Bee Culture

FEBRUARY 1993

INSIDE . . .

THE PACKERS

RECORD KEEPING I I

Febru

COLUMNS

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FEATURES

The Queen & You

Good colony management requires an understanding of queen management. This is the best look at that most important aspect of beekeeping we've seen. February *is* a good time to think about queens.
(by Richard Bonney)
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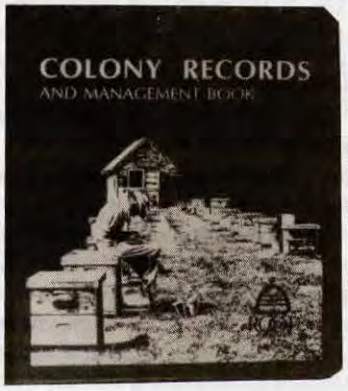

Cover

Keeping good records makes every aspect of your hobby or business easier and more profitable. Records I I has a host of ideas on how to keep good records.

A Valentine For My Bees

Spring feeding should be a last resort effort to get your bees to better times. But if you must, you must. Here's a half-dozen techniques to get you through to that first spring flow.
(by O.B. Wiser)
80

Records II

Goood records make good beekeepers. Our Weekender looks at several ways to keep those good records, easily.
(by Jeff Ott)
83

Meet Andrew Matheson

Just over a year ago Andrew Matheson became Director of the International Bee Research Association. His background prepared him well for the job, but it's a very big job.
(by Kim Flottum)
86

The Packers

The honey packing industry is as varied, and as variable as the individuals who make it go. Six of them, from a very, very small operation to the biggest there is let us take a look at what makes each one tick.
(by Kim Flottum)
92

Take The Bite Out Of Mites

A simple procedure, carried out the right way can help reduce *your* mite losses this year, and next. It doesn't require expensive equipment or lots of time. Try this this year and see for yourself.
(by Dennis Whetzel)
100

FIRE!

A California forest fire took its toll on the land, the people ... and some of the bees. An eyewitness account of the battle's aftermath.
(by Larry Goltz)
103

INNER · COVER

Standing Around

Between time off for the holidays and attending a whole slew of meetings during December and January there has been little time left over for this space this month. Not a common occurrence in the last seven years, but occur it did this time.

The meetings were, as is my usual offering, worth the trip, and I learned much of what's going on in this industry on a global, national and local level. While the big picture is interesting to view, and necessary to know about, it's the local talk that has the most color and most information.

I tend to stand around during meetings, listening in, as it were, to any two or three or nine beekeepers talking about anything that sounds interesting. You can learn much just listening, even if you don't get to ask questions. And since the beekeepers at the larger meetings tend to have varied geographical, market, regulatory and other backgrounds the discussions can be far reaching.

If you're outgoing enough it's usually easy to sort of ease in to one of these talks, and if you're not too nosey, or try to change the subject too often, most folks don't mind. After all, we're all beekeepers under the skin.

But sitting in on the scheduled talks is certainly worth your time, don't get me wrong. Well, most of them will appeal to you anyway. I always miss some, and never miss others and I suspect most people are the same. Scheduling a meeting can be tricky since you need to appeal to most of the people most of the time.

The global and national picture can usually be gleaned from the journals, if you're interested, and can find where it's printed. You can read what those in the know have to say, and their talks are seldom different. But it is good to have a face with a name and place. And sometimes there is something new that they haven't already published, or they're using old skills in a new way – worth the trip if you haven't heard it.

The 'politics' of meetings, whether local or national, can be critically interesting, or boring beyond belief, depending on your dedication and commitment. I'm somewhere in between usually, and if I have to miss something, those sessions are usually close to the top of my list.

I guess I'm a fan of small talk. Where what may seem like insurmountable problems to you have already been solved by somebody else, who easily explains the how-to of it to you. And, if you're looking for an excuse to get away, that part of these meetings can make you money, save you money, make life easier, or faster

At your next meeting (what? You don't belong? Try one this month!) stand around awhile. You'll learn something, or teach something, or meet somebody, or just enjoy the sounds of beekeeping.

Kim Flottum

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NEXT MONTH

Think spring next month because it's time to get everything in order and in gear. The bees won't wait, and if they get going before you do, it's already too late.

Our Weekender takes a long, hard look at a product that may become very important in the months and years ahead. The 'Bee Vacuum' may be on the top of the list for every beekeeper who deals with swarms. There's one on the market now, and we've spent a season working with it and the manufacturer on its use. If you've considered buying (or even making) one of these you won't want to miss this.

Spring management is necessary, and timing and the rest can be critical to your (and your bees) success or failure. Roger Morse takes a look at this timely topic next month so stay tuned, and avoid some of the usual mistakes, and pick up a few pointers along the way in 'Think Spring'

Buying queens this year? March isn't too late to order, and we've got a quick look at the Midnight and Starline hybrids you can purchase from some suppliers. Find out how these bees come to be, the organization behind their production and the day-to-day how-to's. Mel Greenleaf, who oversees the operation, gives a good overview of these special breeds next month, too.

Plus all the regulars looking at the things of spring, all the things you'll need to know to be a better beekeeper – next month in *Bee Culture*.

MAILBOX

■ Systems Work

Enjoyed Adee's honey production operation as described in the Nov. and Dec. issues of *Bee Culture*.

I have used a management system similar to theirs since 1982. In the past ten years, I have improved on my system, going from 60 lb. average per colony in 1982 to a 260 lb. average in 1992. I had 58 colonies in 1992 and totaled 15,000 lbs. A system that stops swarming and requeens yearly, will really pay. Beekeeping can be enjoyable with the right system and profitable.

Everything Adee's do, they do to make honey. I also do the same.

Without a system, beekeeping can be very boring and unenjoyable. With a system such as mine it can be enjoyable and fun.

Louis Cranson
McGraw, NY

■ Jars, Revisited

I enjoyed the article in the Dec. issue on "Jars" by L. Edwin Rybak, because, like him, I too use food jars. But up to now have passed up pickle jars for the obvious reasons.

Let me make an addition to what was said in the article. Notice in the picture at the top of the page above Mr. Rybak's story. The first three covers on the bottles on the left end advertise what the contents used to be. This is not good for sales. In fact, people think that you are a real cheap-skate, recycling bottles.

What I do was recommended to me by Charlie Fisher, an old time in our club. He spray paints the cover first with a coat of flat black paint. This covers all the printing on the cover. When the paint is dry, spray it again with a glossy white paint. These covers will pass anywhere.

Robert B. Neumann
Troy, OH

CORRECTION

In the Tracheal Control Chart, 1/93, prices for Miticur, Apistan and menthol are variable by amount and location purchased. Menthol is effective between 65°-100°F. Column headings were misaligned by the computer. Tracheal mites should be over the 3rd column, Varroa mites over the 4th. We regret any inconvenience.

■ Keep Quality In

On the question can you reliquify granulated honey in a microwave oven. The answer yes – which is true. But what does it do to the quality of the honey?

Isn't it about time that we as beekeepers understand that anything we do to heat honey in a microwave you have destroyed the best qualities of honey completely.

Heating it other ways up to 117° will not destroy its being classified as raw honey.

If we as beekeepers do not know the difference between raw honey and high-heated or pasteurized honey we are not informing ourselves, our customers and the public of the finest qualities of honey.

James Hogemeyer
Madisonville, TN

■ Brush it on?

I would like to comment on my experiment with Tracheal and Varroa mites this last year.

I lost 15 hives (out of over 30) – mostly due to tracheal mites. This happened inspite of menthol packets and terramycin patties installed late summer 1991 to spring 1992, here in Southeastern TN.

The bees cut down comb and surrounded the menthol packets with it! Only *one* terramycin patty was slightly used! I even found a couple live and large wax moth larva lying beside the menthol.

Now, the varroa mites really hit one apiary, heavy, before I was able to inspect these hives. To top it off, the combs had foulbrood, too. I've never had foulbrood in 15 years or lost so many hives, till now. This happened near the end of summer (1992) honey flow.

Now I order Apistan strips for all hives.

In the meantime, waiting for the Apistan to arrive (one week), I immediately got "store brand" vegetable shortening (three lb. size), not butter type. I brushed it *heavy* on all my hives bottom boards, slatted racks, top and bottom of inner covers and top bars of all frames, (surplus honey supers removed first), so the bees and mites would have to walk and rub on it.

Don't you know, that *right away* the bees started looking and acting better (happy). They seemed to have no problems moving around or moving their wing and flying normally.

A week later, I installed the Apistan strips, all survived, except for four. I did the same thing this late summer. So far, so good, time will tell. This shortening cost less than three dollars per three pound can and did ten hives.

Voron Baughan
Chattanooga, TN

Continued on Next Page

MAILBOX

■ Kids in NZ

Copy of a page from a letters to the Editor page from a recent issue of your journal was sent to me recently.

Titled "Reader Bee" the letter was written by Margaret Tanguay of Los Angeles. It concerned a program to combat public ignorance about bees by focussing on grade school kids.

As a subject of considerable interest and activity by our New Zealand domiciled company we would be obliged if you could either enlarge on the L.A. County Beekeepers program or conversely put me in touch with someone who could.

While we understand it is always difficult to open correspondence of this type we trust in the interest of kids everywhere you will make an exception in this case.

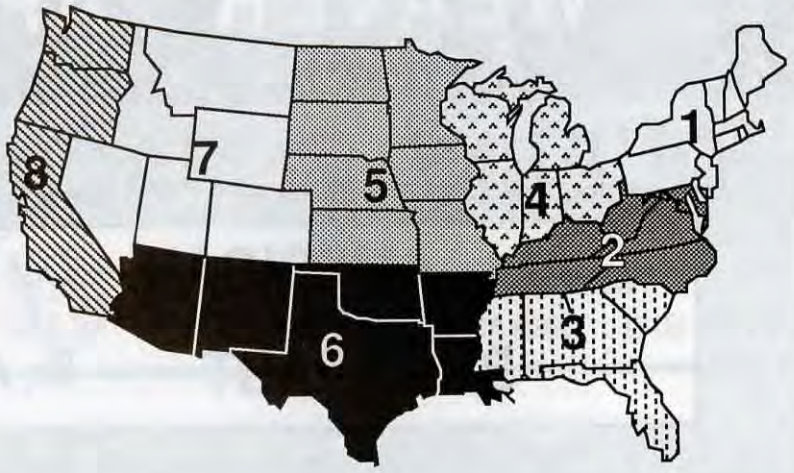
W.J. Bracks, Marketing Director
Comvita New Zealand Limited
P.O. Box 444
Te Puke, New Zealand

FEBRUARY Honey Report

February 1, 1993

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.	46.10	40.77	42.50	43.00	40.25	43.25	43.55	39.50	29.50-58.00	42.37	42.13	41.50
60 # Am.	43.72	40.10	41.65	39.50	38.10	41.15	41.70	35.25	31.10-57.00	40.18	40.58	39.70
55 gal. Wh.	.600	.541	.531	.565	.550	.555	.528	.610	.41-.79	.561	.576	.583
55 gal. Am.	.558	8.511	.510	.533	.540	.515	.510	.555	.45-.75	.530	.530	.544
Wholesale - Case Lots												
1/2 # 24's	20.10	21.13	21.25	20.00	18.66	21.00	22.25	22.50	15.93-25.80	20.85	20.96	19.29
1 # 24's	29.15	30.00	33.75	31.55	28.19	32.50	30.20	29.00	15.50-30.00	30.61	30.67	28.80
2 # 12's	27.65	28.70	33.00	27.15	25.00	26.12	29.00	31.20	22.80-40.00	28.48	28.12	26.99
12 oz. Bears 24's	26.70	27.62	29.85	25.43	26.11	25.55	27.95	22.18	13.75-36.00	26.52	26.60	26.50
5 # 6's	30.95	29.00	32.15	30.66	27.25	30.10	27.30	27.00	25.00-46.00	29.31	30.12	29.29
Retail Honey Prices												
1/2 #	1.15	1.25	1.27	1.13	1.00	1.15	1.19	1.25	.80-1.75	1.22	1.17	1.14
12 oz. Plas.	1.65	1.60	1.79	1.48	1.38	1.45	1.55	1.33	1.25-1.98	1.52	1.55	1.47
1 #	1.73	1.81	1.78	1.82	1.66	1.89	1.91	1.75	1.45-2.50	1.79	1.80	1.70
2 #	3.16	3.19	3.00	2.99	2.63	2.74	3.12	3.13	2.25-4.00	2.98	3.09	3.00
3 #	4.75	4.60	5.10	3.88	4.32	3.85	4.45	4.44	3.50-6.25	4.41	4.34	3.90
4 #	5.85	5.33	5.65	5.38	4.66	5.15	5.10	5.20	3.99-7.40	5.28	5.25	5.02
5 #	6.99	6.54	6.09	7.03	5.89	6.11	6.15	6.10	4.44-8.50	6.35	6.47	6.46
1 # Cream	2.19	2.50	2.25	1.99	1.95	2.53	2.21	1.95	1.49-2.75	2.20	2.21	2.09
1 # Comb	2.95	2.81	3.00	3.00	3.33	3.13	3.33	3.77	2.25-5.00	3.18	3.25	2.87
Round Plas.	2.39	2.53	2.60	2.75	2.25	2.50	2.50	2.75	1.95-3.75	2.63	2.53	2.47
Wax (Light)	2.02	1.21	1.29	1.27	1.35	1.88	1.15	1.29	1.10-2.80	1.45	1.83	1.41
Wax (Dark)	2.02	1.19	1.19	1.19	1.12	1.45	1.10	1.12	1.00-2.75	1.28	1.45	1.18
Poll./Col.	33.75	22.50	22.50	30.00	30.00	28.00	30.75	33.50	20.00-40.00	28.88	30.53	30.86

Region 5

Sales and prices appear strong across the region with supply and demand high. Sellers optimistic. Colony conditions were pretty good a month ago, but tough to tell for another month.

Region 6

Sales doing well in the region, demand and prices steady. Wet weather bodes well for spring flows and good production. Early spring will reduce feeding, but some areas still troubled with mites.

MARKET SHARE

Varroa mites continue to spread, and unchecked (and untreated) colonies are in peril. Check as early as possible so you can treat BEFORE the honey flow. Infested colonies will be pretty much gone by harvest if you don't. No colony no honey. Watch the buy back some warn, since imported honey not as bad as forecast earlier.

Region 1

Prices down just a bit, but demand steady as cold weather makes its mark. Sellers anticipate a slow recovery to higher prices as region gets stronger. Bees in good shape generally, some light and will need feed.

Region 2

Prices seem to be improving, and sales reported strong for season. Colonies in good shape as early warm weather permitted inspections and cleansing flights. Mites appear to be decreasing, but spring will tell.

Region 3

Prices stable to rising, but not across the board. Erratic weather hasn't helped. Bees in good shape, mite problems seem to be decreasing, a bit. Bulk sales have been affected by recent imports, but retail about the same.

Region 4

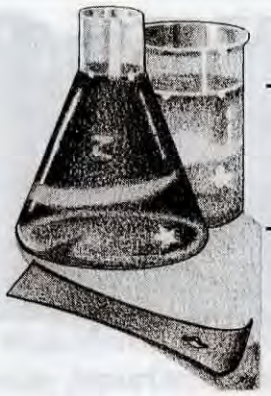
Sales strong, but prices only steady, even decreasing a bit in some places. Demand seasonal, but supply high. Bees in fairly good shape. Early warm weather provided flights, but now most socked in. Some problems in northern areas with mites, still.

Region 7

Sales moderate to strong and prices steady as the best part of winter sets in. Expect more of the same for awhile. Colonies in good shape, but mite problems still showing up, especially in untreated colonies.

Region 8

Sales doing well across the region as wet 'winter' weather returns for the first time in years. Moisture at low levels, snowpack at high promise a good crop this season. Almond pollination strong with rental rates up a good sign.



RESEARCH REVIEW

roger morse cornell university ithica ny

"Blueberry pollination, royal jelly, and monitoring domestic honey for pesticide residues.

Well over 75,000 colonies of honey bees are rented for blueberry pollination each year. The principle states are Maine (lowbush), Florida and the southeast (rabbiteye), and Michigan, North Carolina and New Jersey (highbush). There are more than 40,000 acres of highbush blueberries in the U. S. and another nearly 5,000 acres in Canada. Acreage of all four blueberry species is increasing rapidly and this should open more opportunities to rent bees for blueberry pollination. Highbush blueberry breeding research programs are found in Michigan, New Jersey, North Carolina, Maryland, Minnesota, Arkansas, Mississippi, Texas, and Florida.

Blueberries are capable of setting fruit on 100 percent of their flowers. (This is unlike most fruits; in the case of apples, for example, if seven percent of the blossoms on a tree produce a fruit there is a very good crop.) In case of most blueberries if 80 percent of the flowers set fruit one has a large crop. Highbush blueberry varieties vary in their attractiveness to honey bees with some being very attractive and others relatively unattractive. It has been suggested that the quality and quantity of the nectar may be a factor. From one to three colonies of bees per acre are recommended depending upon the variety to be pollinated.

Only a page and a half of "Highbush Blueberry Production Guide" is devoted to pollination but several important points are covered. The price of this publication is high but there are 168 full-color photographs to illustrate various cultural techniques and field conditions.

The Distribution of Royal Jelly to Adult Bees

Royal jelly is a substance secreted by the head glands of young worker bees. We normally think of it as food for larvae, especially queen larvae and it is found in great quantity in queen cells. However, recent research indicates that about half of the royal jelly produced is consumed by adult bees, including foragers.

In the experiments reported below, nurse bees were injected with a radioactive material that became incorporated into their bodies, especially their brood-food glands and the royal jelly they produced. How this labeled royal jelly flowed around the hive was then measured. Interestingly, "younger workers received larger amounts of jelly than older ones, but considerable amounts were given to foragers." It was concluded that "nurse bees transfer food not only to the brood but also give up to half of their royal jelly to adult members of the colony." The author points out that nurse bees are important in providing protein to the whole hive community.

