MAR 92

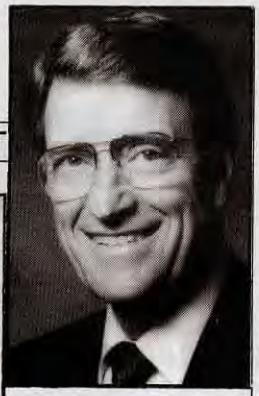
GLEANINGS IN BEE CULTURE

MAKE THIS DESIGNER LABEL AT HOME, TONIGHT

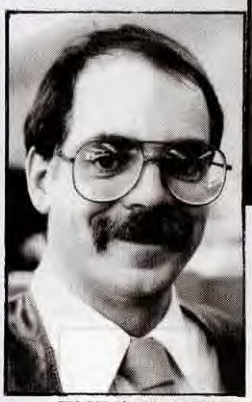
PLUS . . .

- Section Comb Honey
- Spring Management
- and, *To Bee, or Not to Bee*

ROOT PUBLISHING



JOHN ROOT



KIM FLOTTUM

THE A. I. ROOT CO., Publishers
623 W. LIBERTY STREET
MEDINA, OHIO 44256

SUBSCRIPTION RATES: United States, one year, $14.40; two years, $27.00. **Newsstand Price: $1.95.** All other countries (U.S. Currency only), $7.50 per year additional for postage. Send remittance by money order, bank draft, express money order or check. Published monthly. Change of Address: Return completed form contained inside issue. Articles are solicited. *Opinions expressed by the authors are not necessarily those of the publishers.*

Advertising: For information on placing display advertisements, contact our Advertising Dept. 216-725-6677 Ext. 220.

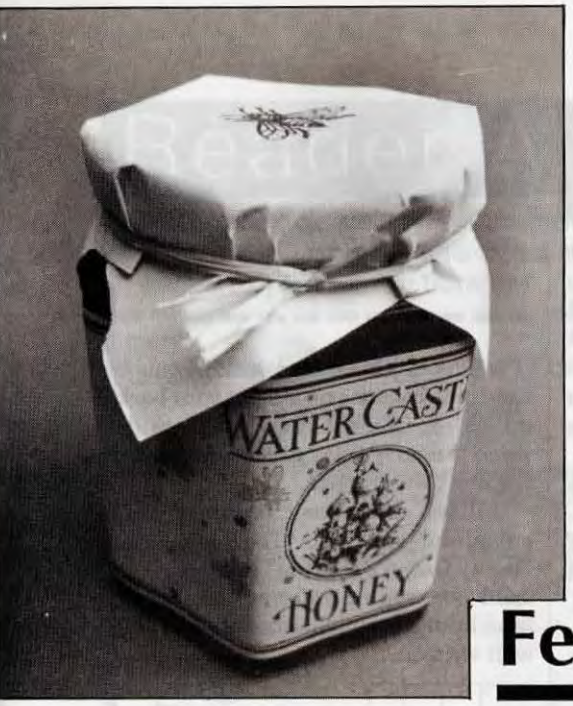
POSTMASTER: Please send form 3579 to: The A. I. Root Co., 623 W. Liberty St., Medina, OH 44256. Tele. 216-725-6677.

Columns

Departments

COVER ... Designer labels are not the exclusive property of the rich and famous. You can make them at home. And you don't need a degree in commercial art or a million dollar studio. In fact, you don't even need to be able to draw a straight line. Check out the Back Yard Label article, inside.

Photo by Walter Swartz



MAR '92 CONTENTS

(ISSN 0017-114X) Vol. 120, No. 3
119 Years Continuous Publication by the Same Organization

Features

New Products Pg. 130

Section Honey Pg. 146

Spring! Pg. 157

INNER·COVER

Sometimes, fantastic things happen when a bunch of beekeepers get together. A couple years ago I sat in a meeting and listened to an Ohio State graduate student tell about a chance encounter between Crisco oil and a tracheal mite. The Crisco won – and a whole new way of looking at pest control in a beehive came to light.

The advantage of being at the meeting was that the author told us about his findings months and months before the research was made public in a professional journal. Yes, you read it here first.

And, although grease patties (Crisco and sugar mixed) aren't the perfect cure for tracheal mites, they've certainly added another dimension to the battle. I know I have colonies alive today because of that bit of information, and I'd like to think that because we told you here, lots and lots of colonies made honey last summer, and are still here this spring. That's the best part of this job.

I sat in on another such meeting back in January, at the Honey Producers gathering in Nashville. There, Dr. Keith Delaplane, Extension Apiculturist for Georgia, reported on a project he had worked on all last summer. And his results are no less exciting.

What Delaplane did was take the next obvious step when looking at tracheal mite control. There is already a good bit of evidence on the efficacy of menthol when applied to a colony to control mites. And, although hard data is a bit sketchy, grease patties seem to do fairly well, too. Delaplane simply tried both treatments at once. And it worked, better than you can imagine.

The basics of his work went like this. He found 40 colonies infected with mites – not too difficult in the part of the state he chose. Next, he determined the 'degree, or level' of infestation of each group, and applied one of three treatments – the legal amount of menthol, placed on the top of the two story colonies; a grease patty placed between the two brood boxes; menthol *and* grease applied to the same colony; and no treatment at all – three treatments and a control. The best part was, he made every treatment legal – the right amounts, in the right place at the right time and all removed before the honey flow. The way it should be done by you, and me, and anybody interested in keeping honey clean. Boy, was *that* refreshing! (There's a whole lot of people fed up with experts *not* recommending how to illegally treat colonies for mites.)

