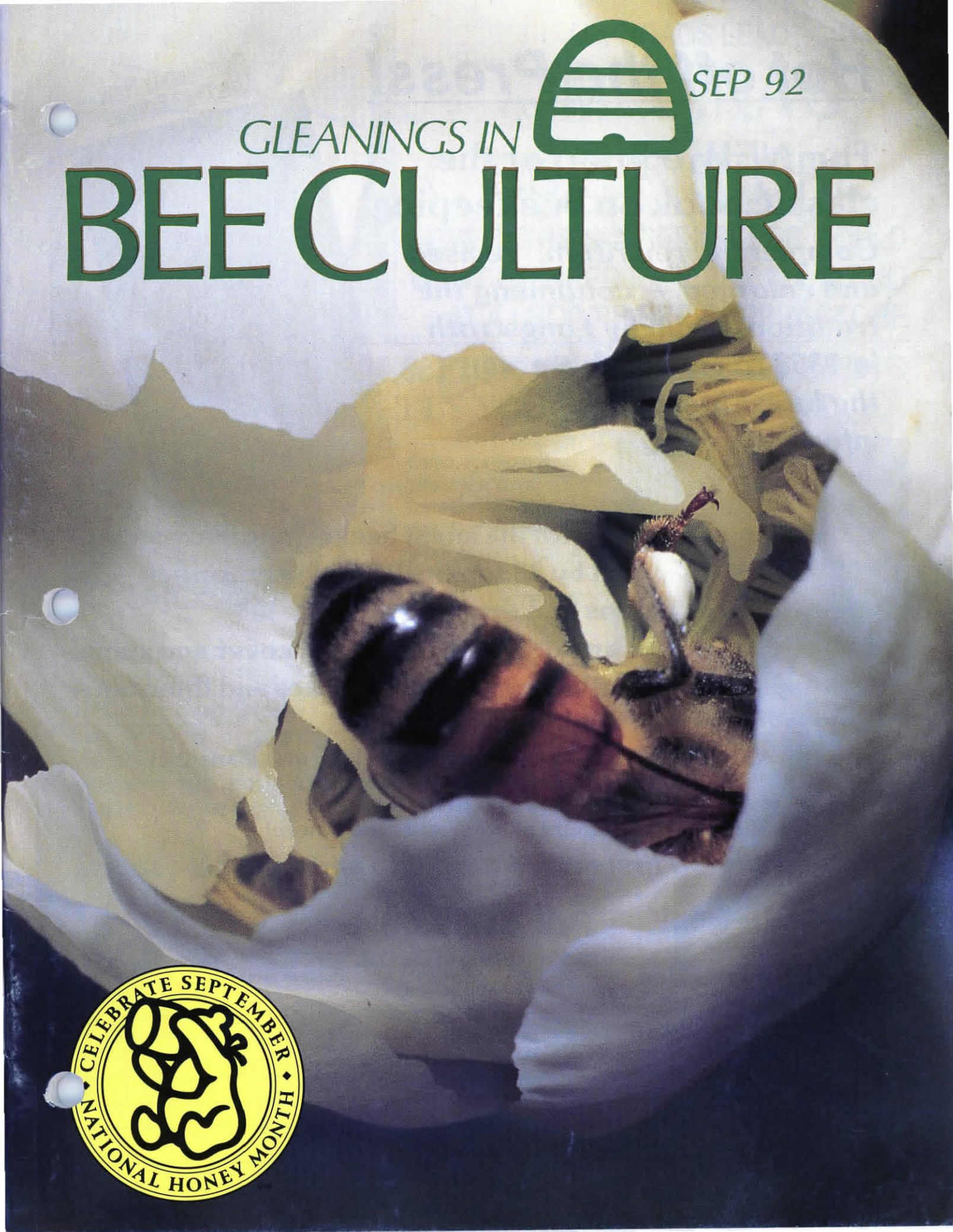
SEP 92

GLEANINGS IN BEE CULTURE



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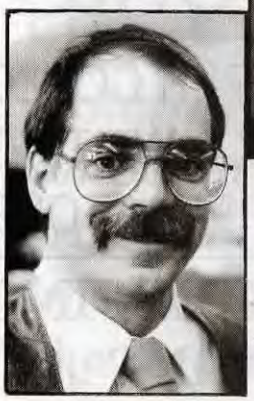

KIM FLOTTUM

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Circulation Figures reviewed by Deloitte & Touche. CPAs.

Columns

Departments

COVER ... Kiwifruit production absolutely requires honey bee pollination. This crop has changed both horticulture and apiculture in New Zealand, and the lessons learned there, and the standards set, should be guidelines used here.
photo by Cliff Van Eaton

SEP '92

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119 Years Continuous Publication by the Same Organization

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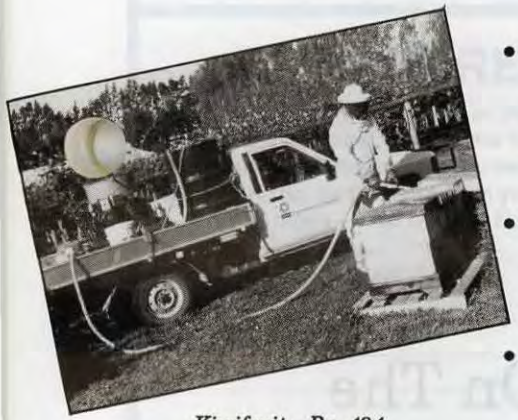

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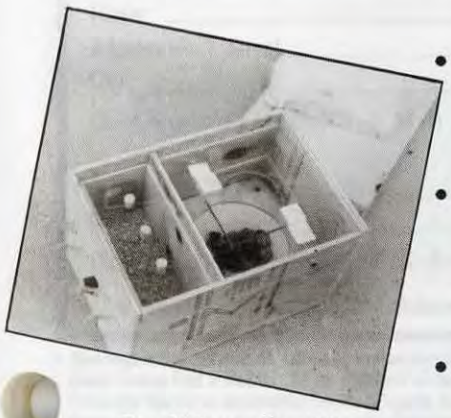

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INNER·COVER

On The Road Again. . .

I was on the road much of June, July and August this year, gone more than not those three months. And, though there wasn't an official vacation involved I enjoyed most of the time I was away.

There was a trip to Denver for the annual meeting of the National Honey Board. They elected a new crop of folks to promote honey and spend money. Binford Weaver takes the reins as Chair. It will be interesting to see how he does. But others were elected, too, and soon we'll have a revealing interview with one of the most interesting new kids on the block.

While there I chatted with the USDA Agriculture Marketing Service (AMS) people. They are responsible for making sure the Honey Board does what it's supposed to. They, too, are an interesting (and expensive) group to deal with and we'll be doing a follow-up later. Now those folks *really* know how to spend money.

I also got to watch the ad agency display its wares while I was there. Not a bad lot of magazine ads featuring honey coming up this year. At least in the opinion of this sometime-ad-creator. A hint: see what you can do to get more space on the shelf for bears – they'll do even better than usual this fall I think.

After Denver I spent three incredible days visiting Adee Honey Farms in Bruce and Roscoe, South Dakota. There will be a three part series coming up this fall outlining how they do things as well as they do out there. Whether you have a single colony or several thousand you'll be a better beekeeper if you read these. I promise.

After South Dakota I was home a bit, long enough to finish last month's issue and get ready for another quick trip to the joint OH and IN meeting in Richmond, IN. Lots of workshops, good food and some excellent speakers made those two days go fast. Afterwards, Andrew Matheson, the newest Director of the International Bee Research Association (IBRA) spent a couple of days at my house and I got to know this transplanted New Zealander (to Wales, in Britain) much better than from the two talks I heard him give earlier. His story, too, will be here shortly. And, you will have a new appreciation of what IBRA is, and what it can do for you. Impressive was my first reaction.

After Andrew left I spent a couple of days in Toledo, working on the production of the video on training firefighters we've put together. That was an eye-opening experience and an appreciation of how those professionals work. The video will be just that, too – professional.

Then to Guelph, Ontario for the EAS meeting. A gentle surprise was Guelph, a beautiful city in southern Ontario. The people and the meeting were worth the trip. Then back home for another few days of work on this issue and off again to Oregon for the WAS meeting. Both the weather and the meeting were hot – good people and lots of information. And finally back to finish this issue.

Being gone all that time has its drawbacks though. A stack of mail taller than the stacks of supers on my well filled hives, sits on my desk. If you're waiting for something from this office ... well, please be patient.

I also forgot to turn off the grass when I left. In another week my neighbor will bale it though, so what I lost in neatness and style, I'll make up in mulch and time. The honey didn't turn off either, and there will be more this year than in any of the last five or six. Hard to figure because of all the rain and tornadoes and cool and cloudy and ... definitely not your usual honey weather – but since I wasn't here I can't complain.

One short trip I made was to New York City during all this. While walking to an appointment during the only sunny morning I was there I noticed two new (to me anyway) innovations in the flower industry. One was using sunflowers as a cut flower. There were huge tubs of them at every flower and fruit stand I passed. I saw them in windows of apartments, on the stoops of brownstones and even on tables in restaurants. A great resource for some grower somewhere, but also for beekeepers because they aren't harvested until they're about half through – perfect for a short but fast honey crop for a nearby beekeeper. Keep your eyes open for this one.

The second thing I noticed was the great number of pots of purple loosestrife for sale at the same locations. I know this plant has a bad reputation in some circles, but it does produce honey. I think what amazed me most was the

Continued on Page 518

Reader Assistance

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COMING SOON

During the next several months we will be covering an incredible amount of material – all aimed at helping you be a better beekeeper, at selling more honey, and at making more (and saving more) money.

So what's up? Take a look at this list

- Wax Processing Equipment – from solar wax melters to huge spinners. What's available, how it works, and at what cost.
- Making Candles in Candle Molds – how-to make them faster, better, easier, and sell for more money.
- Winter Preparations – several articles will deal with wintering hives (on no budget), indoor wintering; getting the beekeeper ready for winter, and equipment to use. Great stuff, even if the sun shines all year where you live!
- Assembling Equipment – all kinds, all ways, and always the right way. See it here first.
- Record Keeping – the best beekeepers keep records of everything, and we'll show you a bunch of techniques to track mileage and sales, honey production and where is that new super?
- Spring Feeding – at least two ways to look at this controversial subject. Do you need to? Yes? How-to-do it, right here.
- Queens – finding, evaluating, requeening, supercedures, swarming, cells ... the whole royal show, in several articles.
- And lots, lots more

Don't miss even a single issue of *Bee Culture*, because there's so much – coming soon!

MAILBOX

■ Reader Bee!

Recently at our L.A. County Beekeeper's meeting (founded in the 1880's) we talked alot about education. We have to start with grade school kids to combat public ignorance about bees.

This picture of the summer reading program in Polson, MT is on the right bee line to making beekeeping user friendly. I wonder if the kids with the most books read are girls (workers bees)? Each skep represents a child and each bee a book read.

Margaret Tanguay
Los Angeles, CA

■ To Richard Taylor. . .

Since *Bee Culture* provides a prominent platform for your writing to reach a substantial following of beekeepers who expect authoritative information, I was distressed to see the manner in which you commented on the Halfcomb Cassette (Questions & Answers, June 1992).

I will not attempt to argue the case for the Halfcomb advantages that have evolved over the last ten years of development. But I must address the specific comments you made in response to the question raised by Mr. Iannuzzi and the circumstances at the time of your use of the Halfcomb.

First, the Halfcomb cassettes that you were privileged to receive in 1986 are now obsolete – they were out of the third of five molds constructed in the course of the Halfcomb development. Also obsolete is the super conversion plan of that time.

Second, the cassettes were provided by me at no cost to A.I. Root and sent to you with my knowledge, but with the understanding that the experimental results would be confidential.

Third, installation of the aforementioned obsolete super conversion unit was far from foolproof with respect to "bee spacing" and sturdiness. Bee space control which in the Halfcomb is 1/4" from brood frame top bars and between cassettes in adjacent supers, is the key to burr comb and propolis control in the Halfcomb. This is not a problem for beekeepers disciplined in principles of bee spacing. As to "propolis on top and bottom just like the old wood sections", perhaps you miss-spoke – since *propolis* would be the likely offender only on the too-small face of a miss-mounted block of cassettes while burr comb would be on the other too-large side. Neither are serious problems when conversions are properly installed, interfacing with standard equipment to provide 1/4" *actual* space. Propolis flicks off the diamond smooth plastic easily and does not stain (like wood). Besides it is not a fair comparison to ignore the propolis and burr comb cleanup required in the maintenance of round frames, which are also an open invitation to the wax moth. I have been amazed by the remarkably low incidence in the Halfcomb due to the absence of crevices and to inherent light exposure post harvest.

Fourth, regarding your comment that comb building Halfcomb is contrary to honey bee nature, apparently you do not recognize that bees sometimes build "halfcomb" on their own, even on bare wood; and that they are doing the same thing "unnaturally" all of the time when they draw out commercial foundation in round comb, wood sections and in the utilization of all man made foundations in frames. "Natural" comb building involves construction of midrib (foundation) and all cells *concurrently* in a downward direction. The point would be irrelevant were it not for the fact that it is *only in the Halfcomb* that a comb honey product is produced which contains a markedly reduced wax content – a major advance for the significant number of consumers who dislike or are concerned about wax consumption in comb honey.

And finally, since you claim that there are no advantages for the Halfcomb, may I suggest that you drop by during the main flow here next season. Given even a fair nectar season, there would be no better way for me to respond to your present perception than to demonstrate the attributes of the Halfcomb to you personally.

John A. Hogg
Galesburg, MI

Editor's Note: John Hogg is the developr of the Halfcomb Cassette System available from many bee supply outlets.

■ Make-Up Bees?

This is the second time you have ROUGE bees. July *Bee Culture* page 376 second column right under To Kill A Honey Bee.

Maybe Rogue bees?

Since I send my magazines to Germany after I read them, I had to correct the spelling so they won't

Continued on Next Page

MAILBOX

learn incorrect English.

Otherwise keep up the good work.

Gerhard K. Guth
Auburn, NH

■ Classic Removal

I have had good luck removing bees from buildings by placing a one-way bee escape over the entrance making sure there are no other cracks or holes where the outside bees can find a place to re-enter.

I place a full depth super with a queen and two frames of brood in it. Place the front of the hive as near the old entrance as possible. Best to place the hive parallel to the building, and as the bees returning with nectar and pollen can't find the old opening they will go into the hive. I have taken three hives full of bees and a 30 lb. super of honey in about 60 days from buildings this way.

After getting the hive full of bees I put sulphur in a smoker with a lot of hot fuel and blow this into the old entrance after removing the one-way bee valve and this kills the remaining bees.

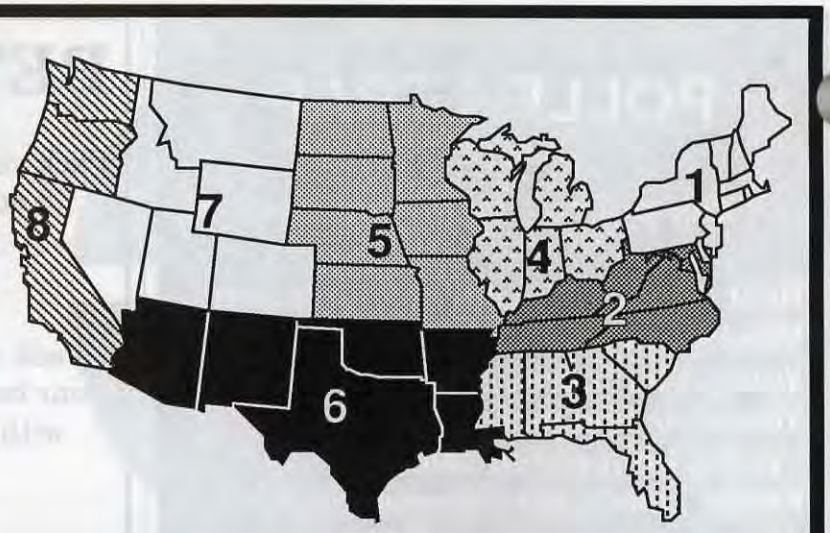
Be sure to plug the old entrance with cement or fiberglass car dent filler.

Cecil F. Duffield
Evans, CO

Editor's Note: This technique is usually very successful, but patience is the key word. Also, if the building is being used, you (or somebody) will have to remove wax and honey or a mess may appear later.

SEPTEMBER Honey Report

September 1, 1992



REPORT FEATURES

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

	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Bulk												
60 #Wh.	47.40	50.12	47.50	41.50	36.20	45.09	44.10	40.83	31.80-60.00	45.18	45.40	42.10
60 # Am.	42.97	44.58	42.50	36.20	36.64	40.86	41.48	38.73	28.20-58.00	41.47	40.55	40.14
55 gal. Wh.	.743	.630	.519	.587	.532	.607	.545	.554	.51-.79	.574	.610	.537
55 gal. Am.	.677	.542	.495	.539	.514	.507	.503	.530	.40-.75	.537	.559	.497
Wholesale – Case Lots												
1/2 # 24's	19.18	21.35	21.69	17.99	15.96	21.69	21.19	21.50	15.12-26.88	19.87	23.56	18.78
1 # 24's	30.50	31.35	31.93	28.60	25.55	31.50	29.92	28.80	25.00-42.00	30.08	29.42	28.66
2 # 12's	28.51	28.94	30.07	26.17	22.60	29.06	28.56	30.30	22.20-40.80	28.37	28.04	26.00
12 oz. Bears 24's	28.21	26.63	29.85	24.26	27.69	28.95	27.03	21.50	14.00-35.00	26.58	27.60	25.94
5 # 6's	33.08	32.75	34.30	28.90	26.01	32.29	29.41	27.55	24.00-48.00	31.07	29.90	29.18
Retail Honey Prices												
1/2 #	1.06	1.33	1.27	1.12	.87	1.24	1.15	1.35	.82-1.75	1.19	1.15	1.03
12 oz. Plas.	1.65	1.58	1.90	1.47	1.24	1.54	1.51	1.48	1.09-2.00	1.52	1.53	1.44
1 #	1.69	1.88	2.04	1.70	1.45	1.77	1.81	1.81	1.25-2.59	1.76	1.77	1.65
2 #	3.22	3.18	3.48	2.99	2.42	2.84	3.00	2.89	2.29-4.29	3.04	2.96	2.86
3 #	4.12	4.22	5.35	4.50	3.84	4.44	4.28	3.64	3.10-6.19	4.21	4.11	4.09
4 #	5.42	5.07	5.34	5.22	5.28	5.26	5.06	4.59	4.00-6.50	5.17	5.15	5.00
5 #	7.44	7.05	6.00	6.45	5.75	6.49	6.12	5.85	4.59-8.75	6.48	6.60	6.41
1 # Cream	2.23	2.38	2.22	1.79	1.60	2.57	2.05	2.18	1.55-2.95	2.15	2.28	1.95
1 # Comb	3.35	2.51	2.51	2.89	2.68	2.83	3.24	3.57	1.55-4.50	2.52	3.11	2.75
Round Plas.	2.25	2.65	2.43	2.17	2.12	2.29	2.43	2.48	1.95-3.00	2.33	2.75	2.29
Wax (Light)	2.83	1.23	1.33	1.35	1.13	1.80	1.25	1.21	.95-3.00	1.46	1.52	1.27
Wax (Dark)	2.38	1.18	1.13	1.13	1.08	1.33	1.25	1.15	.90-1.75	1.26	1.16	1.09
Poll./Col.	28.91	23.75	30.00	31.35	29.62	26.00	26.25	29.00	20.00-40.00	28.87	31.70	28.00

MARKET SHARE

Bear season opens officially this month. Not the wild and wooly ones, but the cute and squeezable kind with *YOUR* honey inside. Add a bow tie or straw hat, attach a recipe and label and stand back to avoid the rush. In fact, honey should sell well in any container this year - be ready.