The long-held view that royal jelly is larval and queen food only does not appear to be correct.

Monitoring Honey for Residues

In 1991, the last year for which we have a report, The Pure Food and Drug Administration picked up and analyzed 103 domestic and 13 foreign samples of honey for pesticide residues. In that year no samples were found that were contaminated with an unregistered pesticide or that were over tolerance. That is good news.

There were 19,082 samples of food analyzed in 1991. The majority were imported foods (10,616). The emphasis in past years, the report states, has been on imported foods but that was not the case with honey in 1991. While a very small number of contaminated samples of food were found, the FDA reports, "The 1991 total diet study results show that intakes of pesticide residues are generally well below the standards."

In this country, three federal agencies regulate pesticides: The Environmental Protection Agency registers or approves the use of pesticides and sets tolerances. The United States Department of Agriculture has a Food Safety and Inspection Service that is concerned with meat, poultry and some egg products. The Pure Food and Drug Administration is the enforcement agency for foreign and domestic foods. Reading this report assured me that our food is safe and that inspection is thorough.

References:

Pritts, M. P. & J. F. Hancock, Editors. *Highbush Blueberry Production Guide.* Northeast Regional Agri. Engineering Service, Ithaca, NY. 200 pages. 1992. ($45.00 Available from NRAES/55, 152 Riley-Robb Hall, Cooperative Ext., Cornell Univ., Ithaca, NY 14853-5701.)

Crailsheim, K. *The flow of jelly within a honey bee colony.* Journal of Comparative Physiology B. in press. 1992.

Food and Drug Administration Pesticide Program, Residue Monitoring 1991. 23 pages. Reprinted from Journal of the Association of Official Analytical Chemists 75. 1992.

? DO YOU KNOW ?

Equipment

clarence collison

With spring just around the corner, it is time to begin planning for the up-coming season. Beginning beekeepers, in particular need to be thinking about apiary locations and having the proper equipment purchased and assembled when the bees arrive. As you study the various equipment catalogs and trade magazines, it becomes evident that the industry as a whole has a lot of different pieces of equipment for various functions that could become overwhelming for the inexperienced individual. Please take a few minutes and answer the following questions in regards to beekeeping needs and practices. The first six 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. ___ When producing extracted honey, the same foundation is used in the supers as in the brood chamber.

2. ___ The color of paint used on the exterior of the hive affects interior hive temperatures.

3. ___ When establishing an apiary, the beekeeper should select morning shade and afternoon sun over morning sun and afternoon shade when limited to these two situations.

4. ___ The best time to work bees is when they are inactive and confined to the hive rather than when they are actively foraging.

5. ___ Bottom boards made of cedar, cypress or redwood generally last longer than those made of pine.

6. ___ When honey bees begin drawing out comb foundation they start at the two ends and build toward the center.

Multiple Choice Questions (1 point each).

7. ___ The full depth hive body holds frames which are:
   A. 17 5/8 inches long, 6 1/4 inches deep
   B. 15 1/8 inches long, 7 1/4 inches deep
   C. 17 5/8 inches long, 9 1/8 inches deep
   D. 15 1/8 inches long, 9 1/8 inches deep
   E. 17 5/8 inches long, 5 3/8 inches deep

8. Honey comb is composed of cells that are _____ in shape:
   A. Octagonal
   B. Hexagonal
   C. Circular
   D. Triangular
   E. Pentagonal

9. ___ Packages of honey bees are normally sold in 2, 3, 4, or 5 pound sizes. A pound of bees is approximately:
   A. 10,000 bees
   B. 15,000 bees
   C. 5,500 bees
   D. 3,500 bees
   E. 2,500 bees

10. When establishing a new colony, how do you know when to stop feeding the colony sugar syrup? (1 point).

11. Please explain why it is desirable for the beginner to start with at least two colonies. (1 point).

12. Listed below are two items associated with beekeeping. Please indicate the function of each item. (2 points).
    A. Apistan Queen Tabs
    B. Follower Board

13. Please explain why the lower two-thirds of end bars are narrower than they are at the top. (1 point).

14. _____ An implement used to insert between the cover and the hive bodies and to pry the frames loose from each other. (1 point).

15. Name three types of honey that require thin surplus foundation. (3 points).

16. Please explain why many beekeepers reduce the number of combs in honey supers to either nine or eight. (1 point).

17 The drawing of comb foundation is difficult unless colony conditions are right. (3 points).
    A. In established colonies, what is the primary condition required for drawing foundation?
    B.Where should the foundation be placed in an established colony to have the greatest possibility of it being drawn?
    C.In a newly established colony without drawn comb, what should be done to stimulate comb production?

18. Please list three reasons why honey bee colonies need a source of fresh water. (3 points).

ANSWERS ON PAGE 110

THE QUEEN & YOU

richard bonney

In the middle of winter, with ice, snow, and freezing temperatures all about, most of us aren't thinking too much about what is going on in the hive. We can assume the queen is laying a few eggs, and later, on some of the warmer days, we may even see a little pollen coming in. A certain air of expectancy prevails and when the nice weather does arrive we can assume the bees will be ready. So, why are we talking about the queen in the middle of winter? Well, why not? The more we think about her, the better we will understand her, and when the active season does arrive, think how much better prepared we will be. Management actions taken with forethought are always better than those performed by rote. So let's talk about her, while it's snowing or raining outside, and there's a few minutes of free time.

Most of us have a reasonable understanding of the life of a queen – the where, when, and how, of her development. We know she starts as a fertilized egg, goes through a sixteen-day development cycle, emerges, mates and, soon after, takes up her queenly duties in the hive. Sometimes our knowledge of the details may be a little fuzzy but we also know that queens only develop from larvae of a certain age, and that conditions both inside and outside the hive can effect her development and ultimate quality. We know these things, but too often we don't put them all together in just the right way and the colony suffers.

Before I explain what I mean, let's examine the queen's development and subsequent life a little more closely so that we are all on common ground.

First, brood development

Development Stage	Time in Days
Egg	3
Larva	5-1/2
Pupa	7-1/2
Total	16

Figure 1. A Queen's Brood Development Time

This development time is straightforward, and we all understand it fairly well. It starts with a fertilized egg and ends with an adult queen, paralleling the development time for both workers and drones although it's shorter, of course. The next stage of development, maturation, is perhaps a little less familiar. A common assumption among beekeepers is that the queen emerges, mates almost immediately, and goes right to work. Not so. The time until her first egg can be almost two weeks, and sometimes more.

Activity	Days From Emergence
1st orientation flight	3-5
1st mating flight	6-9
1st egg laid	9-13

Figure 2. Queen Maturation Time

These activities are visible manifestations of her ongoing development. If you look at the right time you can gauge what is happening. When the first flight takes place, for instance, we know that her flight muscles have become functional, and later, with mating flights, that the reproductive system is maturing. Other facets of her development are less obvious perhaps but can be inferred. During these early days of her life the queen is not queenlike in certain respects. Though she is full sized at emergence, she loses a little weight in those first few days, and her abdomen, her most distinguishing feature, is not much larger than that of a worker. She can be hard to spot in the hive. Further, she does not begin to secrete queen substance until after mating, so the workers do not recognize and treat her as a queen in the fullest sense. For instance, she has no court of attendants during her early days.

As can be seen in Figure 2, the elapsed times during maturation are variable. They depend on several factors that were at work from the time that the queen was an egg. These include:

- population of the hive
- population balance
- conditions in the hive
- pollen and nectar availability
- the weather

If population is low or out of balance with few or no nurse bees, queen rearing could be delayed and occasionally not even started. If the bees wait too long, they may not have ideal larvae available. We know that a queen raised from a late larva, one more than two days old, is not going to be of the same quality as one raised from a day-old larva. Then, depending on some of the factors mentioned, queen rearing might proceed with little enthusiasm, with the queen larvae not as well fed as might be and as a result, not developing to be large and robust. (Think of some of those puny, little queen cells you have seen.) Further, although everything might be timely, if stores are at a low level and especially if the nectar flow or pollen availability is poor, again the developing larva may not be as well

fed, resulting in a queen of lesser quality – lesser size, lesser strength, lesser vigor.

Even if all else goes well, we must still be concerned with the weather. The queen must fly out to mate. If the weather does not allow flight, then in the best case it would mean a day or two of delay. In the worst case, she may never mate, becoming a drone layer.

We expect a queen of high quality to lay many eggs – hundreds per day. We hear of 2000 per day but probably no queen lays that many for sustained periods. Twelve to fifteen hundred is probably more realistic. Even an older queen, one we believe to be failing, should still be laying some reasonable number, perhaps 1000 per day.

Now, with all of this as background, let's look at some situations that can develop in the hive, either naturally or as a result of some sort of beekeeper intervention. First, what can happen if the queen dies unexpectedly, from any cause.

Referring to Figure 3, look at the situation as the days progress

• Day 0 - old queen dies. Her last eggs were laid, perhaps many, perhaps only a few.

• Day 1 the colony has recognized its loss and selected day-old larvae. The bees might do this immediately but it can easily take a day for them to realize the loss and take action. If the old queen was laying right up until her death, there should be plenty of brood from which to select. Even with a day or more of delay they can still select day-old larvae. As a day-old larva, this potential new queen is then in the fourth day of her development cycle.

• Day 13 - the new queen emerges. Her maturation period begins.

• Day 16 - the new queen makes her first orientation flight, assuming a minimum interval from emergence.

• Day 19 - the new queen makes her first mating flight, assuming a minimum interval.

• Day 21 - the last of old queen's brood emerges.

• Day 22 - new queen lays her first egg, once again assuming a minimum interval

• Day 43 - first of new brood emerges.

A healthy, active productive queen is your goal, but there are several obstacles in the road to obtaining that goal.

Depending on the actual maturation period for the new queen, there has now been an interval of at least 22 days (from day 20 through day 42) with no brood emerging. At a conservative 1000 viable eggs per day, this represents a loss to the colony of 22,000 bees not born. This number

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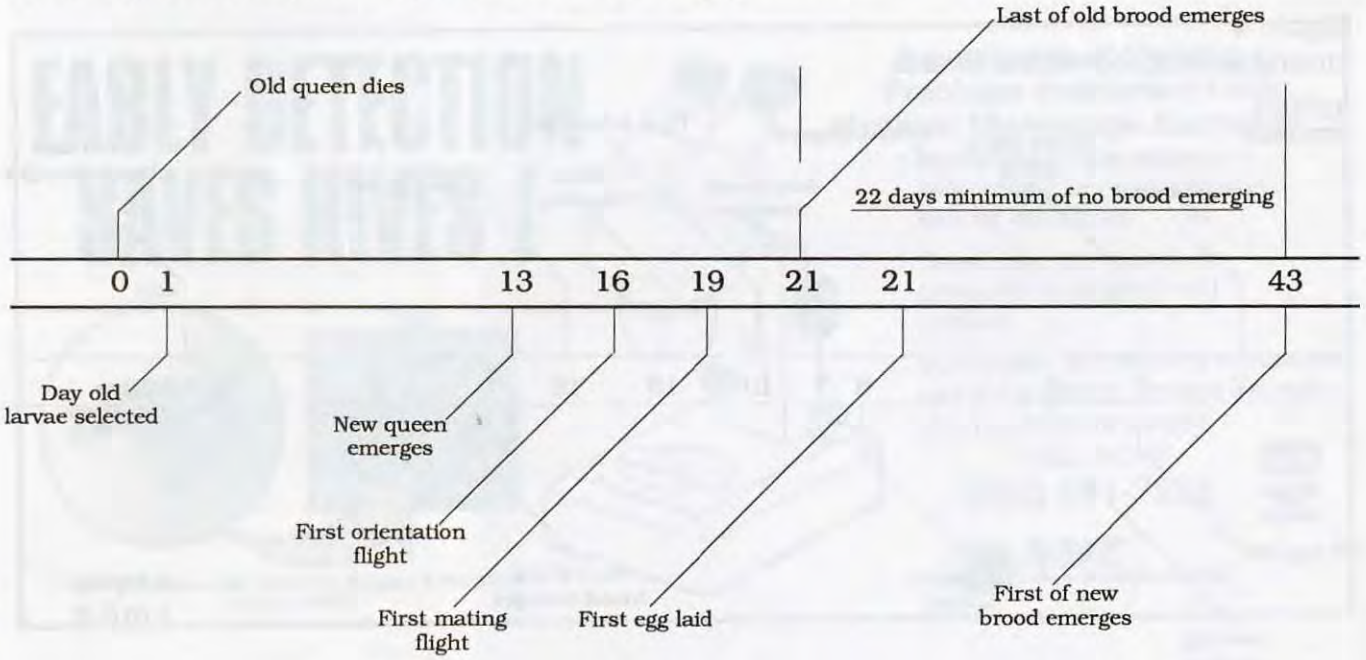
Figure 3
Time required to replace a queen who dies abruptly



Of course the first step in obtaining a healthy queen is starting from the right age egg and having enough nurse bees to raise the cell.

QUEEN ... Cont. From Pg. 77

could be much larger if the new queen is slow in maturing, but even 22,000 is a substantial dent in a colony's population. Further, assuming this is all happening sometime during the active season, bees are normally dying off rapidly. The colony's population is fast dwindling.

One further thought here – it will take time for the new queen to build up to egg laying speed. She does not start off laying hundreds of eggs per day. The build-up time may run into weeks, and is dependent on some of the same factors that affect a queen's development time – population, forage availability, and so on.

So far, we have been talking in general terms. We have been thinking about the queen and how she develops. Now think about hive management and how all this might tie in. Consider making a split.

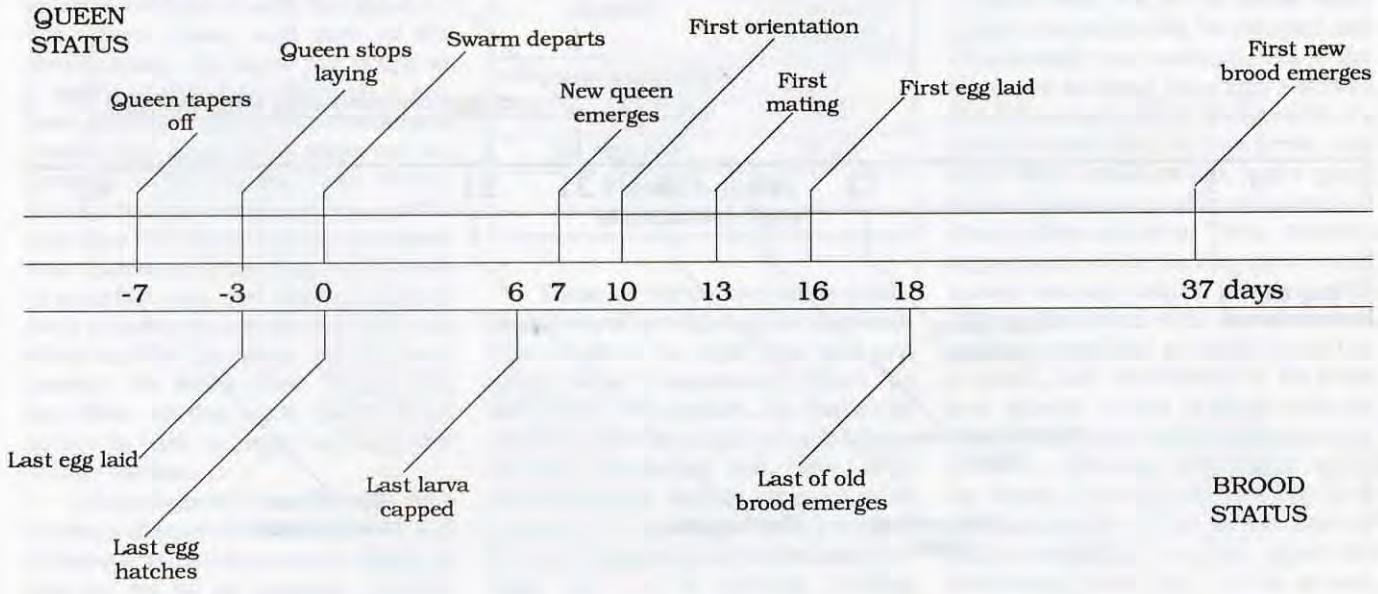
A common method of splitting is to divide the resources of a single strong colony, leaving one half with the existing queen and allowing the second half to raise a new queen from brood. There is nothing basically wrong with this. However, referring back to Figure 3, there is a substantial delay before the first new brood emerges. In effect, the day the split is made is day 0 in the life of the potential new queen of that queenless half of the split. Presumably the split will include some brood from the parent colony. This old brood will continue to emerge, but it will be over seven weeks before brood from the new queen first emerges. Perhaps you can live with that, especially if you are simply making increase and don't care about honey production during that first season. But if honey production is important it would be better to acquire a new, mated queen elsewhere and install her immediately.

Good Colony Management Means Good Queen Management.

Now consider another situation, more common than we like to think – swarming. What happens when a colony swarms? The stay-at-homes raise a new queen. We should look at that with the same kind of eye. What is really happening in that hive?

Without getting into the ramifications of anthropomorphism, let's accept that a colony preparing to swarm has a plan. Ideally, swarm preparations start well before the ac-

Figure 4
Timing associated with a swarm



tual event and proceed accordingly. As a part of these preparations, about nine days before day 0, a number of larvae are selected to be raised as queens. A couple of days later the old queen's egg laying begins to taper off. Egg laying stops completely about three days before day 0, allowing the queen to be in flying form on day 0 when she departs with the swarm. We will pick up there

- Day 0 - the swarm departs, leaving a replacement queen (actually, several, but let's ignore the others) in about the ninth day of her development cycle. Further, on that same day, the last of the old queen's eggs are hatching.

- Day 6 - the last of the old queen's brood is capped, beginning a period of about ten days with no uncapped brood in the hive.

- Day 7 - the new queen emerges, to begin her maturation period.

