bee Culture
THE MAGAZINE OF AMERICAN BEEKEEPING

SPECIAL EDITION INSERT

September, 1998 National Honey Month

USDA USDA USDA

United States Standards for Grades of Extracted Honey (effective 1985) & Comb Honey (effective 1967)

Grades For Extracted Honey

This is the fifth issue, as amended, of the United States Standards for Grades of Extracted Honey published in the **FEDERAL REGISTER** of April 23,1985 (50 F.R. 15861), to become effective May 23,1985. This issue supersedes the fourth issue, which has been in effect since April 16,1951.

Voluntary U.S. grade standards are issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality. These grade standards are available for use by producers, suppliers, buyers and consumers. As in the case of other standards for grades of processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

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§52.1391 Product description
Extracted honey (hereinafter referred to as honey) is honey that has been separated from the comb by centrifugal force, gravity, straining, or by other means.

§52.1392 Types.
The type of extracted honey is not incorporated in the grades of the finished product since the type of extracted honey, as such, is dependent upon the method of preparation and processing, and therefore is not a factor of quality for the purpose of these grades. Extracted honey may be prepared and processed as one of the following types:

(a) **Liquid honey.** Liquid honey is honey that is free from visible crystals.
(b) **Crystallized honey.** Crystallized honey is honey that is solidly granulated or crystallized, irrespective of whether candied, fondant, creamed or spread types of crystallized honey.
(c) **Partially crystallized honey.** Partially crystallized honey is honey that is a mixture of liquid honey and crystallized honey.

§52.1393 Styles.
(a) **Filtered.** Filtered honey is honey of any type defined in these standards that has been filtered to the extent that all or most of the fine particles, pollen grains, air bubbles or other materials normally found in suspension, have been removed.

(b) **Strained.** Strained honey is honey of any type defined in these standards that has been strained to the extent that most of the particles, including comb, propolis or other defects normally found in honey, have been removed. Grains of pollen, small air bubbles and very fine particles would not normally be removed.

§52.1394 Definitions of terms.
As used in these U.S. standards, unless otherwise required by the context, the following terms shall be construed, respectively, to mean:

(a) **Absence of defects** means the degree of freedom from particles of comb, propolis, or other defects which may be in suspension or deposited as sediment in the honey. Classifications for the factor of quality, absence of defects, are:

(1) **Practically free** – the honey contains practically no defects that affect the appearance or edibility of the product.
(2) **Reasonably free** – the honey may contain defects which do not materially affect the appearance or edibility of the product.
(3) **Fairly free** – the honey may contain defects which do not seriously affect the appearance or edibility of product.

(b) **Air bubbles** mean small visible pockets of air in suspension that may be numerous in the honey and contribute to the lack of clarity in filtered style.

TABLE 1 - COLOR DESIGNATIONS OF EXTRACTED HONEY

USDA Color Standards Designations	Color Range USDA Color Standards	Color Range Pfund Scales Millimeters	Optical Density 1/
Water White	Honey that is Water White or lighter in color	8 or less	0.0945
Extra White	Honey that is darker than Water White, but not darker than Extra White in color.	Over 8 to and including 17.	.189
White	Honey that is darker than Extra White, but not darker than White in color.	Over 17 to and including 34.	.378
Extra Light Amber	Honey that is darker than White, but not darker than Extra light Amber in color.	Over 34 to and including 50.	.595
Light Amber	Honey that is darker than Extra Light Amber, but not darker than light Amber in color.	Over 50 to and including 85.	1.389
Amber	Honey that is darker than light Amber, but not darker than Amber in color.	Over 85 to and including 114.	3.008
Dark Amber	Honey that is darker than Amber in color.	Over 114	. . . . .

1/ Optical Density (absorbance) = $\log_{10}$(100/percent transmittance), at 560 nm for 3.15 cm thickness for caramel-glycerin solutions measured versus an equal cell containing glycerin.

(c) **Aroma** means the fragrance or odor of the honey.
(d) **Clarity** means, with respect *to filtered style only*, the apparent transparency or clearness of honey to the eye and to the degree of freedom from air bubbles, pollen grains or other fine particles of any material suspended in the product. Classifications for the factor of quality, clarity, are:

(1) **Clear** – the honey may contain air bubbles which do not materially affect the appearance of the product and may contain a trace of pollen grains or other finely divided particles of suspended material which do not affect the appearance of the product.
(2) **Reasonably Clear** – the honey may contain air bubbles, pollen grains or other finely divided particles of suspended material which do not *materially* affect the appearance of the product.
(3) **Fairly Clear** – the honey may contain air bubbles, pollen grains or other finely divided particles of suspended material which do not *seriously* affect the appearance of the product.

(e) **Comb** means the waxlike cellular structure that bees use for retaining their brood or as storage for pollen and honey. Fine particles of comb in suspension are defects and contribute to the lack of clarity in *filtered style.*
(f) **Crystallization** means honey in which crystals have been formed.
(g) **Flavor and aroma** means the degree of taste excellence and aroma for the *predominant* floral source. Classifications for the factor of quality, flavor and aroma, are:

(1) **Good flavor and aroma for the predominant floral source** – the product has a good, normal flavor and aroma for the predominant floral source or, when blended, a good flavor for the blend of floral sources and the honey is free from caramelized flavor or objectionable flavor caused by fermentation, smoke, chemicals, or other causes with the exception of the predominant floral source.
(2) **Reasonably good flavor and aroma for the predominant floral source** – the product has a reasonably good, normal flavor and aroma for the predominant floral source or, when blended, a reasonably good flavor for the blend of floral sources, and the honey *is practically* free from caramelized flavor and is free from objectionable flavor caused by fermentation, smoke, chemicals or other causes with the exception of the predominant floral source.
(3) **Fairly good flavor and aroma for the predominant floral source** – the product has a fairly good, normal flavor and aroma for the predominant floral source or, when blended, a fairly good flavor for the blend of floral sources, and the honey is *reasonably* free from caramelized flavor and is free from objectionable flavor caused by fermentation, smoke, chemicals or other causes with the exception of the predominant floral source.

(h) **Floral source** means the flower from which the bees gather nectar to make honey.
(i) **Granulation** means the initial formation of crystals in the honey.
(j) **Pfund color grader** means a color grading device used by the honey industry. It is not the officially approved device for determining color designation when applying these United States grade standards for the color of honey.
(k) **Pollen grains** mean the granular, dustlike microspores that bees gather from flowers. Pollen grains in suspension contribute to the lack of clarity in filtered-style.
(l) **Propolis** means a gum that is gathered by bees from various plants. It may vary in color from light yellow to dark brown. It may cause staining of the comb or frame and may be found in extracted honey.

§52.1395 Recommended sample unit sizes.
(a) **Determination of color designation** – the amount of product required to adequately fill a color comparator cell of any approved device used for the determination of honey color.
(b) **Factors of quality and analysis** – 100 g (3.5 oz).

§52.1396 Recommended fill of container.
The recommended fill of container is not incorporated in the grades of the finished product since fill of container, as such, is not a factor of quality for the purpose of these grades. It is recommended that each container be filled with honey as full as practicable, and with respect to containers of one gallon or less, *the honey shall occupy not less than 95 percent of the total capacity of the container.*

§52.1397 Color.
The color of extracted honey is not a factor of quality for the purpose of these grades.

§52.1398 Color designations.
(a) **The color designation of extracted honey** is determined (after adjusting for cloudiness in the honey) by means of the USDA-approved color standards in accordance with the range as given in Table 1.
(b) **The respective color designations,** applicable range of each color, color range on the Pfund scale and optical density of freshly prepared caramel-glycerin solutions are shown in Table 1.

§52.1399 Tolerance for the designation of color of officially drawn samples.
When designating the color of samples that have been officially drawn and which represent a specific lot of honey, the lot shall be considered as one color if the number of containers with honey comprised of a darker color does not exceed the applicable acceptance number indicated in the sampling plans contained in 7 CFR 52.38 of the **Regulations Governing Inspection and Certification of Processed Fruits and Vegetable, Processed Products Thereof, and Certain Other Processed Food Products:** provided, however, that the honey in none of the containers falls below the next darker color designation. Applicable sampling plans and acceptance numbers are shown in Table II.

TABLE II
SINGLE SAMPLING PLANS AND ACCEPTANCE NUMBERS

Sample Size (number of sample units)	3	6	13	21	29
Acceptance No.	0	1	2	3	4

§52.1400 Grades.
(a) **U.S. Grade A** is the quality of extracted honey that meets the applicable requirements of Table IV or V, and has a minimum total score of 90 points.
(b) **U.S. Grade B** is the quality of extracted honey that meets the applicable requirements of Table IV or V, and has a minimum total score of 80 points.
(c) **U.S. Grade C** is the quality of extracted honey that meets the applicable requirements of Table IV or V, and has a mini-

mum total score of 70 points.
(d) **Substandard** is the quality of extracted honey that fails to meet the requirements of U.S. Grade C.

§52.1401 Determining the grade.
Determining the grade from the factors of quality and analysis.

(a) **For the factor of analysis, the soluble solids content of extracted honey is determined by** means of the refractometer at 20°C (68°F). The refractive indices, corresponding percent soluble solids, and percent moisture are shown in Table III. The moisture content of honey and percent soluble solids may be determined by any other method which gives *equivalent* results.
(b) **For the factors of quality, the grade of extracted honey is determined by** considering, in conjunction with the requirements of the various grades, the respective ratings for the factors of flavor and aroma, absence of defects, and clarity (except the factor of clarity is excluded for the style of strained).

(c) **The relative importance of each factor is** expressed numerically on the scale of 100. The maximum number of points that may be given each factor is:

Factors	Points
Flavor and aroma	**50**
Absence of defects	**40**
Clarity	**10**
Total Score	**100**

(d) **The factor of clarity for the style of strained extracted honey** is not based on any detailed requirements and is not scored. The other two factors (flavor and absence of defects) are scored and the total is multiplied by 100 and divided by 90, dropping any fractions to determine the total score.
(e) **Crystallized honey and partially crystallized honey shall be liquefied by** heating to approximately 54.4°C (130°F) and cooled to approximately 20°C (68°F) before determining the grade of the product.

§52.1402 Determining the rating for each factor.
The essential variations within each factor are so described that the value may be determined for each factor and expressed numerically. The numerical range for the rating of each factor is inclusive (for example, **37 to 40 points** means 37, 38, 39 or 40 points) and the score points shall be prorated relative to the degree of excellence for each factor.

§52.1403 Requirements for grades.

§52.1404 Sample size.
The sample size to determine meeting the requirements of these standards shall be as specified in the **Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof and Certain Other Processed Food Products** (7 CFR 52.1-52.83) for lot grading and on-line grading, as applicable.

§52.1405 Determining the grade of a lot.
A lot of extracted honey is considered as meeting the requirements for quality and analysis if:

(a) The requirements specified in Table IV and V, as applicable, are met; and

(b) The requirements for the procedures set forth in the **Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof and Certain Other Processed Food Products** (7 CFR 52.1-52.83) are met.

Done at Washington, D.C. on: April 16,1985
William T. Manley
Deputy Administrator
Marketing Programs

TABLE V - STRAINED STYLE

	Factors	Grade A	Grade B	Grade C	Substandard
Analytical	Percent Soluble Solids (Minimum)	81.4	81.4	80.0	Fails Grade C.
Quality	Absence of Defects	Practically free - practically none that affect appearance or edibility.	Reasonably Free - do not materially affect the appearance or edibility.	Fairly free - do not seriously affect the appearance or edibility.	Fails Grade C.
	Score Points	37-40	34-36 1/	31-33 1/	0-30 1/
	Flavor & Aroma	Good - free from caramelization, smoke, fermentation, chemicals, and other causes.	Reasonably good - practically free from caramelization; free from smoke, fermentation, chemicals, and other causes.	Fairly good - reasonably free from caramelization; free from smoke, fermentation, chemicals and other causes.	Poor - Fails Grade C.
	Score Points	45-50	40-44 1/	35-39 1/	0-34 1/

1/ Limiting rule – sample units with score points that fall in this range shall not be graded above the respective grade regardless of the total score.

Table III - Refractive Indices, Corresponding Percent Soluble Solids, and Percent Moisture in Extracted Honey 1/

Refractive Index @ 20°C (Range)	Percent Soluble Solids	Percent Moisture	Refractive Index @ 20°C (Range)	Percent Soluble Solids	Percent Moisture
1.4817 - 1.4818	78.1	21.9	1.4930 - 1.4932	82.6	17.4
1.4819 - 1.4820	78.2	21.8	1.4933 - 1.4934	82.7	17.3
1.4821 - 1.4823	78.3	21.7	1.4935 - 1.4936	82.8	17.2
1.4824 - 1.4825	78.4	21.6	1.4937 - 1.4939	82.9	17.1
1.4826 - 1.4828	78.5	21.5	1.4940 - 1.4941	83.0	17.0
1.4829 - 1.4830	78.6	21.4	1.4942 - 1.4944	83.1	16.9
1.4831 - 1.4833	78.7	21.3	1.4945 - 1.4946	83.2	16.8
1.4834 - 1.4835	78.8	21.2	1.4947 - 1.4949	83.3	16.7
1.4836 - 1.4838	78.9	21.1	1.4950 - 1.4951	83.4	16.6
1.4839 - 14840	79.0	21.0	1.4952 - 1.4954	83.5	16.5
1.4841 - 1.4843	79.1	20.9	1.4955 - 1.4957	83.6	16.4
1.4844 - 1.4845	79.2	20.8	1.4958 - 1.4959	83.7	16.3
1.4846 - 1.4848	79.3	20.7	1.4960 - 1.4962	83.8	16.2
1.4849 - 1.4850	79.4	20.6	1.4963 - 1.4964	83.9	16.1
1.4851 - 1.4853	79.5	20.5	1.4965 - 1.4967	84.0	16.0
1.4854 - 1.4855	79.6	20.4	1.4968 - 1.4969	84.1	15.9
1.4856 - 1.4858	79.7	20.3	1.4970 - 1.4972	84.2	15.8
1.4859 - 1.4860	79.8	20.2	1.4973 - 1.4975	84.3	15.7
1.4861 - 1.4863	79.9	20.1	1.4976 - 1.4977	84.4	15.6
1.4864 - 1.4865	80.0	20.0	1.4978 - 1.4980	84.5	15.5
1.4866 - 1.4868	80.1	19.9	1.4981 - 1.4982	84.6	15.4
1.4869 - 1.4870	80.2	19.8	1.4983 - 1.4984	84.7	15.3
1.4871 - 1.4873	80.3	19.7	1.4985 - 1.4987	84.8	15.2
1.4874 - 1.4875	80.4	19.6	1.4988 - 1.4990	84.9	15.1
1.4876 - 1.4878	80.5	19.5	1.4991 - 1.4993	85.0	15.0
1.4879 - 1.4880	80.6	19.4	1.4994 - 1.4995	85.1	14.9
1.4881 - 1.4883	80.7	19.3	1.4996 - 1.4998	85.2	14.8
1.4884 - 1.4885	80.8	19.2	1.4999 - 1.5000	85.3	14.7
1.4886 - 1.4888	80.9	19.1	1.5001 - 1.5003	85.4	14.6
1.4889 - 1.4890	81.0	19.0	1.5004 - 1.5005	85.5	14.5
1.4891 - 1.4893	81.1	18.9	1.5006 - 1.5008	85.6	14.4
1.4894 - 1.4896	81.2	18.8	1.5009 - 1.5011	85.7	14.3
1.4897 - 1.4898	81.3	18.7	1.5012 - 1.5013	85.8	14.2
1.4899 - 1.4901	81.4	18.6	1.5014 - 1.5016	85.9	14.1
1.4902 - 1.4903	81.5	18.5	1.5017 - 1.5018	86.0	14.0
1.4904 - 1.4906	81.6	18.4	1.5019 - 1.5021	86.1	13.9
1.4907 - 1.4908	81.7	18.3	1.5022 - 1.5024	86.2	13.8
1.4909 - 1.4911	81.8	18.2	1.5025 - 1.5026	86.3	13.7
1.4912 - 1.4913	81.9	18.1	1.5027 - 1.5029	86.4	13.6
1.4914 - 1.4916	82.0	18.0	1.5030 - 1.5031	86.5	13.5
1.4917 - 1.4918	82.1	17.9	1.5032 - 1.5034	86.6	13.4
1.4919 - 1.4921	82.2	17.8	1.5035 - 1.5037	86.7	13.3
1.4922 - 1.4923	82.3	17.7	1.5038 - 1.5039	86.8	13.2
1.4924 - 1.4926	82.4	17.6	1.5040 - 1.5042	86.9	13.1
1.4927 - 1.4929	82.5	17.5	1.5043 - 1.5044	87.0	13.0