Region 1

Prices only steady, and in some cases even lower. However, shortages driving up bulk prices, and small containers going up, too. Sales of large containers (2-5#) falling off, as customers save a few cents on smaller purchases.

Region 2

Sales of regular honey strong and prices steady to increasing a bit for some sizes. The speciality crops highlight the season though. Tulip poplar a bust in most areas, while sourwood better than in many years. Prices for this crop skewed everyone's sales, with some reporting *$10/quart!*

Region 3

Although demand seems steady, prices are down a bit for bulk honey, but up for most retail sizes. Weather certainly a factor, but a good crop, and good production, will affect prices for quite awhile this fall for larger producers.

Region 4

Prices steady to increasing a bit, supply good, great or terrible, depending where you live. Cool wet weather has slowed what could have been a bumper crop to an only-average crop. Though some areas still dry, most of region has made up for two dry summers.

Region 5

Prices and sales both increasing as fall approaches and first crop begins to show up on fruit stand shelves. Wet, cool weather has slowed what could have been an incredible clover crop early, but some warm weather late helped. White and extra light amber crop may be short, driving up prices, finally.

Region 6

Sales and prices pretty much steady, but erratic and difficult to predict. Production erratic also, with hot and dry areas falling short, while too-wet areas doing the same. Whatever happened to a normal season?

Region 7

Prices down a bit this fall, while demand is steady a strange mix. Production mixed as some areas too wet to drive in, pesticides showing up in many areas where they haven't been a problem before, and some areas still dry - Go figure.

Region 8

This area still defys prediction. Southern areas doing pretty well for production and sales and prices, but pesticides will hurt, northern areas slowing in both price and demand (could record breaking heat be the reason?), but moisture seems better, and fall flows could be great.

RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

"We still don't know much about honey bee physiology, but we're learning."

Observations made in Great Britain indicate that even in winter the feeding of ordinary sugar syrup stimulates a queen to lay eggs. This was observed over two winters. During the first year that observations were made the colonies were fed every third week; it was in those weeks that the queens laid more eggs. Also, when the colonies were fed the queens were seen moving over the combs more.

Interestingly, feeding sugar syrup to a colony did not stimulate a greater number of worker bees to groom or feed the queen. It was noted that during winter queens receive less attention from workers than they do in spring and summer.

There have been many people who have suggested that when day length starts to increase in late winter queens lay more eggs. The authors of this paper conclude that the availability of food is more important and has a greater effect on egg laying.

•

An excellent paper reviewing the factors that control division of labor has appeared recently. It is possible to "pull out" some isolated facts that explain what takes place.

As honey bees age they graduate from simple to more complex tasks. The first thing an emerging bee does is clean cells. This is apparently the simplest task. She then becomes a nurse bee, feeding the young. Soon thereafter she may undertake other activities such as removing the dead, processing honey, controlling temperature and humidity, etc. Finally, a worker becomes a forager, the most difficult and dangerous task.

How fast a bee moves from one activity to another is controlled by a hormone called juvenile hormone (JH). Foragers have more JH than young bees. A bee that has been a forager and is forced to revert to nursing (which may occur if all of the nurses are killed or disappear) has less JH in its blood.

One may age a bee, that is, force it to forage earlier by applying a small amount of synthetic JH to the top of its abdomen. This is presumably absorbed by the body and eventually reaches the central nervous system. Genetics also enter the picture. For example, there are differences between colonies as to how much pollen their foragers will collect. This has been shown to be a genetic trait as has several other behaviors.

It is pointed out that there are still major gaps in our understanding of how a colony functions. For example, how are the needs of a colony perceived by workers? Much remains to be done.

•

There is a new technique to measure a bee's body temperature. It uses an infrared scanner held over a bee that converts infrared radiation from the bee into electrical impulses. These are amplified onto a black and white or color monitor like a TV screen. Prior to the discovery of this technique honey bee body temperature was measured by inserting a thermocouple into a bee's thorax. Inserting thermocouples has been done over the past several years, but of course, it kills the bee and gives us limited information. We do know, however, that the thorax of a bee is very warm during flight.

It is hard to know where use of this new technique will lead. However, it has been possible to follow dancing bees in a hive where several facts have been noted: It has been found that 90 percent of bees reach a maximum thoracic temperature before taking flight. Bees that stay at a feeding station for more than a minute cool down considerably but heat up again before taking flight. The richer the food a forager is collecting the warmer its body temperature.

There are temperature differences between bees and I have no doubt there will be genetic differences in this regard between colonies.

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AVOID THESE 10 COMMON BUSINESS MISTAKES

RICK KREPELA

Businessmen fail even during days of prosperity – turning otherwise profitable enterprises into dismal failures – often in surprisingly short time.

A highly detailed survey was recently conducted by the Bureau of Business Research of the University of Pittsburgh. Their investigators uncovered 30 management "traps"

Red ink, according to the authors of the survey's report, is an indication, not a cause, of a breakdown in a company's health.

Being guilty of one failing of the ten major ones outlined, or a combination of several, can sink any profitable business into oblivion. Whether a firm is a giant in its field, or is a relatively small firm, the businesses which fail are guilty of one or more lapses of good management, and fall into one or more of the following traps:

1. Keeping Inadequate Records:

The surest way to run afoul of accountants and tax collectors is to conduct your business with "scraps of paper" A drawer full of bills, a stack of statements, and notations on the back of envelopes detailing sales orders is not the same as a carefully kept set of records.

Poor records lead to an absence of adequate financial information which allows management to know the results of operations.

While larger firms often skirt this problem because of full time staffs, inadequate record keeping was the greatest *single cause* of business failures unearthed. It was an important factor in nine out of every 10 firms studied. Management did not KNOW they were heading for trouble until it was too late.

2. Ignore New Developments In Your Field:

Doing things in the same old way simply because they were once successful is a sure way to invite aggressive, up-to-date competition to take over. Retailers need store modernization programs, packers must constantly improve their products, and producers must be on the lookout for new and more efficient ways to produce product. The report emphasized that "keeping abreast" was not only essential to a firm's growth, but it detailed a number of instances where failure to adopt new ways was the *dominant* factor in leading to "out-of-business" signs.

3. Incur Cumulative Losses:

A trickle of red ink isn't much to worry about, or is it? At least 40% of the firms in the study discovered that the "little" leaks added up to a torrent. Add one unproductive beeyard, or excessive waste in some other area; couple it to "minor" losses elsewhere, and the result can wreak havoc with a firm's profit and loss statement.

4. Hitch Your Wagon To <u>One</u> Customer:

Signing up with a single big packer or producer to the exclusion of others MAY look like an easy road to a secure future. Packers find a single low-price producer, or a producer finds and future-contracts with a single packer and thinks they have it made. Sounds great! No sales headaches, only one customer to keep happy but NO PLACE TO HIDE if the account suddenly sours on you. The University of Pittsburgh report shows that three out of ten bankrupt firms fell into this particularly inviting trap and found out to their chagrin that "friends in court" move on. The old saw about all your eggs in one basket is all too true.

5. Be Your Own Expert:

Trying to save money on professional advice can lead to costly mistakes, the survey shows. Any expert – production, sales training, distribution, legal or tax aid – costs money. But specialized opinions minimize errors and form a sound basis for decisions. Operate solely on your own hunches and half-proven guesses and you *could*

wind up making one or two company-killing mistakes.

6. Build A Family Empire:

Nepotism may be one way to keep your family in control, but look out. Unless your relative is at least as competent in his or her job as someone else you might hire, the practice of burdening a payroll with family members siphons cash from the till and squelches initiative in non-family employees.

It isn't only a question of the cash drain going out to a non-productive brother-in-law, son or brother. Think what happens to staff morale when conscientious, eager management talent finds the top of the ladder blocked.

7. Forget About Cost Analysis:

So long as the checkbook shows a balance, why bother? For one thing, the investigators proved that unless a producer knows EXACTLY what it costs to produce a barrel (or bottle) of honey the matter of pricing is largely guesswork. Usually it boils down to "meeting competition" Trouble here is that the competition could be in the dark too.

Competition can only go so far in setting a price. If you or your firm cannot provide a product (honey or pollination) at a profitable price, it is probably better, the experts agree, to drop it and let the competition go bust. If they can handle the item profitably, then something is wrong with your costs. Only careful cost analysis can pinpoint the fault.

8. Ignore Your Competition's Mistakes:

Many magazine articles detail glowing success stories. Meet a guy at a convention, and he likely will tell you about the things he's doing RIGHT. But what about the companies that fall by the wayside? If they are in your line of business, it is a good idea to find out what happened.

The answers may be more revealing than studying – or worse yet, envying – the success around you. Excessive inventory, poor sales management, obsolete equipment or methods; whatever the reasons, make sure your outfit isn't making the SAME mistakes.

9. Expand Beyond Resources:

An enthusiastic sales rep who sells an as-of-yet unproduced crop can throw a production schedule into a tailspin if the company isn't geared to increase output, or the weather sours. Likewise, a prosperous packer who makes promises at the drop of a hat and finds producers (domestic or import) unable to fill orders is soon in trouble. Even if the product can be found the price is important, and perhaps more importantly, the *source* of the product must also be considered.

"Marketing honey means more than fancy labels, advertising, efficient production and distribution. It also means common sense business practices."

A really successful business, the study shows, grows within its means. The rate can be fast or slow, but it must have sound financial footing and, above all, the management talent necessary to coordinate the growth.

Also under this heading are such expansion moves as runaway borrowing to purchase little needed equipment or facilities. The report states quite frankly that some lenders lack "proper management and financial analysis" and that acquiring credit by some thinly capitalized companies in the study was surprisingly easy.

10. Let Absolutely Everyone Shift For Himself:

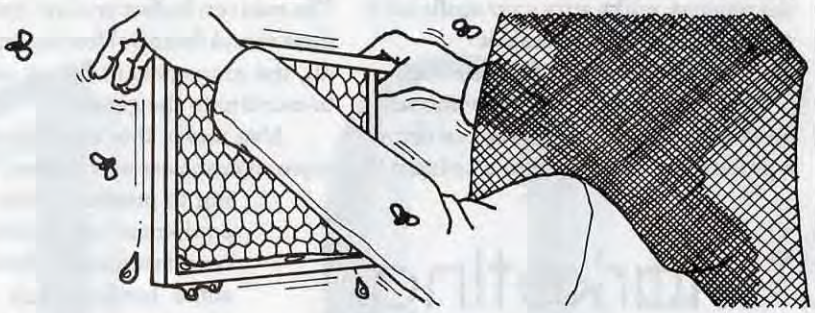
The researchers cite several instances where uneven work loads on supervisory personnel, failure to delegate authority along with responsibility, and unusual or unequal management privileges inevitably sap a management or production team of its enthusiasm. Coordination comes from the top on any organizational chart, and the objectives and energies of a company must come from this same direction.

Failure to provide firm guidance along these lines results in either staff bickering or a company figuratively set adrift. In either case, the management breakdown can prove disastrous.

There are other points in the Bureau of Business Research study. Failure to watch depreciation schedules, neglecting to provide for a competent successor to the present management, and a host of specialized reasons why *particular* businesses went bust. But the ten points listed here are applicable to virtually ANY business, large or small.

Whether or not your firm is next on the red ink parade depends in large part upon how well you follow – or how cleverly you avoid – this checklist of ten common management "traps"

N·E·C·T·A·R



This article introduces Dr. Tom Sanford, Extension Specialist in Apiculture from Florida (past from Ohio), as an occasional contributor to these pages. His writings, under the heading "Nectar On My Boots", will be of various topics, themes and ideas. They will be short (usually), timely and somewhat formal. You will do well to spend a few minutes each time with him though. He has good things to say – and nectar on his boots.

PRIVILEGE

DR. TOM SANFORD

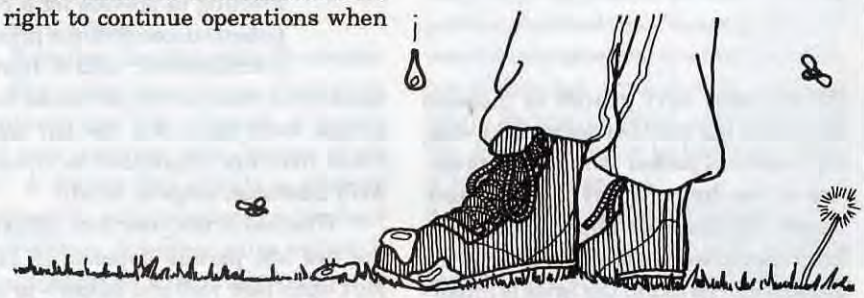
Is beekeeping a right or privilege? There are arguments on both sides. Traditionally, the activity has been considered a right by beekeepers, who have used the bee's pollinating value as a rationale. In many parts of the country, however, this notion has been consistently and effectively challenged by urbanites moving to the country who know nothing about the insect except that it stings.

Beekeepers may take solace in the knowledge that they are not the only ones blamed for causing nuisances. Non-farm neighbors (citizens) are just as likely to complain about the noise, odor and slow-moving vehicles associated with other agricultural operations. Recently some states have passed "right to farm" bills to protect growers from nuisance suits. They also put developers and others on notice that farmers have the right to continue operations when and if the city moves to the country.

Given the tenor of the time, this may be only a fleeting respite and doesn't address the unique problems of city beekeepers. In some instances, beekeepers who have the beekeeping-is-a-right philosophy have hurt their own cause by less-than-diplomatic responses when queried about their operations. In addition, perceived problems by neighbors may not be given the legitimacy they deserve. Concerns may be tossed off by the beekeeper as irrational ravings, the proverbial making of mountains out of mole hills.

Many complaints will in fact have no basis. But they have also led to increased expenditures of time, money

Continued on Page 518



ON·MY·BOOTS

? DO YOU KNOW ?

Brood Basics

CLARENCE H. COLLISON

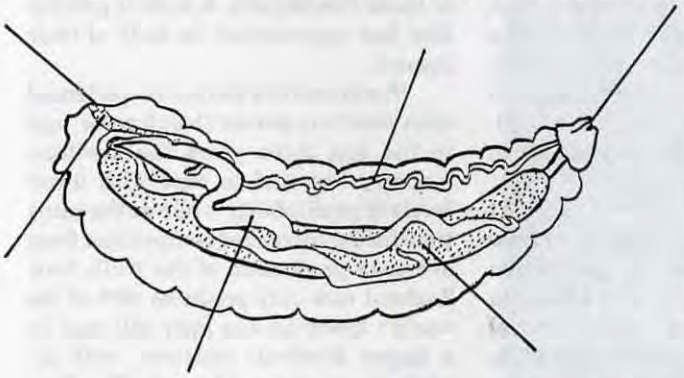
Colony development and productivity are indirectly related to the brood rearing capacity of the colony. Necessary components include: a high quality queen capable of laying a large number of eggs, a large force of nurse bees, an adequate food supply and broodnest temperature. In order to understand the life cycle of the honey bee, it is essential to be familiar with the characteristics and requirements of the various stages of brood. Please take a few minutes and answer the following questions to determine how well you understand this important topic.

The first eight 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.____ Nurse bees begin visiting cells as soon as eggs are laid.
2.____ Young honey bee worker larvae have an excess of food available to them until they are 4 days old.
3.____ The tiny, developing honey bee larva emerges from the egg by chewing through the outer membrane or egg shell.
4.____ Worker honey bees can discriminate between sister and half-sister workers and queens in both the larval and adult stages.
5.____ Africanized worker honey bees have longer development periods for all developmental stages (egg, larva, pupa) than European honey bees.
6.____ Honey bee larvae are unable to feed themselves, thus require over 3,000 nurse bee visits.
7.____ Queen larvae gain more weight and are larger than drone larvae when they change into the pupal stage.
8.____ Peak drone production occurs in the temperate region in mid-summer.

9. Listed below are several internal organs associated with the larval stage of honey bee development. Please label the diagram shown below with the correct organs. (Question is worth 6 points).

A. Ventriculus or stomach **B.** Silk gland **C.** Anus **D.** Mouth **E.** Malpighian tubules (Kidneys) **F.** Proctodeum or intestine



10. Please explain why the malpighian tubules (kidneys) and midgut of larvae are shut off from the intestine until a larva is nearly mature and finished feeding. (1 point)

11. Worker honey bees have approximately a 21 day life cycle which varies with nutrition, broodnest temperature and race. Please indicate which day of the 21 day cycle the following events occur. (Question is worth 7 points).

A.____ capping of brood cell
B.____ egg hatches
C.____ larva sheds its skin for the first time
D.____ larva stretches out on its back with its head toward the cell opening (prepupa)
E.____ sixth and final shedding of the skin
F.____ fifth molt into the pupal stage
G.____ larva spins a cocoon

12. Honey bee eggs are non-descript, pearly white in color, cylindrical and elongate-oval in shape. What are the functions of the egg chorion and micropyle? (2 points).

13. What is the primary function of molting during the larval stage of honey bee development? (1 point).

ANSWERS ON PAGE 522

KIWIFRUIT

Pollination & Production

CLIFF VAN EATON
MAF
NEW ZEALAND

The kiwifruit has simultaneously revolutionized New Zealand horticulture and beekeeping. By the beginning of the 1980's the fruit was a highly sought-after commodity, especially among sophisticated consumers in Western European markets. Prices for kiwifruit skyrocketed, and the fortunate growers who had planted orchards in the mid-70's saw both their incomes and property values increase almost beyond imagining. There followed what can only be described as a modern day "land rush", with dairy and sheep farms in areas with the required combination of good soils and warm temperatures purchased at prices far above their productive value. And although establishment costs for the crop were extremely high, plantings of kiwifruit increased 15 fold in the ten year period 1975-85, levelling off at just under 8,000 acres. Total returns also increased dramatically, and by 1991 income from sales of New Zealand kiwifruit had reached $NZ660 million a year.