- Day 16 - the new queen lays her first egg.

- Day 19 - last of old queen's brood emerges.

- Day 37 - first of the new queen's brood emerges, ending a period of over two weeks (day 20 through day 36) with no brood emerging.

Everything We Do Affects, or is Affected By the Queen.

Once again we have a condition where a colony has a substantial loss in its potential population. In this instance we have already acknowledged that it was "planned", and we have seen from our own experience that colonies can survive such a loss. Swarming is part of nature's scheme. Understanding the details of the queen's development within this plan can help to understand some of those questionable situations you may have come across during hive inspection in swarm season. For instance, what if your very populous hive had swarmed last week and you weren't around to know it, but happened to inspect it somewhere around day 9 or 10 (referring to Figure 4). What would you find?

First, you would still have a reasonable population. Half of very populous is still populous. But, you would be very unlikely to find the queen. She is young, not acting queenlike, and perhaps not even in the hive. She could be out on an orientation flight. Finally, though you would find some capped brood, you would find no eggs or larvae. A quick interpretation of this could be, not that your colony had swarmed, but that it was simply queenless and had been for eight or ten days minimum. Obviously, the condition of a colony in apparently a queenless condition during swarm season needs careful analysis.

Other situations exist that we have not explicitly considered here – making up a nuc, for instance, or allowing a colony to requeen itself after deliberately killing the queen. I'll leave you to work out the ramifications of both those actions. You might also give some thought to late season swarms – those that occur in August and September. We know that a late swarm will have a tough time getting established before winter. We perhaps give less thought to the colony that cast that swarm. It becomes obvious here that the parent colony has suffered a substantial setback, too. It may not survive either, unless it receives assistance from the beekeeper.

So why are we talking about the queen in the middle of winter? I hope it's obvious. She is the most important personage in the hive. Anything we do in the way of hive management may affect her or be affected by her. We can never know too much about her.

A Valentine For My Bees

o.b wiser

The first warm days of February find both bees and beekeepers chomping at the bit. It takes the first warm rays of sun after January to activate most beekeepers, who seem to disappear until the first hint of spring, and then my phone will ring, almost magically, after two days in a row that bee flight occurs. The first question I always get is, **how do we feed our bees?**

I always start with the very best methods and work my way down to the not so wonderful programs that the desperate will find themselves having to do because they have no choices.

The absolute best way to feed bees in the spring is **to not have to.** Proper wintering procedures (as mentioned in the November '91 issue) are the best answer to feeding. Also, proper supering in the summer is vital to whether you have to feed or not. Take precautions at the right time and spring will be enjoyable instead of filled with fear.

But let's say things did not go well or you didn't super on time, or there was no fall honey flow for the bees to pack away for winter. Then what does one do to keep the bees alive?

Best Feed The absolute best thing to feed bees is honey in a comb. Capped, full frames of honey set apart at extraction time at the rate of 1 to 1-1/2 full depth combs per hive is a wise investment. Not only is it the best feed, it is already in the best possible package for the bees to use.

So you go out to your bees and heft them from the back. You should know by weight which ones are bone dry. Of course, you can look inside and check the outside frames (frames near the walls) for honey, too.

Since this is February, there should be a minimum of two full frames of honey. If not, pull an empty comb next to the cluster and put the honey right next to the bees. Do not hide it over on the side next to the outside wall. However, you may pull an outer empty frame and then make room for the honey next to the bees by pushing the frames over and making a hole.

The best feed there is, a full comb of uncrystalized honey.

Second Best Feed If you do not have honey, the very next best way to feed bees in the spring is to have some type of top feeder that sits right on top of the cluster. An empty box with a two-four gallon container put over the cluster, with small holes for the bees to take the syrup. If you have two-gallon square gas cans, use a bee frame nail and punch 5 holes from the outside into the lid.

In California, I worked for a beekeeper with 10,000 hives. Every cover had a hole for the two gallon can lid to fit into drilled in the top of the hive. There was a piece of wood with one screw in it to pivot over the hole when the feeder was not in. It worked great. There is no better way to feed sugar than a top feeder. These hives obviously had no inner covers. They were migratory type outside covers. This was the best I have ever seen.

Third Best Feed Inside feeders that replace one frame and hold one gallon of syrup is the next best way to feed bees. If you use this feeder in the spring, it is important to put it right next to the cluster. If feeding a very weak cluster, you may kill it as they do not have enough warmth to generate heat to pick up the feed and they will drown. A larger cluster kind of moves over the feeder like an amoeba and engulfs it with bees and warmth. I found putting a piece of at least 6x6 mesh screen into the feeder vital to keep the bees from drowning in the feeder.

Even so, they do drown and sometimes by the thousands. Then there is the mess of dead bees and rotten syrup. As a beekeeper, you have just not lived until you have emptied a few feeders with 2 inches of dead, rotting bees. It is worse than the smell of a dead skunk and it takes a strong stomach to work around it.

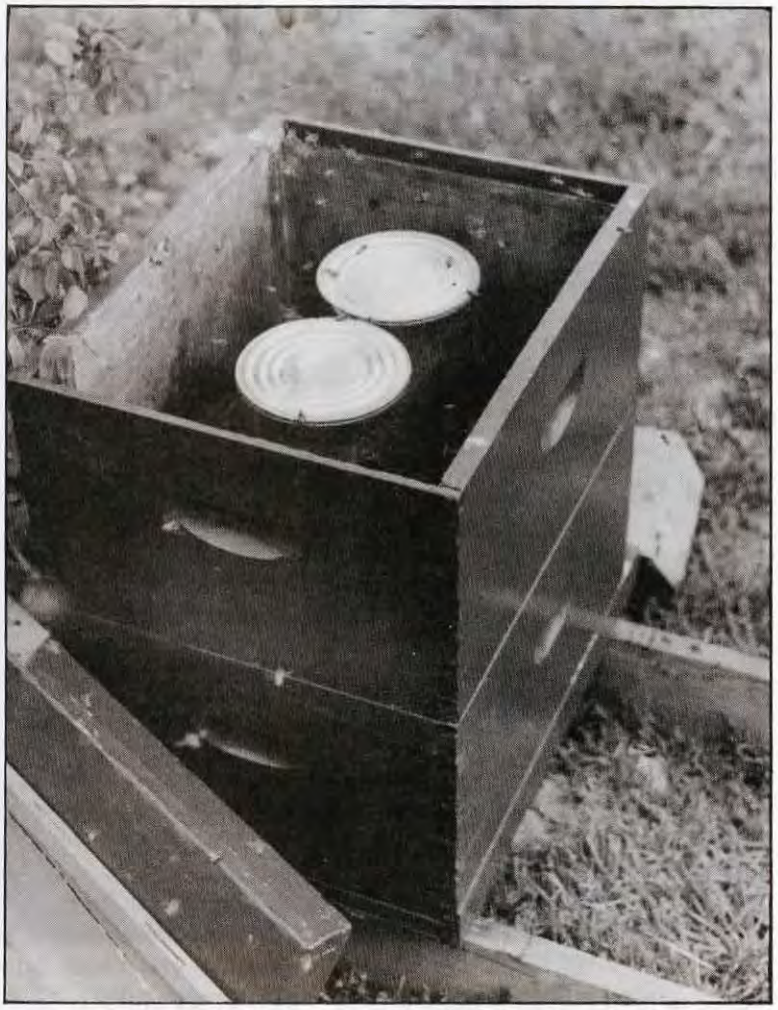
A Miller type feeder, right, looks much like a super. Inside is a leakproof compartment that can be filled with syrup in the spring. Some beekeepers fill them with straw in the fall as insulation. (Tonn photo)

Fourth Best Feed For spring time feeding of really hungry hives, the use of dry sugar can be a life saver when it is very hard to drag syrup into the bees. You can take a few sacks of sugar on your shoulder and hike through the mud and get the same energy that syrup gives in a lot less pounds.

Dry sugar does not stimulate your bees like syrup does, which I think is a real advantage in early spring. When they are already short on feed. This method does not take any special expensive feeder or extra time or equipment. In fact, you can take the sugar to the bees in a volkswagon after Church on Sunday. I like to use a big coffee can which holds five Lbs. of sugar. Oh yes, it does take newspaper.

The method simply is to take the pile of newspapers and first slip a doubled up sheet between the top and bottom box from the back of the hive. I take the time to cut all the sheets 16 inches wide because my hives are always sitting right next to each other and they fit better. Slip the paper so it covers at least one half of the box, side to side, but not the whole thing front to back. It is then a simple matter to open up the hive and pour the sugar in the back, next to the back wall of the super, pouring a little on the tops of the frames and even letting some fall between the frames – but not a lot. I let most of the sugar pile up near the center back of the hive.

Using this method, you can usually get a hive that is starving through the spring on 10 lbs. of sugar. In fact, that is a typical amount of actual



Some types of can(s) full of syrup directly over the cluster will work.

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You could put uncrystalized chunks of honey comb in a Miller type feeder, in an emergency.

A way to open-feed. A large burlap bag fills the barrel completely. Bricks hold the bottom down. Straw or small sticks are often used to float inside. Be sure the top is mostly covered to keep out rain and animals, and be certain no livestock have access. Sugar syrup can be fatal to livestock.

VALENTINE ... Cont. From Pg. 81

sugar to figure on as a minimum to feed starting in February.

The chemical composition of sugar is made of two simple sugars, glucose and fructose. So, in essence, one half of the weight of sugar is made up of glucose, a monosacaride that cannot be used by the honey bee, readily, if at all. Simply stated, sugar only gives one half the energy to the bees that you pay for. Honey is better for bees. One pound of honey goes further than one pound of sucrose, or table sugar.

Fifth Best Feed Open feeding is something that can save bees. We all hate to waste feed this way, but I have had to revert to it. I used to keep bees in Cache Valley near another beekeeper and I could always depend on a honey flow to hit my hives in March.

My bees were always a lot stronger than his, so I suspect mine got the lions share of his syrup. I always appreciated that "early honey flow."

To open feed use four or five gallon buckets (or even a barrel) with a heavy syrup in it and good dry straw or dry weeds stuffed down into the syrup. I always put the lids on them with a rock and just barely offset the lid so the rain is kept out. Water over heavy syrup quickly stops the bees feeding. Try your best to put it out when you expect several days of flying weather to take place. They can take it real fast when it is warm. Be sure no cattle or horses have access to these pails because drinking sugar syrup will kill a cow, quick. And replacing a cow tends to hurt the bottom line.

Other Feeds The use of sugar syrups and high fructose corn syrups are all great but, in either case we support the sugar industry or the corn syrup industry. It always bugs me to realize I support my competitors when I buy their sugar – another good reason to use honey.

Worst Feeds The worst delivery system for any kind of feed is the use of the infamous boardman feeder. I hate Boardman Feeders with a passion!

Now I have seen some real desperate attempts at feeding bees – attempts that did no good. Feeding dry sugar outside of the hive will not work. Feeding liquid honey outside of the hive doesn't work either. I have seen old bottled fruit used and smashed up in troughs, and out-of-date jam and jellies, or even the attempt at using crystalized honey – they all fail. Maybe in the heat of the summer it would work, but not in the spring. Wiping honey over the entrance of the hive is not real effective either – or drilling holes in a hive and putting it in your cellar and then dripping honey through a screened hole. Well I confess, I tried this last one when I was 12 years old, along with some of the others. Boy, my Mom was not at all happy with the bees in the fruit room. It was my first mistake at wintering and feeding bees. The bees died.

Remember to feed heavy syrup, not light syrup. We are not trying to stimulate brood rearing. Let Mother Nature do that unless you have a special program. The idea with spring feeding has only one purpose, and that is to keep the bees alive until better days.

I hate to feed bees so I most strongly believe in prevention, which happens to be proper preparation at the end of summer, and **I learned that the hard way.**

THE WEEKENDER

jeff ott

Records I I

Last time I discussed some things you may want to track when keeping records of your colonies. This month let's look at methods you can use to record this information.

Why should you keep records on your colonies? The answer and the method you use to record the information often depends on the goals of your operation. If you have two colonies in your backyard you may be able to remember from year to year what you've done to them. However, if you have thousands of colonies moving around the country, you are going to have to rely on more than just your memory.

Whatever you use, your record keeping system has to be useful to you, otherwise you are not going to use it. Generally, the larger your operation, the more important it is for you to keep accurate records. When you find yourself describing your beekeeping as a "business", you will, whether you like it or not, have to keep accurate records of all aspects of your operation. This is plain good business sense. How can you make a profit if you do not know *to the penny*, how much it costs to put a jar of honey on the store shelf? You can't, at least not for long, and still call it a business. However, don't get me wrong, even a Weekender can keep records and benefit from it.

This brings to attention another good reason for keeping records, no matter what scale your beekeeping takes. Taxes. If you are, or are planning on becoming, a large scale beekeeper, a sideliner or Weekender, you should keep records of all aspects of your operation for tax purposes. I am not a tax expert, and will not attempt to "advise" you on such matters. However, I can say that unless you keep accurate records, you won't know if you can benefit by filing your business with the IRS as part of your 1040, a Schedule C or even a Schedule F. This is a topic that needs to be explored for beekeepers in a future *Bee Culture* article. However, for now, understand that without some form of record keeping system you will not have any basis for changes or improvements in your beekeeping – financial or otherwise.

I've found four ways to keep records: The "In-Yard System"; the Notebook method; the Colony Record Book; and the Computerized method. There are, without a doubt variations on these but I believe they cover all the bases.

In-Yard System

This month Richard Taylor writes about his method of keeping track of his colonies. It works for him and has for many years. This is a good and working example of an "In-Yard System" It is possible that it can work for you, too. The concept is based on positioning bricks or rocks on the hive cover to indicate the colony's condition. Basically, it goes something like this: If the rock is placed in the front right corner the colony requires an additional honey super. If it is in either of the other corners something else is indicated or required. If the rock or brick is in the middle then all is fine. This method is simple, convenient and doesn't cost a cent. You can easily modify it to adjust to your own operation and it is far better than trying to remember what any single hive needs.

Other variations of this method include writing inspection findings and colony needs on the hive cover, inside the cover, or even on a piece of paper, left in a resealable food bag in the colony. Anything goes with this method, *as long as it works for the beekeeper using it.*

As simple as this is, this system may not work for you because of its inherent limitations. The first being the record of the colony stays with the colony. It stays in the yard after you leave.

While this helps when you walk up to the hive in the apiary, it does not help before you leave your house to check on your colonies. You do not really know what that colony needs as you are packing and preparing to leave. You wind up depending on your memory to count up all the extra honey supers, medications or other items you need for that yard, before you go.

The other limitation is that it does not help you keep track of the financial portion of your operation. Nor does it provide a place to record the purchase of equipment, jars, queens, or bees. If this information is

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One method of in-yard Record Keeping.

RECORDS II ... Cont. From Pg. 87

important or you feel that it may become important as your operation grows you will need to find another record keeping system.

Notebook

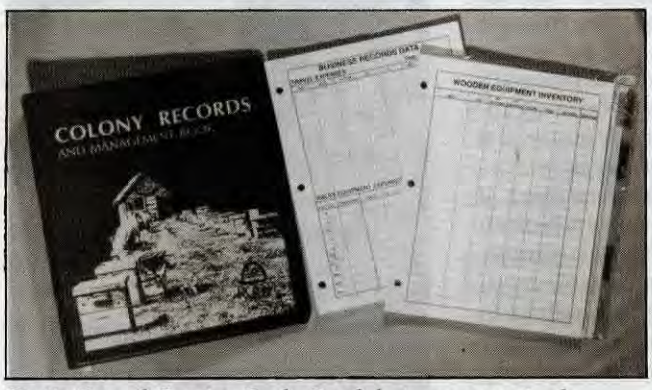
This system is convenient, costs very little (the price of a notebook and a pencil) and can be made as simple or as complex as you need. The notebook can contain any type of paper; blank, lined, graph, or columned paper such as an accountant would use. It can be loose leaf, spiral or ring binder. Finally, it could be any size that suits you best. If you'd prefer a notebook that fits in the breast pocket of your beesuit, or even in your hip pocket you can find exactly what you need by visiting an office supply store.

This is a most popular method, second only to the "No Record Keeping Method of Record Keeping" It's appeal is its adaptability to individual operational needs. You can add just about anything you want to one of these record books, including drawings. When I first started I drew little maps of my yards, numbering each colony in the different yards. I thought I'd get a little artistic once and got carried away. I drew a couple of colonies as they appeared under a black locust tree. The sketch was not as good as the idea, and it is fun to look at now, but the artistic urge has long since left. That is part of the appeal of this system, it is as flexible as you need it to be.

Before you start to write in this notebook decide what information you want to keep track of. Lay out the "look" on another piece of paper. Once you think you know what you want to keep track of, transfer it to the notebook. This will help you to organize your thoughts. However, you will find that what you start out with in the first year with the notebook will probably not be the same look as you have in a few years.

There are limitations to this method of record keeping, but not many. As your operation grows you will accumulate several notebooks. One will contain yard and/or hive information, another perhaps sales information and yet another with equipment information. The reason for this becomes more apparent as your outfit grows. Business records.

Soon, if you chose to do so, you will begin to treat yourself as a business. You will no longer classify your beekeeping as a "hobby" and you'll move beyond being a "Weekender". At this point you'll become a "Sideliner" (definitions vary, this is mine). The IRS does not allow deductions for hobbies, but once you file as a small business you can begin to take 'advantage' of Uncle Sam by itemizing your deductions and expenses. Everything from a hive tool and extractor, to Association membership dues and your *Bee Culture* subscription can, and should be deducted.



Root's Record Keeping Book. Good, but very organized.