1/ Temperature corrections: If refractometer reading is made at temperature above 20° C (68° F) add 0.00023 to the refractive index for each degree C, or 0.00013 for eachdegree F. If made below 20° C (68° F), subtract correction. The moisture c[illegible]nt of honey and equivalent values may be determined by any other method which giv[illegible]quivalent results.

TABLE IV - FILTERED STYLE

	Factors	Grade A	Grade B	Grade C	Substandard
Analytical	Percent Soluble Solids (Minimum)	81.4	81.4	80.0	Fails Grade C.
	Absence of Defects	Practically free - practically none that affect appearance or edibility.	Reasonably Free - do not materially affect the appearance or edibility.	Fairly free - do not seriously affect the appearance or edibility.	Fails Grade C.
Quality	Score Points	37-40	34-36 1/	31-33 1/	0-30 1/
	Flavor & Aroma	Good - free from caramelization, smoke, fermentation, chemicals, and other causes.	Reasonably good - practically free from caramelization; free from smoke, fermentation, chemicals, and other causes.	Fairly good - reasonably free from caramelization; free from smoke, fermentation, chemicals and other causes.	Poor - Fails Grade C.
	Score Points	45-50	40-44 1/	35-39 1/	0-34 1/
	Clarity	Clear - may contain air bubbles that do not materially affect the appearance; may contain a trace of pollen grains or other finely divided particles in suspension that do not affect appearance.	Reasonably clear - may contain air bubbles, pollen grains, or other finely divided particles in suspension that do not materially affect the appearance.	Fairly clear - may contain air bubbles, pollen grains, or other finely divided particles in suspension that do not seriously affect the appearance.	Fails Grade C.
	Score Points	8-10	6-7	4-5 1/	0-3 2/

1/ Limiting rule – sample units with score points that fall in this range shall not be graded above the respective grade regardless of the total score.

2/ Partial limiting rule – sample units with score points that fall in this range shall not be graded above U.S. Grade C regardless of the total score.

Grades For Comb Honey

This is the second issue, as amended, of the United States Standards for Grades of Comb Honey. This issue contains all of the requirements of the first issue, effective August 1933, and the amendments published in the **FEDERAL REGISTER** of May 24,1967 (32 F.R. 7565) to become effective May 24,1967.

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§52.2861 Product description.
The grades in this subpart, as hereinafter outlined, are for the following variations of comb honey:

Comb-section honey; Shallow-frame honey;
Wrapped cut-comb honey; Chunk or bulk comb honey.

§52.2862 U.S. Fancy comb-section honey.
U.S. Fancy honey shall consist of comb-section honey that meets the following requirements:

(a) The comb shall –
(1) Have no uncapped cells except in the row attached to the wood section;
(2) Be attached to 75 percent of the adjacent area of the wood section if the outside row of cells is empty, or attached to 50 percent if the outside row is filled with honey;
(3) Not project beyond the edge of the wood section;
(4) Not have dry holes;
(5) Have not more than a total of 2-1/2 linear inches of through holes;
(6) Be free from cells of pollen.

(b) The cappings shall –
(1) Be dry and free from weeping and from damage caused by bruising or other means;
(2) Present a uniformly even appearance except in the row attached to the wood section.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for this grade in the official color chart*.
(d) The honey shall –
(1) Be uniform in color throughout the comb;
(2) Be free from damage caused by granulation, honeydew, poorly ripened or sour (fermented) honey, objectionable flavor or odor, or other means.

(e) The wood section shall –
(1) Be as free from excessive propolis and/or pronounced stains as illustration A in the official color chart;
(2) Be smooth and new in appearance, of white to light buff basswood and shall not contain knots and/or streaks in excess of the amount shown in illustration B in the color chart.

(f) The minimum net weight shall be 12 ounces, unless otherwise specified.

§52.2863 U.S. No.1 comb-section honey.
U.S. No. 1 honey shall consist of comb-section honey that meets the following requirements:

(a) The comb shall
(1) Have no uncapped cells except –
(i) In the row attached to the wood section, and/or
(ii) In the row adjoining the outside row, in the corners, and along the lower edge, provided the number does not exceed 15 in a comb section.

(2) Be attached to 50 percent of the adjacent area of the wood section;
(3) Not project beyond the edge of the wood section;
(4) Have no dry holes;
(5) Have not more than a total of 4 linear inches of through holes;
(6) Be free from cells of pollen.

(b) The cappings shall –
(1) Be dry and free from weeping and from damage caused by bruising or other means;
(2) Present a uniformly even appearance except in the row attached to the wood section and except for slight irregularities affecting not to exceed one-half of the comb surface.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for this grade in the official color chart.
(d) The honey shall –
(1) Be fairly uniform in color throughout the comb;
(2) Be free from damage caused by granulation, honeydew, poorly ripened or sour honey, objectionable flavor or odor, or other means.
(e) The wood section shall –
(1) Be as free from excessive propolis and/or pronounced stains as illustration A in the official color chart;
(2) Be smooth and new in appearance, of white to light buff basswood and shall not contain knots and/or streaks in excess of the amount shown in illustration B in the color chart.
(f) The minimum net weight shall be 11 ounces, unless otherwise specified.

§52.2864 U.S. No.1 Mixed Color comb-section honey.
When sections of U.S. No.1 comb-section honey of different colors are packed in the same container, they shall be designated as U.S. No.1 Mixed Color comb-section honey.

§52.2865 U.S. No.2 comb-section honey.
U.S. No. 2 honey shall consist of comb-section honey that meets the following requirements:

(a) The comb shall –
(1) Have no uncapped cells except –
(i) In the row attached to the wood section, and/or
(ii) In the row adjoining the outside row, in the corners, and along the lower edge, provided the number does not exceed 30 in a comb section;

*Color Chart no longer available, see 52.2885

(iii) Elsewhere in the body of the comb, not more than five of the total number of uncapped cells exclusive of those in the outside row, not more than 20 may be empty.

(2) Be attached to 50 percent of the adjacent area of the wood section;
(3) Not project beyond the edge of the wood section;
(4) Have no dry holes larger than three-eighths inch across if more than 1-3/8 inches from the wood section;
(5) Have not more than a total of 6 linear inches of through holes;
(6) Be free from serious damage caused by cells of pollen.

(b) The cappings shall –
(1) Not be badly bruised, marred, or leaking (small holes cut in cappings or small broken surfaces permitted;
(2) Have no requirements as to uniformly even appearance.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for this grade in the official color chart.
(d) The honey shall–
(1) Have no requirements as to uniformity in color in any of the comb sections;
(2) Be free from serious damage caused by granulation, honeydew, poorly ripened or sour honey, objectionable flavor or odor, or other means.

(e) The wood section shall –
(1) Be as free from excessive propolis and/or pronounced stains as illustration A in the official color chart;
(2) Be new in appearance, unless otherwise specified.
(f) The minimum net weight shall be 10 ounces, unless otherwise specified.

§52.2866 Unclassified comb-section honey.
Unclassified comb-section honey shall consist of comb-section honey that does not conform to the requirements for any of the foregoing grades.

§52.2867 U.S. Fancy shallow-frame comb honey.
U.S. Fancy honey shall consist of shallow-frame comb honey that meets the following requirements:

(a) The comb shall –
(1) Be produced in shallow frame spaced 1-3/8 inches from center to center, which will give a comb thickness of not less than 1 inch unless otherwise specified;
(2) Be drawn out on foundation which is light in color and is thin enough to produce a comb that compares favorably in texture with the comb in comb-section honey;
(3) Be well built out;
(4) Never have contained brood;
(5) Have no dry holes;
(6) Have no uncapped cells, except as follows –
(i) Empty cells in the row attached to the frame, and/or
(ii) 150 uncapped cells filled with well-ripened honey in the adjoining row.

(7) Be free from cells of pollen.

(b) The cappings shall –
(1) Not be broken or damaged by other means;
(2) Present a uniformly even appearance.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for U.S. Fancy comb-section honey in the official color chart.
(d) The honey shall –
(1) Be uniform in color throughout the combs of the lot, unless otherwise specified;
(2) Be free from damage caused by granulation, honeydew, poorly ripened or sour honey, objectionable flavor or odor, or other means.

§52.2868 U.S. No.1 shallow-frame comb honey.
U.S. No.1 honey shall consist of shallow-frame comb honey that meets the following requirements.

(a) The comb shall –
(1) Be produced in shallow frame spaced 1-3/8 inches from center to center, which will give a comb thickness of not less than 1 inch, unless otherwise specified;
(2) Be drawn out on foundation which is light in color and is thin enough to produce a comb that compares favorably in texture with the comb in comb-section honey;
(3) Never have contained brood;
(4) Have no uncapped cells, except as follows-
(i) Empty cells in the row attached to the frame and in the adjoining row, and/or
(ii) Additional uncapped filled cells, provided they are confined to groups and in the aggregate do not cover over 10 percent of the comb surface in any frame;

(5) Be free from damage caused by cells of pollen.

(b) The cappings shall –
(1) Be free from serious damage caused by being broken or by other means;
(2) Present a uniformly even appearance except for slight irregularities affecting not to exceed one-half of the comb surface.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for U.S. No.1 comb-section honey in the official color chart.
(d) The honey shall –
(1) Be fairly uniform in color throughout the comb;
(2) Be free from damage caused by granulation, honeydew, poorly ripened or sour honey, objectionable flavor or odor, or other means.

§52.2869 Unclassified shallow-frame comb honey.
Unclassified shallow-frame comb honey shall consist of shallow-frame comb honey that does not conform to the requirements for either of the foregoing grades.

§52.2870 U.S. Fancy wrapped cut-comb honey.
U.S. Fancy honey shall consist of wrapped cut-comb honey that meets the following requirements:

(a) The comb shall –
(1) Be drawn out on foundation that is light in color and is thin enough to produce a comb that compares favorably in texture with the comb in comb-section honey;
(2) Have no uncapped cells except on the cut edges;
(3) Never have contained brood;
(4) Have no dry holes;

(5) Be free from cells of pollen.

(b) The cappings shall –
(1) Be free from weeping and from damage caused by bruising or other means;
(2) Present a uniformly even appearance.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for U.S. Fancy comb-section honey in the official color chart.
(d) The honey shall –
(1) Be uniform in color throughout the comb;
(2) Be free from damage caused by granulation, honeydew, poorly ripened or sour honey, objectionable flavor or odor, or other means.

(e) The wrapper shall be transparent, clean and sealed in such a manner as to prevent leakage.
(f) The minimum net weight shall be 12 ounces, unless otherwise specified.

§52.2871 U.S. No.1 wrapped cut-comb honey.
U. S. No. 1 honey shall consist of wrapped cut-comb honey that meets the following requirements:

(a) The comb shall –
(1) Be drawn out on foundation that is light in color and is thin enough to produce a comb that compares favorably in texture with the comb in comb-section honey;
(2) Have no uncapped cells; except as follows
(i) On the cut edges, and/or
(ii) In the row adjoining the cut edge, provided the number does not exceed 15 in a cut comb;

(3) Never have contained brood;
(4) Have no dry holes;
(5) Be free from cells of pollen.

(b) The cappings shall
(1) Be free from weeping and from damage cause by bruising or other means;
(2) Present a uniformly even appearance except for slight irregularities affecting not to exceed one-half of the comb surface.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for U.S. Fancy comb-section honey in the official color chart.
(d) The honey shall –
(1) Be fairly uniform in color throughout the comb;
(2) Be free from damage caused by granulation, honeydew, poorly ripened or sour honey, objectionable flavor or odor, or other means.

(e) The wrapper shall be transparent, clean, and sealed in such a manner as to prevent leakage.
(f) The minimum net weight shall be 11 ounces, unless otherwise specified.

§52.2872 Unclassified wrapped cut-comb honey.
Unclassified wrapped cut-comb honey shall consist of cut-comb honey which does not conform to the requirements for either of the foregoing grades.

§52.2873 U.S. Fancy chunk or bulk comb honey-packed in tin.
U.S. Fancy chunk or bulk comb honey packed in tin shall consist of not less than 50 percent by volume of chunk or bulk comb honey, unless otherwise specified, which meets the following requirements:

(a) The comb shall –
(1) Be drawn out on foundation that is light in color and is thin enough to produce a comb that compares favorably in texture with the comb in comb-section honey;
(2) Have not more than one uncapped cell per square inch of comb surface;
(3) Never have contained brood;
(4) Have no dry holes;
(5) Be free from cells of pollen.