The "mark of quality" for New Zealand kiwifruit.

The rapid expansion in kiwifruit plantings also had a dramatic effect on New Zealand beekeeping. New Zealand growers originally relied on wind and feral insects to pollinate kiwifruit, but it was soon apparent that variability in fruit size and shape that resulted from inadequate pollination required a more systematic and controlled approach. In the early 1970's, New Zealand researchers carried out honey bee pollination trials on kiwifruit and in 1974 a colony density of four hives per acre was recommended for mature orchards. This recommendation became the industry standard and beekeepers operating near the major kiwifruit growing areas soon began to make at least some of their hives available for paid pollination.

The four hive per acre density is far greater than for other horticultural crops and reflected the unique nature of the kiwifruit plant. Kiwifruit produces no nectar, is dioecious (separate male and female plants), and requires a high level of pollen transfer to produce a properly sized and shaped fruit. A well-pollinated kiwifruit contains between 1000-1400 seeds. By contrast, a well-pollinated apple needs only six-seven seeds.

As more and more kiwifruit plantings came into production in New Zealand, the demand for pollination hives escalated sharply, and a boom in both hive numbers and new commercial beekeepers occurred in the early 1980's. A report prepared by financial analysts, and highly debated at the time, suggested that the New Zealand beekeeping industry could not cope with the hive increases needed to pollinate the nation's kiwifruit and predicted a significant shortfall in hive requirements by 1990. The report was used to justify the research and development costs for artificial pollination systems.

However, the New Zealand beekeeping industry more than met the challenge, with hive numbers nationwide increasing by 45% to 340,000 in just seven years (1981-1987). Interestingly, a large proportion of the development was financed directly by pollination fees, which growers often claimed were exceptionally high. The major government agricultural lending institution, the Rural Bank, refused to take security over beehives, and the only alternative was to increase hive rental prices to cover development costs. During the height of the boom, the pollination fee sometimes even reached the market value of used hives ($NZ85-100). The 1980's also saw a number of young commercial beekeepers come onto the scene, with new ideas and often a more business-like approach. For many of these beekeepers, kiwifruit pollination fees represented the bulk of their income.

The boom New Zealand experienced with kiwifruit couldn't last forever, and in the last three years the kiwifruit industry has had to cope with lower levels of profitability while at the same time facing increased competition from overseas production of the fruit. New Zealand now only produces 39% of the world's kiwifruit and Italy will soon be a bigger kiwifruit producer, with already more acres planted. The New Zealand kiwifruit industry has gone through a period of soul-searching and reorganization and has created a single organization controlling exports, the Kiwifruit Marketing Board. The board, realizing that the New Zealand product

Kiwifruit pollination beekeepers often use gate signs to advertise their services and identify orchard clients.

continues to hold a position of quality at the top end of the world market, has decided to follow a strategy of maintaining product returns through *strict* adherence to quality control.

As a result, quality has become the byword in all aspects of the industry. Ever-stricter standards are being used in both production and packing to ensure that the fruit is of the best size and shape and reaches the consumer in the best possible condition. The quality assurance system is enforced by an extensive array of checks and audits. Depending on the year, 15-20% of the crop is rejected during the packing process, and a further 10-15% is culled either in New Zealand cool storage or after the product has reached its overseas destination.

The overwhelming emphasis on fruit shape and size has meant that quality now plays an increasingly important role in kiwifruit pollination, as well. Many people in the kiwifruit industry see pollination as *the* essential requirement for the production of high quality fruit, and growers go to great lengths (including artificial pollination) to achieve "optimum pollination results" Pollination is often blamed for quality defects which upon analysis turn out to be caused by other factors. Nevertheless, packhouses, consultants, and even the Kiwifruit Marketing Board continue to list many quality defects under the broad heading "Pollination"

Fundamental to this desire for the best possible pollination is the hive strength standard. In the mid-80's, New Zealand beekeepers and government advisors became concerned with the lack of any defined hive strength standard for kiwifruit. They believed such a standard was important because, a) growers needed assurance that pollination fees paid were justified, and b) the right "size" hive, in terms of bees and brood, made a significant difference in pollinating this non-nectar bearing crop. A number of floral sources, including clover, bloom at the same time as kiwifruit. It therefore followed that colonies with high brood-to-bee ratios would

Continued on Next Page

Hive audits are an important part of kiwifruit pollination quality assurance.

A grid used to measure brood amounts. High brood-to-bee ratios are essential for maximum kiwifruit pollination performance.

KIWIFRUIT ... Cont. From Pg. 495

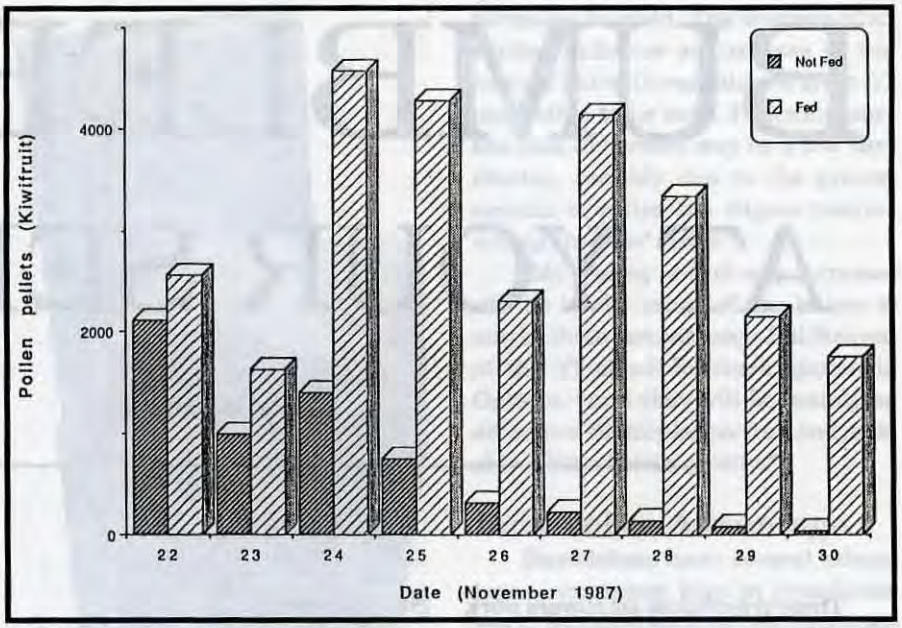
be the most effective pollinators of kiwifruit because the brood would create a stronger than normal stimulus to gather pollen, even at the expense of nectar collection. In 1985, the New Zealand Ministry of Agriculture and Fisheries (MAF) developed a recommendation for kiwifruit pollination hives based on pollen collection studies carried out by researchers, and a worldwide literature search. The standard called for 1) a minimum of 7000 square centimeters of brood, 2) at least 12 full-depth frames of bees, 3) adequate honey stores and sufficient empty comb for colony expansion, and 4) a young, prolific queen. These were put together by Andrew Matheson, now head of the International Bee Research Association, while working for MAF.

The "MAF standard" has now become the basis for hive strength standards adopted by various pollination associations, which in most cases were formed initially to publicize the pollination activities of their members. The publicity, however, often took the form of educational talks to growers, and hive strength was invariably a major topic of discussion. Associations soon realized that they could only retain professional credibility by adopting a set standard and ensuring that it was met. The standard-setting process took some time, and unfortunately, in a few cases led to resignations by beekeepers opposed to group control over their personal activities. Nevertheless, pollination associations now exist in several parts of the country which make adherence to hive strength standards a provision of association membership. The standards are listed in the association's rules and failure to follow the rules usually means disciplinary action, and in some cases expulsion from the association.

Different associations use different methods to audit standards compliance. The Hawkes Bay and Taranaki associations employ MAF personnel to conduct across-the-board end-point inspections of hives in orchards. Reports are then issued to both the individual

In-orchard syrup feeding is now an integral part of New Zealand kiwifruit pollination.

Effect of feeding sugar syrup in a hive on the collection of Kiwifruit pollination.



beekeepers and the association for further action. This system has worked well, but does suffer from the two problems inherent in end-point inspection: high cost and lack of production systems feedback.

The Kiwifruit Pollination Association has taken quality assurance one step further. Association members realized the weaknesses in end-point inspection and decided to add a management-systems audit similar in concept to the one used in packhouses by the Kiwifruit Marketing Board. The system is based on principles outlined in the ISO 9002 standard (a universal quality assurance system) and includes documenting of the processes involved in producing quality assured hives. Each year members fill out a lengthy questionnaire which is designed to highlight shortcomings in their beekeeping system. The questionnaires are reviewed by a MAF auditor who discusses any problems with the member concerned. Based on these management system checks the auditor then determines a more targeted program of product (hive) auditing. Inspectors employed by the association conduct these less expensive audits once the hives are placed in the orchards.

Kiwifruit growers can also take advantage of independent hive strength quality assurance services. In some areas growers often hire a MAF consultant for a professional assessment of the pollination hives they have rented. Once the hives have been placed in the orchard, a random selection of hives is inspected, using statistical sampling techniques. The hives are assessed for various factors, including population size and brood amount, and the orchard is analyzed for any obvious problems which might affect pollination. A written report, with recommendations for further action (if any), is then faxed to the grower within 24 hours.

New Zealand beekeepers can be justifiably proud of the way they have used hive strength standards to improve the kiwifruit pollination industry. Interestingly, however, another change they have recently made in their hive management has probably had just as big an effect on the increases in pollination efficiency which have been achieved. The change has certainly been more dramatic, as anyone driving around major kiwifruit growing areas in late November can attest. Four years ago almost no one fed sugar syrup to bees while they were in the orchards. Fears were expressed about the potential for robbing where hive densities could reach upwards of 1000 per square kilometer. Now, almost every kiwifruit pollination hive is fed syrup once it is placed in the orchard, and crews and vehicles are hired specifically to do the work. Generally, no major robbing problems are experienced, and a multitude of sugar feeding trucks are busy in the orchards (and on the roads) every single day during the two- to three-week pollination period.

This major change in hive management follows experimental work carried out by Goodwin, ten Houten, and Perry in the late 1980's. In trials conducted over four seasons using 380 colonies, they produced daily increases of up to 436% in the amount of kiwifruit pollen gathered simply by feeding sugar syrup. Increases over the whole pollination season were as high as 79%. The researchers also investigated various aspects of the feeding process, including time of day, frequency and amount of food, type of sugar, and type of feeder.

Once the researchers' findings became available, they were rapidly disseminated by way of field days and beekeeper and grower newsletters. There followed, as with all new ideas, an initial period of resistance, but by 1991 the changeover in beekeeping management was complete.

The question still remains as to why the feeding increases pollen gathering. It has been speculated that syrup feeding, especially in the morning, fills the house bees' stomachs, and they therefore do not carry out the eliciting behavior which is thought to produce the nectar gathering stimulus in foragers. As a result, the foragers ignore the available nectar sources and concentrate on gathering pollen, a large concentration of which happens to be close by in the form of kiwifruit. This explanation is still very much a theory, however, and finances have not yet permitted researchers to determine the mechanism involved. ○

The author is an Apicultural Consultant with the Ministry of Agriculture and Fisheries (MAF) in Tauranga, New Zealand.

BUMBLEBEES AT YOUR SERVICE

LARRY M. BULLING

These greenhouse employees work seven days a week, receive no pay or benefits, and are simply let go after a few months of service. Yet except for an occasional buzz, no one's complaining – the employees are bumblebees.

A number of hothouse tomato and bell pepper growers in Canada and the United States are now using bumblebees to pollinate their crops, replacing the tedious and less efficient job of pollinating by hand. Growers report improved pollination, evidence of increased yields, larger fruit and earlier harvests, as well as reduction or elimination of hand pollination labor. The costs of bumblebee colonies are not necessarily cheaper than humans, but the bees work constantly and are more efficient pollinators.

Ingratta and Son, tomato growers in Leamington, Ontario, have stopped hand pollination altogether. "We really like it because we know it's a job that gets done everyday, and it gets done as soon as it can get done," says Margaret Ingratta. "It's a big load off your mind."

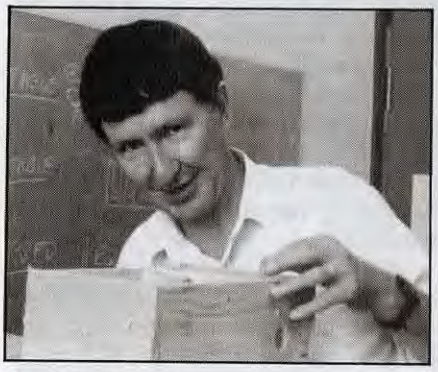
"You can estimate about 15 hours an acre a week" in labor savings, says Chris Stratton, owner of Elysburg Gardens, a greenhouse supply company and bumblebee marketer in Elysburg, Pennsylvania. "They're doing a wonderful job with us right now. They're visiting the flowers numerous times." Better pollination by bumblebees may also mean improved yields. Tests at the Ontario Ministry of Food and in British Columbia indicate potential tomato yield increases.

Suppliers

Bees Under Glass Pollination Services, Inc. and Biopol (Biological Pollination) are North America's only suppliers of these industrious and unpaid workers. Bees Under Glass, established in Cantley, Quebec, in 1990, was the first company in Canada and the United States to successfully cultivate bumblebees and market their services for greenhouse pollination. Biopol, in Aylmer, Ontario, was started by Henry and Chris Hiemstra as a diversification of their Clovermead Apiaries.

"We're not doing anything revolutionary at all," says Bees Under Glass's founder, Dr. Chris Plowright, currently on leave from the University of Toronto. "All we're doing is essentially using North American species to do something that Europe has been at for at least five years. It's a very established technology in Europe."

European companies, who raise *Bombus terrestris*, are shut out of the North American market since both the USDA and Agriculture Canada forbid importation of European bumblebees. The great distance and relatively small North American market also discourage European entry.



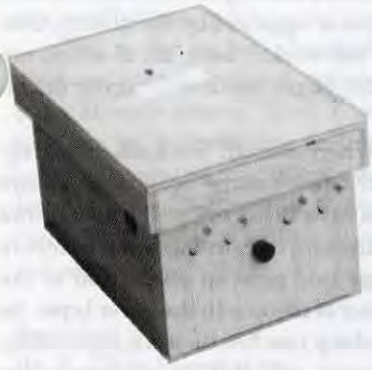
Dr. R.C. Plowright

There are about 800 acres of greenhouse-grown vegetables in North America, says Plowright. Of these, Statistics Canada lists 295 acres of greenhouse tomatoes. Plowright is currently working with a grower of Chinese cucumbers, strawberries, and zucchinis.

Bees Under Glass rears bumblebees native to North America, *B. impatiens* in eastern North America, and is trying out *B. occidentalis* and other species in the western provinces. Three Canadian distributors and one American distributor presently handle contracting and for Bees Under Glass instruction in use of the bumblebee colonies to interested growers. Biopol has one U.S. marketer for their colonies, Agrodynamics in East Brunswick, New Jersey.

Increased Yield

Although improving pollination and eliminating hand labor are bumblebee pollination companies' major sales points, there is also evidence that bumblebee pollination can increase tomato yield and fruit size. Dr. Jim Matteoni, technical co-director at Westgrow Sales, Inc. in Delta, British Columbia and a distributor for Bees Under Glass, reports (in a personal communication) replicated and controlled tests showing yield increases of "3.8% to 18.4%." He has observed increases in



Hive box with glass vial of sugar solution for transport to greenhouse.

the number of seeds per fruit, which is a good index of fruit quality in tomatoes. Matteoni is still experimenting with three *Bombus* species native to British Columbia but he says growers are demanding to be supplied with more colonies without waiting to see documented yield increases.

Dave Ryall of Gipaanda Greenhouses, a British Columbia tomato grower trying out bumblebees, thinks yield increases are in the two to five percent range but sees a big advantage in stopping hand pollination. Gipaanda, with five acres under glass, had two fulltime hand pollinators riding in electric carts on a rail system which often brushed the plants, breaking off some branches and lowering yield. Using bumblebees greatly reduces disturbance

Bees Under Glass hive box for B. Impatiens *two-chamber, insulation pad.*

of the tomato plants. Ryall also believes he gets bigger fruit with bumblebees; "Bigger fruit, better return," he says of the North American market where "big is beautiful."

Dr. Plowright, who has studied bumblebees for over 30 years and authored 58 journal articles on the subject, is cautious about claiming a definite yield increase. He says European studies have shown both increases and decreases in yield. The average of all studies indicates an increase of two percent but with variation so great it's impossible to be sure. Plowright says the time to harvest may be a few days shorter, possibly due to the greater amount of pollen the stigma receives during the bees' visits.

"My feeling is that any increases will be in the range of one to two to maybe three percent," says Bill Straver, of the Vineland Research station in Ontario. "And that will be mainly on account of slightly larger fruit and probably a little better quality."

Bumblebee Advantage

Bumblebees have several advantages over honey bees in greenhouse work. Bumblebees don't communicate forage locations as honey bees do so "if one stumbles out of the greenhouse and finds something, it's her own secret," says Matteoni. With honey bees, once a bee finds better forage outside the greenhouse, all the workers get the message and leave.