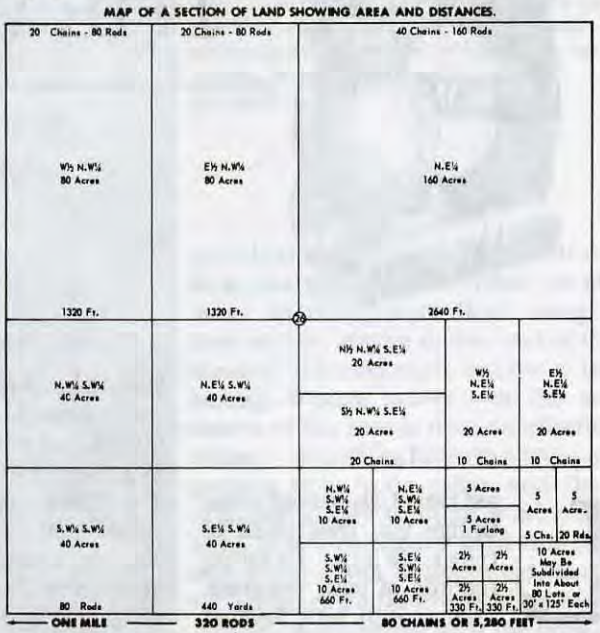
Some of the largest beekeepers in the United States use this "Notebook" method of record keeping for the simple reason that it works. But what if you want something more?

The Colony Record Book

The A.I. Root Company has prepared a book for beekeepers to record colony conditions and management practices. This three ring binder has prepared pages laid out in such a way that makes it a simple and easy process to fill out while you inspect. Lay the binder on top of a hive while you work on the colony next to it. (Just remember, if you record information in *any* record book while working in the hives, don't use a pen with a black colored barrel. The motion of the black barrel while you write is

WHERE?

MAP OF A SECTION OF LAND SHOWING AREA AND DISTANCES.



A typical description might read: SW1/4SW1/4 sec. 4, township 45 north. Work backward when reading rectangular survey descriptions.

Once you find the township your apiary is located in, locate section 4 along the northern boundary of the township. Reading backward again "SW1/4SW1/4" means the southwest quarter of the southwest quarter of the section. The southwest quarter of the section will contain 160 acres and the southwest quarter of it will contain 40 acres. The location of this 40 acres will be in the extreme southwest corner of the section. If the tract were not a full 40 acres, the description would have been SWfr. 1/4SW1/4, the fr. denoting a fractional unit. Often, the legal description will give the acreage at the end such as "containing in all, 38 acres more or less according to government survey."

From Doan's Ag Report

like a magnet to defensive guard bees. It doesn't hurt the pen, it's just that the bees keep after the pen until they find your finger tips, and drive home their point. Also, if the pages get wet this will run. If possible, always use a pencil.

This book is nice if you don't know what you what to keep track of. The pages prompt you for the information. Prepared pages are available to keep track of colony information and management practices, equipment inventories, and sales and purchases information. Even if you know what to keep track of, the record book provides an organized and consistent manner to keep your colony records.

There are a couple limitations to the Record Management Book. If you have an aversion to organization and structure, especially if it is someone else's idea of how it should be, you probably won't like this book. But that is the the hazard of any commercially prepared record keeping method. It is impossible to please everyone (especially beekeepers. .). Second, if you are wordy, write big or a lot, especially concerning your thoughts about your inspections, you will find the areas for "Notes" or "Inspection Activities" limiting.

What if record keeping is important to you, but you want something better? If you are an enterprising beekeeper and computers are not foreign or threatening to you, there is a way for you to keep your beekeeping records.

Computer Age

If you are familiar with computers you are aware that anything you do on paper you can do on the computer *and more*! You can purchase different programs, such as the computerized version of an Accountant's ruled, columned paper, called a Spread Sheet, or even a simple word processing program and maintain your beekeeping records. If you have an IBM compatible computer, there is a company that has designed a special computer program for beekeepers called Bee Management System, or BMS.

Computer Haven/ACS, Upland, California has prepared a commercially available software package designed specifically for beekeepers. Bill Haigh (a beekeeper himself) and Robert Spilker have come up with BMS to help beekeepers with a computerized method to keep track of all aspects of their business.

I received the commercial version of the BMS software to evaluate. This complete package is a powerful management tool for the beekeeper. Setup, like any new record keeping system takes a little bit of time but it is well worth the effort! You can keep track of every aspect of your operation from individual colonies, to general ledger information. Record inventory, keep track of sales and print reports at the stroke of a key to receive an in-depth review of your operation.

One of the features of this software package is the prepared field reports that can be printed. You can take these sheets out to the apiaries, fill them out as you inspect, and return later that day to transfer the information to your computer. The record sheets look similar to the Colony Record Book forms.

I expect that computers will slowly make more headway into beekeeper's hands, especially as "lap-top" computers become more powerful and less expensive. With these laptops and the BMS software, a beekeeper could update his records as he worked. BMS stated they have begun work with "bar-code" readers to simplify inventory record keeping. BMS points out however, that a beekeeper's dirty, sticky hands and a computer keyboard are not very compatible. If you were to attempt such a venture, make sure you keep your hands and keyboard clean.

All of this new technology is becoming less expensive each year and I wouldn't be surprised to find it someday in the pages of beekeeping supply catalogs. The day of the beekeeper to use his cellular phone and a computer modem to "upload" colony and yard information to his home office and computer is here . . Record keeping for the 21st century!

You don't have to have a fancy computer or notebook to keep records. The important thing is that you keep records of some sort. You, your bees and your customers will benefit from the information you keep, and those are the best reasons I know to keep records at all! ○

Richard Blake, a commercial beekeeper in Iowa, keeps pretty good records, and each year he is able to calculate the inputs and their respective costs for his 2,000 colonies.

The cost per colony, *excluding labor*, is $13.64, which means that he must harvest at least 22 lbs. of honey from each colony to break even on just these costs. That doesn't include income from wax for each colony.

Item	Cost	Cost Per Colony
Fructose (48,000 lb.)	7,200	3.60
Gas (3,600 Gal.)	3,960	1.98
Queens (600)	3,300	1.65
Yard Rent (100 cases @23.50)	2,350	1.18
Interest on Notes	1,820	.91
Utilities	1,450	.73
Sugar (8,000 lb. @ .13)	1,040	.52
Insurance	1,000	.50
Taxes (Property)	900	.45
Barrel Cost (200 @ $4.00	800	.40
Truck Expense	800	.40
Tetra (400 lb.)	336	.17
Paint	300	.15
Other Supplies	360	.15
Miticur	1,660	.83
TOTAL	**$27,276**	**13.64**

Sources

Bee Management Software (BMS)
Computer Haven/ACS
957 W. Foothill Blvd.
Upland,CA 91786
(714) 985-3278

Colony Record Management Book
A.I. Root Co.
P.O. Box 706
Medina, OH 44256
(800) 289-7668

MEET ANDREW MATHESON

IBRA'S NEWEST DIRECTOR

kim flottum

Just over a year ago Andrew Matheson became the fourth Director of the International Bee Research Association. One of the highlights of his first year at the helm was a month-long trek across the U.S. During his trip he gave talks at the Eastern and Western Apicultural Societies, the Ohio, Indiana, New York and Louisiana State Beekeeper's Associations, visited several universities, the Grand Canyon, several USDA bee labs and stayed at my house in Medina, OH, for a weekend.

Between visits to Medina's annual art fair and the largest K-Mart in the Universe (at the time), we talked about IBRA, the journals they publish, the privileges of membership, plans for the group's future, and how he plans to make it all work.

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Andrew Matheson is married, still thirty something and, until moving to the U.K. lived on the North Island of New Zealand. He got his undergraduate degree in biological sciences and his masters in Entomology studying the passion leaf hopper, a minor agricultural pest, but responsible for producing toxic honey on some parts of the North Island. He was a hobby beekeeper during school.

After school he started as an extension apiculturist with the Ministry of Agricultural and Fisheries (MAF). The variety of skills required – verbal and written communication, working with clients one-to-one, dealing with the mass media, holding group meetings, both inside and outside work, mental and physical labor and essentially being his own boss – was appealing.

Training for the position was considerable by U.S. standards. He spent six months working with an established extension officer, being his shadow, gofer, assistant and partner. He went through training courses, worked with commercial beekeepers and after six months was transferred to the south island to start his job.

Matheson's extension position had several components providing information and new techniques in a manner easily understood by beekeepers along with assisting associations and organizing field days; the position is also responsible for administering the Apiaries Act, along with registration of apiaries; offering management and financial consulting to commercial beekeepers; and toward the end of his tenure, working with the Kiwifruit industry establishing and then enforcing standards of pollination.

The first component of the position is dedicated to helping beekeepers find answers to questions. But rather than just give information the goal is to suggest questions, then through meetings, field days, publications, networking and other means help beekeepers find the answers themselves. This is extension at its best – helping people help themselves.

"Supporting a network that helps other beekeepers has always been important to me."

New Zealand's Apiaries Act, responsible for regulating honey bee diseases in that country, is somewhat different than in the U.S. There is compulsory registration and all beekeepers must inspect and report their inspections and apiary sites. There is very high compliance. American foulbrood is the only serious disease in the country, but it is dealt with severely.

Each year beekeepers must inspect each of their colonies for disease and submit a statutory declaration on completion. If they find American foulbrood there is only one recourse – burning the hive, entirely. Commercial beekeepers can, if they have the appropriate equipment, dip supers, lids, bottom boards, covers, queen excluders and feeders in paraffin. To qualify they must be "trustworthy and have access to a dipper" Scorching is not reliable, therefore illegal.

Apiary inspectors did inspections until the early 60's, but the government felt this was the beekeeper's job . . so now they are responsible. However, part of Matheson's job was enforcing the Apiaries Act and he had a team of inspectors, paid and voluntary who assisted in enforcement.

To locate beekeepers who were not complying with the law was a difficult, but rewarding part of this job. There were always keys to look

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WHAT IS IBRA?

The Bee Research Association was founded in 1949 by Dr. Eva Crane, who saw a need for good information services for beekeepers and bee scientists. It's a non-profit organization and a registered charity.

Dr. Crane was director until approximately 1983, and during those years the Association grew from a small, voluntary nucleus to the International Bee Research Association (IBRA). It now has members and subscribers in 180 countries, a permanent headquarters building in Cardiff, complete with offices and a huge library. In 1976 the name changed to the International Bee Research Association to reflect the global scope it had taken on.

Today, there is a staff of eleven, a book and journal publishing enterprise and a conference and workshop sponsorship program.

IBRA is basically an agency that dispenses information on beekeeping and bee science. It tackles all aspects regarding bees and subjects relating to bees, which includes all 20,000 plus species in the group Apoidea ..."honey bees, bumble bees, bees you never heard of"

It also covers beekeeping, the practice of beekeeping, the equipment that's needed; the industries involved; bee products; honey; honey chemistry, processing equipment and trade; beeswax and related products; pollination including crops, biology, production and even trade.

The Association collects all this information from around the world in languages from Arabic to Vietnamese, but most is in English. They have over 30,000 reprints in their library and receive all significant beekeeping journals in the world kept bound and stored. They have thousands of books, theses, reports (published and unpublished), and other information not normally available in conventional libraries.

But information is not only collected, it is disseminated – to almost anyone, but especially members – on general and specific bits and topics and themes. Copies of reprints, books, articles and journals are available for loan or to use on site.

They also publish four very high quality journals that serve very different audiences.

Bee World is the oldest and predates even the BRA. Published quarterly, it serves as an international link between beekeeping science and practice, specializing in reviews of particular subjects that relate to these fields. It's science, not for scientists but rather, it's science interpreted for the lay person. It's free to members or available by subscription. It also contains the news of the Association, its activities, members and associates.

Beekeeping And Development is the newest quarterly publication, beginning in 1991. It is a practical journal, covering a wide range of subjects relating to beekeeping's place in developing countries. Appropriate technology for the situation is what it's about . Langstroth hives, hives of straw and dung, concrete hives, power extractors or squeezing comb through

cloth. It addresses beekeeping at all levels.

Original research is published quarterly in the *Journal of Apicultural Research* (JAR), covering original research relating to bees, beekeeping and all related subjects – nectar secretion, pollen production, pollen analysis of honey, pests and diseases. But it is all original research . . scientists recording the findings of experiments.

The editorial arrangement for the review process is rather unique. One team is based at IBRA headquarters, while another is located at the USDA Bee Lab in Baton Rouge, Louisiana. Dr. Tom Rinderer, the labs research leader, along with Dr. Ben Oldroyd and Dr. Allen Sylvester assess all submissions for scientific merit, select the references and send out the papers to be reviewed.

The review process is 'rigorous', and over 60% of the papers submitted are rejected for publication. The standards are quite high. Once reviewed and accepted, the paper is sent to the IBRA team who edit it to style, format and design. Then, after the author's last look it is published.

Although there was a period of time when manuscript publication – the time from submission to printing – was extremely slow, the turn around time has improved considerably since the U.S. Editing team was instituted a year ago. Lapsed time is now about seven and a half months, shorter than many journals of this type. JAR is available through subscription to both members and non-members.

Apicultural Abstracts is a review of all the reprints, journals, books, reports everything that comes into the IBRA library. These are 'scanned' by experts who summarize each piece. These experts, both staff and people outside IBRA add the key elements to the reference so it can be located later. The subjects covered include all those mentioned before ... bees, beekeeping, pollination ... the works.

Apicultural Abstracts reviews the world's beekeeping and bee science literature. It's a way to just "sit in your arm chair and have the world at your fingertips"

The reviews cover the best parts of each article or book, telling you what you need to know about the contents. But if the original is re-

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for – filling in the annual report in a 'glib' manner, always filing late, always sending it in early, the general appearance of the apiary, what you would hear at meetings and the like. Also, if a beekeeper went from 20 to 250 hives in two years, didn't attend meetings, expanded rapidly while holding down another job and the kinds of questions they would ask on the phone.

None of these by themselves, or even two or three would be indicative of a problem, but very often patterns develop that would indicate a high risk operation.

Matheson and his colleagues worked at pinpointing these high risk beekeepers, and by putting pieces together became very efficient at finding pockets of AFB. Using this detective approach they were able to find AFB at a rate 10 times higher than random searches or methodical inspections. Once found the beekeeper was charged with destroying infected colonies.

During the 13 years he held the position the MAF moved from a purely governmental agency to an income generating body to help defray costs. Consulting with a commercial beekeeper interested in expansion went from a free resource to paid. Though these services were basically billed by the hour, like most professionals the usual practice was to charge by the 'job', which proved more satisfactory to both client and provider, and more clearly focused the job from both perspectives.

It was also during this time the Kiwifruit industry took off in New Zealand, and soon after the critical need for honey bee pollination became apparent. This resulted in explosive growth in the number of colonies rented, and the beekeeping industry as a whole.

The Kiwifruit industry was very interested in making sure they were getting the right kind of hive for pollination – strong, healthy, on-time delivery – so initially insisted on on-site inspection.

But Matheson and others began a Quality Assurance System where they worked with beekeepers long before colonies were to be moved. They looked at equipment (what if a truck breaks down the day before colonies are to be moved?); financial management (is a beekeeper in a position to borrow extensively at a moments notice to save colonies?); what about floods, fire

"You can be the best beekeeper in the world", Matheson said, "you can provide the best colonies for pollination, but if you're not prepared for contingencies, trucks blowing up, floods, rain, a lot of good beekeeping goes for naught as far as the Kiwifruit grower is concerned. They want quality hives, reliably delivered. Preparation is part of the equation, delivery is another part, good management before, during and after moving is still another part," he added.

"Our goal was to move beyond product auditing into quality systems auditing. I think it is a great step forward and I was pleased to be involved in the development", he said. (For a detailed look at New Zealand Kiwifruit pollination read 'Kiwifruit – Pollination and Production', by Cliff Van Eaton, in the September, 1992 *Bee Culture*.)

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Matheson joined IBRA seven or eight years before applying for the Director's position.

"The journals were of great value while I was in Extension, but I also joined because I felt they needed support for their organization. I believed what it was doing was important and saw a lot of potential for it to provide more and better services to the world, besides the beekeeping community", he said.

When the position was announced Matheson applied and was asked to interview. As luck would have it he was in London for a conference so was able to comply. He got the job, and started in January, 1991.

Matheson's goals and directions when he took over were simple. continue all the things IBRA had been doing, the basic services and products, only better.

His experience with receiving the journals while in Extension had shown that not only do members gain, but by using information he found, his clients gained as well. So one goal was to improve the content and quality of the journals to make them even more useful. The changes have been apparent to regular readers.

He's also worked at providing better service to members. They're now getting more information about how to use the resources IBRA has at the ready, making it easier, faster ...better.

The library is heading toward an electronic database system so searching for information will be more efficient, and an on-line computer service is being studied.

Publishing more books is a priority, too.

"IBRA used to publish a lot of specialist things, like books and bibliographies, but not much in the last five years or so", said Matheson, "and I think it's important for IBRA to be doing that, even more so now", he added.

"We're also actively persuing new members, using voluntary regional representatives, advertising and regular press releases. I have been actively seeking speaking engagements wherever and whenever possible", he said, "like this trip across the U.S."

"IBRA is also expanding the range and number of specialist conferences and workshops we offer. We just finished a conference on beekeeping in tropical countries, something we do every four years, but there's more. Two of our next projects are dealing with varroa now that it is in the U.K., and a second, more distant goal is to begin working with the scientists who until recently were in Eastern Europe. IBRA is poised to be the bee science component of that program", Matheson said, then added, "but we're also looking to collaborate with the many scientists who until now have had little western contacts."

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There's more, according to Matheson. "Membership in IBRA is certainly rewarding. Besides receiving *Bee World*, you have access to the whole world's literature on any subject relating to bees. You can call, mail, fax or ask for requests in person", Matheson said when asked about privileges.

"Not only that, members can really make what they want of it. lots and lots of library use, subscriptions (at reduced rates), or, they can just be content knowing they are helping support a worthy organization", he said.

"It's comparable, in a way, to your public T.V. You can watch for

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free, or you can donate some, or lots of money, yes, I think that's a good analogy" he added.