(b) The cappings shall –
(1) Be free from damage caused by bruising or other means;
(2) Present a uniformly even appearance.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for U.S. Fancy comb-section honey in the official color chart except that any amount of watery cappings shall be permitted.
(d) The honey shall –
(1) Be uniform in color throughout the comb and the color of the honey in the comb shall not be darker than the next darker color classification of the extracted honey used to make up the total weight.
(2) Be free from damage caused by granulation, honeydew, poorly ripened or sour honey, objectionable flavor or odor, or other means.

(e) The total weight shall be made up with U.S. Fancy extracted honey.
(f)The color of the honey within the container shall be designated according to the color of the extracted honey used to make up the total weight.

§52.2874 U.S. No.1 chunk or bulk comb honey – packed in tin.
U.S. No.1 chunk or bulk comb honey packed in tin shall consist of not less than 50 percent by volume of chunk or bulk comb honey, unless otherwise specified, which meets the following requirements:

(a) The comb shall –
(1) Be drawn out on foundation that is light in color and is thin enough to produce a comb that compares favorably in texture with the comb in comb-section honey;
(2) Have not more than one uncapped cell per square inch of comb surface;
(3) Never have contained brood;
(4) Have no dry holes;
(5) Be free from cells of pollen.

(b) The cappings shall –
(1) Be free from damage caused by bruising or other means;
(2) Present a uniformly even appearance except for slight irregularities affecting not to exceed one-half of the comb surface.

(c) The color of the comb and cappings shall conform to the requirements as illustrated for U.S. No.1 comb-section honey in the official color chart except that any amount of watery cappings shall be permitted.
(d) The honey shall –
(1) Be fairly uniform in color throughout the comb and the color of the honey in the comb shall not be darker than the next darker color classification of the extracted honey used to make up the total weight.
(2) Be free from damage caused by granulation, honeydew, poorly ripened or sour honey, objectionable flavor or odor, or other means.

(e) The total weight shall be made up with U.S. Fancy extracted honey.
(f) The color of the honey within the container shall be designated according to the color of the extracted honey used to make up the total weight.

§52.2875 Unclassified chunk or bulk comb honey – packed in tin.
Unclassified chunk or bulk comb honey packed in tin shall consist of chunk or bulk comb honey that does not conform to the requirements of any of the foregoing grades.

§52.2876 U.S. Fancy chunk or bulk comb honey – packed in glass.
U.S. Fancy chunk or bulk comb honey packed in glass shall consist of chunk or bulk comb honey that conforms to the requirements for this grade when packed in tin, except that no given volume of chunk or bulk comb honey is required.

§52.2877 U.S. No.1 chunk or bulk comb honey – packed in glass.
U.S. No.1 chunk or bulk comb honey packed in glass shall consist of chunk or bulk comb honey that conforms to the requirements for this grade when packed in tin, except that no given volume of chunk or bulk comb honey is required.

§52.2878 Unclassified chunk or bulk comb honey – packed in glass.
Unclassified chunk or bulk comb honey packed in glass shall consist of chunk or bulk comb honey that does not conform to the requirements of any of the foregoing grades.

§52.2879 Application of tolerances.
The tolerances specified for the various grades are placed on a container basis. However, any lot of honey shall be considered as meeting the requirements of a specified grade if no sample from the containers in any lot is found to exceed the tolerances specified by more than double the amount allowed, provided the entire lot shall average within the tolerance specified.

§52.2880 Tolerances for comb-section honey.
(a) **U.S. Fancy, U.S. No.1, and U.S. No.1 Mixed Color.**
(1) In order to allow for variations, other than in weight, incident to proper grading and handling, not more than 5 percent, by count, of the comb sections in any container may be below the requirements for the grade, but not to exceed two-fifths of this tolerance, or 2 percent of the comb sections in any container, shall be allowed for defects causing serious damage.
(2) In addition to the foregoing tolerance, not more than 5 percent, by count, of the comb sections in any container may fail to meet the weight requirements.

(b) **U.S. No.2.**
(1) In order to allow for variations, other than in weight, incident to proper grading and handling, not more than 5 percent, by count, of the comb sections in any container may be below the requirements for the grade.
(2) In addition to the foregoing tolerance, not more than 5 percent, by count, of the comb sections in any container may fail to meet the weight requirements.

§52.2881 Tolerances for shallow-frame comb honey.
(a) U.S. Fancy and U.S. No.1.
(1) In order to allow for variations, other than in weight, incident to proper grading and handling, not more than 5 percent, by count, of the frames of honey in any container may be below the requirements for the grade, but not to exceed two-fifths of this number, or 2 percent of the frames in any container, shall be allowed for defects causing serious damage.
(2) In addition to the foregoing tolerance, a variation of not more than 5 percent below the net weight marked on the cases shall be permitted.

§52.2882 Tolerances for wrapped cut-comb honey.
(a) **U.S. Fancy and U.S. No.1.**
(1) In order to allow for variations, other than in weight, incident to proper grading and handling, not more than 5 percent, by count, of the wrapped cut combs in any container may be below the requirements for the grade, but not to exceed two-fifths of this tolerance, or 2 percent of the wrapped cut combs in any container, shall be allowed for defects causing serious damage.
(2) In addition to the foregoing tolerance, not more than 5 percent, by count, of the wrapped cut combs in any container may fail to meet the weight requirements.

§52.2883 Tolerances for chunk or bulk comb honey – packed in tin.
(a) **U.S. Fancy and U.S. No.1.** In order to allow for variations incident to proper grading and handling, not more than 5 percent, by count, of the containers in any lot may have honey below the requirements for the grade.

§52.2884 Tolerances for chunk or bulk comb honey – packed in glass.
(a) **U.S. Fancy and U.S. No.1.** In order to allow for variations incident to proper grading and handling, not more than 5 percent, by count, of the containers in any lot may have honey below the requirements for the grade.

§52.2885 Official USA colors.
(a) **Official color chart.** The official color chart mentioned throughout this subpart is out of print and no longer available.
(b) **USDA glass color standards.** These color standards replace the **official color chart** which is out of print. Information regarding the USDA glass color standards, and their availability, may be obtained from:

Chief, Processed Products Branch
Fruit and Vegetable Division, AMS
U.S. Department of Agriculture
P.O. Box 96456, Rm. 0709, So. Bldg.
Washington, D.C. 20090-6456

§52.2886 Color classification of comb honey.

(a) Comb-section honey, shallow-frame comb honey and wrapped cut-comb honey shall be classified as white, light amber, amber or dark amber.

(b) The foregoing color classification shall be determined in accordance with the color standards as outlined in the applicable U.S. Standards for Grades of Extracted Honey, but the color shall be designated as follows:

(1) Honey classed as water white, extra white, and white for extracted honey shall be designated white comb honey;

(2) Honey classed as extra light amber and light amber shall be designated light amber comb honey;

(3) Honey classed as amber shall be designated amber comb honey.

(4) Honey that is darker than amber shall be designated dark amber comb honey.

(c) In classifying the color of comb honey, a sample of liquid honey shall be drained from a broken comb and the determination made according to the color standards for extracted honey as outlined in the applicable U.S Standards for Grades of Extracted Honey.

(d) It is permissible to state the color of the honey contained in the comb in conformity with the colors established for the classification of the color of extracted honey.

§52.2887 Uniformity of color.

(a) **Uniform in color** means that no pronounced variation in color is apparent in the honey on looking through a comb toward the light.

(b) **Fairly uniform in color** means that honey of a slightly different color from that in the body of the comb section is permitted in the row next to the section and in 10 additional cells, provided these additional cells are well-distributed and are in the row adjoining the outside row. In no event shall the contrast of color be greater than that between any color classification and the next darker color classification.

§52.2888 Definitions of terms.

(a) Damage means any injury or defect that materially affects the appearance, edibility or shipping quality of the honey, such as:

(1) The presence of any cells, of pollen in more than one-third of the combs in any lot of U.S. No.1 shallow-frame comb honey. One-third of the combs may have not more than 50 cells of pollen in a comb provided they are not widely scattered but are on the outside edges of the comb.

(2) The presence in comb-section honey, shallow-frame comb honey, wrapped cut-comb honey, or chunk or bulk comb honey packed in tin or glass, of more than 10 percent by volume of granulated honey in the uncapped cells, or of more than very small or scattered granules in the capped cells.

(3) The presence of any spots of feces (bee excrement) on the comb.

(b) **Serious damage** means any injury or defect that seriously affects the edibility or shipping quality of the honey. Any spots of feces on the surface of the comb or, in sections, attachment of comb to less than 45 percent of the adjacent area shall be considered serious damage.

(c) **Uncapped cells** or cells, either empty or filled with honey, which are not sealed or capped over by the bees.

(d) **Adjacent area of the section** means the total length of the four inner sides of the section, multiplied by the thickness of the comb; as, for instance, in the case of a section 4-1/4 inches square, 4+4+4+4 equals 16, which, multiplied by the actual thickness of the comb, which might be 1-1/4 inches, gives an adjacent area of 20 square inches.

(e) **Project beyond the edge of the section** refers to the projection of comb beyond the widest part of the section, generally because no separators were used, and does not refer to the occasional slight projection of wax beyond the narrow or beeway part of the section. Projection at this point to such an extent that honey leaks down over the face of the comb is not permitted.

(f) **Dry holes** are holes in the honeycomb larger than a cell, and not next to the wood; they may extend partly or entirely through the comb.

(g) **Through holes** are holes or passages through the comb from one side of the comb to the other, between the edge of the comb and the section.

(h) **Weeping** is the exudation or seepage of honey through the cappings forming small drops which finally run down the face of the comb. It is usually caused by absorption of moisture from the atmosphere by the honey.

(i) **Bruising** is any injury by accident or pressure, such as an indentation of the surface of the comb by pressure of fingers. Bruising is considered to be damage if it is sufficient to cause leaking.

(j) **Uniformly even appearance** means that the surface of the combs shall be free from irregularities other than those incident to the work of the bees in completing a comb of uniform construction.

(k) **Slight irregularities** means irregularities of not more than one-eighth inch above or below the general surface of the comb, but not projecting beyond the edge of the section. The slight ridging of the comb surface sometimes incidental to use of fence separators is not to be considered an irregularity.

(l) **Freedom from excessive propolis and/or pronounced stains** means that the top of the wood section shall bear no greater stain from propolis than that ordinarily found on a paraffin section, and that the other three sides and the edges and inner faces and angles of the wood sections shall be reasonably free from propolis. Permissible stain is shown in the color chart.

(m) **New in appearance** means not discolored by age or exposure. Paraffined sections usually appear new, even though they may be left over from a previous season.

(n) **Well built out,** as used in reference to shallow-frame comb honey, means that the combs are fairly uniform in thickness throughout each comb and throughout the lot.

Dated: May 16,1967.

G.R. Grange, Deputy Administrator, Marketing Services.

Published in the Federal Register of May 24,1967 (32 F.R. 7565)

Fix Or Repair Daily

Richard Bonney

It's been longer than you think since you put this stuff together, and it's beginning to show its age.

Beehives wear out. That's something we don't think of much during the first couple of years of keeping bees, but as with any other physical object – houses, tools, vehicles, appliances – time takes its toll. One day we go to the beeyard and notice that the hives are looking shabby. As we open a hive, we note incipient rot in a corner of one of the hive bodies. Nails have begun to back out from what were once firmly nailed joints. Inside the hive, the inner cover may have started to separate at the joints.

None of these things are catastrophic. They can be repaired, and they should be repaired – soon. With delay, the underlying problem will get worse. The first time this sort of thing happens usually is a bit of a surprise. You are probably still thinking of your hives as new equipment. After all, it has only been a year or so – well maybe a couple of years – well, maybe a little longer – since you started with bees.

At first, when these problems began to appear in my hives, I would make a note, sometimes written, sometimes mental, to bring the necessary tools or supplies to the beeyard on my next visit and repair what I had found wrong. Sometimes I actually remembered to follow through and bring what I needed to make those repairs.

As time passed, my holdings increased and my equipment aged: Problems became more common. I began to carry a few things with me to the beeyard routinely – a small hammer, an assortment of nails, a staple gun, odd pieces of screening, duct tape. At first I just threw them in a wooden box, but as often as not, the box would be left in the open on the back of the truck or dropped off by the barn at the end of the day. The tools and supplies weathered, rusted, and disintegrated. Then I graduated to a plastic pail with a lid. This worked for a while to keep things weatherproof, but it became too small as I kept finding more things I needed to carry just in case. I bought an inexpensive plastic storage chest with a tightly fitting lid. Even that had limitations, and soon I had two.

Now I was beginning to have some order to my beekeeping life. When going to the beeyard I had four basic items to load – two plastic chests, one plastic pail with lid containing smoker fuel, and one metal pail containing my smoker and hive tools. When working my home yard, these all can go in the garden cart. For outyards, they go on the truck. I almost always have with me everything I need for routine maintenance and repair. Of course, I do carry other things but these vary from trip to trip and depend on the particular mission of the day – supering, feeding, making splits, for instance – but the routine is taken care of with my pails and chests.