Bumblebees are also more willing than honey bees to work flowers that have no nectar, like tomatoes, and they can buzz pollinate – grab the anthers with their mandibles and buzz their wings, shaking the pollen onto their abdomens for collection in the pollen baskets on their rear legs. Plowright says the pollen in the hollow box-like

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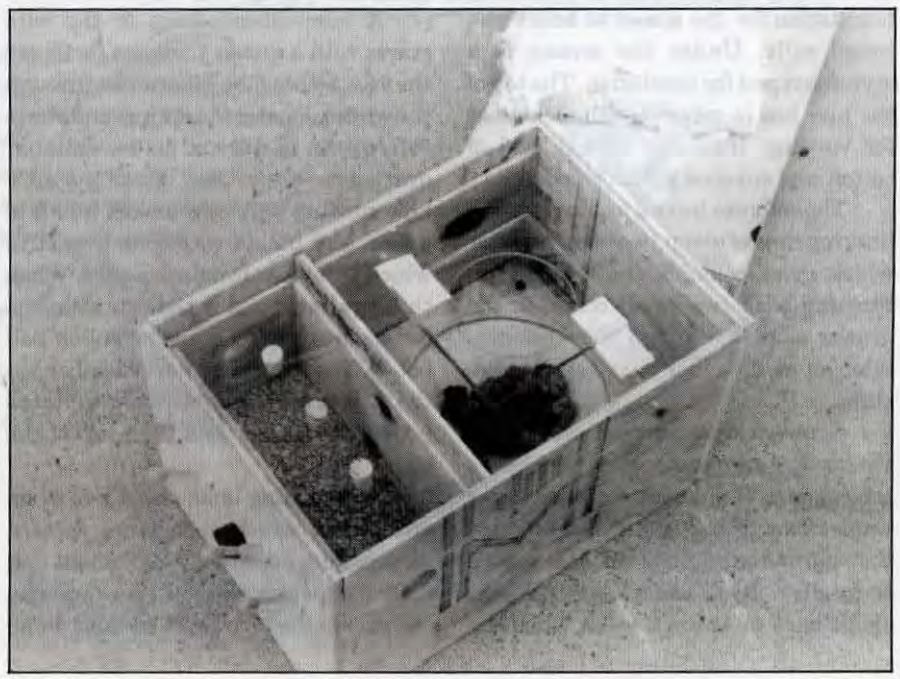

Bees Under Glass two-chambered Bumblebee hive box. Colony is visible through plexiglass cover.

BUMBLEBEES ... Cont. From Pg. 499

anthers of the tomato will not come out well unless the flower is vibrated. Honey bees can't buzz pollinate and many more honey bee visits are needed to get the same amount of pollen release that bumblebees produce.

"Bumblebees are a better bet," than honey bees, says Matteoni, for working the flowers on cool, overcast days. The bumblebees' willingness to work in such conditions may be due to the colony's food supply which is only about a day's worth. Honey bees have a much larger buffer and will not come out and work on colder, wetter days.

Using Bumblebees

Bees Under Glass starts growers with two colonies per acre. The colonies number 20 to 30 worker bees at the beginning of flowering and eventually reach 150 to 200 bees. "Monster" colonies of 1000 are unusual but have been reported. The colonies are mounted on hive stands or onto a greenhouse support post. The plywood hive box used by Bees Under Glass measures about 12" long by 8" wide and 9" high. The hive is divided into two chambers, a small entry chamber is lined on the bottom with cat litter and has small holes for feeding syrup vials while the hive is in transport. The entry chamber is connected by a small opening to a larger chamber for the colony. The bottom floor has a round patch of screen which serves as a foundation for the queen to build wax brood cells. Under the screen is a styrofoam pad for insulation. The top of the hive box is covered with plexiglass for viewing, insulated with a pad of cotton and covered with a wooden lid.

The colonies have a productive pollinating time of about two months, after which more colonies are brought in. Starting with two small colonies, the grower adds one to two more colonies later on as the older ones begin to decline.

Growers who contract with Bees Under Glass are responsible for feeding the colonies with honey water or sugar water. The grower must also monitor the pollination rate to be sure it is 80% or greater. Ryall samples 50 flowers about once or twice a week which he says takes about two hours for his five acres split over three greenhouses.

Biopol, however, monitors pollination and handles management of the colonies for the grower. It charges by the month.

A major constraint on growers using bumblebees for pollination is the need to use biological controls in the greenhouse. "It's not economically feasible for a grower to use bumblebees unless they've got pretty good biological control," Plowright says. Since most pesticide sprays used by growers are toxic to bumblebees, the hives must be corked up and removed before spraying may be done. They must then be replaced in exactly the same location as before or the bees may get confused and lost in the greenhouse. There is also the risk of killing the bees with spray residue. Plowright points out that moving hives around will cost the grower – both in labor and in hives weakened by removal from their pollen sources. And in the meantime hand pollination must, of course, be resumed.

Growers are seldom stung by bumblebees but Plowright emphasizes the need to keep bee sting kits on hand. Reaction to bumblebee stings is similar to those of honey bees. The bumblebee colony will usually let you inspect them once in a day without problems, but if you come back for a second look, they'll come after you, says Plowright.

The Colony Cycle

A bumblebee colony in the wild starts with a queen that was fertilized the year before. She hibernates through the winter, emerges in spring, and starts to forage for nectar and pollen while her ovaries develop. After locating a suitable nesting site, she makes a ball of pollen and builds wax cells over it in which to lay her first brood eggs. When the eggs hatch inside the wax cells, the larvae begin to feed on the pollen ball below. The queen will periodically open the cells to feed them with regurgitated pollen and nectar and then reseal the cells.

This feeding lasts about five to six days, after which each larva spins a cocoon and pupates. After about ten days of pupation, the adult bees emerge, but stay in the hive for a few days doing chores like feeding the larvae from later batches of eggs laid by the queen. After this, the worker bees, all of which are female, begin regular foraging activities.

When enough workers are foraging, the queen stops foraging and stays in the hive to lay eggs. The hive grows upward and outward and the numbers of eggs laid grow in proportion to the number of cocoons in the lower layer. As the colony reaches its peak population, the queen will start to produce males from unfertilized eggs and new queens from fertilized eggs.

Males leave the nest a few days after emerging to forage for themselves and do not return. New queens will sometimes forage for the colony, but usually they develop fat bodies for winter food reserves, fill their honey stomachs and leave the nest to mate and hibernate over the winter.

Over 24 years ago, Plowright and others developed techniques to artificially hibernate the bumblebee queens and induce them to nest inside hive boxes. Only recently, however, has demand for bumblebee pollination reached such a degree that Plowright decided to go into business supplying the colonies. "There was a lot of pressure because people were seeing what the Europeans were doing and how well it was working and they wanted to do it in North America."

In Europe, the bumblebee business is very competitive and secretive, says Plowright. There are over 17,000 acres of tomatoes grown under glass in the Netherlands alone, he says and most growers use bumblebees supplied by three companies: Biobest of Belgium, and Koppert Company and Brinckmann Company, both of the Netherlands.

Plowright is currently involved in research with the Universities of Wisconsin and Florida on bumblebee pollination of cranberry and blueberry crops in the open. Bumblebees are believed to be important pollinators of these crops but no decisive data has yet been collected since honey bees are also working the same flowers. Commercially reared colonies will probably not be feasible for outdoor crops. Providing more natural nesting sites and ready nectar sources throughout the season

will help to increase the local bumblebee populations.

But as far as greenhouse tomato growers are concerned, bumblebees have already proven their cost-effectiveness by contributing to improved pollination and yields. "It's an advanced technique," says Stratton of Elysburg Gardens. "I think it will be a competitive advantage." ○

Sources:

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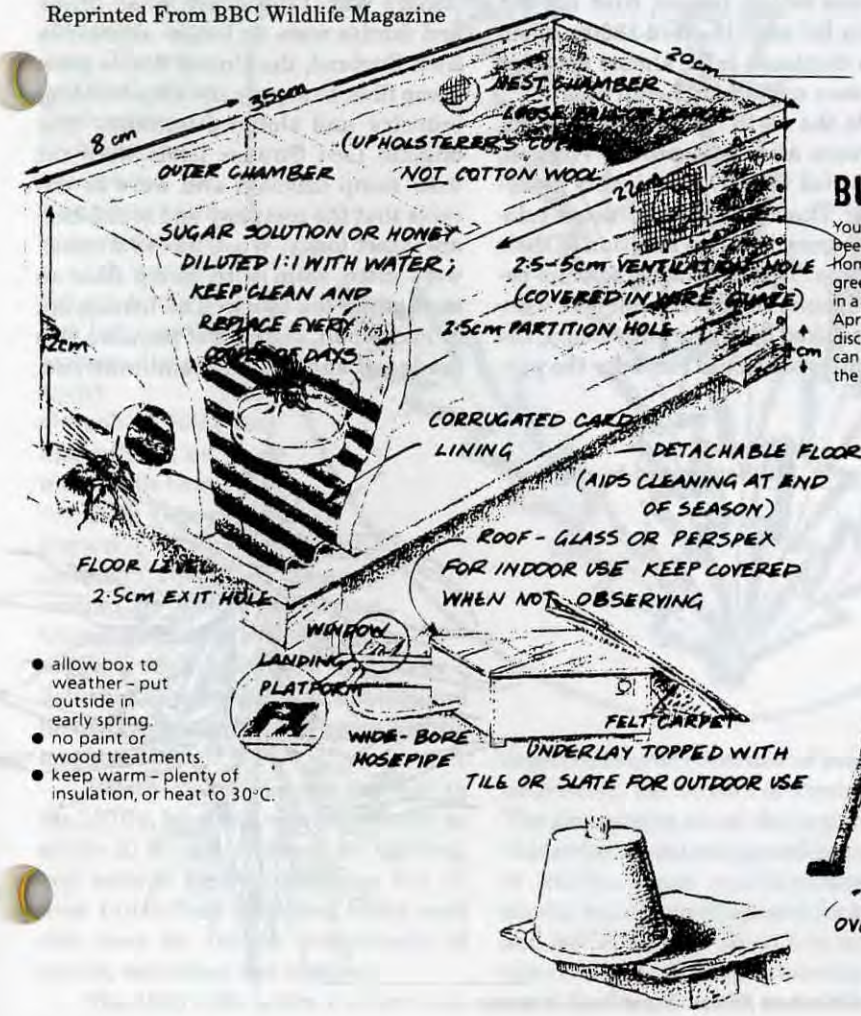
WANT TO GROW YOUR OWN?

Reprinted From BBC Wildlife Magazine

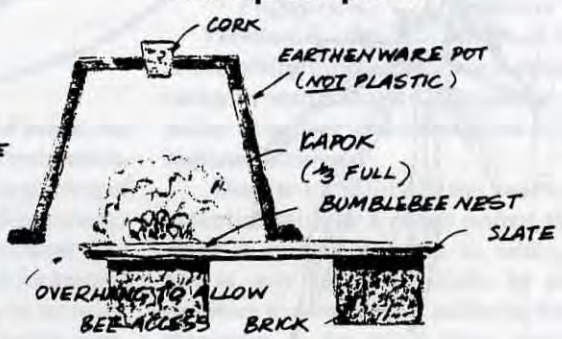


- allow box to weather – put outside in early spring.
- no paint or wood treatments.
- keep warm – plenty of insulation, or heat to 30°C.

BUMBLE-BOXES

You can vary the dimensions to suit your timber – all the bees need is a waterproof, insulated, ventilated, undisturbed home, whether it's out in your garden, tucked away in a greenhouse, or near a window indoors. Set up the nestbox in a shady shrubbery at the end of winter, and in March or April, an early rising queen may adopt it. Alternatively, if you discover a vulnerable bumblebee nest in, say, a compost heap, you can carefully transfer the whole nest to a box, after dark, when all the colony members are back at home.

A simpler option



HEMP

B.A. STRINGER

This plant has an important, and controversial history in U.S. Agriculture. In areas where it still grows wild it can be a significant pollen source. However, we do not recommend you grow it for your bees.

Although this plant is certainly controversial, it is of historical interest both from the perspective of bee forage and of fiber utility.

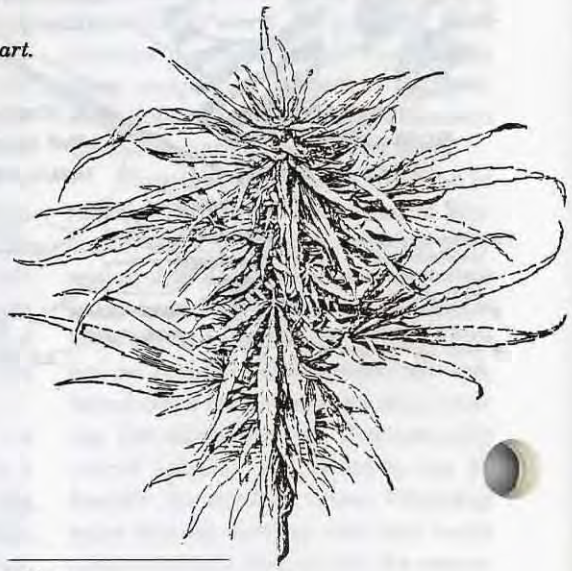
The hemp plant apparently originated in China, where it was grown for centuries and used medicinally as well as for fiber and oil. The earliest record of the plant is in *The Herbal of Shen Nung*, prescribing medicinal uses of hemp, called Ma Tang, which was considered a gift from the gods.

Hemp, *Cannabis sativa*, has long been cultivated as a fiber plant. Fibers and cloth of hemp stems have been found in caves dating back to the late Stone Age, about 6000 years ago. It was grown by the early Greeks and probably by the ancient Egyptians. The main value of the fiber was its resistance to salt and rot and it was the most durable material available for ships' sails and rigging, anchor ropes, nets, charts, logs, flags and bibles. Indeed, from the 5th century BC until the mid-1800's, when steam displaced sails, almost all ships sails were made from hemp fiber.

On the north American continent, four years after Jamestown, Virginia, was settled in 1607, the deputy governor Sir Thomas Dale instructed colonists to grow hemp in addition to their food crops. Throughout the colonial period, citizens of several colonies were also required by law to grow hemp, the seed imported from France for the purpose. In 1682 the crop had become so widely grown and valuable that the Virginia legislature made hemp fiber legal tender for up to 1/4 of all debts.

During and following the Revolutionary War (1775-1783), when linens and fabrics were no longer obtainable from England, the United States grew hemp fiber to supply the ship-building industry and clothing markets. The original Levi Strauss jeans were cut from hemp sailcloth and were so durable that the company and reputation are intact today. Wool, flax and cotton were often spun with hemp fiber to strengthen the fabric. The homespun, or hempspun, clothing of pioneers was made of such fiber combinations.

Pistillate or seed-bearing part.



Staminate flower. It produces no nectar.

Conestoga wagons of many westward bound settlers were covered with hemp cloth. The word canvas is derived from the Greek *kannabis*, "hemp"

By 1810, hemp was Kentucky's major crop and was even used as money. The plant thrived in the blue-grass region of the state, where 9/10ths of the hemp of America was grown, and much of the state's crop was made into binding for cotton bales. Liberty Hyde Bailey, author of *Hortus*, said in 1907, "The years it has been grown in Kentucky, probably no other crop has brought an equal revenue. A few years before the Civil War it contributed more to the wealth of central Kentucky than all other crops combined."

Until 1883, over 75% of all paper, including that used for some historical documents, was made using hemp fiber. Such paper has very low acidity and lasts for an extremely long time. The original draft of the Declaration of Independence presented to Congress and approved on July 4, 1776, was written on hemp paper but was later embossed on parchment. The Gutenberg Bible was also printed on paper made with hemp fiber.

Both George Washington and Thomas Jefferson cultivated hemp, even to the point of separating the male and female plants, which suggests medicinal use of the plant. Jefferson considered wheat, tobacco and hemp to be his principal crops for the market.

Before coal oil became popular in the 1870's, hemp oil was second only to whale oil for use in lamps for lighting, and records for 1935 indicate the oil from 116 million pounds of hemp seed was used for the oil components of paints, varnishes and shellacs.

The 1901 *ABC of Bee Culture* lists hemp as one of the nectar and pollen sources of the time. Professor E.F. Phillips, in his 1928 book, listed hemp as a pollen source in the eastern United States. *Cannabis* is wind-pollinated and the male flowers produce abundant pollen which is readily collected by honey bees.

L.H. Bailey's *Cyclopedia of Farm Crops* (1907) reported on the superiority of Chinese hemp seed over the Japanese varieties, but all seed seemed to degenerate over a number of years, necessitating the import of fresh seeds. The plants were cut at the beginning of September, dried and placed into shocks or stacks. About mid-November the shocks were dismantled onto the ground and left to rest for about two months. Alternate freezing and thawing separated the fiber from the rest of the stem 'hurds', after which the process of 'breaking' extracted the fiber from the other tissue. All of these activities were done by manual labor.

The Marijuana Tax Act of 1937 effectively destroyed the hemp seed and fiber industries, opening the market for proliferation of petrochemical substitutes.

George Vansell, who surveyed the honey plants of California, noted in 1941, "Hemp cannot be grown legally in California, but it occurs as a weed in many places. Bees collect a great deal of pollen from the blossoms during summer."

The geographical origin of many honeys may be indicated by pollen grain analysis. Microscopic examination of the honey, with particular attention to the insect-gathered pollen species present in the sample, may give a good idea of the source where the honey was made. It is interesting that hemp pollen is one of the indicators for some regional European honeys. According to *Honey, A Comprehensive Survey* edited by Eva Crane (1976), "South-eastern European imported honeys are recognized by the pollen combination *Castanea* – honeydew constituents – *Robinia – Onobrychis – Trifolium incarnatum – Centaurea cynanus – C. jacea – Fagoprum – **Cannabis** – Verbascum – Mentha pulegium.*" It is interesting to note that there is enough hemp in south-eastern Europe for its pollen to appear in the signature of the regional honeys.

Despite its utility in the past and potential value as a pollen source, this plant is currently illegal to cultivate and is only legally available by prescription to some people suffering from glaucoma or for relief from chemotherapy side effects. ○

TURN ABOUT IS FAIR PLAY

ANN W. HARMAN

Bonanza! The weather was just right, honey plants bloomed in abundance and your hives were strong and willing. Now you, a hobbyist beekeeper with four hives (or two or nine), just removed and extracted 250 (or 450) pounds of honey – much more than you ever have in the past. Now what? Figuring what you will give to all your friends and relatives, plus neighbors and coworkers, and adding in what you'll need for home use you find you *still* have 100 (or 250) pounds left. Selling the honey is obviously the way to go – but since you have never had such a surplus you have never tried this trade. "Will anyone want to buy my honey?" is a question often asked.

The answer is: Certainly! But first, let's stop and investigate the concept of marketing honey.

Until just a few years ago honey sales were stagnant in the United States. Far fewer people bought honey to put on toast, or in a cup of tea. Honey was almost always "honey colored" and almost always came in a one-pound queenline jar. You could find it in grocery stores but never in restaurants, and you hardly ever saw advertisements for honey in magazines or newspapers.

Yes, beekeepers sold honey but did their own promotions (if any) and found their own customers. It was obvious that just because you were a really good beekeeper didn't mean you were successful at selling. Guidance, suggestions and direction were almost always needed.

Today the situation is improving – and you, a hobby beekeeper, are enjoying the results of the improvements that have been made.

What's different today? Why has the market changed? And most important, how have you benefited?