"Supporting a network that was helping other beekeepers, whether in New Zealand, the U.K., Egypt or wherever has always been important to me", Matheson said.

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IBRA has 11 staff, who run the library, organize conferences, support memberships and subscriptions, publish journals and books, raise funds, catalog donations, edit manuscripts and basically provide services members, scientists and the beekeeping community have come to expect.

Matheson's basic experiences in Extension, and later as a professional consultant seem to have prepared him well for the task he has undertaken. He has been a member and supporter for years, because of his belief in what it can do for the beekeeping world.

"I believe IBRA has a direct relevance to beekeeping in all countries, especially the U.S.", he said.

"No matter what level their knowledge, I believe beekeepers can benefit from IBRA and I believe they have a responsibility to support IBRA, and beekeepers in all countries."

It's hard to argue with that sort of dedication.

IBRA ... Cont. From Pg. 87

quired there's a full reference, a key to tell if it's in the library and a specific number so you can get a copy to study further.

Apicultural Abstracts is quarterly, but a fifth issue is put out containing all the indexes for the year. It is available by subscription to members and non-members also.

IBRA also organizes conferences in various parts of the world for different sectors of the beekeeping and bee science community.

Conferences are a good way of providing information to participants they otherwise couldn't get easily. They are a place for people to meet, share experiences and learn from each other. Similar, in many respects, to beekeeper's meetings anywhere.

The conferences are international in scope beekeeping in tropical climates for instance where experts from developing countries present their practical experiences in beekeeping, starting a development project or a woman's cooperative, or improving the quality of the local product.

Funding comes from registration, sponsorship of host country's government, international agencies (U.N., CTA, FAO, the Commonwealth Foundation) and others.

For information write: IBRA, 18 North Road, Cardiff CF1 3DY, UK

THE PACKERS

kim flottum

There are a thousand facets to the business of beekeeping and honey production, one of which is putting the finished product in a bottle. Even here there are infinite ways to approach and accomplish this task.

Traditionally, the 'groups' involved in this process are defined by their respective place in the chain of events between honey bee and honey bottle. For the purpose of this article we've divided this chain into three distinct links.

The primary support for this entire process is the 'honey producer'. These operations manage colonies of honey bees with the intent of producing honey. Pollination, pollen and wax production and queen or package bee production all may be part of this business, but eventually honey is harvested, extracted and put in containers with little or no value added. A honey producer, by our definition, then sells this 'raw' product to someone who moves it up the chain by adding value in some fashion.

A 'producer/packer' is a sort of hybrid in this scenario. They may indulge in some or all of the activities producers do, but they add more items to their 'to do' list. Actually, once honey has been put in a container a producer/packer may take several more steps, including heating, filtering, blending and bottling (here meaning actually bottles, pails, barrels, totes or tankers).

Once 'bottled', a producer/packer may sell these 'bottles' to a wholesale broker, another producer/packer, a packer, to bakeries or food processors or even sell directly to a retail business. The product may have no label (especially for pails, barrels and totes), a 'private' label (that belonging to another business, i.e. Kroger, IGA), or their own label(s).

The key is they produce at least some of their own honey, harvest it, add value in some fashion, then sell it for a (usually) greater amount than if sold only in bulk form. Generally, producer/packers wear many hats.

Packers, on the other hand do not manage honey bees nor harvest honey. Again for the purpose of this article, they only buy harvested honey, generally in barrels, but sometimes in pails or even tankers. What they do with it and why they do it the way they do is what follows.

This definition of 'packer' certainly needs further clarification though, since no two operations are the same. Moreover, individual packers approach their tasks from different perspectives. They differ in size, scope, markets, goals, equipment, distribution techniques and even philosophies.

But after observing several operations, we've developed a rule of thumb that divides 'most' packers into one of three 'size' groups.

The first are the very small operations that focus their energy on producing a very high quality product, designer packaging and have an intense marketing program.

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Although several companies qualify as small, high-end packers, *Moonshine Trading Company* in Winters, CA is one of the best. Small is the key word here. in 1992 they bottled less than 150,000 lbs. of honey. But this miniscule volume in no way reflects the scope and image of the business.

Moonshine specializes in specialty honeys – Yellow Star Thistle, Orange blossom, Eucalyptus, Sunflower, Black Button Sage, Hawaiian Lehua and Christmas Berry, Sweet Clover, Tupelo, Fireweed and Desert Garden. They also sell comb honey, bears, six nut butters and a honey/apricot spread. They have pollen, royal jelly, propolis tincture and beeswax, too.

The honey is sold in 2.5 oz., one Lb. and one gallon sizes, and there lies the secret, well almost all of their secret. Packaging these specialty products is probably even more important to the success of this small company.

Working with a commercial artist, each label shows the flower the honey comes from, along with lots of information on the source. Coupled with their exceptional labels are the gift boxes, equally well designed.

These two marketing techniques, designer labels and boxes, and 'exotic' honey flavors have enabled *Moonshine* to penetrate some pretty exclusive markets, which, by the way command some pretty hefty prices. Retail prices are $4.00 for a pound jar, $1.75 for the 2.5 oz. jar and $28.50 per gallon. Bears go for $2.75, comb honey for $4.50 each and their 15 oz. honey apricot spread is $6.75.

Ishai Zeldner and his wife Amena Harris operate Moonshine, and employ four full and six seasonal employees. Though his background is in beekeeping, Ishai got into packing honey by producing too much of his own.

Today, they attend two major food trade shows, call buyers directly and work with commissioned sales reps to sell about 98% of their product. They do some direct retail sales. One person works full time in the office, and spends about one hour/week dealing with the government (ASCS, etc.).

Honey is purchased from whoever has the varieties, and meets the quality standards Moonshine needs.

It comes mostly in barrels, but 60 pound pails aren't uncommon.

Barrels or pails of honey are slowly heated to remove crystallization in a very small hot room. Liquid honey is filtered, and poured into a combination holding tank/bottler. One person operates the metered bottler, one starts the cap and another mechanically tightens the lid and moves filled cases out of the tiny enclosed bottling room.

This approximately 70 square foot room is in the corner of their warehouse, which holds bottles, bulk honey, pollen, boxes, labels and the other necessary items to do business.

"Persistence is the key to growth", Ishai says, "along with a high quality, value added product. We encourage tasting our varieties whenever possible, because people become aware of how different honeys can be. It's always a good sales promotion", he said.

They are looking to expand their market of bulk honey (one and five gallon pails of select varieties), and are studying the future of comb honey.

"We sell about 10 thousand rounds a year, but they are high labor, low margin products. I guess it depends on demand", Ishai said.

Given the tiny size of their present operation and facilities, without moving expansion seems limited. The fact that this small amount of packed honey supports this many employees speaks of the attention to quality each product can receive, and, as is often the case with small operations expansion may not be a primary objective.

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Midsize operations are probably the most numerous in the packing industry, and for the purpose of this article pack between a half million and five or so million pounds/year. That's a wide range, and though these outfits are often similar in size, they display great variance in style, goals and direction. *Island of the Moon Apiaries* and *Glorybee Foods, Inc.* typify those differences.

Jerry Kaplan started keeping bees in San Francisco in the early 70's, eventually moved to Esparto, CA (near Davis) and became a commercial beekeeper. He started packing his own honey, then sold his bees and expanded his packing operation.

Today, *Island of the Moon Apiaries, Inc.* operates out of a 60' x 40' warehouse/bottling facility, and sold nearly 700,000 lbs. of honey in 1992.

Unique to this operation is the solar heated melting room. Panels on the roof heat water which runs through pipes in the floor. Lower heat (about 105°F, max.) requires longer time to melt crystalized honey, but a 'raw', 'natural' product is the goal. Promotional literature stresses that their honey will crystalize on the shelf because of this, but replacement is guaranteed nevertheless.

Melted honey is pumped from barrel to the holding/bottling tank and bottling is done by hand. This keeps varieties distinct since blending is only done for his generic brand.

Jerry buys most of his honey from California or neighboring states, but brings some clover honey in from Canada. Freight costs are the deciding factor for clover.

"I try to work with honey producers as much as I can," said Jerry. "I was a beekeeper, I know how hard it can be."

He generally tries to pay on delivery, but sometimes, when sales are slow he can work out, in advance, a payment schedule or 30, 60 or even 90 days.

"You work with producers, keep up front with them, share the good times, and the lean times, and everybody will do O.K.", he said.

"Try and con one though, and you've lost a source of honey, and definitely hurt your reputation."

About 80% of his product is sold in drums or pails to bakeries, a business he specializes in. Tasajara Bakeries are one of his clients, but he has many regional customers.

The remaining 20% is sold in retail stores. Although he sells some direct, his major sales force is a distributor. He sells using two labels, *Island of the Moon Apiaries*, his own brand, and *Dancing Bear*, the 'generic' brand he produces.

Dancing Bear is packed in PET plastic, and is available in the common sizes, plus a half gallon square that holds six pounds. *Island of the Moon* labels cover similar sizes, but include bears, comb honey and a 12 oz. canning jar. Wooden gift boxes are also available for both the queenline one Lb. and 12 oz. jars. All *Island* labels are in glass except the bear, even the six pound round.

"Slotting, or buying shelf space, is becoming more common, and we are just too small to afford it", Jerry said, "if that comes to one of our stores, we're out. But much of our retail business is in the health food area, so it hasn't been a real problem, at least yet.

"Our biggest problem last year was that we lost customers to sell to. Not because of competition or slotting, but there's been a real shakeout in distributors and manufacturers. There just aren't as many as there used to be," he said.

Besides himself, there is one other employee, plus some family input. They spend about an hour/wk. dealing with the government.

"We're small enough that we can put quality first, every time", he said, "and that's what's important. We're a strong regional label, and we intend to keep it that way"

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PACKERS ... Cont. From Pg. 93

A much larger medium sized operation is *Glorybee Foods, Inc.* But size isn't the only difference between these two packers.

Dick Turanski, President of *Glorybee* got his start in a beehive because of his love of 'natural' honey. He also found it easy to buy honey from beekeepers and resell it. But beekeeping got him into selling bee supplies, buying more honey, expanding his bee supply business and teaching a beekeeping class. This was in the mid '70's, and the back-to-nature kick was in full swing in Oregon. Business was good.

His operation doubled each year for a couple of years and moved from his garage to a leased warehouse, made an addition, kept buying and selling honey and expanded bee supplies.

In 1985 he started selling other natural sweeteners to supplement his honey (molasses, maple syrup, barley malt) and in 1986 changed to *Glorybee Natural Sweeteners, Inc.*

His primary customers had always been natural food distributors, manufacturers and bakeries, and to keep those customers his 'bakery' line kept expanding.

In 1992 he became *Glorybee Foods, Inc.*, and the focus of his business evolved to become "all things to the medium sized bakery" His line now carries, besides honey, grains,

nuts, spices, raisins and currents, sorghum, natural flavorings, cider vinegar and much more. He has expanded his warehouse and delivery system, and covers parts of three states.

The staff includes eight office, sales and mail order people, eight delivery, production and maintenance staff and part time and seasonal help.

But honey is still an important part of business. In 1992 he sold about four million pounds, all to the natural foods and industrial market.

"We don't compete in the retail market", he said, "it's difficult to get into, and competitive to stay in. We've found our niche.

"The bakery market is our biggest business, but it's high volume, low margin, so that's why we had to diversify. But the institution market is expanding – restaurants, hospitals, schools – mostly in five pounders. You gotta keep looking."

Turanski buys all local honey that comes in, barrels or pails. Some customers still trade for the bee supplies he still carries. But most is from larger suppliers.

Specialty honeys – blackberry, raspberry, alfalfa, clover, fireweed, orange blossom – are all purchased from 'local' suppliers (local is WA, ID, OR, CA). These are almost all bottled for sale. Bulk sales, made in barrels or 'totes'. A tote is a more or less cubical stainless or plastic container holding about 2500 lbs. of honey, filled at the top with a drain at the base of their sloped bottom. There is a built-in fork lift skid. They are 'returnable' Several styles are available, but they are all similar.

Bakery honey is almost exclusively light amber, and most require samples before sale. Dark honeys are rare in Oregon, and *Glorybee* imports dark honey to blend with local light honey to meet this need.

Sales are made by phone and salesmen, using in-house designed promotional material plus Honey Board collateral. "We have a very 'professional' sales force," Turanski says, "and don't seek new customers by 'buying' the account."

Payment is made to producers generally as net 30 days, but they pay more if payment terms can be extended, and less if immediate payment is required.

Barrels of honey are 'melted', the honey is run through four filters and then into one of six holding tanks. Tote, barrel or bottle filling is done from these. Blending can also be done in these tanks.

There is one twin piston and two single piston bottling machines, but capping and labeling are done by hand. They carry four oz., 12 oz., one lb., two lb., and qt. in glass, and have a gal., five lb., 40 lb. and 60 lb. in plastic. They're also capable of selling drum, tote and tanker size loads.

Deliveries are made by *Glorybee* drivers, sent UPS or other carrier, or picked up at the warehouse. Deliveries are made along the I-5 corridor, and the sales territory is essentially from Fresno to Alaska.

Once a business has grown to this size, unlike *Island of the Moon*, long term pricing becomes more important. *Glorybee* produces a bakery customer catalog with prices good for six months. It's apparent that once a price is set raising it can be difficult. Customers, too, must budget into the future, and if *Glorybee* raises prices unexpectedly, a bakery will substitute – either suppliers or the commodity they use.

It is for this reason Dick Turanski has trouble with the buy back system, as it is now.

"The buy back price shouldn't change more than twice a year, and an announcement should be made before hand", he argued.

"That's what most commodities do, so you can contract with *both* suppliers and customers in advance. You need to be able to 'plan' your business".

But there's more to success than good planning.

"It's pretty easy, in hindsight, to see why we've been able to grow. We moved from smaller to larger facilities, diversified from bee supplies to the natural foods and bakery market, brought in new products (especially honey stix), sold off the lowest margin part of the business (manufacturing bee supplies), and taken advantage of the incredible increase in industrial demand for honey", said Turanski.

"But the real keys are providing good service (we try to be 'all things' to our customers), develop an 'ingredient profile', if you will", he said, "keep improving technology, and adding to the product line, and of course the basics – on-time delivery, good products and proper invoicing and billing", he added.

Glorybee Foods, Inc. has evolved from a small honey packer to a natural foods distributor, serving the bakery and industrial markets. But they still seem to be able to keep one foot in the beeyard.

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There are far fewer mega packer operations than medium sized outfits, and as would be expected they tend to do business somewhat differently. But not as different as you

might expect.

For this article we talked to three of the biggest in the country – *Dutch Gold Honey*, in Lancaster, PA; *Western Commerce Corporation*, City of Industry, CA; and *Groeb Honey Farms*, Onsted, MI. Combined these three packed about 85 million pounds of honey in 1992, just over 27% of the 306 million pounds assessed by the National Honey Board that year.

As a group these operations are similar in how and where they purchase honey. Efficiency requires they buy in large amounts, but there are exceptions. Payments vary somewhat, but after this stage the differences really become apparent.

Ralph Gamber started business in 1946 with three hives, packing honey in his kitchen. Today *Dutch Gold* is the largest 'independent' packer in the country. In 1992 they packed over 30 million Lbs. of honey, 40% or so in retail packs (their own and private labels) the rest as bulk to the industrial and bakery market.

Dutch Gold prefers to purchase honey by the truck load and has installed a 60' truck scale in front of the plant to accommodate entire semis. They pay for honey 10 days after receipt.

Once inside, a load is 'marked' for sample no., who produced it, the color, floral source, weight and the number of drums in the lot. Also included is a quality control report that records the Pfund color, moisture percent, flavor and destined use. Other tests are sometimes run, (the SIRA test for example) to spot check for corn syrup, or foreign residues. Samples found 'unfit' are rejected.

The new 100,000 square foot facility includes storage for honey, glass and packaging; processing and bottling equipment, offices and sales areas.

Purchased or stored honey (they are an ASCS storage facility) is processed when needed, and barrels are chosen so, when combined will make the right 'blend'. Crystalized barrels are heated for three days until almost melted, removed from the hot room, dumped into a hot blending tank, agitated, pressure filtered and sent to a holding tank for bottling.

The food service and industrial markets use barrels or totes (*Dutch Gold* owns 135, 350 Lb. stainless totes), and the honey blended for these sales is moved to 48,000 Lb. storage tanks in the warehouse area. Honey to be bottled is moved to smaller tanks so varieties or blends can be isolated.

The bottling line has been designed so changes in bottle size, label or honey blend can be implemented rapidly.

No bottles are packed until an order has been received, but because of the capacity (about 1000 barrels/wk.), and efficiency of the packing line an order takes a week or less to fill. Moreover, they only keep at most a month's inventory in storage to keep costs down.

The *Dutch Gold* brand runs two 'types', Golden, which is a light blend, primarily clover and a darker blend – wildflower. They also have bears, both their own and private label. And, they produce specific varieties, so labeled on the bottles.

To sell their own honey, they work with 25-30 distributors who buy, then resell the product. The primary market is gourmet stores, but that image is changing and they are appearing in every-day stores now. They also bottle over 400 private label brands in an assortment of sizes and blends.

A tote

With the extensive long term contracts to be filled (both retail and industrial) maintaining a steady supply of the right kinds of honey is critical.

"It's difficult to contract , long range, U.S. honey", said Bill Gamber, "and to cover the long range planning we have to do, we sometimes must go foreign. But there's problems there, too", he added.

"It's difficult to pinpoint shipping times, so we end up ordering so it arrives early and storing it or hoping it comes in on time to help out. it gets a bit crazy sometimes", he said.

"Price plays some role in buying foreign honey, but availability is more the key. That and the kind of honey you can buy at what price. In this business, you make money buying honey, not selling it."

Which brings up the governments role.

"The U.S. buy back determines the world price of honey. When the buy back is high world production goes up, and vice versa", Gamber said.

"And when it changes (the buy back price) packers are expected to react immediately, but we, in turn, can't change our prices to customers nearly as fast.