Now, what is in those chests? I've mentioned a few things, a hammer for instance. Actually, there are two, a tack hammer and a mid-weight claw hammer. These take care of any nailing or hive stapling. Then, an assortment of fasteners, such as a selection of nails, hive staples and

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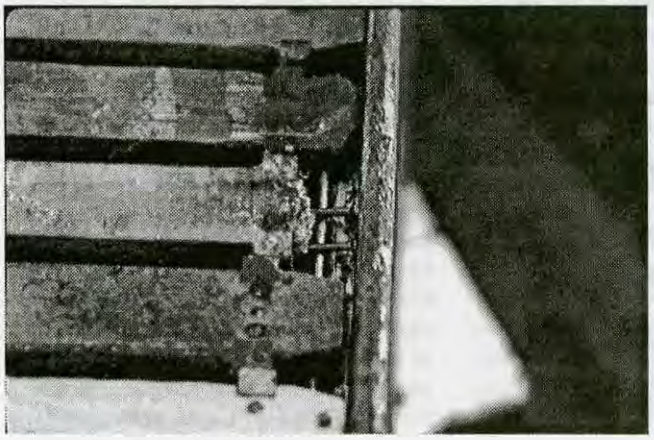
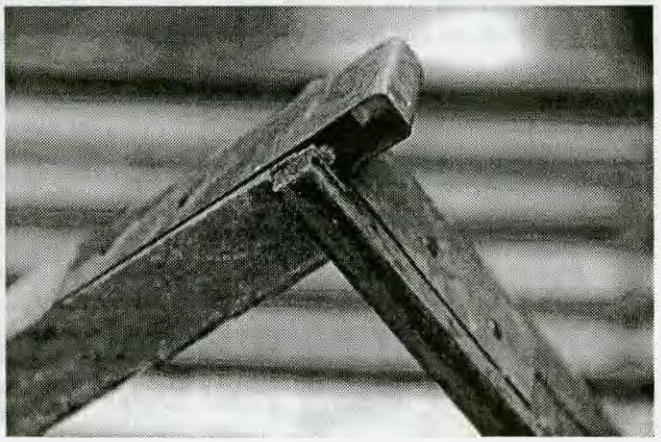
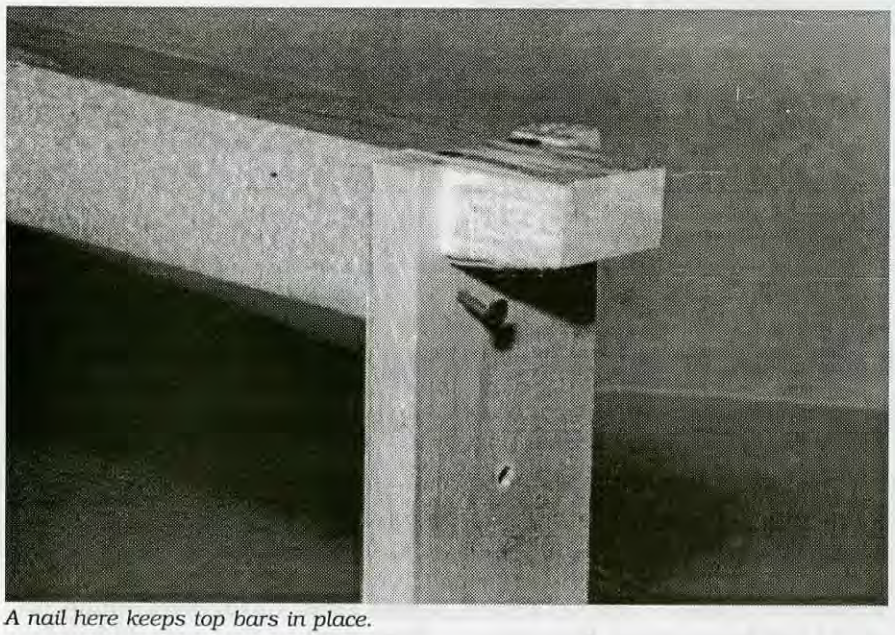
Make-do frame repair.







A nail here keeps top bars in place.

regular staples, all carried in one-pound coffee cans with plastic lids marked with the contents. The nails include the standards used in hive assembly – 7d box nails, coated or galvanized, 1-1/4-inch frame nails, 5/8-inch or 3/4-inch nails for various minor uses, and then some larger nails for purposes I will mention shortly.

Other tools and accessories include pliers, a couple of screwdrivers, a staple gun and staples, grass clippers, a bee brush, a lid lifter for plastic pails, tape, entrance closure screens, a marking crayon, a nine-frame spacer, and on and on. All of these things are kept permanently in these chests. It means duplication for some things, but the little added expense is worth it. For instance, when I am ready to work bees, I don't have to search the garden shed for grass clippers, nor must I search my shop for a hammer. Conversely, around the house my tools are where they should be, and not off on the truck or left in a beeyard.

What use is made of all of these tools and equipment that I carry? For some items, the answer is obvious. For instance, the bee brush, the nine-frame spacer, the entrance reducers and screens, mouse guards – these are used in working and managing hives. Most of the other items come under the heading of maintenance and repair. Let's start at the top.

I have found with many of my metal-clad outer covers that the nails holding the metal in place tend to pull out over time. This is a result of the constant exposure to the weather, and especially to the effects of the sun. With alternating heat and cold, both the wood and the metal of a cover expand and contract, but usually in different directions and at different rates. The nails are relatively small, sometimes too small, and of limited holding power. Out they come.

A similar problem comes at the joints of the woodenware. Here the joints are all wood, but the two sides of the joint are expanding and contracting separately and the nails sometimes move. This problem comes more often with equipment made from lesser grades of wood, or poorly seasoned wood, or with unprotected wood. In a sense, unseated nails are a minor problem, but they can lead to a greater problem, aside from the slight possibility of getting clothing caught on the protruding nailheads.

When a hive is assembled, the nails make holes in the wood. Any hole is a potential route for moisture to find its way into the interior of wood. When properly seated, the nail fills the hole and the nailhead covers the hole and acts as a seal. Paint or other finish provides an additional seal. However, if a nail starts to unseat, even a little, the paint seal is broken. Then, the nailhead is no longer covering the opening. For the nail to unseat in the first place means that the shaft of the nail is no longer a tight fit in the nail hole, leaving a path for moisture to seep in. True, it is a minuscule opening, but moisture will find it and seep in to the interior of the joint. Ultimately, rot will begin.

What do you do? You could simply hammer the nail back in, but the basic problem would still be with you. The nail hole has become too large and the nail will slowly work out again. Before doing anything, look closely at the offending piece of equipment. Is it looking shabby? Is it a candidate for scraping, painting and general rehabilitation? If so, then the fix for the moment can be relatively simple. Tap the nails back into place, and mark the hive part as one to be removed, replaced, and taken back to the shop for reconditioning. Do that reconditioning, and do it soon, and you will add years to the life of that piece of equipment.

If the box (or cover) is relatively new and the unseated nail or nails seem to be the only problem, then replace the nails. Since the nailheads are slightly protruding, you should be able to pull them with relative ease and minimum disturbance to the colony. When re-nailing, use slightly larger (fatter) nails, and be sure they are coated or galvanized. Both the added thickness of the new nail and the coating or galvanization will add to the holding power. Seat each new nail carefully

"Repair and maintenance is an ongoing, seldom mentioned part of keeping bees. Ignore it and your equipment investment deteriorates faster than you can imagine."

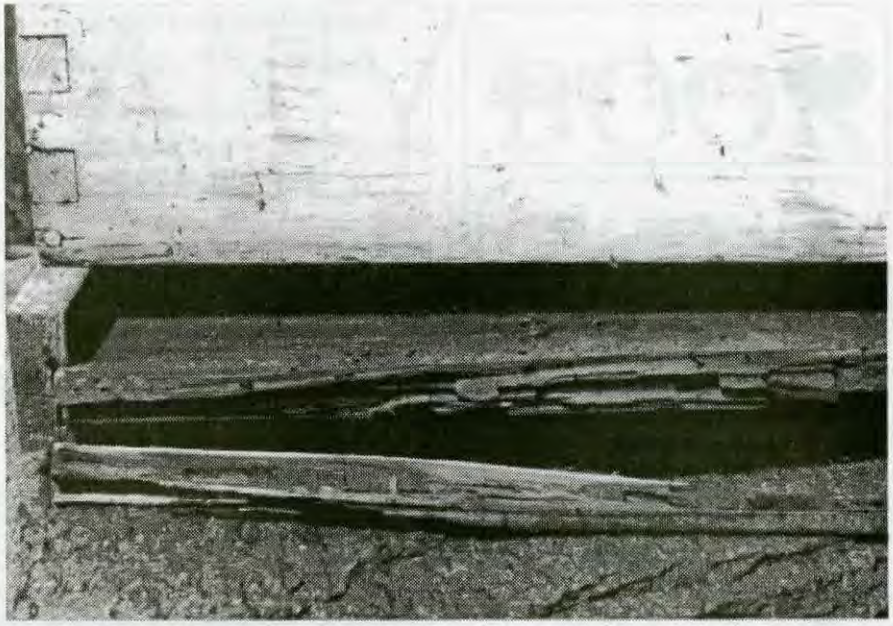
to re-establish the seal.

I have done such repairs with hive bodies in place on a hive, but if there are more than just one or two nails to be reseated, remove the hive body from the hive and carry it a few feet away before you start thumping and banging. The more aggressive field bees will tend to orient back to the original hive stand, and the house bees in the box you removed will tend to remain docile.

What about rotted wood? I have found this to be a common problem on hive bodies and bottomboards. Moisture seeps in between two hive bodies or between the hive body and the bottomboard. The pressure and slight damage that can be caused by a hive tool being repeatedly inserted breaks down the integrity of the wood surface. The moisture seeps in, and eventually the wood begins to deteriorate. During hive assembly, some paint applied to these surfaces where hive parts come together will help with this problem, but paint is not a guaranteed solution. A step towards reducing such damage is to use the hive tool carefully, and inspect these corners regularly when working hives.

Inside the hive, frames often take abuse. Frames are strong, but they do break. One vulnerable area is the end lug of the top bar. Pressure from a hive tool as a frame is removed can stress the lug, and dropping a hive body or super with full frames can create further stress. Of course, we don't often drop a full box, but it can happen. When a frame breaks in this fashion, it is tempting to just place the frame back in the box, propping it up in some makeshift way and hope for the best. That frame then becomes a continuing nuisance until it is repaired or replaced.

There are two ways to repair a frame with a broken lug, one a quick fix and one more permanent. The quick fix can be done on the spot with minimum disturbance to the bees. Remove the frame from the hive and drive at least one, but preferably two nails into the broken end of the top bar. Position the nails so that they hold the frame at normal height in the box. At some more convenient time, that frame can be given a more permanent repair using a metal replacement frame end made for the purpose. Several of the bee supply catalogs list these replacement ends.



Replace equipment that's been 'weathered' immediately, and check the rest.

This looks harmless, but it's not.

Another type of damage to a frame, also caused by dropping, occurs when the end bars begin to separate from the top bar, pulling the comb down from the top bar. I have found no neat and sure way to repair such damage. A couple of sharp blows from a hammer to reset the top onto the frame ends may do some good, but it leaves a mess at best and is not a permanent fix. The next time a hive tool is applied to that frame to remove it from the hive, the top bar will probably separate from the ends again. This whole situation can be avoided by nailing the frames properly as they are initially assembled when new. A nail pounded horizontally through each end bar into the top bar will prevent such separation.

Hive maintenance is an ongoing necessity of successful beekeeping. Little problems become big problems when ignored. Next month we will talk more about some of both, the little and the big. Meanwhile, take a critical look at the condition of your hives. BC

Richard Bonney is the retired Extension Educator for the State of Massachusetts, and a regular contributor to these pages.

NOT IN ANY BOOK

Fall Requeening – Looking Better Every Year

James E. Tew

As I look back on my 25 plus years of beekeeping, the fogginess of time seems to be clearing some. For those of you who were not working with bees in the 60s and early 70s, they were beekeeping's halcyon years - "The best of times." Our biggest problem was whether or not to burn for American Foulbrood and how to avoid pesticide hits. We knew everything about bees and their biology - or so we thought. We had special breeds of bees - Starlines and Midnights and special Alfalfa pollinating bees. We got innumerable calls each spring to pick up swarms. Killer bees, in the early years called "Brazilian Bees", were some kind of vague bees that were reputed to be giving South Americans beekeepers all kinds of guff. And we had no idea what mites even looked like. It seemed as though everything was in its beekeeping place. Those were the days, my friend. We thought they'd never end, but end they did.

Alas, we are now near the millennia thirty to forty years later. The Africanized honey bees are in the U.S. and we have survived. We have more mites than anyone could have ever imagined and we are surviving. Our honey industry has taken hits over botulism and again our heads were bloodied, but again, we seem to be surviving. Though the clearing fog, our industry is emerging in some ways unchanged, but other ways never to be the same. That is the way of things. Nothing stays the same forever. Many of the rules and recommendations have changed or will be changing. We are more sophisticated beekeepers now.

Through all the years right up to this very day, queens have always gotten a lot of our beekeeping attention. They get the credit or the blame for all the good, or all the evil within the colony. We still go in search of the perfect queen. Breeders breed queens and tout. Beekeepers buy queens and complain. That's one of the bee things that has changed very little.

The standard recommendation continues to be to requeen every two years - probably in the Spring. By doing so, swarming is reduced and populations remain high. If something does goes wrong, you have the rest of the Spring/Summer to make things go right again. The average beekeeper's year consists of a hectic Spring, a slow Summer, an interesting Fall, and a dead Winter. The Spring season got most of the attention. Now what? It's not as simple to get all the packages and queens you want in the Spring season any longer. For the past few years, both packages and queens have been in (somewhat) short supply during the Spring season. In our current emerging era of new beekeeping, we need to review everything we do or do not do to determine what's still right and what's still wrong. Is Spring requeening still the best way to go? Probably not in all situations.

During a heavy Spring nectar flow a bee colony acts like a colony of kittens. Very little smoke is needed. Stinging is at a minimum. Robbing is non-existent. Populations are building up and requeening is reasonably simple. The bees are in a good mood. What am I saying? I'm saying you don't have to be a great beekeeper to keep bees in the Spring season. It's easy.

Why consider alternatives then? Because queens are not always as readily available in the Spring season as they once were. Mites, in their own way, have rewritten many aspects of beekeeping books. Additionally, your queens may be fine during Spring months but show signs of failing later in the year - for myriad reasons. Is requeening during other seasons wrong? No. It's just easier in the Spring.

Requeening - at any time of the year - is one of those good recommendations that few beekeepers actually do. This recommendation is in the same league with annual prostate exams or getting your teeth cleaned. Good suggestions, but really troublesome to implement. The old adage, "If it's working, don't fix it" seems to apply here, but I don't think it does. Queen management is more important than ever. On one hand, I am saying to consider requeening during an off season, but on the other hand I am saying that queens may be difficult to get. True and true. Today's beekeeper must be more skilled than the casual beekeeper of 25 years ago. Until you understand the concept of queen replacement, it's probably a good idea for you to NOT ever requeen until you do understand the process. Replacing queens is potentially a time consuming process. Do it right or don't do it at all.

In reality, a hive can have it's queen changed any time of the year. Problems are that it's hot in the Summer and cold in the Winter, but the concept is essentially the same regardless of the season. Fall is the obvious best *second* choice.