In 1987 (that's not very long ago) the National Honey Board was created to put HONEY into the minds and kitchens of Americans. In these five short years honey has achieved national status. Magazines such as *Good Housekeeping, Family Circle* and *Better Homes and Gardens* now run full color advertisements for honey (paid for with Honey Board funds) sometimes in connection with other products that encourage the use of honey. Recipe brochures have been developed by the Honey Board to give consumers information and instructions for using honey in salad dressings, sauces and dips, as well as traditional baked goods. Furthermore, they have developed large-quantity honey recipes for schools and institutions, increasing awareness of honey as a versatile cooking ingredient. At a recent International Fancy Food and Confection Show this fact was realized since one of the Honey Board's recipes won first prize.

The National Honey Board has already planned ahead for National Honey Month (this month-long celebration was made official by the Board). Working with the Institute for Cereal Food Technologists, the Honey Board has developed a new cereal to be introduced during September. Not only should it be on every beekeeper's breakfast table, but it would be nice to see it on many other tables as well.

Restaurants are excellent places to introduce honey as a table condiment. For this, the Honey Board is developing an individual-users package so restaurant goers are encouraged to use honey found on the tables. The goal, of course is that the customer will then buy a jar of honey, from either a store or a beekeeper, at a later date.

One important discovery made by

the Honey Board is the popularity of the 12-ounce squeeze bear, easily obtained from local bee supply dealers. The bear is cute and appeals to adults as well as children. Besides, honey is easier to use from a squeeze container than from out of a jar. Bears can be refilled and bears don't break.

Another Honey Board confirmation is that most people view honey as a clean, safe, natural product. In order to maintain this desirable image the Board has developed an educational program called PRIDE to provide beekeepers with information on keeping their honey operation safe and clean.

But there's more! You can fix up your sale area with eye-catching decorations, signs, a loveable stuffed bear, or a colorful apron for you to wear. All of these items, and more, help promote HONEY and you can obtain them from the Board. Since these promotional items can be reused their value is great when compared to actual cost.

With all of this good publicity and support, you can now see that those excess pounds of honey have a good chance of selling. But you still have an obligation – to provide your customer with an excellent product.

You have seen what the National Honey Board has accomplished. Now take a look at your honey. What sort of container are you using? Honey looks beautiful in the traditional queenline jar, where both color and clarity can be appreciated. But don't forget squeeze bears. You can offer both containers, but if you can, point out the advantages of the bears. You will probably find more sales for those than for queenlines.

Nice looking labels are available for both queenline jars and for bears. Ordering labels with your name, address and phone number may cost a few cents extra but you will soon benefit from increased sales. One of your honey jars, labeled, sitting on a friends' kitchen table will be seen by people you don't know who then know where to get more. By the way, put the label on straight, which takes a bit of practice, but once you have the technique down, it goes quickly. You can also obtain a safety seal beneath your jar's lid or an outer-cap security label to show customers your product is clean and protected.

Another kind of label is very important – the small one that describes crystallization and how to reliquify honey. It should be on *every* container. Consumers are not beekeepers and you would not want them to think your honey is spoiled if it crystallizes.

Speaking of crystallization, your honey should be thoroughly strained through a synthetic fabric strainer to remove both the debris from extracting and any small particles that could initiate crystallization, like wax or sugar crystals.

Added value is important, too. If a recipe leaflet is given along with every jar or bear, that customer will return for more honey and return sooner. And, very importantly, *nothing* should be sticky – jars, bears, caps, and comb honey containers should not leave even one sticky spot on a customer's hands.

Wonder where the money comes from to enable the Honey Board to do it's work. Well, 100% of the money comes from beekeepers. Producers who harvest 6000 pounds or more per year pay one cent per pound to the National Honey Board. This fee is collected, almost exclusively by the ASCS when producers apply for their government loan, or by honey packers who buy large quantities of honey on a daily basis. This fee is not refundable. However, if you produce less than 6000 pounds per year you are not *required* to contribute, but you can do so if you wish. Information and forms for reporting can be obtained by writing or phoning the Honey Board, which spends 87% of its income on honey promotion, including researching and developing markets. Only 13% is spent on the necessary administrative expenses (including collecting and organizing fees).

Now that you and the National Honey Board are working hand in hand, how can you tell other hobbyist beekeepers about the benefits that are available? Many state and local beekeeping associations publish Honey Board information. Some states have a member on the Honey Board, and all states have a nominating committee member. But the best way is to contact the National Honey Board and ask for information on obtaining recipe brochures, table tents (signs), aprons, bears and other items useful for your sales. Write or call them at 421 21st Avenue #313, Longmont, CO 80501-1421; (303) 776-2337.

The National Honey Board is doing its part for all beekeepers, whether commercial, sideline or hobbyist. Make certain you are doing *your* part with a quality product, made with pleasure by your bees and packaged with pride by you.

S·T·A·T·E·S R·I·G·H·T·S

DEWEY M. CARON

Most beekeepers want the public to know what is or isn't a "bee" And, they want effective and fair state regulatory programs. But increasingly, beekeepers are finding they must be willing to go out and politic to get these and many other things.

How can you get what you want? What has to be done? No single course of action always works best but here are some successful beekeeper programs that have worked in the Eastern U.S.

In **Connecticut,** EAS Director and CBA President Austin Knox has recruited some 45 volunteers for his "Bee" team. This group quickly routes neighbor-type problems involving bees to a volunteer in the area who could then go inspect and help take care of the problem. If the volunteer needs more resources, a committee is available for further assistance to help decide what to do next.

Connecticut beekeepers are working with state officials to draft a new state Bee law, too. This approach worked very well in neighboring **Rhode *Island*** where the present law was passed with overwhelming support of the beekeepers. The **Rhode Island** association helped draft the regulations and worked with legislative and regulatory officials to obtain the best possible wording of the new law to benefit both beekeeper and citizen of the state.

Rhode Island Beekeepers are also working with Master Gardeners in their state. They have prepared and made available answers to 20 questions to ask homeowners reporting "bee" or stinging insect problems or nests. They maintain a list of beekeepers who will help with swarm removal in communities around the state.

Other groups also assist the public with swarm removal. The **Toronto, Canada** district beekeepers have a swarm referral list. The Chester Co., **Pennsylvania** and Central **Maryland** (Baltimore suburbs) beekeepers do, too. Extension offices in all three counties in Delaware maintain such lists and beekeepers are invited each season to add or remove their names and telephone numbers from the list.

One difficulty beekeepers encounter is laws regarding supplying "advice" or assistance in the removal of stinging insects. Hornet nests, yellow jackets nesting in the ground, pestiferous yellow jackets in the fall or honey bee nests in trees or the sides of buildings are all situations beekeepers get asked about. Beekeepers usually know what to recommend and are willing to offer advice – the problem is they are not legally permitted to do so by many state laws unless licensed as a PCO (Pest Control Officer). Few beekeepers have adequate liability insurance or have passed Pesticide Applicator Licensing to be in a position to legally offer such information.

Inspection. A Right, or A Privilege?

In the Eastern US, as elsewhere, many states are facing financial

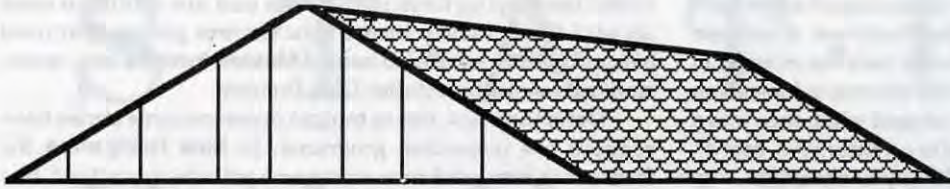
problems and are cutting back apiary regulatory programs. Some states are looking for alternate financing schemes such as charging fees to register and inspect beehives. A number of beekeeping groups have attempted to halt the erosion of state services to beekeepers but not all attempts have been successful. **New Jersey** has greatly reduced what once was a very strong inspection program despite an extensive, coordinated effort of support by the **New Jersey** beekeepers.

Continued political pressure has proved helpful in other states, though. **Pennsylvania** beekeepers have gotten their state legislature to include a line item of support for bee research/promotion activities. **Massachusetts** has an advisory council of beekeepers that meets regularly to offer advice/suggestions to agriculture officials. In **New York,** a delegation of beekeepers has met with the chairs of both House and Senate ag committees to inform them about beekeeping and to press for favorable consideration in the declining budget situation in that state.

In **Maine,** industry has agreed to finance the regulatory activity of the state bee inspector. The industry offering help? No, not beekeepers but the *blueberry* growers who rely on honey bee pollination for their product. They want a strong viable beekeeping force in the state and are willing to come up with funds to help insure this. Grower groups that need bee pollination have also helped **Massachusetts** hire extension beekeeping specialist Dick Bonney.

Unfortunately, due to budget pressure some states have reduced bee inspection programs. In **New Hampshire** the former bee inspector now works as a private consultant. She inspects beehives for those beekeepers willing to pay for her services. Other areas have gone to volunteers. Fifteen volunteer individuals in **Ontario, Canada** inspected beehives without pay in 1991. **Pennsylvania** is one state that may use volunteers in 1992. Liability issues are an obstacle to other states or provinces extensively using volunteers.

Beekeepers are a diverse group that don't always effectively lobby for what they want or need. With increased state budget reductions it is easy for beekeeping to suffer reduced funding, like many other groups. If we want better public education and more effective regulatory programs we need to work together through bee associations to see that our needs are not neglected.



HOME HARMONY

ANN HARMAN
6511 Griffith Road • Laytonsville, MD 20882

NATIONAL HONEY YEAR!

What are you planning for your celebration of National Honey Month? Beekeepers are fortunate in having an entire month for this celebration. Some commodities have only a day or at most a week to celebrate. Thirty days is quite an honor, therefore we need to promote honey as a delicious and useful hive product.

Here are a few ideas to help you, and your bees, celebrate National Honey Month. You certainly can use honey every day during the month of September. Take jars of honey to work to give to colleagues or visitors. Keep a supply of honey recipes handy to give to friends. Put a jar of honey in your mailbox with a note thanking your hard-working carrier. Think of people who serve you throughout the year: your bank teller, veterinarian, the store cashier who greets you with a cheery "hello", your minister, and the plumber who saved you from a flood at 10 O'clock one night. Introduce these people to the joys of using honey.

A recipe using honey is an excellent way of introducing citizens to the many uses of honey. That *is why a recipe should accompany each jar of honey that you give or sell.* Good types of recipes are those for ham glazes, salad dressings and barbeque sauces, as well as for traditional cakes and cookies. Choose recipes for their simplicity as well as good flavor. Beautiful recipe folders are available from both the National Honey Board and the American Beekeeping Federation. Some states also have recipe folders available, so contact your local or state beekeeping organization for those. Make up your own handout using favorite recipes along with some from ***Home Harmony*** articles. A good recipe is a great way to celebrate honey.

And now for our own celebration. What a pleasure it is to use just *gobs* of honey in a recipe. Honey poured from a jar or a measuring cup is really a beautiful sight. Whether the honey is light or dark, it seems to shimmer and glow. The recipes for this month were chosen because they use lots of honey.

Keep in mind that a one-pound jar full of honey measures 1-1/4 cups for recipes.

Oatmeal Cake

This recipe for an oatmeal cake is one of my favorites. It is strange but nobody ever guesses it has oatmeal in it. Sometimes I keep that a secret in case someone dislikes oatmeal. The cake is made quickly and definitely does not need to be frosted, but if you wish, use a cream cheese and honey icing for it.

1 cup oats
1/2 cup butter or margarine
1-1/2 cups boiling water
1-3/4 cups whole wheat flour
1 tsp soda
1 tsp cinnamon
1/4 tsp nutmeg
2 eggs
1-1/4 cups honey (one pound)
1 cup chopped nuts
1 tsp vanilla

Combine oats, butter, water and let stand about 20 minutes until cool. Combine dry ingredients. In a large bowl, beat eggs until foamy. Add honey in a fine stream, beating well. Add vanilla and stir in oat mixture. Add dry ingredients, about 1/2 cup at a time, beating well after each addition. Add nuts. Pour into 9 x 13 greased and floured pan. Bake at 350° for 30 to 40 minutes.

When introducing *citizens* to the pleasures of using honey I always give them some hints that make using it easy. Here are a few that you might use: never store honey in the refrigerator because it will granulate; wipe measuring cups and spoons with a little oil so honey slides out; use a rubber bowl scraper in the honey jar and measuring cups for easy removal of honey; creamed (crystallized) honey can be substituted equally for liquid honey.

You can easily print up a little handout with these and other honey hints.

Honey Marshmallows

You – or your children or grandchildren – can make marshmallows. I recommend a flavorful honey since the flavor of the honey will be the flavor of the marshmallows. Marshmallows are lots of fun for several reasons, one being that nobody believes you can make marshmallows at home. Another reason is that they can be used as taste samples for the different flavors of honey, thus encouraging others to use a variety of flavors. One caution – honey marshmallows should not be made on a humid summer day because they will become hopelessly sticky.

1 envelope unflavored gelatin (1 Tbs)
1/4 cup cold water
1 cup honey
pecan or almond meal or finely shredded coconut

Soak gelatin in the cold water. Warm honey in top of double boiler to about 120°. Add gelatin and stir until dissolved. **Remove mixture from heat.** Beat with hand mixer on high speed for 10 minutes, until mixture is light, fluffy, but thick. Put in buttered pan: 9" x 9" for thick marshmallows, 9" x 13" for thinner ones. Let stand at **room temperature** for 24 to 48 hours. Dip knife in cold water and cut marshmallows into squares. Roll or shake in nut meal or coconut. Do NOT roll or shake with powdered sugar – it makes very sticky marshmallows.

Kitchen Creations With Honey
Ann Harman and Ernest Miner

Grapefruit Sherbet

This next recipe for sherbet uses lots of honey. It can be made any month of the year since it uses grapefruit juice. This sherbet makes a very refreshing dessert for a hearty meal.

2 envelopes unflavored gelatin
1/3 cup cold water
3/4 cup boiling water
2 cups honey
4 cups unsweetened grapefruit juice
juice of one lemon

Soften gelatin in cold water. Add boiling water and honey. Stir until gelatin is dissolved, then cool. Add fruit juices. Pour into freezer container and freeze according to instructions. Garnish with candied cherries or strips of candied orange peel.

Nature's Golden Treasure Honey Cookbook
Joe M. Parkhill

Scratch Fudge Cake

You can inaugurate National Honey Month with this spectacular cake. This recipe features the favorite combination of chocolate and honey. If you wish to decorate the cake with bees, ask your local florist for a couple of cute fuzzy bees used to decorate flower arrangements. These are mounted on wires,so the bees can "fly" above your cake.

3/4 cup butter
1-3/4 cup honey
1-1/2 tsp vanilla
3 eggs, beaten
2 one-oz. squares unsweetened chocolate, melted
3 cups cake flour
1-3/4 tsp baking soda
1/2 tsp salt
1-1/4 cups ice water
1 cup nuts, chopped

Blend the butter and honey, then add the vanilla and the beaten eggs. Blend well. Then blend in the melted chocolate. In a separate bowl, sift together the flour, soda and salt. Beat this into the honey mixture alternately with ice water. Line three 8" round cake pans with waxed paper or kitchen parchment. Pour batter into pans and bake at 350° for 30-35 minutes. Frosting only makes it better.

A Honey Cookbook
The A.I. Root Company

True appreciation of honey comes from using it every day. A squeeze bear of honey needs to live next to your stove so a teaspoon, or a quick squeeze can enhance your salads, meat sauces and vegetables. Who knows – maybe National Honey Month will turn into National Honey Year!

M·O·V·I·N·G EXPERIENCES

O.B. Wiser

I hate to move bees. I would like to repeat that. I **hate** to move bees! However, moving bees is part of beekeeping and it has to be done when it has to be done. Few of us will go without moving our beehives, at least once.

I started moving bees when I was eleven years old when my Dad bought my first eight frame hive. We loaded the three story hive full of bees and honey into the back of the old 1947 Jeep station wagon. I sat next to the hive on the ride home to keep it upright and somehow my Dad and I got it to the backyard.

I started making real interesting mistakes moving bees when I was 14, and I located my first outyard in the country. My first beeyard was in our back yard and the VW Bus was in the frontyard and the hives were two, three and four stories high. It was a long walk from back to front yard, so I decided to use the old solid-metal wheelbarrow to transport them. The wheel was also metal. This is not a good idea, but it seemed like one then. By the time I got the hives to the garage, the bees had totally covered the outside of the hive and looked like a giant swarm.

I'll not ever forget that May evening moving my best beehive in the wheelbarrow – a four story hive jammed to overflowing with bees. I had a hot smoker with me to chase the bees back into the hive. The billows of smoke followed behind me across the lawn as slow progress was made. When I got to the patio the hive shifted, the bottom fell off and a massive army of upset bees literally flowed into the wheelbarrow covering all surfaces. Smoker in hand I attacked, puffing streams of hot smoke into the hive, turning the attacking wave of bees back. But I was using the bellows constantly and the next thing I knew, I had a blow torch aimed directly into the bottom of the hive, as flames leapt from the spout.

Wax burns like nothing else I know and before I knew what was happening, I had a wax fire to deal with on top of pounds of mad bees. The garden hose was nearby so after a frantic rush to the faucet I was soon directing a solid stream of water *into* my beehive. The fire was put out, and as the smoke cleared, the water surface was darkened with tens of thousands of dead bees. I was heart broken and vowed never to use the wheelbarrow again.

In those early years I often made the mistake of putting bees in wonderful spots for honey, but that I could not get a vehicle to. So, I had to walk into, (and carry out of) them. Vehicle access is top on my list now. If I cannot get my truck to it, I won't use it. Period!

Once, I had been given a condemned yard of bees by the state bee inspector and had to move it out at a moments notice. My old commercial beekeeping friend rustled a location up in a field near Riverton and I loaded my VW bus up with 14 hives and headed for the spot.

Unfortunately, it was irrigating time and I could not get to the spot where the bees had to go. So in the dark, by myself, I picked up two story hives and sloshed through the water and under a fence to a spot that was high and dry.

It was at this wonderful period in my life that I learned to not drop a beehive while being stung. In fact, I learned to just keep going, put the beehive down and then yell and scratch. I got lots of practice that night. The ultimate test took place as I was going under the barbed wire fence for the 12th time. Two bees reached my belly button at the same time and stung me with all they had. It took my breath away. I stumbled, but held fast and swore something about being a beekeeper, not a gladiator.

So, Lesson #1 is slightly modified to read, Vehicle access to bees during beekeeping time of year and during irrigation times is required.

The time of day to move bees was also learned the hard way. I used to believe one had to wait until the dead of night to move bees. Then I would load them and leave them in my VW bus overnight. The horror stories I can tell! Waking up Sunday morning early to a VW bus with curtains of bees over all the windows is another wonderful experience to avoid.