"We're stuck between a rock and a hard place more often then not", he said. "It's time beekeepers become aware of their place in the world and how they fit in. The ASCS should get out of the market because the honey business just isn't as profitable because of them", he added.

"Packers have these restraints, so it's been competitiveness between packers that has kept prices down" he said, "not between producers."

There are 40 non-family employees at *Dutch Gold*, 28 in the plant and office and seven on the road. Part of those work for Gamber Glass, a separate corporation that sells queenline and other bottles, including the new honey jar they recently developed.

Dutch Gold is set up to move lots and lots of honey. They have an efficient packaging line, along with an aggressive sales force in the industrial and bakery trade. Honey, whether from U.S. beekeepers or off shore is all handled in a "fussy" manner so the end product is consistent, and affordable.

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PACKERS ... Cont. From Pg. 95

Similar in size and product is *Western Commerce Corporation*, headquartered in City of Industry, CA, with a branch in Kansas City. Started in 1935 by his father, Roland Vom Dorp now runs a 25 million Lb/yr. operation that has a somewhat different flavor than *Dutch Gold*.

They have a 24 drum minimum purchase rule, which is a small truck load. Before sale samples are preshipped by the producer for color, flavor, etc. A purchase contract is sent to the seller after examination. On receipt a 10% random check is made and compared to the sample. If different, further checks are made and a price change is made. In extreme cases a USDA inspection is made to verify findings.

Once accepted the lot number is registered for future reference. Samples are tested for common problems, and testing for less common contaminates is in the planning stage. They pay 30 days net on receipt.

WESTERN COMMERCE CORPORATION

Industrial sales account for some of this product, but much is bottled for the retail trade under the *Cucamonga* and *Pot O' Gold* labels. They sell 8 oz., 12 oz., 1, 1.5, 2, 3, and 5 Lb. containers, plus gallon and five gallon, all in plastic. For the industrial trade they will sell drums, totes or tankers. Glass is special order only. They also do about 3% private label. They sell molasses to the industrial market.

National sales are broken into several areas. Retail and food service sales each have a manager working with brokers. The industrial and export areas are covered by brokers and selling direct. There are some direct retail and food service sales, but very little.

They have two people in charge of purchasing honey, one for the Canadian and U.S. market, and one for other foreign sources. They import about 30% of their total, used mostly in blends. They are very active in the beeswax arena, too, but only buy processed product to resell.

Different from many operations is their Total Quality Management (TQM) program, where they work with beekeepers and others before a product is produced. Honey house standards, medication use and other management practices are developed, that, when complied with, qualify a beekeeper to become a 'Certified Honey Supplier'. Receipt of this certificate entitles a producer to a higher price for his honey because production costs (testing etc.) will be lower and the savings passed on. This TQM program also applies to manufacturers of boxes, bottles, etc. Even the development of a new plastic bear had to meet these specs. Needless to say this program has met some resistance from beekeepers. However, this type of quality control is common in other food producing areas, so that its finally coming to honey packing is not surprising.

"The government loan program is still necessary for beekeepers", said Vom Dorp, "because the way things are if they lost the program, we'd lose producers. But the buy back is another thing. When the buy back goes up the packer absorbs the difference, but (seldom) get the difference when it goes the other way", he added.

"But I think the biggest problem this industry has is the little producer/packer. They can put honey in a bottle during the off season and approach a local market with a lower price. They don't measure the overhead they have, or their labor, and can underprice a bigger operation every time", he said.

"And, there's the producer who makes a commitment for delivery down the road, then backs out for a better price elsewhere. Packers need to be more business-like and enforce these commitments", said Vom Dorp.

Western Commerce is a typical food process operation. Though they work with beekeepers their philosophy would work equally well with sweet corn or pickles. They are probably the way most honey will go in the future.

Groeb Honey Farms in Onsted, Michigan takes a somewhat different approach to buying and selling honey. Their background is firmly established in honey production (and although they still run a 1000 colonies we have placed them in the packer column), and in honey packing.

Similar in outlook to *Glorybee*, they consider themselves a 'food company', selling a variety of products to the food service and industrial market.

"Nobody cooks anymore", said Ernie Groeb, Jr., "so we're looking to sell where the largest market seems to be."

Ernie's father started the business in 1984 with two of his sons after working several years at Hubbard's, also in Onsted. After a rough start they slowly began expansion, purchasing a Florida facility and growing from there.

Groeb Farms buys honey primarily from the eastern part of the U.S., and the collection facility in Florida buys much of that crop. They also have eight warehouses across the country for storage and collection. With seven semi's and two small trucks transportation isn't a problem.

They will buy any amount of honey, and for small lots pay cash on delivery. Larger amounts are usually net 30 days. Container exchange and freight are figured in the final price, but they require samples for color and moisture testing.

Because they are almost exclusively a bakery and industrial supplier their bottling equipment is limited. They will do private label on request. Most honey is sold in barrels, totes, or plastic containers used in food service or industry. They also handle molasses, peanut butter, sunflower seeds, mustards, sauces and mayo for some customers, and all are custom packed. They aren't all things to customers, but they fill several needs, and can supply several items on one truck, with one invoice, saving money.

They handled over 30 million Lbs. of honey last year, have 47 employees and devote one and a half people to dealing with government paperwork.

One person handles the food end of the business, while Ernie Jr. deals with the industrial customers. Sales are made through brokers, who don't own the product, but can offer services to their customers a packer this size can't.

"Brokers are a cost of doing business. They do the sales work and get paid for it", Ernie Jr. said. "Even though I visit each customer once per year I can't offer than kind of service. It's worth the price", he added.

But just selling isn't enough. Developing a new product in conjunction with a manufacturer is the aim of this outfit.

"We may spend years working with a company on a new product, getting just the right blend, or color or consistency to meet exactly what they want. We start on the ground level and work up. We develop the standard for the product, therefore the manufacturer won't gamble with another supplier just because of price. Our quality and consistency are worth the extra cost to them", said Groeb.

"This 'pull through' system is better than just beating a price because you've developed a working relationship with the customer. It's a win-win situation for both", he summed up.

Groeb Farms sells bee supplies to customers and also handles wax, in fact quite a bit of wax, besides food and honey.

To make some blends they import product, but less than 15% of their total last year.

"We have a good supply of domestic honey, and are on good terms with our producers, so imports aren't a big part of our business", Groeb said, "but we need to do some."

Groeb Farms has focused their skills on other than the retail market. Increased use of honey in the food service and industrial sector has spurred their growth, and working with manufacturers on new product development promises to keep their market growing.

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The honey packing industry in this country is as varied and as variable as the people in it. From small, high end gourmet outfits to mega packers putting labeled honey in bottles for hundreds of different customers, to operations who focus on developing products with global sized food manufacturers.

Each, in their own way fills a piece of the demand for honey, some even help create more demand. Each has problems with suppliers (including honey producers), with the government program and with maintaining the quality their particular market calls for.

And each tends to deal with the beekeeping community from a different perspective. Some, like *Island of the Moon* keep their feet firmly planted in the beeyard, while operations like *Western Commerce* and *Dutch Gold* tend to treat honey as a raw commodity, much like wheat or cotton.

Inherently, none of these outlooks should be difficult for a honey producer to work with and in fact, when approached in the correct light a particular producer and packer should mesh quite well.

The key, of course, is that both need to understand the other's position, needs, business and product requirements. This process, it seems is often more difficult than producing honey, putting it in a bottle, or selling it to the person each absolutely requires – the customer.

HOME HARMONY

ann harman

Be Patriotic Today

February is a patriotic month. Now you are probably used to thinking of the 4th of July, but February has more claims to being patriotic than July. Although we celebrate a Presidents' Day on a Monday, we also celebrate Washington's and Lincoln's birthdays as special presidents. Two other Presidents were born in February: William Henry Harrison and Ronald Reagan. The Boy Scouts of America organization was founded in February. And don't forget Groundhog Day, a peculiarly American celebration. Also in February our first American was sent into orbit. So February becomes a month to celebrate. How about a cake decorated like the American flag? You can use the same recipe and decoration for a 4th of July picnic, or for any other national occasion or celebration.

Garden Carrot Cake

First comes the cake and a 9x13" pan will be just the right shape. You will need some blue food coloring, too.

4 eggs
1 cup honey
1 cup vegetable oil
2-1/4 cups flour
1/2 teaspoon salt
1/2 teaspoon baking soda
2 teaspoons baking powder
1 teaspoon cinnamon
1/2 teaspoon nutmeg
3 cups grated, raw carrots
1 cup chopped walnuts
1 cup raisins

Beat eggs, gradually beat in honey until light. Slowly add oil. Mix together flour, salt, baking soda, baking powder and spices. Stir into batter. Add carrots, nuts and raisins. Pour into a greased 9x13" pan. Bake at 325° for 45 to 50 minutes.

Ontario Honey Recipe Book
Ontario Beekeepers Association

Cheesy Frosting

After the cake has cooled, ice it with your favorite white frosting. You can use this simple cream cheese frosting which goes well with carrot cake.

1 8-oz. package cream cheese, softened
3 tablespoons honey
1 teaspoon vanilla

Beat cream cheese until light. Beat in honey and vanilla. Makes 1-2/3 cups. You may increase the recipe by 1/2 if you prefer a more generous frosting.

Ontario Honey Recipe Book
Ontario Beekeepers Association

Ice the whole cake with white frosting. However, save a small portion of frosting and tint it blue for the blue field in the upper left hand corner. You can either put the blue-colored frosting on top of the white or directly on the unfrost portion.

For stars, you have a choice. One word of advice – it is very hard to get 50 white dots on the blue field, but don't worry – no one will count. The white stars can be made with little dots of white frosting or white chocolate drops. You can also choose yogurt-covered nuts or raisins. If you go for 50 "stars" you will need to make 5 rows of 10 dots – impossible with something as large as coated raisins.

Now for the more difficult part. Your choice of red for the stripes is easy: halved or quartered strawberries or red cherries. Fresh raspberries can be used but the frozen ones are too juicy and tend to collapse when completely thawed. Don't try to make your stripes too accurate – 13 stripes just does not divide out very well. Start at the bottom of the cake with a stripe of red. The *bottom* of the next red stripe will be a tiny bit less than 3/4" from the *top* of the last red stripe. It's not easy getting the spacing of the stripes. Just guess and have a bit of white frosting in reserve to cover up anything you had to change. If you have to add or subtract stripes, don't worry – the effect will still be great!

Strawberry Fluff

Punch bowls tend to be unearthed for special occasions and hidden in a back corner for the rest of the year. Too bad since many punch bowls are very pretty and a small punch bowl makes an elegant server for a mousse or other gelatin dessert. A strawberry fluff would make an ideal light dessert for a Presidents' Day supper. Use a white tablecloth and some blue paper napkins for a patriotic effect.

1 pound strawberries
2/3 cup honey
juice of 1/2 lemon
2 envelopes unflavored gelatin
3 egg whites

Place the strawberries, honey, lemon juice and gelatin in a saucepan; add about 1/3 cup water. Simmer for 15 minutes. Strain. Chill until partially set. Beat the egg whites until stiff. Fold egg whites into strawberry mixture. Chill. Serve with whipped cream. You can save some strawberries to halve and decorate the top of the fluff.

variation on a recipe from Nature's Golden Treasure Honey Cookbook
by Joe M. Parkhill

Cherry Pie

George Washington seems to be remembered for two things: being the first president and for chopping down a cherry tree. Whether he did or not, cherries are a traditional symbol for his February birthday. And cherry pie seems to be a traditional dessert.

Instead of using the usual lattice-top crust, see if you can find some cookie cutters in appropriate shapes and decorate the top of the pie with pie-dough hatchets or other shapes.

1 21-oz can pie cherries
3 tablespoons cornstarch
3/4 cup honey
1 tablespoon butter
1/8 1/4 teaspoon almond extract
unbaked shell for 8-inch pie

Drain cherries, reserving juice, and set aside. Combine juice with cornstarch. Add honey and cook over medium heat, stirring constantly, until thickened and clear. Add butter and stir until melted. Remove from heat and gently stir in cherries and almond extract. Set aside while preparing crust. Preheat oven to 425°. Line an 8-inch pie plate with pastry; spoon in filling. Top with lattice strips or shapes cut from pie pastry. Bake 30 to 35 minutes or until filling is bubbly and crust is lightly browned.

The Healthy Taste of Honey
Larry J.M. Lonik

With these recipes, February can be a month of celebration. Be certain that in the midst of the flags and cherries Valentine's Day is not forgotten.

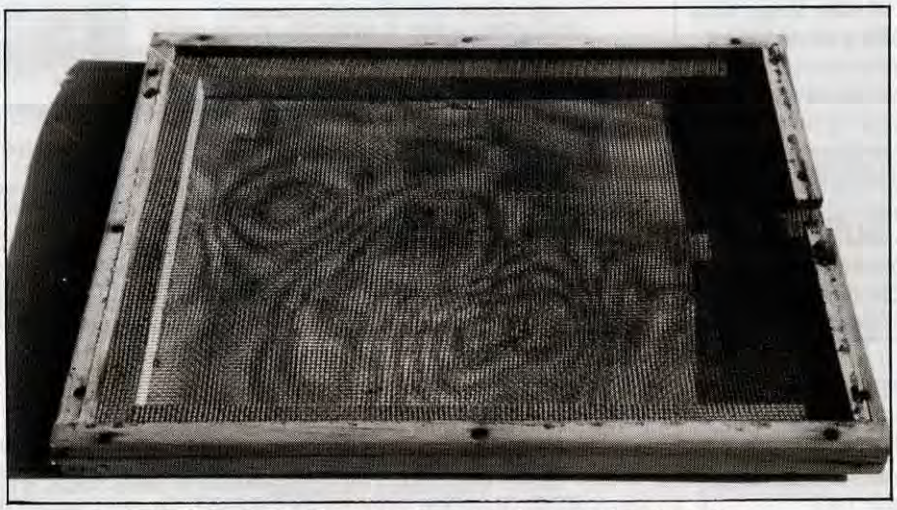
TAKE THE BITE OUT OF TRACHEAL MITES

dennis whetzel

Making splits makes more sense than ever, when viewed in this simple biological light.

As the sun rose over the valley early one morning, I reflected on the past year's activities in the bee yard. Why did the bees in my home yard have 50% losses, while in two other yards of the same bees and given the same treatments, had minimal losses of only 5%. What was the difference? Then the realization dawned on me. It was like a revelation, and so very simple.

Splitting colonies using a double screen over the parent colony has been my usual spring procedure for many years. It is recommended by Taylor and others, but I did not realize the importance of one tiny aspect of it.



The simple double screen can save bees, and make splits.

In April and May I make increases by splitting colonies, as the bees are making natural queen cells at this time. I place one to three of these cells in each new split. I make as many splits as possible from each colony, depending on colony population and number of natural queen cells available.

These splits are placed on double screens above the parent colony. This past year, after a month or so, the time came to market honey from the parent colony. I moved the splits to a new location, collected honey and then moved the parent colonies into yet another location for a new honey flow and left them there for the season. At the time of the fall harvest, the parent colonies had produced a reasonable amount of honey given the flow conditions, so they were strong and had high numbers going into the winter.

However, in November and December noticeable decreases were observed and these previously strong colonies suffered losses as high as 90% by the coming spring. K-wings were observed and I attributed the rapid weakness and death of previously vigorous bees to tracheal mites.

On the other hand, splits from these heavily infested colonies that were placed in separate yards from their parents only suffered minor losses of 5%. They were from the same bees that had the 90% losses in that same year. Something was significantly different.

If the original colony has a high population of bees in the fall, but does not survive the winter and the split from that colony had fewer bees but does survive the winter, I guessed it must be because of heavy infestation of mites that the parent colony died and a lesser infestation allowed the split to survive. This was particularly evident due to the huge difference between the two mortality rates.

So what is happening here? I am no scientist, and I did not conduct a double blind study, but the following is my guess.

When the bees are split, several frames of brood are placed into another short super or nuc, with whatever bees are hanging onto it to care for that brood. It is commonly acknowledged that the older bees have

a higher concentration of mites. Any field bees that leave this nuc to gather honey or make cleansing flights only know their old entrance and so will return to their parent colony. *The significant point about the whole procedure is that the new nuc is virtually cleansed of mites by virtue of the old, foraging, more intensely mite-infested bees flying out of the nuc to forage and instead of returning to the nuc, returning to their old familiar entrance.*

The nuc is then left with basically only nurse bees, guard bees, house bees and brood, all having low concentrations of mites.

For a week or two, no foraging bees are present in the split. But as the new colony determines that it doesn't have any food, it will send out field bees to collect nectar, but these are still young bees with few mites. Even if they were not totally mite-free, it wouldn't make much difference for the first year. As experience has shown, it takes two or three years before we notice colony death from extreme infestation. Any foraging bees left in the split will go to the field and return to the parent colony, not to the split.

When the new split is *immediately* taken into a new yard, all the older foraging field bees are brought along, which necessarily have higher concentrations of mites. While this split may make it through the season and even produce a fairly good crop of honey, it most likely has a 50% chance of making it through the winter due to mite kill.

However, by leaving those splits in the original yard, on a double screen above their parent colony, with the entrance of the split to the rear, the old bees are given time to fly out of the split and back into their original colony, since they usually return to their familiar old entrance. The bees that remain in the new split would be nurse bees and other fairly young bees having comparatively fewer mites. Thus you have an immediate reduction in the mite population of the new split.

To be successful, the procedure is done in the yard and the splits must remain in the yard for at least a few weeks, then moved to a different location.

Some beekeepers have been making splits and carrying them on to the next yard. If you don't have mites, that procedure produces a stronger split but because you've brought along a huge percentage of field bees on the frames, emptying their load at the time of the split, the ratio of mites to bees has not been reduced and the colony again has the typical 50% chance of not surviving the coming winter.