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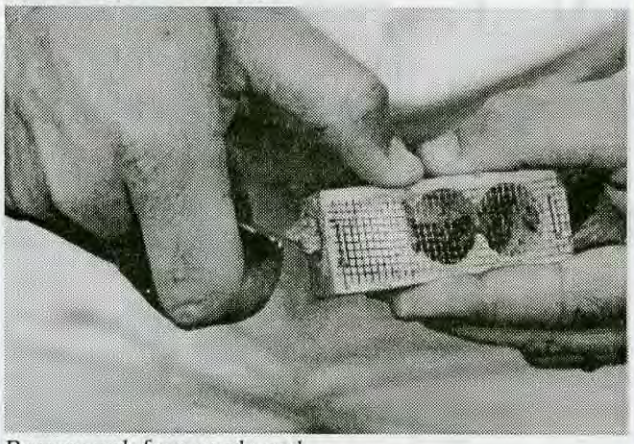
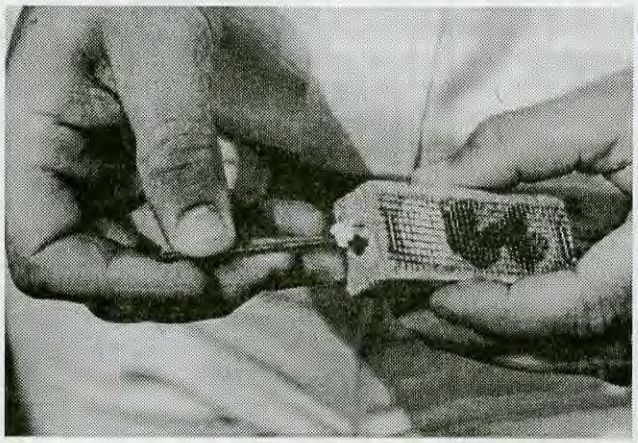
BASICS

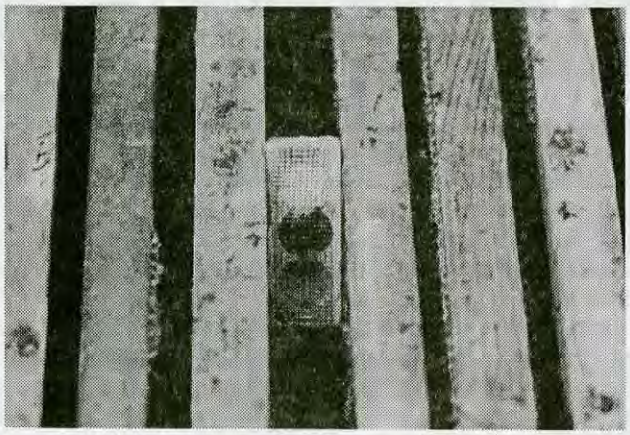
If installing a wooden cage . . .



Remove cork from candy end . . .



. . . make a small hole in the candy . . .



. . . and place cage, screen side exposed, in the very center of brood nest.

Some Aspects of Fall Requeening

Be prepared. Order your queens before the Fall season begins. You must know the season and watch for the signs that the Fall flow is starting. Obviously, Winter follows Fall so you won't have the luxury of time to make corrections.

Choose Your Days. Just like Spring, Fall is a transitional season. Unlike July where one day is much like another, Fall can surprise you with cold snaps. Be ready to move when the weather predictions are for those pleasant, crisp Fall days.

De-Queening is More Important. Some of the more user-friendly spring recommendations are to de-queen and re-queen in the same procedure on the same day. Essentially, the recommendation is to find the reigning queen. Eliminate her and place the new caged queen in the colony near the brood nest and all should go well. Fall requeening is a bit different. You can't assume that you will have weeks and weeks to get the queen installed. I would suggest that the reigning queen be found and eliminated. Let the colony stew over its queenless situation for a day or so and then place the caged queen in the brood nest. This recommendation is actually a good one even for Spring requeening.

New Queen's Cage Location. Obviously, seasonal conditions vary across the U.S. You will have a lot more latitude if you are keeping bees in a warm climate, but if you are attempting this procedure in a cold climate, be sure to position the queen's cage in a spot where it will not be exposed to excessive cold if the bees should pull back into a cluster. Go right for the middle of the brood nest and use a longer wire for supporting the cage there if necessary.

Have a Dooms Day Plan. What if everything that could go wrong does go wrong? What are you going to do then? The most obvious thing to do if it is really late is to combine the colony with another and make splits the next spring. I'm sure you will realize that all the other avenues open to you in warmer seasons, such as ordering another queen or letting the bees develop a queen on their own will not apply in this late case. You'll be looking down the bore of the winter season with a queenless colony.

Consider Going the Extra Mile. Consider more foolproof procedures such as establishing a nucleus colony (nuc) and install the queen into that unit rather than working with the full colony. For instance, about three frames of bees and one frame of brood could be moved to an empty box near the opening of the parent colony. Older field bees will move back to the original colony and only the younger, more tolerant bees will remain within the nucleus colony. I would suggest installing the new queen in the nucleus colony as it is made up. All the time the parent colony is queenless, it will be developing queen cells of their own. As you see these, tear them down, but don't make a big deal of finding all of them. After a couple of days, when the new queen is out in the nuc, recage her and reposition the nucleus frames back into the colony, using smoke to cause confu-

sion. Place the recaged new queen on the brood frame from the nucleus colony and allow her to stay caged for another couple of days. What all this extra effort does for you and the new queen is give a cadre of young bees an opportunity to get to know her before exposing her to all the bees of the hive. Essentially, the queen is emerging amongst friends.

So what's the deal here? Are you requeening real early or real late? I'd like to think that a beekeeper who requeens in the Fall is getting an early start on the next Spring season with a colony headed by a young queen that is not inclined to lead a swarm. Such a prudent beekeeper will not be competing with the masses the next Spring for queens.

Do these few things to pull off a Fall requeening procedure: (1) Have your queen producer selected and be certain queens are available. (2) Have the queens come in as it becomes obvious that the Fall flow is upon you (e.g. golden rod is beginning to bloom). (3) Remove the old queen and let the colony sit queenless for a day or so. (4) On warm, sunny days, install the new queen in the middle of the brood nest. (5) Check to be certain that she is out in a couple of days. If she is not and if the bees are not clinging tenaciously to the cage, release her directly. (6) Check for the presence of eggs in five to seven days. If something goes awry, you still have time, in most Autumn seasons, to try again. If everything goes bust, combine the queenless colony with another. Then make splits the next Spring and proceed with queen introductions then.

"As in the Spring, new queens and Apistan may not mix. Remove queen tabs immediately from cages, and install colony strips before, or three to four weeks after your new queen arrives."

Many beekeepers still practice "Let Alone" beekeeping. "The colonies can take care of themselves." Well, not really. Skillful hive management is now more important than ever. We are still trying to understand the nuances of heavy pest infestations within our colonies. Sadly, the bees need us more than ever. A competent beekeeper will be able to competently manage queens. In all cases, do no harm. BC

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Up Close & Personal

MEET THE ROSSMANS

Dana Stahlman

"Don't write about me unless you include Ann as well!" And that pretty well describes the teamwork that goes into making Rossman's Apiaries what it is. I have known Ann and Fred for several years. During that period of time, I have found myself returning to share their friendship, and I continue to do business with them.

Each morning at sunrise in the Spring of the year, one will find both Fred and Ann in the office, ready to welcome visitors and to get the day off and running. While Ann handles the office, phone calls, orders and a multitude of other things, Fred is directing the many chores required to keep an operation such as this fine-tuned.

Time is at a premium in the Spring as orders for packages must be filled. But that is only part of the story. The Rossmans sell a full line of bee equipment and manufacture much of it. And they still find time to make visitors welcome, attend the many bee meetings, and this Spring, serve as one of the stops on the Georgia Beekeepers Association Spring Tour.

Rossman's Apiaries, Inc., has been in business since 1936. As Fred explained, "My dad began working with bees in 1936. He was raised on a dairy farm and a neighbor across the street had bees. Dad got interested in bees and began working for Pruitt Apiaries in Hahira, Georgia. While working there, he met E.W. Long of St. Paris, Ohio. They formed a business called Rossman and Long, which produced package bees for the North. That business lasted until 1952 and since then has been operated by the Rossman family." Fred and Ann assumed operation of the business in 1986.

Over the years, the Rossmans have faced a number of challenges. The most serious was the closing of the Canadian border in 1986. "They almost closed my doors. My banker told me I could legally go bankrupt, but that is not in my vocabulary. When the border closed, I had more eggs in one basket that I thought I did. Eighty to 90 percent of the business was being exported to Canada. During this period, honey prices were down and the entire industry was in crisis."

He continued, "I was in the same boat with a number of other people and here we were, trying to get business out of people who were going out of business. So I had to do something else, too."

That something else turned out to be equipment manufacturing. Fred knew bees. Then came the opportunity to purchase the Forbes and Johnston bee equipment business. Forbes and Johnston were building hive bodies and other equipment from cypress and the Rossmans continue this tradition. "The supply business is a big plus for us being in business today," Fred emphasized.

The Rossmans spend a lot of time working and trying to improve the supplies they sell. All of the equipment is made from cypress except for frames, which are made from Western pine. "I have learned a lot about the supply business. I thought I knew what bee supplies were, but when you start dealing with the public, you find out that you may not know as much as you think you do about stuff you are selling to somebody."

Fred likes the supply business and realizes the importance of the hobby beekeeper to Rossman's. He explained that problems and comments from customers have led to product improvement. When there is a problem, "We try hard to resolve the problem. The supply business is very competitive, and staying in business requires us to do our best to keep customers coming back. If you've got an idea or if you see something we are doing wrong, you call and let me know. I'm willing to change. If you treat a customer right like you like to be treated, then he or she will probably come back."

One of the improvements we talked about was the new handholds being put into his cypress hive bodies. These handholds are slightly beveled upward into the side of the hive body and provide a better grip when the hive body is picked up. "I'll tell you those new handholds have brought more comment than anything I have done in the last three to four years."

Fred is well aware of the feelings many beekeepers have about dado corners. In the South, weather conditions tend to be wet, and the advantage of the dado corner is that water has only one place to go and that is

Continued on Next Page

down and out. If nailed from both sides and glued, these joints hold fast and make a quick job of putting hive bodies together. Plus the hive bodies are made of longlasting wood. He showed me several old hive bodies built by his father. These were well-weathered, very sound and over 40 years old.

As I toured the shop with Fred, my attention was drawn to a machine used to make queen cell cups. It is a one-of-a-kind machine according to Fred. It was developed in 1981 at a cost of $10,000. The idea for this machine developed gradually, plans were drawn up, taken to a local machinist, and after much trial and error the machine now produces as much as 60 pounds of wax queen cell cups during a day's run.

Both light and dark cell cups are manufactured. It was pointed out to me that many breeders prefer the dark wax cups because the young larvae transferred to the cup can be seen at the bottom of the cup. The Rossman wax cell cup does not require a wood base to hold it in place on a cell bar. The final secret, I was told, is the special fine rim on each of the cups. This fine rim makes a lot of difference in the acceptance of the cells by the bees according to Fred.

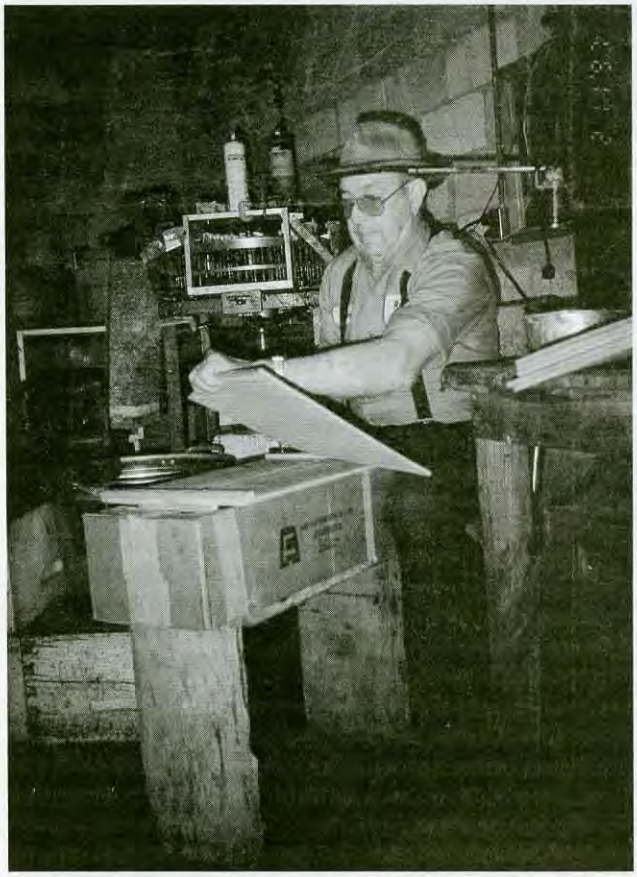
There is more to Rossman's than supplies. They run 12,000 nucs according to Floyd Porter, who has worked for the Rossman family since 1944, and produce over 6,000 packages of bees during a season. Fred, however, separates the package bee business from the production of good queens. Fred has a clear idea of what he wants from a queen. "If you can handle the hive without the bees jumping out on you, then that queen has a chance to become a breeder queen." Gentle bees are his first priority.

"I was in the same boat with a number of other people and here we were, trying to get business out of people who were going out of business."

Color is not at the top of his list. But he indicated that he likes the leather-colored bee. "We got away from it for a while, but I am getting some of it back." Queens must create good brood patterns and produce bees that get honey under all conditions – hot, cold, wet or dry. He learned a long time ago to look at the drones in a colony. If the drones are constant in color, it is an indication of what the queens will look like if the mother queen is selected as a breeder. He feels that it is only by maintaining a good line of queens that he gets repeat business from the hobby as well as the commercial buyers of his queens.

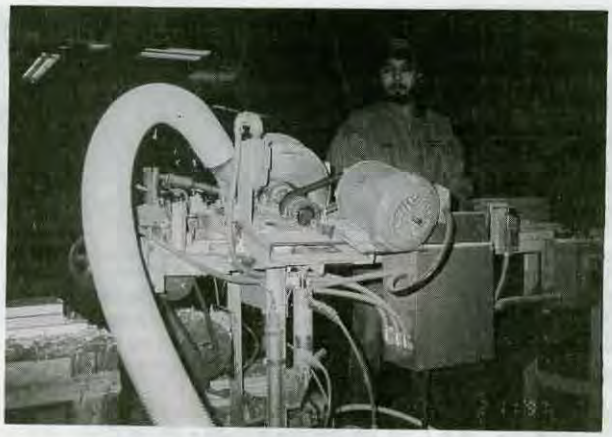
People really don't know the amount of work and effort that go into raising queens. He asks, "What are you going to do? Have a beehive with a worn-out mother that produces maybe 90 pounds of honey or a really good queen that will produce 150 pounds of honey or more?"