Needless to say I had to wear a veil suit and gloves while driving the VW which drew a lot of attention as the bees swirled about the bus. I recall one moment when I pulled up to a light at South and Highland Drive at 7:30 a.m.

on a Sunday morning. It was a beautiful day, few cars, bright, early morning sunshine. But alas, as I sat there, bees crawling across the outside of my veil, a beautiful blond (clad in only a bikini) pulled up next to me in her shiny red Triumph convertible. As she tapped the steering wheel in time with the rock music on the radio, her eyes scanned the scenery. I was watching her closely as her eyes rested on me, the swirling bees around the bus, and curtains of hanging insects on the windows. The color left her face, she tried to scream, and the light changed. Squealing tires punctuated her departure as I waved to her outside my window with my leather-covered left hand, bees flying around my fingertips.

Lesson #2: Do not move bees in the dead of night, and arrive on location with a minimum of stops.

Obviously I had to use my VW bus to move bees and harvest honey – it was all I had and all I can say about that is I am eternally grateful for my 1965 flat bed truck. But most small beekeepers do not even have a good VW bus. Then what? Well, you can move about five hives in a 1953 4-door Chevy if you have to. I did. You put three of them on the back seat and one in the trunk, and one in the passenger seat. Not a wonderful experience, but you can do it.

I went through the stage of trying to stop up all the holes of the hives with screen and then I used a special clay mud. If in fact you can find all the holes and successfully stop all bees from exiting the hive, you will most likely suffocate strong hives. And besides, you spend more time plugging holes than moving bees, and they always find a way out anyway.

So how do I move bees now, after 35 years of mistakes? It is really simple. First of all, I listen to the weather to find out when the sun goes down and determine when it will be dark. Then I time my move so that I am totally done loading bees *one hour before dark*. Yes, there are still bees flying home. So what? I would rather lose a few bees this way, than lose them from stinging my bee suit.

Using smoke is an absolute must when moving bees. Simply make sure the smoke is a light color and cool, put the nozzle right into the entrance and blow plenty of smoke into the hive to calm all the bees – three puffs. That means putting the smoker nozzle in the bottom entrance as well as any other entrance.

Pickups don't work well – not like a flatbed.

I use a bee boom to load now, but I have loaded thousands of hives by hand, which is faster than any bee boom – if there are two beekeepers that know what they are doing, and do the bee-hive-two-step well together.

There is no question that a flat bed truck with plenty of tie down hooks is far superior to pick ups, station wagons, or VW buses. I simply stack them two hives high from the ground and slide them into place. I hardly ever get on the truck, and when using a boom I never get on the truck.

I leave the bee yard just as the last bees come home to find their home gone –most of which land on the truck and enter a hive. I leave a weak hive behind to catch the drift after I move. All the drift ends up in the weak hive making it strong.

I drive home cooling the bees with the moving air. Of course, I make no attempt to close any entrances at all. The moving air forces all the bees in the hive and keeps them there. Then the real secret to moving bees is revealed. I do not go to the new location to unload. I go home and park out in front of my home and leave the load there over night to cool down.

I take out the hose and soak the hives down, cooling them down even more. Then I go to bed and get a good

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When using a flatbed, be sure you have tie-downs – the result if you don't is not to be considered.

WISER ... Cont. From Pg. 511

night's rest and wake up in time to move – about sunup.

Last Saturday I moved a friend's bees to Wyoming and she was late getting to my home and the bees started to come out of the hives. What to do? Do not fret, just get your hose out again and this time hook it up to the sprinkler. Put it on the east side of the load on top and turn it on and create a rain storm. That will keep them inside until you can get under way.

So lesson #3 is: Put the bees on the vehicle in the light of the evening, using smoke in the entrances. Do not close entrances if using open vehicle.

Unloading is easy. Usually the long ride has totally calmed the bees and I will not use smoke or my gloves and just pull them off the truck as fast as they will come off and put them on both sides of the truck for easy working. Unloading 56 hives last Saturday took 15 minutes in each of two locations. And I only got stung once on my bare wrist. I did it by hand because the person's hives I was moving did not have nailed on bottoms and most did not have proper hand holds (cleats).

Lesson #4: Unload your bees in the light. Take off at day break and travel whatever time it takes to get to your location and unload in full sunlight.

Moving bees should not be an exercise in battlefield valor. I remember the night I borrowed my neighbor's stake bed truck instead of my VW bus to move 30 hives. Thought I was real smart by cutting two trips in the bus to just one in a flat bed truck. The bed was ever so high, but the hives went on great. It was October. But there was no rope tie downs available and by the time I got to the location, 40 miles away, I no longer had nice neat stacks of white beehives. In fact there was no white to be seen – just this pulsating, embroiled mass that covered all my now-loose boxes that had slid in all directions. My little brother, John, stood by me at the end of that 20 foot stake bed and gulped air several times in sheer terror. John said, "Well what next, big brother?"

I put him in the cab with the windows up and I, the beekeeper, offered my sweaty body as a self sacrifice to unload the bees – alone. Three quarters through this horrible affair I tore my beesuit wide open from the waist to mid-calf, a real test of being a beekeeper. By then I was only trying to keep my veil clear so I could see what I was doing. I was covered with stinging bees.

I stopped and brushed as many bees from my suit as I could, and I was afraid for the first time. I had seven hives left to move. I was exhausted and was already covered with mean bees. What to do? What came to mind first was prayer. And so, by the side of a clump of sagebrush, I did just that – I fervently prayed I would get the bees off the truck and that I would not be stung in the eyes, and that I would survive.

The last 14 boxes came off the truck only trying to make sure that I did not throw them. They went upside down or on their sides. My only concern was that they went off the truck as fast as possible. I would return to straighten the mess another day.

My fiancé was waiting when I returned to ball me out for missing another date because of the bees. When she saw me, her attitude changed and she spent the next hour picking stings out of my riddled body. I was sick for three days.

Directions on moving bees are simple.

- **First,** be able to drive to the bee location.
- **Second,** use plenty of smoke.
- **Third,** put the bees on the truck in the light and take them off the truck in the light. I often unload at 11:00 a.m. with very little loss of bees because I keep the truck moving.
- **Fourth,** have ropes to tie down with or make sure the hive cannot move.
- **Fifth,** move the hives while the bees can still see to fly and you can see them coming. Crawling bees belong in horror movies, not as a part of the wonderful practice of moving bees.
- **Sixth,** if at all possible, do not use a VW bus or any kind of van. Borrow a pickup or better yet, a flatbed with hooks.

And, with all the attention bees have been getting lately, public relations would suggest that if at all possible cover the load with a net. It won't restrict air movement or hamper bee movement, but it will keep them home.

I believe I have tried about every cockamamy way to move bees there is **and I learned the hard way** that my number one priority is **taking care of the Beekeeper.**

STAY NATURAL

STEVE TABER of Honey Bee Genetics

Goudous • 82370 Villebrumier, France

"There is today a great lack of scientific people who spend time watching their bees."

Most beekeepers have bees because they like to get closer to nature. There are, of course, several of us who want to make it a source of income too, but even so, most commercial beekeepers are basically nature lovers. What I find intriguing then, is that if all of us are so keen on nature why is it that we abolish a large part of nature in the beehive?

Well, maybe you don't. But I'll bet you do at least to some degree. For instance, in the last 20 years or so various types of plastic combs and foundation have been developed. This is my beef because I don't see any need for it. And, they are terribly expensive. But yes, hobbyists just love to spend money on their peculiar hobby. I mean, why have a hobby unless you can spend your money?

Did you ever bother to think about what bees would prefer if they could tell you? Well, why not ask them to find out? I have been asking bees that question for many, many years. The only problem is you have to be able to speak the bees' language; they refuse to learn English (or even French for that matter). So when you start talking to the bees or, rather, communicating with them, be careful not to introduce artifacts that confuse them.

An easy first question to ask is "Which, of all these flowers, do you prefer to collect nectar from?" They will tell you pretty quickly and you can observe the same by taking a walk along my garden path and seeing bees all over apple blossoms, dandelions and clover. But not so on most pear varieties or the horticultural roses.

Now that you are in the proper frame of mind, go into a colony. I asked the bees this question – "If you were going to live inside a box where would you put your nest?" To have the bees answer that question, I put them in a box that was a four foot cube. Their answer was, "It doesn't make any difference, except, not on the floor." So, I asked them another question, "If you are going to build your nest would you prefer a warm or a cool place?"

To get their answer, I built a long box, about eight feet, cooled at one end and warmed at the other and I dumped swarms into the box at various places for them to build their comb. Their answer was, "It doesn't make any difference".

These were experiments that I made some years ago. The reason I bring them up now is that beekeepers rarely bother to ask their bees questions, yet want some government expert or university person to do all the work. It was not this way a hundred years ago. Then, plain old observant beekeepers were discovering all of the things we call *facts* today.

Langstroth was a religious preacher, Root a jeweler, and Miller, one of America's first commercial beekeepers, an MD. There is today a great lack of scientific people who spend their time watching and observing what goes on with their bees, or what I call "rocking chair" research. When I first started my research career back in 1950, I was interested in the question of – "How many drones do virgin queens mate with?"

To answer that question I sat in an old rocking chair in the apiary watching to see when virgins flew, for how long, and whether they came back with a mating sign or not. Have you ever thought of taking an old rocking chair out in the apiary to watch, and I mean WATCH, your bees?

Of your various stocks, do some get up earlier in the morning than others? When it gets a bit cloudy, do some work and others quit? You can see that some produce more honey than others, but what about disease – AFB or chalkbrood. How about their bottom boards, are some very dirty and others clean? You know all these things are genetically controlled and in any apiary you should see many different variations.

But I want to come back to my aversion to plastic combs. About 25 years ago, perhaps even more, I began to think about asking the bees the question, "Why do you want to build drone comb some times and worker comb other times?"

This question was prompted by the following observation. I found a colony that during a honey flow was building comb in frames with no foundation. The hive contained 10 frames. I would remove one on the right and give an empty one on the left, shifting everything over one space. Five days later I would do the same again. And every five days I continued, removing the comb on the right and giving an empty on the left.

At the first the bees built solid drone cells, top to bottom on each and every new frame introduced. Then all of a sudden, as if by magic, the bees decided they had enough drone comb and

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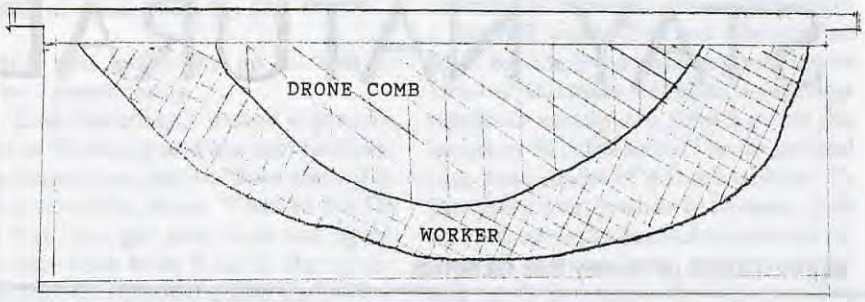


Natural comb built by bees, the first part was drone cell size, the bees then decided they had enough of that size and changed to building nothing but worker cell size.

NATURAL ... Cont. From Pg. 513

built nothing but worker size cells. For the first time in my career I saw the bees change from building drone cells to worker cells on a comb. I began to think, "Why do bees build worker comb?" You know something, that is quite a question to ask your bees and as far as I know there is no answer yet.

When you have your bees build comb, why do you have them build on what is called "foundation" made of beeswax or plastic? Have you ever thought of having the bees just build their own comb? Why not?

This fundamental thought came to me some 25 years ago, which was "Let the bees decide what kind of comb to build" I decided only where they would build it. To implement this I installed just empty frames into my hives. Presto, combs were built but when I examined the comb, it fell out. Reading Langstroth, I found he placed small wood supports inside the frame which the bees built comb on. That prevented the comb from falling out.

So I bored holes in the top and bottom bars and inserted dowels for support. I use 3/16" dowels, three to a frame. I asked myself, "Why should I spend money to buy expensive foundation when the bees will do it themselves?" Yes, they will. Will they build straight comb? Not usually, but when they don't do it right, tear it out and tell them to do it over again. Or, tear it out and stick it back where it should have been and hold it in place with a rubber band so the bees can get it in right the next time.

Get nature back into your hobby or vocation. Yes, you will get more drone cells built by bees but who has proven or shown that this by itself causes less honey production? Why not ask the bees this question? And somebody, somewhere, should be able to figure out how to ask the question to the bees, "Why do you guys want to build drone comb?"

NATURE CENTER ATTRACTS BEEKEEPERS

RICH PATTERSON

"I promise you two things. We'll have a good time and nobody's going to get stung," said Russ Swenson as 14 coverall-clad people followed him toward the hives.

For the next two hours seven children and a like number of adults went from hive to hive. They talked bees, opened hives, searched for queens, put on supers, and enjoyed each other's company. And Swenson was right. Nobody got stung, but several got hooked on beekeeping.

It was the first hands-on session for a beekeeping class at the Indian Creek Nature Center in Cedar Rapids, Iowa.

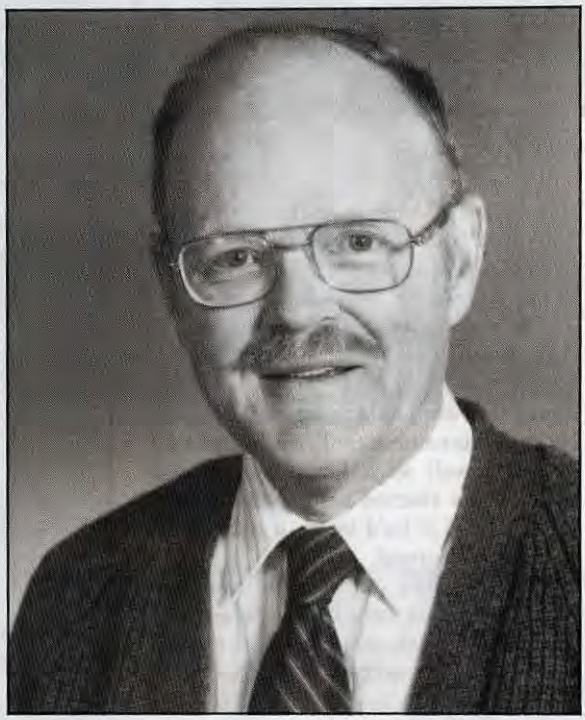
Beekeeping classes aren't at all uncommon, but this one had an unusual origin.

About a decade ago a local orthopedic surgeon, Lee Hawkins, entered my office. "You know, the Nature Center should have a demonstration beehive," he announced. Before I could respond he added, "and, I'll buy it, stock it with bees, and tend it for you!" It was an offer I couldn't refuse, and Lee was correct. The hive became the most popular exhibit for visiting school children, adults, and families.

For years the exhibit delighted visitors, and our staff detected three types of reactions to it. Most people, and particularly children, were fascinated by the bees. A smaller group were scared to death of them and seemed to have an aversion to all insects. A third group had a deep interest and wanted to learn more about bees and beekeeping. It became our goal to satisfy people's curiosity about bees, help those scared of insects develop an appreciation for them, and set up a beekeeping class for the third group.

But more pressing priorities and a lack of cash kept the bee project on the back burner.

Dr. Leland Hawkins



Then, in November 1991 tragedy struck.

Lee Hawkins suffered a massive heart attack in his apiary. Cedar Rapidians grieved the loss of a fine surgeon, community supporter, and beekeeper. His widow, Kate, established a memorial fund in Lee's honor that was given to the Indian Creek Nature Center, along with much of Lee's beekeeping equipment. The Center's Board of Directors earmarked the money to upgrade the bee hive exhibit and establish a beekeeping class.

Pulling the project together ended up in my lap, and I wasn't a beekeeper. I had plenty of questions, and so did many of my board members. Could we do it? Were there enough people out there interested in learning beekeeping? One of my board members, an attorney, wondered if we'd be liable if someone was stung and suffered an allergic reaction. Could we round up enough equipment on our limited finances?

Actually the bee project might never have succeeded had it not been for two remarkable beekeepers who surfaced.

A recently retired tool and die maker, Joe Parrott, had volunteered to help with the Nature Center's maple syruping project. While boiling sap one evening he mentioned that one day a few years ago he spotted a wild swarm of bees in his back yard. "I drove right down to a store that sold hives, bought a beginner's kit, went home and nailed the hive together. The swarm was still there, and I caught it," he told me. I knew Joe was interested in bees, and I also knew he could make most anything. "Would you build a demonstra-

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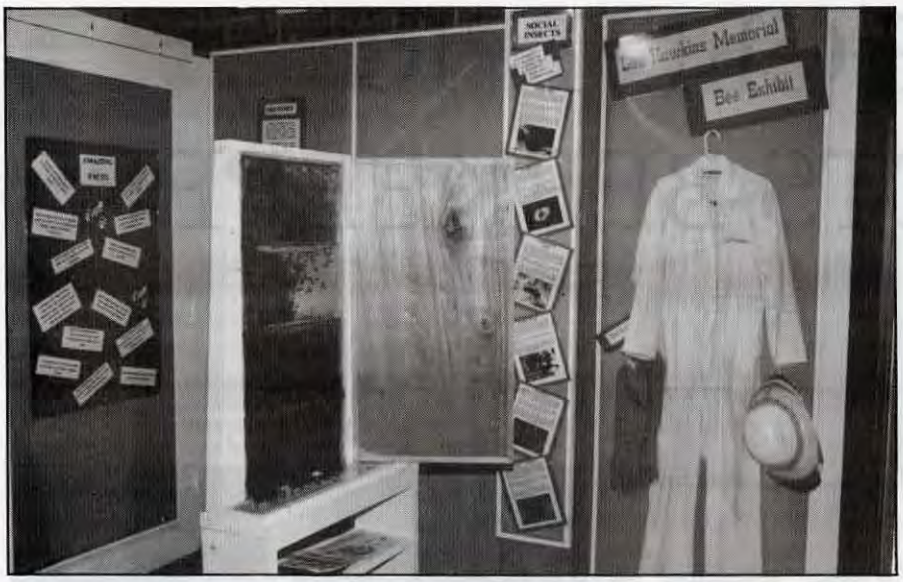

The new Lee Hawkins Memorial bee exhibit.

NATURE ... Cont. From Pg. 515

tion hive?" I asked. Within days Joe delivered and installed it, and along with the hive came an active assistant at our course.

Almost by accident I discovered Russ Swenson. A year or so ago, I was trying to find a local beekeeper to sell us honey for retail sale in our gift shop. A retired extension agent, Russ tends 40 hives as well as a large commercial garden. We started selling his honey, and I asked if he'd teach a course. In seconds he agreed.