I personally feel that the only reason my losses were not greater was because of my normal splitting procedure and that by a quirk I inadvertently did some splits correctly, *leaving them on the parent colony for a period then moving them to another location.*

So what's my procedure?

(1) Separate the colony by a double screen and put your new entrance in any other direction, just so it is different from the parent colony. This assures that the field bees will not again enter into this raw split. Make sure the split has enough honey until they begin foraging on their own.

(2) Keep the split over the parent colony until the queens take, (about three weeks).

(3) Remove the splits, place them on bottom boards and move them into new locations. Do not move the parent colony and the splits to the same location. Drifting may cause the split to become more rapidly infected.

(4) If you don't have a double screen, put on a bottom board and turn the entrance to the back and put in an entrance block to keep the brood warm. It has to be fairly warm to do this – warmer than early spring here in Virginia, but it may work.

(5) Put these splits on bottom boards over your parent colony, with entrance to the back.

(6) Allow the split to remain in their accustomed yard so field bees go back to the parent colony.

That's it. That's all there is to it. Please don't underestimate its value. Bees manipulated in this manner have their mite population reduced so significantly that these new splits will survive the winter without any treatment for mites.

It is good to make splits early so they make use of a decent honey flow and survive the winter. In our area of the Shenandoah Valley of Virginia, splits can be made up until July if placed over double screens to winter.

If you wish to use this manipulation to maintain your current number of colonies, simply make up enough splits each year in anticipation of your usual losses. If you lose 50%, make up 50% splits. That is your increase and your number of colonies will stay relatively constant. If the population of the mother colony is still strong, she may be split several times if desired. This way one could actually increase the total number of colonies.

A number of field bees are lost the first year, so population is not quite as high, and you will likely get lower early honey yields. However, the bees do build up quickly. The split will become strong enough in four to six weeks time and will be able to collect normal amounts of any honey flow after that time. So if you wish to place the bees on an early flow, take action as early as possible for your area in the spring.

To be successful, the splits are made and kept in the same yard, at least for a few weeks.

The parent colony will make it through the season and will produce a good crop of honey if available, but from my experience there is a 50% winter survival rate. Treatment with menthol or pesticide strips could reduce the likelihood of death. The split, however, survives the winter anyway, whether it is treated or not.

Splitting prevents swarming because it gives the queen more room to lay eggs and reduces conjestion; but there are greater advantages. Splitting reduces the mite population because older, foraging bees remain with the original colony; new nurse bees have low (or no) concentrations of mites.

By moving splits *later* to a new location, you are creating a yard where, as a group, mite population is low because all colonies are new splits. If you let the splits raise the queen

Continued on Next Page

TRACHEAL ... Cont. From Pg. 101

cells you put in, splitting gives new vigorous queens which produce more bees, which dilute the mite to bee ratios even more, plus you'll gradually produce mite resistant bees.

When queen cells are obtained from stronger colonies, even though they are still infected by the mites, they are probably already developing some resistance. If we remove brood and queen cells from these survivor colonies we are using bees that are the most resistant to mites, otherwise these bees would not be strong – they would be dead. So we are selecting for mite resistance in our own bees.

Understandably many may laugh at what appears to be a simple solution, and conjecture as to what occurred in his bee yard that year. However, the foregoing is the result of one thinking beekeeper trying to survive as his colonies give into the onslaughts of the tracheal mite. It is evident that something positive resulted from that manipulation. In desperation, I have speculated. But speculation is often the mother of discovery. Try it yourself and see if you can take the bite out of the mite as well.

F I R E !

larry goltz

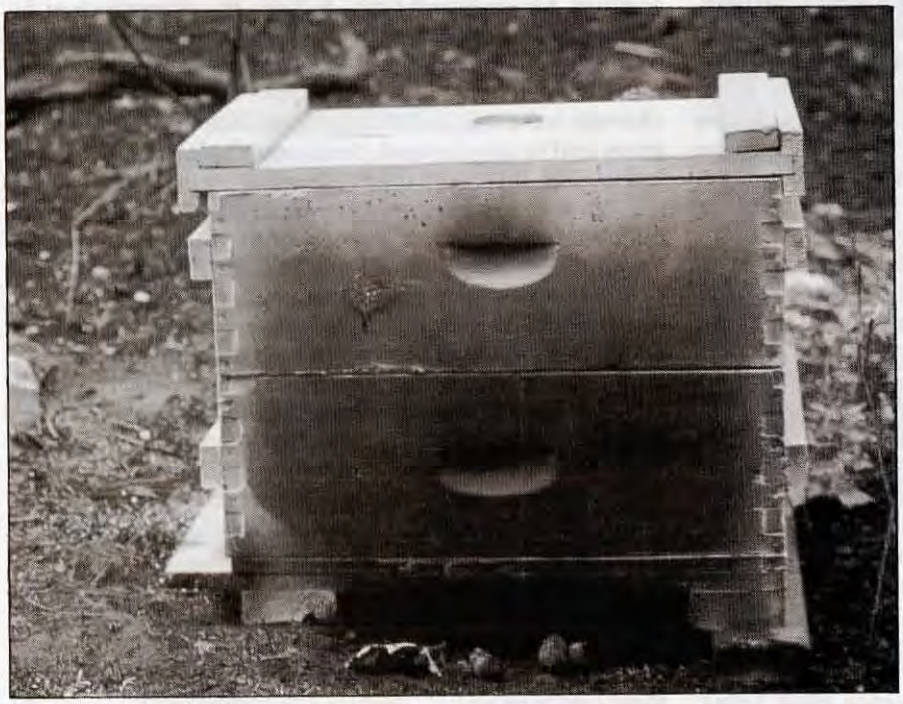
Millions Of Trees, Thousands Of Acres Of Brush, Hundreds Of Homes . . . And A Handful Of My Colonies . . . Gone.

It was William Tecumseh Sherman, a Union general in the Civil War who said, as I remember from my American history, that "War is hell" So are such disasters as the recent hurricanes, tornadoes, earthquakes, floods and fires. Many of these disturbances are quick acting and horribly destructive. Recently in northern California we experienced a very destructive forest fire. Six years of below normal rain and snowfall left the woods as dry as tinder. The inevitable forest fires scarred the landscape and tested the spirit of those immediately affected.

Fountain fire, the worst in California in the last five years had a rather inconspicuous beginning near Round Mountain, 25 miles east of Redding, in east central Shasta County. Many beekeepers will recognize Shasta County as being the locale of a number of package and queen bee producers. The fire may possibly have had its origin in arson.

The first report of the fire was heard on local TV news on Thursday evening, August 19th, 1992. It spread rapidly to the adjacent community of Montgomery Creek and eventually 25 miles to the east through some of the finest timberland in northern California. Ponderosa pines and large cedars flared into flames like giant torches. A week later, the fire was 50% contained, but not before approximately 68,000 acres of land was scorched, 307 homes and 267 other buildings burned. Privately owned timber worth $85 million was destroyed, enough to build 50,000 homes. At one point, 208 fire engines, 77 bulldozers, 16 water tankers, five tanker planes, 15 helicopters and 3,925 firefighters battled the blaze, some having hurried north 200 miles without rest after bringing under control the huge Calavaras fire to the south.

Four days after the fire began I drove into the burned area . At my first two stops I was heartened to find the bee yards undamaged. Just beyond the second apiary site the blighted zone began. By the time I reached the third location I was nearly resigned to what was likely to be found. Only a two-inch deep circle of ash remained of 10 three-story colonies, each with a super of yellow star thistle honey. The following week I would have extracted these supers.



A survivor. Scorched but alive.

I drove to the remaining bee yard. All about the fire had razed the woods destroying homes, but sparing others. Trunks of huge trees and stumps were still smoking, an eerie, surrealistic scene of destruction wrought by three days and nights of intense wind-driven firestorm. I felt uneasy, as one does on a battlefield shortly after the front lines have advanced leaving devastation behind. It was a scene devoid of the comforting presence of other humans; a holocaust had descended upon the earth now lying silent, the specters of blackened trees stand-

Continued on Next page

Only piles of ashes remain where once four colonies stood.

FIRE! ... Cont. From Pg. 103

ing lifeless trailing wispy plumes of smoke into the reeking atmosphere. I was reminded of other times, years distant of the battle of Hurtgen Forest in World War II where shell-shattered trees bore testimony to the devastation rendered shortly before.

Periodically a low flying tanker plane would pass overhead carrying fire retardant chemicals, or a helicopter with a bucket of water suspended below would chatter by, enroute to the plumes of smoke marking where the demon raged ever forward.

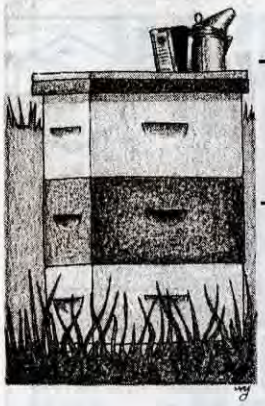
The last stop on my tour of inspection eight colonies remained of the original 21, started last spring from packages. Earlier that month the majority were populous and working in the third story. I had been considering wintering them in this sheltered location. Now there remained only charred patches of cinders to mark where 13 of the colonies had been. The next day I moved the surviving eight colonies out of the fire zone. Only two of the hives bore burn marks. Inside the hives, frames, combs and the bees were apparently undamaged.

Why eight colonies were relatively undamaged while colonies a few feet away were completely burned is a riddle for which I have no answer. Could the action of the eight surviving colonies been responsible for their well being? Could fire retardant sprayed on nearby ranch buildings have provided some measure of protection? It seems unlikely as those destroyed were intermingled with the survivors.

Some may question my choices of apiary locations, and perhaps there is some justification for such criticism. Two years ago I lost 18 colonies to bears after being assured by the land owner that no bears had been seen in the neighborhood. At least in that incident I could rationalize the loss by taking some satisfaction from the thought that several well fed bears went into winter nourished on my U.S. Grade A yellow star thistle honey. At my Montgomery Creek apiary, the site of total loss, the colonies foraged from hives located in a grassy clearing near stands of blackberries, yellow star thistle and were fronted by an apple orchard. The bees built up on creekside alder and willow and later on apple bloom. Now ghostly, charred trees marked the creek bottom land. Previously grass and brush covered, rocks reared blackened, almost indecently, in seared fields.

So, if you have never been burned out, flooded out or otherwise suffered bee losses, count your blessings. My losses were small in comparison to others who lost properties of much greater value, or, worst of all, met death or suffered injuries. However relatively small my loss the experience leaves me cognizant of how greater losses can be catastrophic for some beekeepers. I can only suggest that beekeepers take reasonable precautions when siting apiaries. Consider the possibilities of flooding, wildfires, predation, poisoning, climatic aberrations and vandalism. In my instance even inches-high dry grass surrounding my colonies was sufficient to carry fire to the doomed hives.

Beekeeping has its hazards as most of us are aware. Biological and natural disasters take their toll of colonies. Eternal optimism, the catharsis that erases all memory of prior troubles seems to be a beekeeper's special attribute. Most continue on despite the setbacks.



BEE TALK

richard taylor

"Careful managment reduces swarming almost every time; and, don't be fooled by new equipment. Use what works, not what's pretty."

December is no time for me to be talking about bees. Not much is going on, and on top of this, my interest in bees is always low at this time of year. I need to be out working with them for my enthusiasm to peak. When winter sets in I start to languish, like the bees.

Anticipating this, I sat down one day last June, when my spirits were high, and wrote up something about my bees, thinking that, by golly, come winter I might be glad to have that on hand. And that time has come. So here is what I wrote.

My management system seems to be working pretty well this spring. Most of my colonies are up to good strength and they started working in the comb honey supers in mid-May. By the first of June some of the hives were getting so crowded with bees that the entrances were getting congested. That's the way you want it. And the supers were full of bees. That meant they would soon be full of gorgeous, snow-white comb honey. Swarming was minimal. I kept a pretty close eye on things and only saw two swarms, both very small. The best way to tell whether a colony has swarmed is to look in the supers. If a super has lots of bees in it one day, and the next time you look it has very few, then that colony has swarmed. I always know at a glance which colonies are strongest, or rather, which ones were strongest last time I looked. There's a brick on the cover of each hive, and if the brick is toward the front, it's strong; toward the back, weak. If it's crosswise, then there's reason to think something might be wrong, such as queenless or something like that. A brick on end means the hive needs another super. Those bricks save me a lot of time.

The reason swarming has not been a problem is that my management system worked. I seem to have timed things just right. Beginning in mid-May I took three combs of brood and bees from the brood nest of the strong colonies and, with new queens, made up nucs and new colonies. I kept this up for a couple of weeks, concentrating each time on the strongest colonies, but most of them I did early on. I guess I must have split out combs of brood from maybe 20 colonies altogether. With nine combs you can start a new colony, giving them a new queen, and with three, a nuc. I sold the nucs. Timing is what is important here. If you put three empty combs, or foundation, in the center of the brood nest of a strong colony, then it will be three weeks before the first adult bee emerges from those combs, and you have stalled swarming by at least a month. By that time the bees will usually have gotten over the swarming impulse and settled down to making honey. But if you start removing combs of brood too soon, then the bees will have built back up before the swarming season is over, and you'll get big swarms.

Well, it's a good feeling to put an idea into practice and then find that it's working the way it should. Though nothing is perfect, of course. Some years this system works better than others. I figure the time to split out those three brood combs is when the dandelions are starting to bloom. If you do it too late you'll get big swarms early on, and if you do it too early you'll get late swarming. So the timing is critical.

I was standing in the middle of my favorite apiary the other day, marveling at how well things are going there, and noting, too, that most of my hives are in pretty junky condition. They haven't been painted since I can remember. Some of the covers are shot. A couple of them are hardly more than a sheet of rusty tin, the wooden parts having gotten broken and fallen off. A few of the bottom boards are also coming to pieces. I checked the catalogue to see how much some replacement equipment would cost, and was shocked. You can't make any money from your bees with that kind of overhead. So I called the lumber yard and had them cut up a panel of five-eighths inch construction plywood. That gave me ten pieces for twenty dollars. Now with a few scraps of wood that I've got lying around, a bit of creosote I still have on hand, and some aluminum sheets I picked up for nothing from a printer, I'll have five fine new covers and five nice bottom boards, and I'll be able to make them all in less than an hour. They'll last for years.

Of course this won't improve the general appearance of my apiaries. I'll still have hives where the bees are going in and out of cracks in the backs, rather than the regular entrances, but who cares? To me the beauty of a beehive is not how well it is painted or how shiny is its cover or how well designed is its stand. The beauty of a beehive is how full of bees it is and how fast they are filling the supers up with beautiful comb honey. That is what counts at harvest time. And to get that kind of beauty you

Continued on Page 110

QUESTIONS? ANSWERS!

Richard Taylor

Doorways

Q. What size should the winter entrance to a hive be? And is a top entrance advisable? If so, how big should it be, and where should it be?

Joseph Morris
Wills Point, TX

A. The purpose of reducing the winter entrance is (a) to keep mice out and (b) to reduce cold draft through the hive. Traditionally, this is accomplished by inserting a cleat with a notch about an inch or two wide and about a quarter inch high. The problem with this, however, is that the restricted entrance often becomes obstructed by dead bees, and this can cause suffocation of the entire colony. A better approach, I think, is to insert a wedge of quarter-inch hardware cloth into the hive entrance, thus keeping mice out, and then slap a scrap of tar paper across the entrance, held in place with a couple of staples or thumb tacks, thus keeping the wind out. The bees go in and out around the sides.

As for an upper "entrance", the idea here is to provide ventilation for moisture to escape. This is very important, and is easily accomplished by creating a small crack at the top of the hive, any place, or by leaving the inner cover hole partly open.

Mead Info

Q. Where can I get information on making honey wine?

Scott Litzau
Glencoe, MN

A. From Mr. Steve Forest, Rt. 1, Box 135, Moravian Falls, NC 28654. You can also contact the American Association at P.O. Box 206, Ostrander, OH 43061.

Requeening

Q. I just started beekeeping last spring with three packages, one Italian, one Midnight and one Starline. All have done very well, and the hives are very populous. When should I plan to requeen them?

Bruce Hrach
Smithton, PA

A. Since you are just starting I recommend that you not requeen at all. Your colonies are all strong, which means the queens you have are doing fine. Leave well enough alone. After a season's experience you can decide when to include requeening in your management. Many good and successful beekeepers do not routinely requeen. Things can go wrong requeening, especially for beginners.

AFB Cleanup

Q. Can you use bleach or bleach water to clean up hives and frames contaminated with AFB?

James Shaw
Ames, IA

A. I have never tried it, nor known anyone who has. A solution of hot lye water works well for frames, though it is dangerous stuff. As for hive bodies, it is quick, easy and effective to scorch out the insides a bit. Sprinkle kerosene inside – not much – stack the hive bodies on a bottom board or sticks, drop in some flaming newspaper, creating a roaring chimney effect, then quickly smother the flames by covering the top and bottom, so that the hives are slightly singed inside and not turned to charcoal.

Makin' Nucs

Q. Can you make up a nuc with just one frame of brood? When you make up a nuc, do you take it to another apiary or leave it in the apiary where it was made up? If the latter, how far should it be from the parent hive? And how soon do you give it a new queen? Do you introduce this new queen with the attendant workers, or alone? And should you then check for queen cells after a few days?

Maurice J. Walsh
Limerick City, Ireland

A. At least three combs are needed to make up a nuc, and at least two, and preferably three, should contain brood. It can, but need not, be removed to another apiary. If left in the apiary of the parent colony the entrance should be stuffed with grass overnight, to discourage too many bees from flying back to their hive. It makes no difference how far it is from the parent colony. It should be requeened at once, with or without attendant workers, and you should check four days later for the presence of eggs. If there are no eggs and the queen was released from her cage then the queen was rejected, and you will certainly find runt queen cells, which should be destroyed, and you start all over.

Cold Outside?

Q. What is the lowest temperature that I can open my hives when there is little wind without danger to the brood?

Leroy S. Yoder
Flemingsburg, KY

A. 65°F.

Ed. Note: 65° is the recommended temperature for prolonged exposure, but for emergency inspections 50° for a few minutes will do minimal harm.