The Rossmans also rent bees for pollination. But this creates its own special problem. As Fred sees it, Georgia farmers are wanting bees earlier and earlier each year. Farmers are starting seedlings in greenhouses and transplanting plants in the field to get earlier crops to compete with Florida-grown crops. To quote Fred, "The 10th of April isn't the best time for me to move bees for pollination. I am a little bit like this – if a man is going to rent a hive of bees from me for pollination, I don't feel like I can go out there and take bees out of that hive to sell to somebody else for packages.



Floyd Porter standing in front of the new cell cup machine, punches out corks for queen cages.

Ann and Fred Rossman . . .



Francisco Sanchez operates the new handhold machine that makes concave grips.

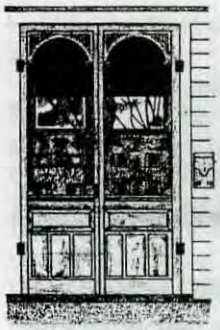
He has paid for those bees and I just don't think it is ethically right to do that." The demand for package bees has created a real problem for him because as he tells it, "Pollination has helped me through these lean years."

Teamwork best describes the Rossmans. Ann and Fred work together and as Fred told me, "I don't dare make promises for delivery without first checking with Ann to avoid conflicts." If you call, you most likely will be talking with Ann. She is involved in any order and could be described as the heart and soul of this operation.

She travels with Fred to many of the meetings, and I discovered that she likes to visit antique shops. She has a collection of depression glass with honeycomb design. She has almost complete collections of the ruby red, cobalt blue and milk white, but she is looking for pitchers to go with them. She is looking for green and amber pieces as well.

If you are looking for a place to visit when you are in Southern Georgia, you'll find Ann and Fred Rossman warm and friendly. And if you have an RV, they might even give you a place to park for the night. BC

Dana Stahlman runs a queen and package bee business traveling between Ohio and Georgia. He is a frequent contributor to these pages.



Ann Harman

Home Harmony

Promote Your Honey This Month

Your bees gathered it; you stole it; now do something with it. What? Honey, of course. And since this is National Honey Month it's time to do something new and different. This is a good month for improving your promotion of honey, not only as a delicious product, but one that is versatile in the kitchen.

You probably have your honey all bottled to sell, jars are clean, all neatly labeled. Is there something missing? Perhaps. Do you have a hang tag, sometimes called a neck tag, on your jars and squeeze bears? Although the National Honey Board has beautiful hang tags for sale, if someone is buying several jars of honey then several identical hang tags are acquired with that one purchase. Why not combine the National Honey Board's tags with some of your own.

Computers really are a big help in making professional-looking hang tags, and also brochures that give honey facts along with posters for honey sales booths. Color printers can make hang tags extremely attractive, but if your printer prints only black, interesting effects can be created with colored stock. You can select from a large assortment of decorative and colored paper stock available from office supply stores.

The first thing to do is plan the hang tag. A good size is a 2" X 2" square. However, a standard business card, folded in half, will give you a nice size of 1-3/4" X 2". You then need to decide whether to punch a small hole in the corner or attach the ribbon another way. Elastic cord or narrow ribbon can be obtained by the spool. But if you wish to match seasonal or holiday colors you may decide a whole spool of each color is too much. Yarn works very well and the selection of colors is enormous!

If you decide to have a decoration on the front of the tag, do not choose a realistic honey bee. Flowers make good graphics, as do cooking utensils. Explore the clip art in your computer. Remember the front of the hang tag needs to be simple but eye-catching. A line border frequently enhances the appearance.

You can create a whole assortment of hang tags: ones for the holiday season, ones for a harvest festival, others suitable for the different seasons. You can even make special occasion ones, such as for a birthday, a gift basket, or a tailgate party.

Don't get enthusiastic over fancy fonts. Choose one that is open in appearance so that it can be read in the small type size necessary for a hang tag. Write a few words then make a test print so that you can see if what you chose is legible.

Now for the recipes and information. If you have a label on your jar that tells how to liquefy crystallized honey, then you do not have to repeat this on the hang tag. However, if you do not have this particular label, then liquifying instructions are really helpful. So many people throw out crystallized honey believing it to be "spoiled."

The selection of recipes needs careful thought. The recipes need to be short in order to fit on the small tag. And recipes need to be simple and quick to encourage customers to use the honey, then buy more. If you are using seasonal tags, fit the recipes to the occasion. For example, a simple barbecue sauce would be useful for sales in the Summer.

You might wish to save one page for suggestions for using honey: enhance the flavor of fresh fruit with a drizzle of honey; sweeten ice tea and lemonade with honey; use on breakfast cereals. Many people think of honey only for sweetening hot tea or for a sore throat. Let them know that honey can make cooked vegetables taste wonderful.

Here are some recipes you might wish to use on your tags. You can, of course, modify the instructions to fit the size tag you chose, but do not leave out any important steps.

CINNAMON & HONEY FRENCH TOAST

A good choice for a breakfast recipe is French toast. The addition of honey makes it special.

8 slices bread, stale
4 tablespoons honey
2 eggs
1-1/4 cups milk
1/4 cup butter
2 teaspoons ground cinnamon

Spread one side of each slice with 1 teaspoon honey; let soak in for a few minutes. In a large flat pan beat the eggs with 1-1/2 tablespoons honey until blended. Add milk and beat. Melt butter and 2 teaspoons honey in large, flat skillet. Dip each slice in egg mixture; let soak in but not become soggy. Heat skillet and cook bread for 2-3 minutes on each side. Sprinkle each slice with 1/4 teaspoon cinnamon.

A Taste Of Honey
Jane Charlton & Jane Newdick

APPLE STRAWBERRY REFRESHER

Since beverages are quick and simple, here is one that will be easy and delicious!

2 cups apple juice
2 tablespoons honey
10-12 frozen strawberries

Place all ingredients in blender. Blend until liquid. Serve in chilled glasses with a sprig of mint.

Kansas Honey Producers

GOOD SAUCE FOR STEAK

A steak sauce can be useful, especially if the steaks are done on the outside grill.

1/2 cup sour cream
2 tablespoons prepared horseradish, drained

Continued on Page 41

Richard Taylor

Bee Talk

"When we enter the evening of our lives and begin to feel our mortality more acutely, then all the years gone by begin to take on a new meaning."

Last time I was reminiscing about the days of my youth and my early obsession with bees, and now I'm going to go on with this. It seemed to me that, having been involved with bees for 60 years now, I might find quite a lot to talk about in that considerable history that might be of some interest to readers. Actually, of course, that was just an excuse to dwell in the past, something old people are much given to doing. When we enter the evening of our lives and begin to feel our mortality more acutely, then all the years gone by begin to take on a new meaning. We relive in thought our joys, our defeats and our follies, and finally try to glean some wisdom from all that – too late, really, to do us much good.

Well, I do have a problem this time. My active beekeeping was interrupted for 16 years when I sold my apiary and went off to college, this being followed by wartime military service, then back to college again. Bees were on my mind all that time, and I kept reading about them, but I didn't have any. So I'm not sure that what I am about to talk about is really relevant to the themes of this magazine. I do recall, however, that A.I. Root, the founder, wrote a column toward the end of his life called "Our Homes," devoted mostly to proclaiming the glories of the Christian religion, which didn't have much to do with bees either. So without presuming to compare myself to that great man, perhaps I can get away with digressing a bit. Those 16 years were so filled with paradox and strange turns that perhaps they will be of some interest to someone other than me.

It would be hard to imagine anyone less prepared for life than I was when I left high school. Except for bees and insects, I had learned almost nothing, with but one exception, about to be mentioned. I had also learned to play the saxophone, but that got me nowhere. Two very severe childhood diseases had brought me near death and, I believe, the high fevers had permanently affected my thinking mechanisms. In any case I was, and remain to this day, slow-witted. I have no sense of direction whatever, and there are whole areas – computers, for example – which other people handle with ease, but in which I am totally helpless. There was, however, one corner of my brain that the fevers seem to have spared, for I (and my teachers) were amazed to discover that I was a whiz with geometry. While all the others, including the brightest, struggled with these problems, I sailed effortlessly through even the advanced ones. This strange and incongruous ability would someday give the direction to my life, though of course I had no inkling of this then.

Anyway, my dear mother (I never had any father) thought that, with my love for bees and insects, I might have a chance of passing something if I went to the nearby agricultural college. But except for my courses in apiculture and entomology, I barely made it through the first year. I recall still how my mother and I rejoiced together upon learning that I had passed my course in agricultural mathematics (how to measure the volume of a silo, etc.). The professor had mercifully given me the passing "D." But my greater problem was English composition. I couldn't spell, much less write a decent sentence, or put those together as an essay, which I was required to attempt each week. I still recall the sting of humiliation as those laborious attempts at writing were returned to me each week with the failing grades, written large, in red ink. Often they were returned with scornful oral comment from Miss Bennett, the instructor, who clearly deemed me hopeless.

That freshman Summer was spent in biological camps, collecting insects. An entomologist back then was someone with a butterfly net. Then back to another meaningless year at the agricultural college. My professor of apiculture was Mr. Kelty, a big commercial beekeeper who will still be remembered by a few old-timers.

But then came a turning point. Something was seriously wrong with my life. It was empty at the core, and I had to do something about it. So I set off hitchhiking across the country, to no purpose, ending up in Missouri. I don't know what I used for money. It was a strange trip, of which I remember very little. But I do remember one evening, in a little town in Illinois, when I peered into the back of a strange vehicle and saw there a dead man, stretched out. I fled. Another night, in Missouri, I rented a room and bed for 50¢, discovering the next morning that it was apparently the local brothel. But on my way back home I was dropped off one night in Urbana, Illinois, and the next morning I beheld a great university. Something told me this was important, that I must go there, and I applied for admission that very morning. This was granted a few weeks later. It was easy to get into a university then. My tuition, higher than normal because I lived out of state, would be $400 per year. And

my life would never be the same after this.

At the University of Illinois I found myself thrown into the company of students from big cities, some from New York, who were filled with ideas. Those I got to know imagined they were Communists, so I became one, too, joining the Young Communist League, not having the least idea what that meant. But these people read all kinds of books, so I began to read everything I could lay my hands on, and we would all spend whole afternoons smoking cigarettes and talking and wheeling ideas around. It was some awakening. I only half understood all the books I was reading and the things my friends were saying, but I was catching on and, what was important, the door to the life of the mind had been opened. I spent all my time reading radical books and talking, living alone in my little basement room, sometimes staying there through vacations, taking extra courses, culminating in a course in the English poets that inspired the rest of my life. I finished there with a solid string of A's, graduated with honors and a gold Phi Beta Kappa key that I still treasure for its memories. Sometimes those two years seem like a wonderful dream.

About then the pastor of the church my mother had attended took notice of me, and decided that I should become a clergyman. I can't imagine why. But the image of a semi-monastic life in a seminary appealed to me, so I went off to the University of Chicago to learn theology. There, for the first time I encountered philosophers, who, like the Euclid I had learned to love in high school, arrived at their conclusions by strict deductive reasoning. I wrote a commentary on one of Plato's dialogues that stunned one of these philosophers, and I now realized that the corner of my brain untouched by childhood fevers must be the part that produced this kind of reasoning.

My theological studies did not have the effect the pastor had anticipated, however. I decided that the Bible, or at least the New Testament, was filled with crude absurdities, and my studies in early church history confirmed this in my mind. But I did, without at the time realizing it, find the basis of what would eventually become my religion. I read Thoreau's Walden. This shook me up and transformed my life, giving a direction, as it does to this day, to everything that was to follow, including my devotion to beekeeping, which I would someday return to. I took a long bicycle trip that Summer, getting badly sunburned, pondering the ideals Thoreau had planted in my mind; then in the Fall I returned, halfheartedly, to my theological studies.

These were soon interrupted by the bombing of Pearl Harbor, however, and although I had been a pacifist since college, I volunteered for the Navy, to begin a new and very strange chapter of my life. I was commissioned an officer, took an oath to "defend and protect the Constitution of the United States" (which I still take very seriously) and volunteered for submarine duty. I was sent off to the post-graduate school of the U.S. Naval Academy in Annapolis, which was quite a contrast to the secluded life in the seminary. At Annapolis I found, one evening, a brief reminder of my days at the agricultural college. I encountered in the officers' club my old teacher of agricultural mathematics, now a Lieutenant Commander and a professor at the Academy, no longer teaching country boys how to measure silos. Needless to say, he did not remember me, and I did not remind him.

At the Naval Academy, a few days before heading off for duty at sea and without telling anyone, I impulsively got married in the chapel there to a lovely person I had known only briefly. Our nuptial flight consisted of a dash by train to Chicago, where I boarded another train for San Francisco and then war in the Pacific submarine force. I remember the moment when, having kissed my bride of a few days goodbye, not to see her again for years, if ever, I stood dumbfounded on a street in that great city and thought to myself, "What has happened to me?"

Have I gotten off the subject of bees? I guess so, but I'll get back to that next time, for my passion for beekeeping followed me even to the remote seas of Asia. BC

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

HOME ... Cont. From Pg. 39

1 tablespoon lemon juice
1 tablespoon honey
2 teaspoons freeze-dried chives

Combine ingredients and blend well. Refrigerate 3 to 4 hours. Makes about 2/3 cup.

Cooking With Honey
Judy Powers

HONEY CARROTS

A simple recipe for carrots can make them really delicious.

7 medium carrots
2 tablespoons butter
1/4 cup honey
1/4 teaspoon salt
1/4 teaspoon thyme or dillweed

Cook carrots as desired until tender-crisp. Combine sauce ingredients, add to carrots. Mix well and cook about 5 minutes to glaze.

Ontario Honey Recipe Book
Ontario Beekeepers Association

HONEY CHOCOLATE SAUCE

Everyone loves vanilla ice cream with chocolate sauce. Include this recipe in your hang tags.

1 6-ounce pkg. semisweet chocolate
1/2 cup honey
3/4 cup evaporated milk

Melt chocolate in honey in a saucepan over low heat. Blend well. Add milk and blend. Can be served hot or cold.

Nature's Golden Treasure Honey Cookbook
Joe M. Parkhill

CINNAMON HONEY BUTTER

Honey and butter mix well and are delicious on toast and waffles.

1/2 cup butter
1/2 teaspoon cinnamon
1 tablespoon honey

Combine and blend well. Store in refrigerator. Makes 1/2 cup.