So, we had our exhibit and our instructors, but would there be enough people out there interested in taking the course? We targeted children.

My staff at the Nature Center is well aware of great changes that have taken place in American families. Many are headed by a single parent, often a woman. Others are headed by very busy parents. We wanted to reach the small percentage of children who had a deep interest in bees but no parent or relative to introduce them to beekeeping.

Thanks to excellent publicity on local television and radio stations and the newspaper we found seven exceptionally interested children and a like number of adults.

Under Russ and Joe's guidance, the class met monthly from March through August. They went through a beekeeping season, and they had fun.

From Lee Hawkins' Memorial we were able to buy protective clothing, and supplies for each participant. We also bought each student *The New Starting Right With Bees* book by the A.I. Root Company. It's our informal text.

The beekeepers Nature Centers attract!

Although I operate dozens of different programs, I've been truly amazed at the bee project. Never would I have expected a bunch of seven-, eight- and nine-year-old kids to act so calmly with thousands of bees buzzing around their heads and to develop such a deep interest in beekeeping. Never would I have imagined the beekeeping industry to be so supportive.

Steve Forrest, of the Brushy Mountain Bee Company is just one example. I saw his ad in *Bee Culture* and gave him a call. "You bet we'll help," was his reply. He set us up with top notch equipment at a discount price. So was the A.I. Root Company, where we ordered books and supplies, and Bob Cox, the Iowa State Apiarist.

But what of liability? After a bit of soul searching and some experience working bees, we came to the conclusion that the beekeeping class offers no more of a threat to health or safety than the hiking, fishing, and other nature study classes that we have sponsored for years. And, we have a comprehensive liability policy.

Still, we erred on the side of caution. Hives are located off the normal route of hikers, bird watchers, and other visitors.

After several classes Russ Swenson's promise still goes. Nobody has been stung, but several of the students, including me, are now hobby beekeepers. ○

WHAT A MESS !

T. J. DUTTON

I was sitting at home one night, reading, when the phone rang. It was my friend Ralph, and he wanted to know if I was busy.

"Not really, what's on your mind?"

"No problem, just something I'd like you to look at. Could you take a ride up the road with me?"

"Sure," and with that simple statement, I got into the biggest mess I'd seen in a long time.

"I was called about a swarm on a house," Ralph said, "But I knew it wouldn't be just any old swarm this time of year. Maybe you can figure out a way to help this lady."

Now I knew that a swarm this time of year was already established, so I wondered what kind of area they were in. I found out shortly. They were on the outside of a building in the corner of the house and porch, about 15-20 feet up the wall, and it was the biggest open-air hive I had ever seen.

It was huge. About four feet long and two-three feet diameter, built in the corner from the overhang down. The house was an older model with lots of gingerbread trim. The bees had built around a couple of the trim braces, (at least I thought it was only a couple, it really was four or five) and the wax would have to be cut away in pieces.

"I don't know about this, Ralph. Even if we could get up there and cut it down, how could we get it to the ground without falling off the ladder?"

"I'm sure you can figure a way do to it and, besides, you can have all the bees and honey," he said.

Well, I thought about it, and decided that if I could borrow the old John Deere tractor from work, I could raise the bucket with the hive bodies in it, load in the comb as I cut it up, and get it down that way.

The idea worked, I guess, except I hadn't figured on so much honey running out of the cut parts of the comb and soaking me, boxes, veil and everything else in sight.

I don't have a complete bee suit, so I just used a cloth jacket, veil and gloves. While I was cutting the comb out, the veil fell against my face and one of those little ladies kissed me through the veil mesh just above my right eye. About three or four more caressed me along the jaw line, while a couple more got more intimate yet. They crawled up under my jacket and got fresh with my side just above the belt line. Thank goodness my belt was tight or we could have had a scandalous situation.

After getting the more than 200 lbs. of bees, honey, and wax, I had to wash the area down with a hose. And, the only way I could do this was by standing on a ladder below, and slightly to one side. I took a shower in honey, wax and bees, along with all the cold water I applied.

Later I told Ralph that if he ever had any more bright ideas about helping people with these kinds of problems, to leave me and my son-in-law-helper out of them.

Like I said, this was one heck of a mess.

INNER ... Cont. From Pg. 480

number of honey bees I saw on these plants. Somewhere in Manhattan there will be a nice crop of light green honey this month. I hope some beekeeper can take advantage of it.

All in all the trips were worth the cost, time, effort (and certainly fun), but it's good to be home for a couple days. There is all that honey out there...

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National Honey Month, designed to promote the end product of our efforts – honey – is celebrated in September and is proclaimed far and wide by any and all concerned.

But I cannot help notice that those most involved in getting honey from inside a beehive onto the shelf so consumers, beaten into a buying frenzy by all the professional promotion can grab those bottles and run, are hardly, if ever mentioned.

Beekeepers, of course, are too often taken for granted. Too often are we ridiculed as strange, alien creatures who wear weird uniforms, deal routinely with stinging insects and, worst of all, get dirty doing our daily deeds.

I am truly glad there is a group that goes to the time, trouble and expense to promote honey and honey month. Our industry needs all the help it can get. But if anything, the people who make honey, the people who get it from here to there, the people responsible for maintaining the pure and natural reputation that honey proudly proclaims, the people who make it work – whether single-colony watchers or thousand colony hustlers – deserve a month, too.

Let there be a month for beekeepers. Better, let it be the year of the beekeeper. You deserve it!

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Last month I discussed making changes in how the honey industry was being treated by government. The first thought that crossed many minds was 'change at the top'. That may certainly be the case, but don't limit your political restructuring to the national level.

There are many, many members of both houses of congress that continue to plague the industry with attempts to kill what honey program exists. If you want to know who these unfriendlys are contact either the ABF (phone 912-427-4018) or the AHPA (phone 605-627-5621), they'll be glad to help.

But don't stop there. What about those state officials who plan on eliminating the inspection program you rely on (or conversely, those who plan on keeping it when you want it gone)?

Then there are the local villains who just want bees out of their collective hair. The feeling is, if we don't acknowledge beekeepers exist, they don't exist.

You need to define your strategy, target your enemy and make plans. Your group or association must work for change, or there will be nothing left to change.

And change is required if American beekeeping is to thrive. The powers that be, no matter what level of incompetence they have attained, *must be replaced*. **It is time to stop farming out the American Farm.**

Kim Flottum

NECTAR ... Cont. From Pg. 492

and energy by beekeepers forced to defend their activities before the city councils of the land. In the long run, especially now that the sensationalized arrival of the African honey bee has occurred, the rights of the beekeeper will continue to be seriously questioned.

It is, therefore, incumbent on those keeping bees to look at the activity *as a privilege*. It should be protected at all costs by being the best of all possible neighbors.

With the arrival of the African bee, the successful beekeeper of the future may have to be even more of a public relations expert. The message that will have to be drilled into the public's collective head is that managed colonies of docile honey bees will be the first line of defense against the wild, overdefensive, African kind. This will mean a constant job of informing neighbors and public officials about the value of keeping bees in urban and rural areas so as to compete with wild populations. Part of this effort could well be to make one's services as a "Bee Consultant" available to public officials who will need good advice about matters involving nuisance colonies and swarms.

As a "Bee Consultant", a beekeeper can become more assertive and influential, literally wearing a "white hat" by taking the lead in community efforts to control "unwanted" bees. The latter practice has been advocated, suggesting that if a community does not have an ordinance dealing with honey bees, local beekeepers should help draft one.

Another "proactive" strategy is to develop a Code of Practice. This is true in other areas of the world as well. In New Zealand, an important reason for contemplating a code of practice is that some beekeepers are reporting difficulties with local government. This includes charging license fees. In addition, local authorities are using the public nuisance by-law to remove all beehives located within municipal boundaries. A code of practice is seen as an effective counter to such problems, because councils tend to use them as the basis for local body legislation.

A code of practice called "certification" is also being considered in the United States at the present time. A draft model certification plan has been drafted and is being made available for states to implement through their apiary laws.

Beekeepers are used to being stung, and take it in stride as a necessary part of keeping honey bees. This intimate association with bee stings also means that beekeepers are a major source of information about them. Unfortunately answers to questions from the fearful average citizen, have often ranged from the blazé to the sublime – definately NOT to our benefit. Q

QUESTIONS?

Ants, And More

Q. What can I do about ants and other insects in my hives? In one of my hives ants have been getting into the combs and I am afraid they will damage the brood and honey

Leroy S. Yoder
Flemingsburg, KY

A. In my latitude, and probably yours, the bees themselves easily repel ants if the inner cover hole is left open and the hives themselves are up off the ground at least a few inches. I have never seen ants actually getting into the combs of a strong and healthy colony. The one occasional exception to all this is a large black wood-chewing ant that sometimes, but rarely, barricades its nest against the bees under the inner cover and even chews up through the bottom board. Even here, the best prevention is a strong colony, able to fend off foes. I know of no insect, in my latitude, that poses any threat to a strong colony. Wax moths threaten only a weakened and demoralized colony, and parasitic mites are not insects. This does not include, of course, fire ants, found in the south, and certainly termites, that attack actual wood.

Wax Moth Menace

Q. My honey supers sat in my honey house for two or three weeks before I extracted them, and I then found severe wax moth damage, especially in the dark combs. The virgin combs were not damaged. The building itself is tight and moths should not be able to get in. I'll have to discard some of the damaged combs, but I hate to get rid of all of them. Will the bees take care of the moth problem when I put the wet supers back on? What can be done to prevent this kind of damage?

B. Hardie
Kokomo, IN

A. Any supers brought into a honey house should be assumed to be contaminated with wax moth eggs, especially those with old combs. In a honey house they then develop and spread very fast, attacking first the combs with pollen and combs that have had brood. The best way to control wax worms is to expose the combs to winter cold, and/or to fresh air. Some beekeepers stack their empty supers on the ends, exposing both tops and bottoms to fresh air and, if possible, daylight. Combs that have not been too severely riddled can be restored by the bees.

SPACERS

Q. Are frame spacers a good idea?

Verne M. Marshall
Geneva, NY

A. Metal spacers fastened to the inside of the hive are certainly not required for achieving correct spacing. If you use ten frames the correct spacing results almost automatically, and correct spacing for nine frames is achieved by simple visual inspection. You simply leave about the same space between each adjacent pair of frames. A problem with spacers is that, once propolis has accumulated, it is extremely difficult to remove frames without breaking them.

No Smoking

Q. Does smoking the bees in a comb honey super cause the bees to leave, or do they puncture the cappings to withdraw honey?

John Iannuzzi
Ellicott City, MD

A. I have never found that smoking bees causes them to vacate a super, and yes, if you blow smoke into a section super then not only may the bees puncture the cappings, you also risk discoloring the cappings with smoke or soot.

Fall Queens

Q. Will a colony with a failing queen accept a new one in the fall? Or should they be left to raise their own?

James Lee
Odessa, FL

A. A colony of bees that has a queen, even a failing one, will seldom accept a new queen until that first queen is removed. A colony with a failing queen eventually supercedes her, that is, raises a new queen.

Editor's Note: A supercedure queen has an unknown genetic past. If you are requeening in the fall (a very good time to do so), replace your old queen with one that has been bred for the qualities you require. Queens are less expensive in the fall, and come spring, your colony will be raring to go, without the typical break in the brood cycle caused by requeening then.

Pesticide Problems

Q. I'm just starting with bees. My neighbor raises Christmas trees and treats them with Sevin®. Wild flowers grow between the rows of trees. Is this going to cause problems for me?

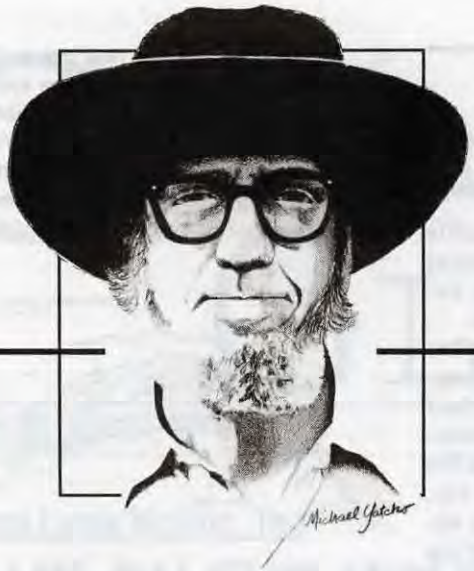
Doug Wallman
Roscommon, MI

From Our Staff: Perhaps, especially if your bees are actively visiting those flowers. Your neighbor should re-read the label, because it is illegal to apply a pesticide to flowers being actively visited by bees. Removing the flowers (mowing) should solve any problems.

Questions are welcome. Address: Dr. Richard Taylor, Box 352, Interlaken, NY, 14847. Enclose a stamped envelope for response.

ANSWERS!

Richard Taylor



BEE TALK

RICHARD TAYLOR

Box 352, Interlaken, NY 14847

"You can learn a lot about your hive without ever taking the cover off."

My measure of a beekeeper is how much first quality honey received in relation to the amount of work spent getting it. Not everyone would agree with this, of course. Some think the best beekeepers are the big commercial people who deliver their crops to packing plants in 55-gallon drums, while for others the model is the beekeeper who has maybe a dozen hives and spends hours and hours fussing over them. My ideal is between these two. What I have in mind is the beekeeper who spends no more time than necessary at the craft, but spends it very well, and who gets decent crops of the very highest quality.

The point I'm getting at is that you don't need to spend an awful lot of time and work with your bees to get good results. But you do need to spend it well, having a good but simple system of management, and not wasting your time with a lot of things that don't count. Going through your hives all the time, checking brood patterns, looking for queens, marking them, maybe clipping them – that's the sort of thing I have in mind as wasting your time with a lot of things that don't count.

Managing your bees properly doesn't require opening the hives up very often; a couple times in the spring, as part of swarm control, and that is about it. After that the important thing is getting supers *on the hives on time* and, if you are a comb honey beekeeper, getting them *off on time*. Those are simple steps, requiring no skill and little work, but they are often neglected.

We had the wettest July on record this year, and I imagined the bees wouldn't be making much honey. I learned otherwise when I checked though, and found lots of comb honey supers filled right up and the bees urgently needing more. There are things you cannot put off, rain or no rain. It is always later than you think.

Actually, you can tell a lot about a colony of bees without looking into the hive at all beyond, perhaps, having a look at the inner cover. You don't have to pull out any combs in order to know the most important things.

For example, if the bees are carrying in pollen then you can assume the colony is queenright. You don't have to examine the combs for brood.

And if the entrance is crowded, with perhaps some bees clustered there, then that colony is a strong one and is probably storing a lot of honey. If you want an even better idea of how strong it is, look on the inner cover. If there are lots of bees there, it is strong, and the supers are likely to be full.

Sometimes bees are plastered all over the front of the hive. Beginners are often alarmed by this, thinking it portends a swarm, even in late summer. It doesn't. It is more likely to be a sign that there is no nectar in the fields, and this will be further confirmed if you find the bees are very cross. Sometimes, on the other hand, such clustering indicates a very high humidity. When it is very hot and humid the bees are apt to do just what we do, go out on the porch and loaf, especially if there is not much else to do.

Sometimes, though, you find very little activity at the entrance of a hive you thought was good and strong. That, of course, suggests the bees have swarmed. If you look at the inner cover now, and find very few bees there, they have almost certainly swarmed.

If the bees are *arriving* at the hives in great numbers throughout the apiary, then this is likely to mean it's going to rain. The bees can tell. On the other hand, if they are both arriving and departing in great numbers, then this, indicates there is probably a strong nectar flow. To confirm this, glance upward, to see bees streaming in and out of the apiary in such numbers that you wonder how they manage not to collide. That means a honey flow for sure, and seeing it is one of the great pleasures of life.

Of course if you see lots of bees in front of the hive, flying facing the hive, then you know that these are the young bees taking their first flights and fixing in their little brains the appearance and exact location of their hive This is most noticeable in spring.

If you see bees in large numbers leaving the hive in the fall, many of them walking out, parade fashion, instead of flying in a normal way, then they may be trying to escape an infestation of tracheal mites. You are not very likely to see this, because it is apt to happen when you are not around. Then what you'll find, in the spring, is a hive with still lots of honey, but no bees, or perhaps only a few dead bees. That is the classic symptom of tracheal mite loss. Don't wring your hands in despair. Just give that hive a few combs of brood and bees from another colony, and a new queen, and the hive is revived.

If you step into your apiary on a warm evening and hear a low murmur from every hive, and see, perhaps with

Continued on Next Page

BEE TALK ... Cont. From Pg. 521

a flashlight, bees at the entrance fanning their wings, then you know that a lot of nectar came into the hives that day. The bees are evaporating the moisture from it. It is a wonderful sound.

Sometimes you see bees going in and out of a hive and, at first glance, all appears normal. But if you see no pollen going in, and if the bees are moving quickly, almost furtively, then what you are seeing is a colony, very likely a dead one, being robbed. This is likely to happen in mid- or late-summer, after the early honey flows. That hive has got to be dealt with quickly, or else wax worms will reduce the combs to rubble before you know it, and that is a mess.

Of course what you find around the hive is sometimes a giveaway, too. Scratch marks on the hive suggest a skunk, or maybe a possum is getting supper there. The skunk scratches the front, and when bees come out to investigate, he swats them with his paws and eats them. I once heard a beekeeper who, learning that a skunk was molesting his hive, left a raw egg there laced with poison. The next day he found his neighbor's dead dog nearby. That wasn't a very good idea (and was probably illegal). A better approach would have been to put some chicken wire in front of each hive, sort of rolled up. That keeps skunks far enough away that they can't scratch the front of the hive.

Well, as you can see, you can learn a lot about what is going on in your apiary without opening the hives at all, or at least without taking out any combs. Of course if you suspect disease then you are going to have to take a closer look. But there is even a disease, chalkbrood, whose symptom can be seen at the entrance as little white pellets. Most bee diseases are easily preventable, so if you have taken the proper precautions you don't need to go checking inside the hives for symptoms.

Beekeeping need not be as much work as some beginners imagine and, as Yogi Bera once noted, you can learn a lot sometimes just by looking. ○

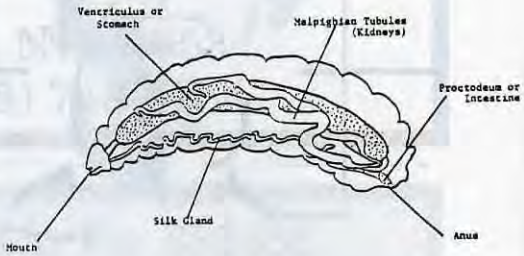
(Questions and comments are welcomed. Use Interlaken address and enclose a stamped envelope for response.)