Allergy Symptons

Q. I bought six colonies of bees last spring. I got stung a few times but it was no problem, but then it started getting worse and I began swelling more and more. I want to continue with my bees and someday have a nice retirement hobby, but this alarms me. Have you ever heard of this?

Ken Dykema
Holland, MI

A. It is not clear at this point whether this will be a serious problem. The general rule is this: So long as the reaction to a sting is localized, that is, consists only of swelling at the area of the sting, then it is not a problem, even when swelling is severe, but, if there is a general reaction, perspiration, itching, etc., *throughout the body*, then this indicates a sensitivity to stings that is likely to increase and may become dangerous. An allergy test by a doctor is recommended.

Questions are welcomed. Dr. Richard Taylor, Box 352, Interlaken, NY, 14847, & enclose a stamped envelope.

?Do You Know? Answers

1. **True** Strong, sturdy combs are required in the brood nest and in honey supers used for the production of extracted honey. Typically, the comb foundation is reinforced with wires, nylon threads, thin sheets of plastic etc., and is often wired within the frames so the combs can withstand many years of use. In honey types where the wax is consumed with the honey, the comb foundation is different than what is used in the brood nest. Thin foundations are used without wiring so that the filled honey comb can be cut from the frames ready to eat.

2. **True** The color of the hive exterior affects the temperature of the hive interior. White paint reflects heat better than darker colors or aluminum paint. The light color helps colonies stay cooler in hot summer weather.

3. **False** An ideal apiary location would be to have the early morning sun hitting the front of the hive and partial afternoon shade during the hottest part of the day. It is important to have the hive heat up quickly in the early morning, which means the bees start foraging earlier than the colonies in the shade. Partial shade in the afternoon means less bees are required to cool the hive.

4. **False** The best time to work bees is when conditions will allow the older bees to be actively foraging in the field, rather than being confined to the hive. Young house bees are more docile to work with than older field bees.

5. **True** Many different kinds of wood can be used in the construction of a hive. Western pine is the best wood to use for hive bodies, lids and frames. Many other woods can be used, but most are less suitable because of their weight, tendency to crack or split, and other characteristics. Hive bottoms made of cedar, cypress, or redwood generally last longer than those made of pine or similar woods.

6. **False** Both in nature and with sheets of comb foundation, comb construction will start at or near the top and build downward rather than starting at the ends and building toward the center.

7. C. 17 5/8 inches long, 9 1/8 inches deep

8. B. Hexagonal

9. D. 3,500 bees

10. The new colony will reduce its syrup intake or refuse syrup altogether when nectar readily becomes available to them. Continue to feed until the bees stop taking it.

11. A beginning beekeeper should start with at least two colonies. With more than one colony they have the advantage of being able to exchange brood, bees and combs in case one of the colonies needs help or becomes queenless.

12. The **Apistan Queen Tab** is a 1% fluvalinate impregnated plastic strip developed specifically for the control of Varroa mites in queen shipping cages. A **Follower Board** is a board used in place of a frame when there are fewer than the normal number of frames in a hive.

13. The lower two-thirds of the end bars are narrower than they are at the top so that bees have free access between the frames.

14. Hive Tool

15. Cut comb honey, Section comb honey, Chunk honey

16. Reducing the number of combs in honey supers to 9 or 8 results in thicker combs that are easier to uncap and produces more wax. When the number of combs are reduced in the brood chamber, it is easier to remove the first comb without rolling as many bees and inspect the brood area.

17. A. The presence of a honey flow.

B. Within the brood nest or directly above it.

C. Feed sugar syrup to stimulate wax production.

18. Air conditioning or cooling the hive.

Bees need water for brood rearing.

Breaking down granulated honey stored in the hive.

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

BEE TALK ... Cont. From Pg. 108

have to manage the colonies right, and not just putter around with things that don't make any difference.

There's another thing about my beehives that might look a little funny. They are all one and a half story, and the shallow story is on the bottom of most of them. So they sort of look as if they were upside down. But there is a reason for that. My management system is very simple. It consists simply of splitting out nucs at the right time, as indicated. So it is much better to have the deep story on top, since that is where the combs of brood will come from. Also, if those combs of brood are replaced with foundation, instead of drawn combs, then they'll get drawn out a lot better up above. If they were down next to the bottom board they would get chewed up.

Some people take a deep satisfaction in having everything looking nice and new. They want new clothes, new car, everything bright and new. I take a far deeper satisfaction in the opposite – old clothes, bought at the Salvation Army store, a rusting old car that's gone 150,000 miles and is still giving good service, and, of course, old, thoroughly propolized beehives that have paid for themselves many times over and are still, from the bees' point of view and from mine, just exactly right.

GLEANINGS

FEBRUARY, 1993 ALL THE NEWS THAT FITS

USDA RELEASES MITE RESISTANT BEES

U.S. Department of Agriculture researchers are scheduled this spring to release honey bees from Yugoslavia that resist two mites now threatening the supply of bees needed to pollinate crops.

While USDA's Agricultural Research Service often distributes plant germplasm to be bred into new varieties, this is the first time the agency has ever released an insect as breeding stock, said Ralph Bram, the agency's national program leader for veterinary and medical entomology.

Bram said the agency's Honey Bee Breeding, Genetics and Physiology Laboratory in Baton Rouge, LA, will release a stock of the Yugoslavian subspecies, *Apis mellifera carnica*, to several selected bee breeders. They will produce queens that will then be distributed to beekeepers. A Stock Release Panel, comprised of ARS and industry representatives, will choose specific breeders to maintain supplies of the bees, Bram said.

He said the Yugoslavian bees – first quarantined in this country in 1989 and later reared for field tests – "have reliable resistance to varroa and tracheal mites"

Thomas E. Rinderer, research leader of the Baton Rouge lab, said the Yugoslavian bees are twice as resistant to varroa mites as susceptible domestic bees, but would still require some chemicals to control severe outbreaks. But he said the resistance is so high for tracheal mites that chemicals controls for that pest probably would not be needed. He estimated that the resistant stock could save beekeepers $2 per colony in tracheal mite treatments.

Three chemicals are registered to control the mites: menthol and amitraz for tracheal mites, and fluvalinate for varroa. A fourth chemical, formic acid, is pending approval for use against both.

But researchers discovered an added bonus: the Yugoslavian bees also were resistant to the tracheal mite, *Acarapis woodi*, Rinderer said. He and Jovan Kulencevic, a geneticist in Yugoslavia, led the joint research project.

"Insect varieties have genetic traits that can benefit agriculture in the same way that different plant varieties have helped create crops with disease and insect resistance and other improvements," Bram said. "Releasing the Yugoslavian breeding stock underscores how seriously we view the mites and that we're committed to helping the bee industry solve the mite problem."

Commercial operators interested in becoming breeders of the Yugoslavian stock should contact Rinderer at Honey Bee Breeding, Genetics, and Physiology Research Lab, ARS, 1157 Ben Hur Road, Baton Rouge, LA 70894, (504) 766-6064.

CA HEROES

The California State Beekeepers, at the annual convention named Brian Wright, Beekeeper of the Year for 1992.

Brian started with bees in 4-H and now runs 1000 1500 colonies. He has held several offices in the CSBA and was Young Beekeeper in 1983.

At the same meeting, Ken Smith was named Young Beekeeper of the year. Ken began as a hobbyist, but in 1986 he started his own package and queen business with 600 hives. He now has 900, pollinates almonds and vine crops and moves to WY for honey.

The 1992 Life Time Honorary Beekeeper in California is Don Strachan. He started with bees when 14, but stated his own business in 1960. Over the years he has pollinated crops, moved bees for honey and raised queens and packages.

Brian Wright

Ken Smith

Don Strachan

Send Your Meeting Notices to *Bee Culture* at least TWO MONTHS in Advance so we can publish them for you.

CALENDAR ... Cont. From Pg. 113

as well as extensive beekeeping in the U.S. Current beekeeping problems of parasitic mites, disease will be discussed in detail. Speakers include commercial beekeepers and professional apiculturists for an extensive two-day workshop on beekeeping. The MI Honey Queen pageant will be on Tuesday evening.

Speakers include Richard Adee, Ray Buell, Kim Flottum and more.

For more information contact Dr. Roger Hoopingarner, Dept. of Entomology, MI State University, East Lansing, MI 48824-1115, (517) 353-8136.

☆ NEW HAMPSHIRE ☆

On Friday, February 5, 1993, from 6:30 – 9:00 p.m., Dr. Richard Taylor, a philosopher and lifelong beekeeper, from Trumansburg, New York will speak at the Farm and Forest Expo. program.

The beekeeping program is sponsored by the NH Beekeepers' Association and UNH Cooperative Extension and is part of the 3-day program of the NH Farm and Forest Exposition held at the Center of New Hampshire/Holiday Inn, Manchester, NH on February 4, 5 and 6, 1993.

For information contact David C. Sorensen, Extension Educator, Agricultural Resource, Carroll County, NH, (603) 447-5922.

☆ OHIO ☆

The Tri-County Beekeepers Association will hold its Annual Workshop on Saturday, March 6, 1993 at the Ohio Agricultural Research and Development Center (OARDC), Jct. Rtes. 83 and 250, Wooster, OH.

More information will follow in next month's issue.

The Ohio State Beekeepers will hold their spring meeting at the Holiday Inn French Quarter, in Perrysburg, OH (just outside Toledo), on Saturday, march 20, 1993 from 8:30 a.m. to 4:00 p.m.

Topics include pollination business, spring management, honey marketing and more.

Different this time is the excellent noon meal included in the registration fee. Dr. James Tew will be the luncheon seaker, who will 'entertain and inform'

Registration, which includes a warm sit-down meal by the pool, is $15.00 single, $25.00 couple, and $12.00 each for three or more in a family.

Preregistration for the meal is required. To preregister send your fees to Louis Haines, 354 Kessler St., Groveport, OH 43125. Registration at the door is available, but to take advantage of the luncheon you must preregister by March 10, 1993. Registration without the luncheon is $12.00 single, or $10.00 each for a family.

For more information contact Kim Flottum at (216) 725-6677 (D), or (216) 722-2021 (E).

☆ OKLAHOMA ☆

The Northeast Oklahoma Beekeepers Association has invited Garry De Young owner of De Young's Nursery in Stark, Kansas to its symposium on honey plants to be held in Tulsa at 7:00 p.m. on February 25, 1993, at the Martin East Regional Library located at 2601 South Garnett Road.

De Young, a longtime beekeeper and producer of pollen and nectar producing plants will explain the role of honey bees and honey plants in preserving our environment. He will also present several demonstrations relating to seed testing and seed germination. The public is invited, admission is FREE. A question and answer discussion will be included.

For further information on this symposium or the Northeast Oklahoma Beekeepers Association please feel free to contact myself at (918) 428-4734 or the Association's President, Carl Harrison at (918) 425-2026.

☆ PENNSYLVANIA ☆

Dr. James Tew, USDA Apiary Specialist, along with Mary Ann Tomasko, Penn State Extension Entomology Specialist, and Jim Steinhauer, PDA Apiary Inspector, will be the featured speakers at the 1993 Western Pennsylvania Beekeepers Seminar on Saturday, March 27, 1993, at the Park United Presbyterian Church in Zelienople, PA.

Dr. Tew will discuss the latest information and research on the varroa mite, the tracheal mite, and the Africanized bee. He will also present information about queen management. Mr. Steinhauer will discuss brood diseases and the new PA Volunteer Inspection Program. Ms. Tomasko will provide guidelines for the first spring inspection and report on Penn State University Apiary Research and the proposed new Pennsylvania bee law.

The cost of the seminar is $10.00 per person and reservations are required. Registration deadline is March 19. For more information or to register, contact the Penn State Cooperative Extension of Beaver County, 1000 Third Street - Suite 102, Beaver, PA 15009 or call (412) 774-3003. Due to limited space, enrollment will be limited to the firsts 100 registrants. Penn State is an affirmative action, equal opportunity university.

☆ SOUTH CAROLINA ☆

The South Carolina Beekeepers Association will host a joint meeting with the North Carolina State Beekeepers Association on March 5-6, 1993 at the Clemson University Pee Dee Research Center, Florence, SC.

Registration will begin at 12:30 p.m. on March 5, in the Research Center Lobby. Registration fee for the meeting will be $5 per family. The meeting will begin at 1:00 with a "Beekeeping Short Course" lead by John Ambrose, NC State Univ. Extension Apiculturist. The short course will be followed by evening activities including a "Carolinas Bee Bowl" and a "True Story Contest"

Other featured speakers for the meeting include Al Dietz, Univ. of Georgia research scientist, Nathan Schiff, USDA research scientist from the Beltsville, MD Bee Lab, Kim Flottum, editor of *Bee Culture*, Jim Powers, founder of Kona Queen Co., Hawaii and Troy Fore, editor of Speedy Bee.

Highlights of the meeting include a Beekeeping Forum entitled "The Issues" which will be held on March 6. Topics to be discussed included the Africanized Honey Bee and Mites. A panel of experts will discuss questions taken from the audience.

Other topics to be discussed during the meeting include: National Beekeeping News, Responsible Beekeeping, Feral Honey Bee Colony Surveys in the Carolinas, Habitat and Price, and Public Relations in Beekeeping.

The Fairfield Inn in Florence has been selected for overnight accommodations for this meeting (803) 669-1666. Room rates are $39 per night and reservations should be made by Feb. 10, to receive this special price.

We invite all beekeepers and friends to join us for a time of education and entertainment. For further information, call Mike Hood, Executive Secretary, SCBA, (803) 656-3106.

BOTTOM BOARD ...Cont. From Pg. 118

we're doing it. You might say we're respectful of our charges and mindful of our position as intruders. For example, we wouldn't think of going in front of their beeline or of opening the hive when the sun is down.

So must you learn to be visionary, but not reckless. Was Abe Lincoln reckless when he started the Civil War? Was Harry Truman reckless when he ordered the atom bomb to be dropped? They both deliberated, and took calculated risks. They both made tough decisions, and lived with the consequences. Many think these Presidents were not reckless, but rather cautiously bold.

Above all, be confident. The best preventative from being stung is to act with confidence. Guests to the bee yard, who are intimidated and begin to nervously dodge bees are the ones who often get stung. Bees sense this fear, I think and act.

Start with a plan. Then listen to advice, consult both sides, and decide based on your best instincts. Once you make a decision, never look back. Fit each spoke into a grand scheme. Listen politely to opposition, but never waver in your resolve. Believe in yourself.

I hope I have been of some help. Good luck.

Sincerely,

A supportive beekeeper.

Display Index

A Letter To Bill

howard scott

Dear Bill,

You probably haven't had too much contact with beekeepers, or bees for that matter. To my knowledge, no President has ever kept bees. Too bad. I think there's a lot to be learned, both as a bee coach and in terms of lessons learned from dealing with natural phenomena. So here's my advice to you which, hopefully, will make your presidential years more pleasant.

Remember you are the servant, not the master. We beekeepers have learned our rightful position as onlookers and intruders. Sure, we set up the hive to maximize our take, but as often as not we don't wind up with much honey. And frankly, it doesn't make that much difference.

Similarly, you must see yourself as the servant of the people. See what they really want, articulate the vision, and structure the mechanism to get there. Try to please everybody, and you'll be afraid to act. Satisfy short-term interests, and you'll lose impetus. Become vain or greedy, and the people won't respect you.

Make everybody pull some weight. In a beehive, the bees don't tolerate laziness. In fact, they ultimately get so angry they kill the drones. We've come to accept this as the natural way. After all, drones don't contribute at all to the hive's welfare; all they do is consume food.

Now we know the politically-correct position is to say, "We must help those poor unfortunates who can't help themselves." But, this charity is draining our country's resources. We can't support a large percentage of slackers who won't do their share. Most people can contribute something and they should.

Strive hard to create good morale. In a beehive, with good morale, the bees will put out every ounce of effort they can muster. Beekeepers aid a hive's morale by doing little things. They cut the grass in front of the entrance, prevent excess humidity by cracking open the tiers, make sure there's always plenty of honey stores, inspect for disease, and time the honey supers.

How do you create a good morale? Attend to the small details. Remove barriers to entry. Provide small rewards frequently. Eliminate outflows that don't contribute to the goal. Keep your own house well-managed. Praise the people for coming through.

Instill a 'share the wealth' attitude. We beekeepers don't have much to do here. Our bees naturally share. It's truly socialism at its finest. No ownership. No private property. No individual perks or bennies or prestige positions. Yet, during the busy season, every worker bee pushes so hard she literally kills herself. Moreover, a bee won't hesitate to sacrifice her life to protect the hive. And yet, all bounty is put in common vaults, available to anybody.

Unfortunately people don't work that way, so you have to encourage a sharing attitude. What can you do? Talk up the sharing idea. Point up that sharing is the way we all come out better off in the long haul. Perhaps increase taxes, but give back something concrete, like national health.

This goal will not be easy, Bill. You might be a good talker, but you've got to emphasize the creed of sharing, so that the people free themselves from the greed and materialism that has been binding this nation for three decades.

Seek out beauty and sing its praises. We beekeepers get excited over seeing a fully-capped honeycomb. We marvel at a clear jar of golden liquid. We appreciate the poetry of the queen. We enjoy the blossom smell and sweet taste of a tablespoon of honey. Even our misfortunes seem miraculous. We stare with awe at a swarm, wondering how its swirling mass silences everything else around.

You too, Bill, must notice beauty in odd places, and appreciate its splendor. Innocence on a little girl's face; sturdiness of a suburban house encased in a white picket fence; triumph of a young boy learning to read. These bits of beauty must inspire you, and drive you onwards.

Be bold, but not too bold. We beekeepers don't take unnecessary chances. We don't always suit up or wear gloves, but we are always cautious of what we're doing and when

Continued on Page 116

BOTTOM·BOARD