Honey Of A Cookbook
Alberta Beekeepers Association

You may find other short, but delicious recipes in your own collection. By all means use them and vary your hang tags. When you do make a hang tag, please send me a sample so that I can show others how easy and effective hang tags are.

INNER ... Cont. From Pg. 6

Many of those jars didn't have labels, none at all. They were gifts, lots of 'here, try this, it's the best I've made in years' samples, and many from now forgotten but delicious sources.

So I got up off the floor and started separating those with from those without labels. When done I had nearly 100 bottles with an identifying label.

Then I separated them even further. Those with some kind of identity, like 'Sourwood' or 'Goldenrod,' were put on one side, while those with generic labels, like 'Pure Honey,' or 'Wildflower,' went to the other side. It was no contest about which pile was biggest.

And to tell the truth, I was disappointed. Most bottles, by far the most, had real unimaginative labels describing what was inside that bottle.

"Pure Honey" or "Honey." That's it. That's all. Now, go to a grocery store. Go to the laundry detergent section and look at those labels. That stuff is all essentially the same. Put it in your washing machine with warm water and dirty clothes and what comes out . . . clean clothes. It's all the same stuff, but those *labels* make them seem different. Colors, words, bottle and box size, and what these words make you *think* is inside.

Yet honey, with its infinite variety of flavors, colors and aromas far, far too many times comes in a generic package that says nothing, tells nothing and inspires . . . absolutely nothing.

Remember a few years back when real 'generic' products came out? Yellow box, black words, no inspiration, no imagination and low prices? Still see a lot of those, do you? No? Why, do you suppose?

Come on. Are most of us asleep? Out to lunch? What? We've got a wonderful product and we put it in what can only be described as lazy, ininspired Plain Jane containers.

Detergent people (and everyone else) figured this out years ago. Why are we so far behind?

•

Speaking, of labels, surely you have noticed those on some nationally distributed brands that employ the additional marketing ploy of *U.S. Grade A.* Not B or C. *A.*

Did you ever wonder how they got that label? What makes their honey *U.S. Grade A*, anyway? But more importantly, is *your* honey good enough to be *U.S. Grade A?*

In the center of this issue are the USDA Standards for Grades of Honey. We put both extracted and comb honey standards in this special, removable section so you have them available.

So how do you measure *Grade A honey*? Easy, actually. Polariscopes, refractometers, good bottling techniques, *not* overheating and reasonable care when applying medications will get you a first rate product.

Who determines whether or not your honey is *U.S. Grade A*? You could I suppose, if you have the equipment. A good honey show judge has the resources to determine all of the required attributes. Of course you'll need to be able to prove the honey in those labeled jars was, indeed, inspected and met all the requirements, but that's fairly easy. And a lot sample will need to be saved and verified I suppose. The big guys all do it because it's an in-house thing. There are no longer agents of the federal government grading honey since the loan program went away.

So you can do this if you want, and if you think it's worth the effort. Once you read all the rules and regulations you'll probably decide to forgo the honor, such as it is.

The Comb Honey standards are incredibly out of date, as you'll note. The world of USDA regs has yet to embrace plastic, which is what almost all comb honey is now, and basswood sections just aren't what they used to be.

It's unfortunate the comb honey color chart isn't available. One on the web would do, but according to the people I reached at USDA even that's not possible. You'll have to resort to the color grades used, and modified, for extracted honey.

But you could put *U.S. Grade A Fancy Comb Honey* on your Ross Rounds or cassette label if you met the requirements, excluding the wood parts. I doubt anyone would, or could, argue with you if everything else was O.K.

All of this labeling, grading and whatnot is based on one simple assumption – that the honey itself is, beyond question, pure and wholesome. The grading is only a measure of what the beekeeper did after the bees were done. For nearly ever this was the standard for quality assurance. If it said *U.S. Grade A*, it was as good as it could get.

Sadly, that is no longer the case. Honey from Argentina, China, Mexico, Russia or the moon for that matter could, and probably is labeled *U.S. Grade A* Honey. And, bits and stuff of medications and other sugars could be mixed in that came in becasue most countries are not as stringent in pest control or adulteration as we *should* be, and still be labeled *U.S. Grade A.*

I'm not naïve enough to believe that life was *that* much simpler in the good old days. It wasn't, and adulteration and contamination occurred. But it was less technical, less fraught with parts per million, and less intensive financially than today – and certainly tomorrow.

U.S. Grade A is a goal for you to achieve, whether you put it on your label or not. However, it is no longer the final step when you place, simply, PURE HONEY on the label you put on Your Jar.

Have a good National Honey Month, and until October, keep your smoker lit, and your hive tool sharp.

Questions?

Evodia Seedlings

Where can I get Evodia seedlings?

Many readers have asked this. They are hard to find and, when found, expensive. My Evodia tree is now (July 27) in full bloom and covered with bees, so I shall have seeds to distribute in October, when precise instructions will be given here for getting them. No advance requests, please. They are sure to be viable, because each spring dozens of seedlings come up under the tree. I am going to try to devise a way to distribute these seedlings in the spring, and will advise then of what success I may have.

Jump On Spring

I would like to get a jump on spring honey production by making splits in September. Is this too late?

Millard Long
Burlington, KY

I think so. It is hard to get new queens this late, and the bees cannot be depended upon to raise their own queens and get them mated. Much better to make the splits in the Spring. The bees will also Winter better if you wait. The stronger and heavier your hives are the better they will Winter over. Making splits in the Spring also reduces swarming.

Supers - On Top?

One of my hives consists of two deep supers and four shallows. Bees were clustered at the entrance so I decided to add more supers, putting them under the ones already there. But I found the two top supers nearly filled and the two lower ones empty, so I left them that way. I always understood that you should have the supers most nearly filled on top to prevent travel stain. What is the right way to do things here?

Richard T. Dallas
Ozone, AR

You do not indicate whether these are comb honey supers or extracting supers. You do not need to worry about travel stain with extracting supers. I believe there was simply a dearth of nectar when you put the last supers on underneath those already part filled. The super most nearly filled should always be the one on top for comb honey. For extracting honey this is not important.

No Buckwheat Honey!

We have planted buckwheat for many years and it grows and blooms well, but we get no honey from it. How come?

John K. d'Esterra
Kingston, Ontario, Canada

Buckwheat seems to require certain soil conditions to produce nectar. My experience with it has been the same as yours, but 10 miles from apiaries, where the soil is very different and considered very poor for agriculture, beekeepers get buckwheat honey almost every year, even when they do not know where the fields are.

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.

Answers!

Richard Taylor

Check Out
"Club Corner"
and
"Beekeeping In The Digital Age"
Next Month!

?Do You Know? Answers

1. **False** Bee parasitic mite syndrome is more likely to be associated with colonies infested with *Varroa* mites than tracheal mites. In a survey conducted by the Beltsville USDA Bee Research Laboratory, they reported that 28% of the colonies contained both mite species, however, it is believed that *Varroa* mites are the principle mite species associated with the syndrome.
2. **False** American foulbrood is not considered to be a stress disease as a strong, healthy colony can come down with the disease whenever there are adequate spores in the diet of young larvae. The disease is not seasonal either, once the colony and equipment are infected, the number of infected individuals will increase ultimately leading to the death of the colony.
3. **False** The only sure way to check adult bees for tracheal mites is to remove the head, expose the prothoracic tracheae, and check them under a microscope for mites. A capping scratcher is often used to sample a colony for *Varroa* mites. A quick and easy method of obtaining drone pupae is to insert a capping scratcher at an angle through the cappings and lift the pupae and cappings upward. *Varroa* mites on the surface of the pupae are easily seen.
4. **False** In addition to honey bees, chalkbrood is also known to be associated with various species of wild bees. It has been isolated from the alkali bee, alfalfa leafcutting bee and the giant carpenter bee.
5. **False** The highest nosema disease infection levels are normally found in the spring following winter confinement. Infection levels increase during the winter.
6. **True** *Varroa* mites have been shown to transmit acute paralysis virus, sacbrood virus, black queen-cell virus and deformed wing virus to healthy test pupae.
7. **False** Honey bee tracheal mites can be found in adult worker, drone and queen honey bees. While they are most prevalent in the worker population, they are associated with the reproductive castes as well. In a recent study, 325 queens were examined and 20% were found to be infested with tracheal mites. It is believed that the queen's become infested while they are in the mating nucs.
8. **True** Chalkbrood disease is considered to be a stress disease, since it is most prevalent during cool, wet times of the year when the colony is unable to maintain optimum conditions for reproduction in the brood nest. *Ascosphaera apis* grows best in slightly chilled larvae. Thus the disease is usually most prevalent on the outer edges of the brood nest and weak colonies are at the greatest risk. Strong, healthy colonies receiving optimal nutrition are less likely to have chalkbrood than weaker ones.
9. **True** In the United States, no chemotherapeutic agent is registered for use against chalkbrood, although some are available in other countries. Most of the management procedures recommended to control the disease are aimed at reducing stress and pathogen load and at maintaining strong colonies. It is unlikely that an antifungal chemical to control chalkbrood in honey bees will be approved in the near future in the United States.
10. **False** The impact of *Varroa* mite has been greater on the European honey bee than on the Africanized honey bee. Possible explanations include that the slightly shorter life cycle of the Africanized honey bee interferes with the *Varroa* mite completing its life cycle, and the more aggressive behavior ofAfricanized honey bees is involved in removing mites from their bodies (hygienic behavior).
11. **False** While some of the dead larvae associated with the bee parasitic mite syndrome may form scales, these scales are not brittle and do not adhere tightly to the cell wall as with American foulbrood. These scales are easy to remove.
12. **True** Honey bee larvae are most susceptible to chalkbrood if they ingest spores when they are three to four days old and then they are chilled briefly two days later, immediately after they are sealed in their cells to pupate. Larvae die after their cells have been capped. They are at first somewhat fluffy and swollen, taking on the shape of the cell, but later they shrink and become hard. By this time the cappings have frequently been removed by the bees.
13. E) 1968
14. C) American Foulbrood
15. C) Bee Parasitic Mite Syndrome
    E) American Foulbrood
16. C) Formic Acid & Apistan
17. Chalkbrood disease is caused by the fungus, *Ascosphaera apis*. Characteristic spore cysts are formed when mycelial strands of the opposite sex (designated + & -) come together. After the interaction of the two mating types, spore cysts are formed.
18. Greater Wax Moth
    Lesser Wax Moth
    Driedfruit Moth
    Indianmeal Moth
    Mediterranean Flour Moth
19. American Foulbrood- Terramycin (Oxytetracycline HCL)
    Varroa Mites- Apistan Strips (Fluvalinate)
20. Vegetable oil patties are believed to be effective in suppressing tracheal mite populations in that they impair fertile host-seeking female mites from finding new young bees to infest.

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

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

Clarence Collison is a Professor of Entomology and Head of the Department of Entomology and Plant Pathology at Mississippi State University, Mississippi State, MS.

Glean'ngs

SEPTEMBER, 1998 • ALL THE NEWS THAT FITS

From South Africa
BEETLE BASICS

- When the number of small hive beetle larvae reaches a certain level in a colony, honey bee brood rearing stops.
- Adult beetles appear to be eating bee eggs and may even consume their own eggs. Larval cannibalism is also reported.
- Amber light shown on frames at night will cause adult beetles to move and be detected.
- Adult beetles will not get caught on sticky boards and move quickly across them.
- Adult beetles will lay eggs on fruit, but this does not appear to be their preferred diet. The material also contains limited amounts of protein necessary for larval development.
- Best survey technique for beetles is carefully examining the frass on bottomboards and/or cardboard inserts with one side removed and exposed corrugated portion in contact with the bottomboard. Beetles apparently are drawn to this material and easily hide in the corrugations.
- There is no need to consider treating for this pest until it has been detected in the apiary. The mood of some beekeepers appears to be one of preventive treatments. This is not warranted.
- Location of major infestations seems to be confined to the southeastern coastal plain. It could well be that soil moisture or makeup is optimal in these areas. The beetle may not effectively reproduce in other ecosystems, which are quite different in climate and soil type. *A. tumida* is a tropical organism in its South African homeland. How it might thrive in temperate areas is not known.
- Freezing honey in the comb appears to kill both beetle and wax moth eggs and larvae.
- Soil conditioning agents may also affect pupation of the beetle. Muriate of potash, sometimes known as 0600 fertilizer might act as a dehydrating agent, similar to boric acid crystals for roach control in urban environments.

NEW BEE STAMP

This Fall, the U.S. Postal Service will issue the first generic philanthropy stamp that all nonprofits can call their own.

Their stamp will be available first in Atlanta at the national Committee on Planned Giving's annual convention Oct. 7. The next day, more than 27 million copies of the stamp will be for sale at post offices across the country.

The official design of a bee pollinating a flower was created by the USPS. The act of pollination symbolizes the mutually beneficial relationship between donor and recipient.

APIMONDIA INFO

The ApiExpo trade show accompanying Apimondia '99 will be every bit as exciting as the other aspects of this huge international congress, planned for the Vancouver Trade and Convention Centre from September 12-18, 1999. Under the glistening white sails of the west coast's premier convention facility are over 6,000 square metres (60,000 square feet) of exhibit space, with wonderful natural light provided through translucent ceilings up to 150 feet high, all in the same grand facility as the convention sessions, lounge and food courts. Roomy, carpeted and fully air-conditioned, the trade show area will provide convention participants, whether exhibitors or registrants, with comfortable access to the best the beekeeping world has to offer.

"We have incorporated other elements of Apimondia, especially the posters for research projects, right onto the ApiExpo floor," says trade show coordinator Paul van Westendorp. "By having this seamless connection between the scientific program and the trade show, all in one envelope, in such incomparable facilities, we have made ApiExpo a deliberately active and integrated part of the Congress."

From educational displays by such groups as the International Bee Research Assn. and the U.S. National Honey Board, to equipment, publications, pharmaceuticals, beverages, cosmetics and anything else concerning the bee industry, exhibitors are vying for position. Already, organizers are fielding requests for larger booths from early registrants.

"We've deliberately kept our exhibitor rates low enough to encourage anyone in commercial beekeeping to display their wares," van Westendorp says. "Everyone should get involved."