Answers to ?Do You Know?

1. **True** Nurse bees begin to visit cells as soon as eggs are laid and continue at frequent intervals throughout the duration of the egg and larval stages.
2. **False** During the first two days after hatching, nurse bees continuously supply the tiny larvae with far more food than can be consumed (mass provisioning), so that larvae appear to float in the milky-white food. During the third day, somewhat less food is provided in advance of needs, so that by the end of the day all excess has been consumed, and thenceforth a larva in a worker cell receives food only at intervals (progressive feeding).
3. **False** The hatching of the egg into the first larval stage is almost indiscernible, and the larva slowly becomes exposed as the embryo moves and the egg membrane dissolves. Insects normally hatch from their eggs by rupturing the membranes. The gradual dissolving of the egg membrane by a fluid that originates from within the egg appears to be unique to honey bees.
4. **True** Recent studies associated with kin recognition have demonstrated that worker honey bees can discriminate between sister and half-sister workers and queens in larval and adult stages.
5. **False** Africanized worker honey bees have shorter developmental periods for all developmental stages than European honey bees.

	egg	larva	pupa	total
European	3.0	6.0	12.0	21.0
African	2.9	4.2	11.4	18.5

6. **False** Larvae have simple mouthparts which lap up large quantities of food placed in larval-containing cells by adult workers. The larvae are even able to rotate within the cells to get to food not placed directly next to their mouths. The 3,000+ nurse bee visits are necessary to supply adequate supplies of food.
7. **False** Drone larvae grow larger than either workers or queens. Worker weights at capping are approximately 140 mg; queens and drones weigh about 250 and 346 mg, respectively.
8. **False** Peak drone rearing in the temperate regions precedes the emergence of virgin queens in spring, about four weeks before swarming. Colonies produce fewer drones in the summer when few virgin queens are produced.
9. See diagram below.



10. Body wastes are stored internally during larval development so that the food surrounding each larva is protected from fecal contamination.
11. A) days 8-9
    B) day 3
    C) day 4
    D) day 10
    E) day 20
    F) day 11
    G) days 9-10
12. The chorion is the outer shell of the egg which protects the developing embryo until the egg hatches. The micropyle is the tiny opening in the anterior end of the honey bee egg through which spermatozoa gain entrance to fertilize the egg.
13. Molting is the process during which the larva casts off its exoskeleton and grows a new larger one to accommodate its increase in size brought about by feeding in the periods between molts. When molting occurs, the skin splits over the head and slips off the posterior end of the larva. This process normally takes less than 30 minutes.

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

GLEANINGS GLOBE

SEPTEMBER, 1992 ALL THE NEWS THAT FITS

Trap Lines Moving, Too

AHB ON THE MOVE

Motorists throughout Central and East Texas may notice blue boxes hanging along highways. But officials with the Texas Apiary Inspection Service note that it's not Christmas in July.

The boxes, hung in one-mile increments, actually are traps used to detect Africanized honey bees, according to John Fick, an inspector with the Texas Apiary Inspection Service.

"We ask that people stay away from the boxes to be sure that they aren't confronted with bees," Fick said. "We are placing them throughout this area to try to detect northern migration of Africanized honey bees."

Fick said the inspection service, a unit of the Texas Agricultural Experiment Station at Texas A&M University, has installed a new trap line from Austin to Hempstead on U.S. Highway 290, from Hempstead to south of Conroe on Farm Road 1488 and from Interstate 45 south of Conroe to Beaumont on Texas 105.

Trap boxes will not be hung at roadside parks, historical markers or other highway spots frequented by people, Fick said.

The U.S. Department of Agriculture-Animal and Plant Health Inspection Service (APHIS) maintains trap lines from the gulf Coast to Alpine in southwest

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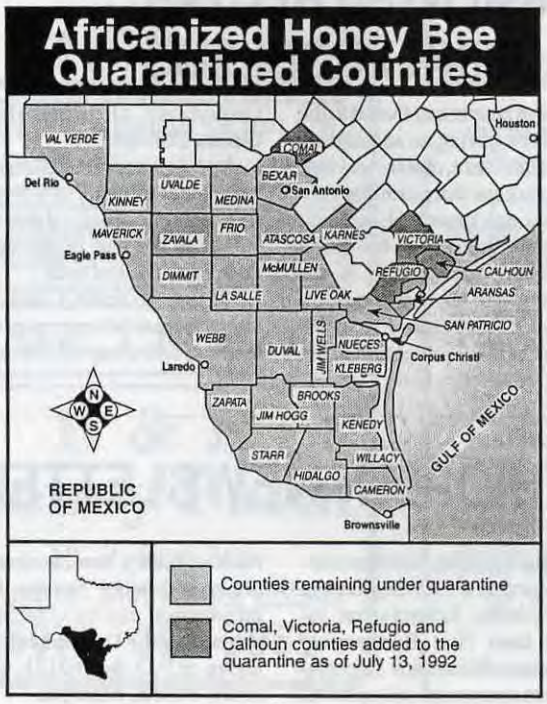
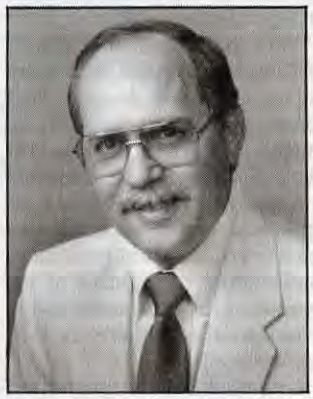


Gamber Retires, Sort Of

HONEY BOARD HAS NEW LEADER

Binford Weaver



Bill Gamber

Binford Weaver, of Weaver's Apiaries, Navasota, TX was elected Chairman of the National Honey Board at their annual meeting in Denver, CO in late June.

Weaver, who chaired the Advertising and PR committee has been involved in Honey Board activities since its inception, and has been an ardent supporter of the Board's goals and was a unanimous choice for the position.

Neil Miller, a packer from Blackford, ID was picked as Vice Chairman, and, his son, John was appointed a member of the board and elected Chairman of the Advertising and PR committee, replacing Weaver.

Bill Gamber, of Dutch Gold Honey retired as Chairman because his term has expired but will continue as a 'Past Chairman' consultant.

NATIONAL HONEY MONTH

The National Honey Board and the U.S. Secretary of Agriculture, Edward Madigan, have declared September as National Honey Month in honor of the nation's most efficient factory – the beehive.

National Honey Month press kits are available on request for beekeepers to share the honey message with their local newspapers, radio and television stations.

The 1992 press kit includes feature stories and photographs for agriculture, business and food editors. "The main goal of the feature stories is to give beekeepers a selling tool," said Sherry Jennings, industry relations director. "The media are always looking for good stories and people are fascinated by honey bees."

The kit offers suggestions on ways for beekeepers to use these stories to publicize National Honey Month. In addition, kits contain a floral source sheet, colorful background information sheets, recipes and honey tips.

Order your Honey Month press kit today. Write to the National Honey Board, 421 21st Ave. #203, Longmont, CO 80501-1421.

Light Trucks Not Good

BEEKEEPER'S TRANSPORTATION THREATENED. CAFE STANDARDS NOT SAFE.

American farms, ranches, and beekeeping outfits are among the most productive anywhere – so much so that the United States for decades has not only fed itself but also helps feed the world. This astounding productivity is the result of hard work, agricultural know-how – and having the right tools for the job. Among ranchers, farmers and beekeepers the list of indispensable tools always includes pickup trucks and other utility vehicles.

Now these tools could be lost, if Congress imposes drastically higher Corporate Average Fuel Economy (CAFE) standards on future cars and light trucks sold in the U.S. Higher CAFE standards could force automakers to downsize or eliminate full-size pickup trucks and utility vehicles, and sharply raise prices of the remaining full-size models to discourage sales. Either way U.S. agriculture loses.

American beekeepers need large, affordable pickup trucks on the market, both for safety and utility. With drastic CAFE legislation, Congress is asking us to carry heavy loads on rough terrain in undersized vehicles, which doesn't make any sense. Also, some members of Congress don't seem to care that the farm family may have to pay more money for less truck – pickups that are lighter, smaller, less sturdy – and less safe.

Proposals pending in Congress would increase CAFE levels for light trucks and vans to 30 mpg from the current level of 20.2 mpg. Only a very few trucks can meet these standards – and they are small, low-powered models, which don't meet the needs of most beekeepers. Yet those could be the only trucks of the future if the drastic CAFE proponents have their way.

Secretary of Agriculture Madigan recently joined other federal officials in opposing drastically higher CAFE standards. The American Farm Bureau Federation, National Cattleman's Association, National Grange and other farming groups are firmly on record against such proposals. Farmers, ranchers, beekeepers and other rural Americans should let their members of Congress know of their strong opposition to any legislative proposals that would directly or indirectly force unrealistic increases in CAFE standards.

Prepared by George Berg, an agriculture and transportation consultant, and past assistant director of national affairs for the American Farm Bureau Federation in Washington, DC.

AHB ... Cont. From Pg. 523

Texas. APHIS bee program manager Elba Quintero of Harlingen said that agency also will operate a trap line between San Antonio and Victoria, from Victoria to Giddings and Sealy to Brenham.

The USDA-Agricultural Research Service monitors a trap line along the Rio Grande from the Gulf Coast to Rio Grande City.

State and federal agencies have monitored the insects' paths with a network of trap lines since before the first swarm of Africanized honey bees migrated into the United States on Oct. 15, 1990, near Hidalgo, Texas. When bees are detected and begin to build populations in an area,t he trap lines often are shifted north to determine movement.

Normally, a "pioneer" swarm will arrive in a new area in advance of the main front. By detecting such swarms in trap boxes, the agencies are able to notify local authorities and the public to be aware of the Africanized honey bees' presence.

Detections also often result in the quarantine of the county where Africanized honey bees are found. That means beekeepers may move commercial bees inside but not out of quarantined counties. Currently, 33 counties are under quarantine for Africanized honey bees.

Don't Like Mandatory Part

ONTARIO BEEKEEPERS REJECT PROGRAM

Ontario beekeepers have rejected a proposal to pay a special marketing and research fee to the Ontario Beekeepers' Association.

In a vote conducted by the provincial government, 66% of the beekeepers who voted opposed the new fee system.

"I can't say it was really a surprise," said association president David McMillan. "None of us are making money these days."

The association wanted to be designated as the representative association for beekeepers under the provincial farm products marketing act. It also wanted the authority to collect fees from producers with 50 or more hives.

It proposed a mandatory annual fee of C$1.50 a hive to be used to increase and improve the marketing, research and educational initiatives for Ontario honey and related products such as pollination services, queens, nucs and package bees.

McMillan said the association had, among other things, planned to use the money for promotional marketing, attracting Ontario consumers to honey through such things as newspaper advertising.

"It was partly the economic times," he said of the rejection. "It was also partly the fact it was mandatory – they didn't want to tie themselves into paying year after year."

The association had also sought to be designated as the representative association for beekeepers under the Farm Products Marketing Act.

The commission said it generally requires that two thirds of producers support a new measure before recommending its adoption and as a result it would not recommend designated status for the association.

McMillan said he wasn't sure what the association would do next.

"We're definitely not going o give up," he said. "We'll review the situation at the next director's meeting, but we certainly can' do the ideas we had in mind.

"We're definitely not going to give up the ghost – we'll look at what we can do instead."

European Bees Are Short Hitters

FERMENTED NECTAR CAUSING PROBLEMS

European bees transplanted to the tropics are getting an added buzz from nectar there, researchers say.

Honey bees that normally consume enough sugar-rich nectar to last them through a European winner are getting high in the tropics, where the nectar can ferment, said Errol Hassan, a senior lecturer in plant protection at the University of Queensland's Gatton College.

And they can find themselves locked out of the hive when they stagger home drunk – if they don't smack into a tree or drown in a dam first, Hassan said.

"If they do make it back, their altered social behavior may mean they are not accepted," he said.

ETHIOPIAN NEWSLETTER

The Ministry of Ag. Environmental Production & Development in Addis Ababa, Ethiopia has released their first Beekeeping Newsletter. It contains information on management of log hives, races of honey bees, beekeepin plants and honey storage. Mor information can be obtained by contacting the Department listed above, at P.O. Box 62181, 62347 Addis Ababa, Ethiopia.

Obituary

LELAND M. HUBBARD

Leland M. Hubbard

Born May 23, 1904 in Springville, MI, the son of Percy and Vinnie Lee Hubbard. He was a lifelong resident of the Onsted, MI area and wintered in Belleview, FL. He married Mary Martin in 1967, in San Francisco. She survives.

Founder of Hubbard apiaries of Onsted, MI and Belleview, FL, Lee was a pioneer in the honey and beekeeping business. One of the first bee supply manufacturing companys in the USA, Lee transformed Hubbard Apiaries into the largest honey processor in the world under one roof. He still operated over 500 colonies of bees at his time of death.

He was a graduate of Adrian High School in 1923, and took short courses at Michigan State Univ. in beekeeping. He was a life member of the Elks Lodge #429 in Adrian, life member of the Tecumseh Club, member of the American Federation of Beekeepers and the American Honey Producers Association, and was a past director of Onsted State Bank and United Saving Bank.

Survivors, besides his wife, include two sons, James and Richard Hubbard, both of Onsted; one daughter, Mrs. Ernest (Jeanne) Groeb of Onsted; 13 grandchildren; 27 great grandchildren; and one brother, Ovid Hubbard of Onsted.

Tape & Packet Available

PRIDE PROGRAM

The National Honey Board has developed a special education program titled PRIDE to help beekeepers maintain quality standards in honey production (see *Bee Culture*, Aug. 1992).

The PRIDE Program consists of an eight-minute videotape and an educational packet. The video features beekeeper Bruce Beekman and highlights safe honey production practices from the beehive to the honey house. The packet includes tips for beekeepers on proper chemical use, honey house sanitation and details on record keeping.

"Beekeepers who participate in the program show their commitment to the safe beekeeping and honey handling practices that give honey its image as a pure and natural product," said beekeeper Randy Johnson, chairperson of the Honey Board's industry relations committee. "That image is what ensures honey's marketability."

The complete PRIDE Program, including the videotape and educational packets, may be ordered from the National Honey Board, 421 21st Avenue #203, Longmont, Colorado 80501.

SEND YOUR NEWS TO *THE GLOBE*

Honey To Saudi

NEW STANDARDS FOR HONEY

The National Honey Board sponsored a Saudi Arabian technical seminar to promote U.S. honey standards, testing procedures and quality control, May 25 in Riyadh.

A Honey Board delegation met with representatives of the Saudi Arabian Standards Organization to encourage revisions to their standards for imported honey. United States honey has been blocked from entry into the Middle East due to rigid honey standards.

The National Honey Board recommended that Saudi Arabia and other Middle East countries adopt revised standards which conform to the World Codex Standards for HMF and diastase levels for honeys. The World Codex Standard sets a maximum level of 80 milligrams per kilogram for HMF and a minimum level of three on the Gothe scale for diastase.

A presentation was made by the U.S. delegation to the Saudi Arabian Standards Organization officials and over 120 honey trade representatives from Saudi Arabia, Kuwait, United Arab Emirates and Quatar. Opening remarks were made by U.S. Ambassador to Saudi Arabia, Chas W. Freeman.

"Standards have a significant impact on the level of trade between the United States and the Middle East," said Freeman. "These standards will determine the types and varieties of honeys that are available in the market worldwide."

Diego Garcia

"The Saudi Arabian Standards Organization is taking steps to adopt the standards presented by the National Honey Board delegation," said Diego Garcia, export director for the National Honey Board. SASO expects to have officially announced the revised standards by the end of August.

The U.S. delegation included Diego Garcia and Bob Smith of the National Honey Board; Dr. Roger Hoopingarner, MI State University; Dr. Roger Morse, Cornell University; and Jerry Probst, Sioux Honey Association.

NEW STAMPS

Postal Authorities of the Republic of Venda have released four stamps with honey and other bees.

Venda has a land area of 6500 square kilometers and a population of 6000,000 inhabitants. The republic belongs to the Republic of South Africa.

Display Index

BOTTOM·BOARD

Legs

DON COX, SR.

Grampa and I were setting out under the grape arbor. I had just finished weeding the vegetable patch and was rubbing my legs.

Grampa watched me for a while then commented, "Hurt?"

"Yes, stooping over, pulling weeds has stretched a few leg muscles that haven't been used for a while."

That reminds me of comments I heard at one of the bee meetings. The speaker that evening was beekeeper Ugli. He talked about the problems some beekeepers had because of their legs.

Regular Legs

In-The-Way Legs

"Tell me about it."

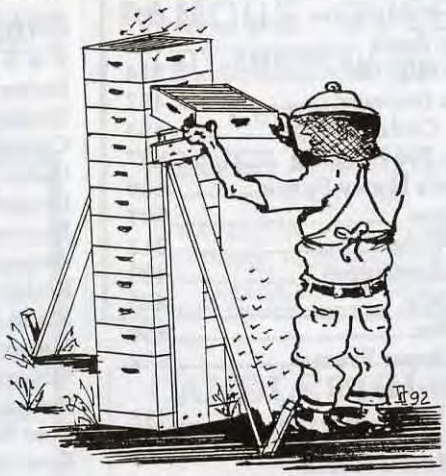
"Well, it was like this," he said. "Beekeepers are forever wishing for two pairs of hands, a stronger back and tougher knees and legs."

"If a beekeeper had developed naturally, he probably would look different. Maybe he would have developed telescope legs. Or, legs with two knees on each leg, one in front and one behind.

"Why?"

"So that his legs could be adjusted for the low or tall stack of supers. However, the beekeeper is constructed as imperfectly as other people. All he can do is what he is capable of doing."

Those who aren't beekeepers can't imagine how much your legs are in the way when there is no place to stand. How impossibly short they are when you have to reach the top of a stack of supers during a good nectar flow.



Telescopic Legs

Grampa continued, "If a beekeeper only had wings to be able to float over the hives when placing another super on top of the stack. But, even telescop legs would be great for working the high stack."

Looooooong Legs

"But, how long they are when trying to clean out the hive entrance. Those folding legs, with the double knees, would help in getting down to the entrance of the hive."

"But then, long legs certainly help when you have to get into the hive to check for stores, disease, the queen and the general condition of the colony."

"Beekeepers certainly need a strong set of legs when it comes to lifting those heavy deep supers onto the flatbed wagon, thus saving his back."

Ma called that supper was ready, so, Grampa and I started for the house. Grampa never did say whether Beekeeper Ugli had said anything more about legs.