One of the first to express interest in becoming a major sponsor was Willie Baumgartner of Medivet Pharmaceuticals, High River, Alberta, Canada. "I've been to the last two Apimondia congresses, in

Continued on Next Page

AHB DATA LOGGER

A newly updated "Data Logging Temper Tester" should help scientists develop and evaluate improved tactics and chemicals to prevent bee attacks – or lessen their intensity. Newly outfitted with memory and microcontroller chips, the Data Logging Temper Tester is the latest generation of a model originally patented by ARS in 1991. The device logs bees' attempts to sting a black, plastic egg-shaped target about twice the size of a chicken egg. In one experiment, a hive of 40,000 honey bees struck or "pinged" the target more than 700 times in 5 minutes, according to records downloaded from the data logger to a personal computer. By profiling the attack in ten-second intervals, the logger revealed a peak of 80 stings in 10 seconds, or 8 stings per second. Scientists deliberately provoked the colony for this test. Because the target can be suspended at virtually any distance from the hive, the device also reveals how far bees will fly from their home to attack. Of greatest concern are Africanized honey bees in AZ, CA, NV, NM and TX. They sting readily and in great numbers, with little or no provocation.

Carl Hayden Bee Research Center, Tucson, AZ
Hayward G. Spangler.

BIG SEEDS

Estimated 1997 Rankings By Total Seed Revenues Of Major World Seed Companies

Company	Country	Estimated Seed Sales (Millions)
Pioneer	USA	$1,700
Novartis	Switzerland	$1,000
Groupe Limagrain	France	$600
Seminis	Mexico	$450
Advanta	Netherlands & U.K.	$450
Dekalb	USA	$340
Takil	Japan	$300
KWS AG	Germany	$300
Cargill	USA	$250
Sakata	Japan	$225

– AgriCapital Corporation and Farmer's Digest

But Still Raises Rates

P.O. HAS GOOD YEAR

Postmaster General William J. Henderson told a House subcommittee that 1998 looks to be one of the best financial years for the U.S. Postal Service.

He also said that to continue to provide universal service at affordable prices, the postal service has to focus on performance, people and public policy. Testifying before the House Subcommittee on the Postal Service for the first time since being named PMG in May, Henderson said revenue and mail volume are three percent ahead of last year and that net income is ahead of budget.

"As a result, we expect to further reduce our negative equity this year," he said. "Since 1994, we have cut our accumulated losses from $9 billion to $4.4 billion at the close of fiscal year 1997. We have done this while keeping postage rates steady for the past 3½ years."

Henderson went on to discuss his plans for the USPA – including focusing on increasing performance and defining its strategy to improve people skills and thrive in a competitive marketplace.

API-EXPO ... Cont. From Pg. 45

Switzerland and Belgium," he explains, "and I was very impressed. For me, it is vitally important to have access to researchers and beekeepers, off-shore as well as on, and there is no better place than Apimondia. The Canadian meeting looks like it will be spectacular. I am thrilled to be involved!"

Paul Belisle, President and General Manager of Bee Main Honey of Manitoba and Alberta, expresses his feelings about the meeting this way. "Our directors are very excited about both Apimondia'99 and the ApiExpo. We feel that we can represent our organization to the world beekeeping industry through ApiExpo. This gives us the opportunity to meet face to face with current and potential customers."

Another major sponsor, Tim Dadant of Dadant and Sons, Hamilton, Illinois, concurs. This will be his first Apimondia congress, an experience he looks forward to after hearing his father speak of others he attended. "Everyone is looking forward to having Apimondia back in North America," he says. "This is our own marketplace, but we have always been interested in the international one too. And I am looking forward to coming to Vancouver for the first time. I understand it is a beautiful city."

Check the website regularly for updated information about the congress: http://www/apimondia99.ca

For ApiExpo exhibitor information, contact Paul van Westendorp, BC Ministry of Agriculture & Food, Abbotsford Agriculture Centre, 1767 Angus Campbell Rd., Abbotsford, British Columbia, Canada, V3G 2M3; phone: 604-556-3129, Ext. 3129; Fax: 604-556-3030; E-mail: Paul.vanWestendorp@gems8.gov.bc.ca

For information regarding Congress Registration, contact Venue West Conference Services, #645 - 375 Water St., Vancouver, BC, Canada V6B 5C6; Fax: 604-681-2503; E-mail: congress@venuewest.com

NEW LABELS

Betterbee Inc., of Greenwich, NY announces the release of three new pressure sensitive honey labels – two ovals and one rectangular. The two ovals, like the popular skep and clover ovals, are designed for queenline and classic honey jars holding from ½ to 2 lbs. of honey. The design of a skep in a wooded glen will appeal to beekeepers in mountainous or forested regions. The rectangular label is two inches high by four inches long and is designed for ½ lb., 12 oz. And 1 lb. Round and hex jars. The labels can be preprinted with your apiary name or hand stamped with rubber stamps. They are available direct from Betterbee at 1-800-623-3379, or on the West Coast, from Glory Bee at 1-800-456-7925, or in the South, from Rossman Apiaries at 1-800-333-7677.

Foreign & U.S. Honey

FOOD SAFETY ISSUES GROWING

Vice President Al Gore called on Congress (July 2) to fund the President's Food Safety Initiative, and he urged state and local governments and consumers to do their part to make America's food safe. Vice President Gore said, "When it comes to food safety, everyone has a role to play." The Vice president and Agriculture Secretary Dan Glickman presented safety tips to promote safe handling and grilling of meat and poultry this Summer. The Food Safety Initiative calls for giving the Food and Drug Administration (FDA) authority to prevent the import of produce from countries that lack safety precautions equivalent to our own, further expanding our early warning system, hiring FDA inspectors to improve the safety of our nation's fruit and vegetables, developing new ways to detect food-borne illnesses, and improving education outreach on proper food handling.

OBITUARY

Steve Liu, of Grande Prairie, Alberta, and former scientist with Agriculture and Agri-Food Canada at Beaverlodge, passed away suddenly on Monday, May 18 of a massive heart attack. He was 65.

Steve worked at the London Research Station from 1975 to 1981 as an Electron Microscopist. He was employed as a research scientist specializing in bee diseases at Beaverlodge in 1981. He retired in 1996 and continued to live in Grande Prairie, AB.

During 1987 to 1989 he took a sabbatical leave to the University of California, Davis, California to work with Dr. Christine Peng.

Steve has published over 95 scientific and popular articles on insect and honey bee research often in collaboration with other scientists from around the world.

Steve was born February 23, 1933 in Tsina China. He received his BSA in 1958 in entomology and plant pathology from Taiwan University. In 1965 he emigrated to Canada to do his MSc, in entomology and biochemistry at the University of Guelph. In 1970 he received his PhD in insect biochemistry and physiology from the University of Waterloo. From 1969 to 1973 he had post doctoral fellowships at McMaster and the University of Guelph. From 1973 to 1975 he was a Research Associate at McGill University.

From Canada Beekeeping

Mint Oil, Formic Acid Tested

WA STATE RESEARCHER GETS MONEY

Dr. Steve Sheppard, WA State University, Pullman was given nearly $50,000 for his continuing research work on the use of botanical oils to control Honey Bee Tracheal Mites (HBTM), and alternative methods for controlling *Varroa* mites.

I.P. Callison & Sons of Chehalis, WA told the Commission they are interested in continuing their support of the research. Last year they contributed $10,000 and provided the mint oil that Steve is testing.

Steve's HBTM work included testing liquid mint oil, mint oil patties, and canola oil patties. He reported that first year data shows "the mean mite load in the untreated control colonies increased by 119% from June to September. Canola oil patties and liquid mint oil treatments showed increases in mite loads of 9% and 20%, respectively. Mint oil patty treated colonies showed a decrease in mite load of 15% over the same period."

Steve also tested Apistan, formic acid liquid, and formic acid gel on *Varroa*. His report stated that "control colonies showed a steady increase in mite populations throughout the season and entered overwintering in weakened condition. Apistan treatments produced high mite fall for the week or two immediately following treatment. Formic acid liquid treatments resulted in moderate short term mite fall and limited control of *Varroa* populations. The formic acid gel formulation was less effective than liquid formic acid."

POLLEN BLEND BEST

Hardworking honey bees might need the farmer's help to get a varied diet containing all the proteins, vitamins, minerals, fats and carbohydrates necessary for good bee health.

Nectar supplies carbohydrates, or sugars. Pollen supplies everything else. But sunflower pollen, one of the familiar honey bee's favorite foods, doesn't provide enough protein, according to tests by Agricultural Research Service scientists.

High crop yields depend on having healthy, effective pollinators, but bees that work only in sunflower fields are likely to become undernourished. As they lose strength, they may not do a good job in that crop or in other crops they are "hired" to pollinate later on.

Sunflower growers can help bees get the mix of nutrients they need by planting small areas of other crops such as canola, also known as rape, near sunflower fields. Or they can let weeds and wildflowers grow along field edges, beside ditches or among rock outcroppings.

Honey bees that pollinate only one greenhouse crop run a similar risk of nutrient deficiency. As a preventive measure, beekeepers can place protein supplements or high-protein pollen patties in the hive.

ARS scientists fed sunflower, sesame and canola pollen to about 126 European honey bees housed in indoor cages at the Carl Hayden Bee Research Center in Tucson. Bees fed canola pollen lived 48 to 65% longer than those fed sesame or sunflower pollens. Justin O. Schmidt, in charge of the study, chose those crops because their planted acreages are increasing.

USDA Completes Fungal Feat

MOLDY COLLECTION AVAILABLE

If it's a fungus and it's connected to farming, you can now look it up anytime – on the World Wide Web. That's because the Agricultural Research Service has posted to the web its new, computerized database for the world's largest collection of agriculturally important fungi.

The web address is http://nt.ars-grin.gov/fungaldatabases/databaseframe.cfm

The new database compiled by ARS mycologists (fungal experts holds records for 650,000 specimens. These agriculturally important fungi are among more than a million specimens in the combined U.S. National Fungus Collections of ARS and the Smithsonian Institution.

Recently, an ARS collaborator using the ARS collections became the first to extract nucleic acids from old, dry specimens of the fungus that causes potato late blight. This fungus caused the Irish potato famine in the 19th century. It recently re-emerged as a serious pathogen in the U.S. Extracting the specimen's DNA now allows scientists to compare blight fungi's genetic changes through time and space.

ARS maintains the collections at its Beltsville, MD, Agricultural Research Center. The collections contain fungi that dwell on plants, insects and even on other fungi. According to Amy Y. Rossman, who leads ARS' Systematic Mycology and Botany Laboratory, many of the specimens represent first-ever collections of their species. Some were collected hundreds of years ago.

The fungal treasure trove represents the standard or true measure for defining what constitutes a particular species.

The database holds all important data about each specimen, including who collected it, where, and when; what it lives on, and who has looked at it. In addition to scientists, it is a valuable resource for regulatory agencies, policy makers and others.

Display Advertisers

"Knows more about bees than anyone!"

I Need More Relatives

Ed Hughes

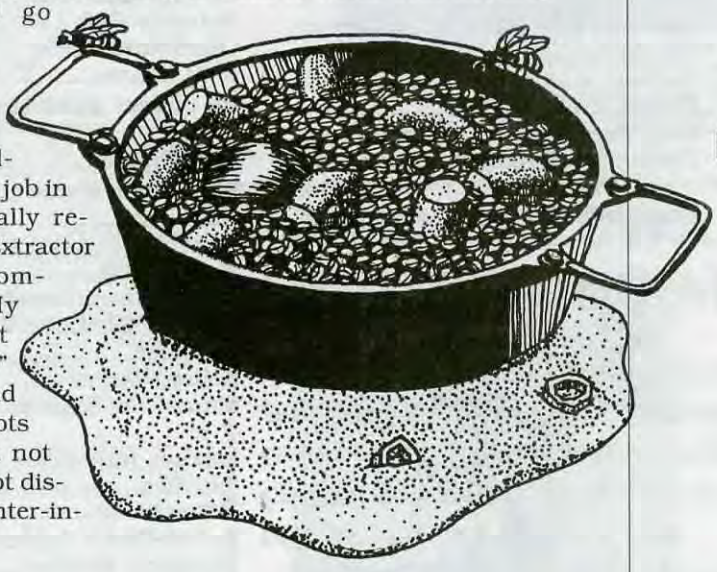
We had some recent desertions by the crew in our honey processing plant and are looking for fresh relatives to replace them. Pay is in honey and the joyful camaraderie of brothers and sisters, nieces and nephews, shirttail and kissing cousins. The skills required to help harvest honey are not actually as onerous as some of my other relatives may have told you. Those relatives aren't getting any honey this year and, if they don't apologize for walking out in the middle of the honey harvest last year, I may not even send them a Christmas card. If you are one of my nice relatives, check out these exciting career opportunities.

Filter Watcher – Must watch honey run through a filter. When the filter plugs up, screams and jumps up and down, or at least says something before honey starts running across the floor. Must lift four-pound slug of unfiltered honey and wax from filter to get filter going again. Does not stand around wondering when we are going to start having fun. Likes my wife's special beans-and-dogs casserole.

Bottle Watcher – Watches bottles fill up with filtered honey. When a bottle is full, turns tap off and happily starts filling another. Will not sing all 99 verses to "Ninety-nine Bottles of Beer on the Wall." Is polite to Filter Watcher, even if Filter Watcher refused to go to his wedding. Likes beans and dogs but does not eat more than his fair share.

Extractor Watcher – Watches extractor extract honey. Must have previous experience using an on/off switch. When frames are free of honey, asks nicely if Bottle Watcher would please (with the emphasis on "please") help get old frames out of extractor and new frames in. If Bottle Watcher balks, can remind Bottle Watcher about de-capping duties but cannot actually threaten physical harm. Experience as fourth-grade bully helpful.

Super Toter – More brawn than brains? Then this job is for you! Lifts and totes full supers into the honey house and empties supers out. Is only gone from the honey house for as long as need be and is not found lounging in the backyard. If told he won't get any honey unless he gets back to work, does not drop everything and go home.



De-Capper – De-caps frames using assortment of dull knives. Admittedly the worst job in the place. Typically reports directly to Extractor Watcher with comments like "My arms are about ready to fall off." De-cappers beg and beg for help, get lots of sympathy, but not much help. Cannot disown son or daughter-in-law. Previous experience as mother of choleric child useful. Must know how to make special beans-and-dogs casserole.

All volunteer honey workers are required to wear approved clothing:

1. Shoes with soles that won't rip off and stick to the floor of the honey house.
2. Shirt and pants that nobody will ever want to wear again.

There are also two work rules:

1. You cannot throw propolis or honeycomb into anybody's hair, even if their hair is already full of propolis and honey.
2. You can't quit, even if you are the De-capper, and tell everybody they'll never have beans and dogs again. After all, some people are tired of beans and dogs.

Interested? Call Today!

BOTTOM BOARD