And you know what Dr. Delaplane found?

The control colonies got worse and worse, and their future was, at best, questionable.

The colonies treated with menthol only and those treated with grease patties only fared about the same – both showing significant declines in mite populations over the course of the summer.

But the combination grease patty and menthol treatment – well, if you want an (essentially) non-chemical way to rid your colonies of tracheal mites this is absolutely the *best* way I've seen. Better than either menthol or grease alone (much better in fact).

I don't have access to the actual data (some other journal gets that first), but what it looked like was that the two together worked better than the sum of either treatment. A synergistic effect seemed to take place. Now that's news. And it's not only legal, but absolutely safe – for you and your bees.

Looking for an (essentially) chemical-free tracheal mite control? Try both menthol and grease patties – you'll be glad you did, and so will your customers. And you read it here first. So this spring, give your bees the menthol and grease combination – sort of a weed (out the pests) and feed (your bees) system of colony management.

Like I said, sometimes fantastic things happen when a bunch of beekeepers get together.

•

This has been an exciting issue to assemble because no matter your background or interest there's a piece devoted to nearly every aspect and facet of the craft we practice.

If you are a basic beginner you'll enjoy, and learn from "Too Bee " and Dewey Caron's "Spring" articles. Good solid beekeeping information, clearly (and humorously) illustrated, and both well written.

Continued on Page 167

Weed &
Feed.
And More.

Reader Assistance

To subscribe to *Gleanings In Bee Culture* remove or copy the form below, fill it in and return it and your remittance to the address at the bottom. Please allow 3 - 5 weeks for your first copy to arrive. And Thank You!

392

☐ Please Renew ☐ New Subscription ☐ Send Sample

☐ **2 Years - $27.00** ☐ **1 Year - $14.40**

Foreign Postage — $7.50/year additional for Foreign and Canada.
Find my enclosed check, or charge to my Credit Card.

Name _____

Address _____

City _____ State _____ Zip _____

Please check one.

☐ Visa
☐ MasterCard
☐ Discover

Signature _____ Expiration Date

Send remittance and form to:
Gleanings in Bee Culture, Subscription Department, P. O. Box 706, Medina, Ohio 44258

ADDRESS CHANGE

If you are moving, please fill in the form below so we can process the change without undue delay. Also, if you have 2 addresses during the year (i.e., winters in Florida and summers in Connecticut), let us know which months you spend where and we can pre-program your address change so you will find us waiting when you move — No Delays, No Fuss!

FOR PERMANENT CHANGE:

Name: _____

Old Address: Street _____

City: _____ State _____ Zip _____

New Address: Street _____

City: _____ State _____ Zip _____

FOR TEMPORARY CHANGE:

Name: _____

Address No. 1: Street _____

City: _____ State _____ Zip _____

Circle Appropriate Months: J F M A M J J A S O N D

Address No. 2: Street _____

City: _____ State _____ Zip _____

Circle Appropriate Months: J F M A M J J A S O N D

Send to: The A. I. Root Co., Subscription Dept., P. O. Box 706, Medina, OH 44258

- *Gleanings in Bee Culture* is available on microfilm from: University Microfilms, Inc., 300 N. Zeeb Rd., Ann Arbor, MI 48103. Second Class Postage Paid at Medina, OH and additional offices.
- Circulation figures are reviewed by Deloitte & Touche Accounting/Auditing.
- We encourage letters to the editor on any subject whether appearing in the magazine or not. Direct your letters to: Editor, P. O. Box 706, Medina, OH 44258. We reserve the right to edit letters for content and length, but will avoid this if possible.

POSTMASTER: Send Form 3579 to:
623 W. Liberty St., P.O. Box 706, Medina, OH 44258-0706, (216) 725-6677 • FAX No.: (216) 725-5624

NEXT MONTH

April. Come She will.

And no matter what we do, it seems, we're never quite ready.

Maybe we can help.

Several things happen in April for keepers of bees, and even the bees. For the bees, we'll look at locating apiary sites. For whatever reason, we all sometimes need to find a new location – more bees, old site turns into a housing development, poor production – whatever. So, our Weekender looks at *Finding The Perfect Sweet Spot.*

On a more conservative side, April brings the swarm season, and a perfect public relations opportunity for beekeepers. But there is another side to the time honored tradition of gathering swarms. Our society has, unfortunately, became a legal morass for good Samaritans. Next month, we want to expose you to the darker side. Meet – The Homeowner From Hell! A swarm catchers nightmare. Be prepared.

With the widespread distribution of *varroa* mites in the U.S., it's a safe bet you'll be exposed sooner or later. But should you treat (an expensive proposition), unless you have them? A wise thought is – no. But, how do you find them? We've four techniques anybody can use – so check before you treat, and here's how – Next Month.

Finally, April brings our annual Who's Who in Apiculture. We've gone to *extreme* lengths to get our list up-to-date, so you can use it to your best advantage, and others can put all those new and ambitious beekeepers in touch with *your* group. If you have a new contact person, contact us so we can help you stay in touch.

Next month – Apiary sites, swarm gathering, varroa detection and our annual directory. Plus all the regular, (and somewhat irregular) contributors – April – Come She will. In *Bee Culture!* □

MAILBOX

■ Didn't Read

I'm just a know-nothing hobbyist and a rank beginner to boot but I've already seen illiterate bees break alot of rules. I've seen foraging on multiple species on a single trip. I've seen at least one drone included in an overwintering unit. I've seen that bees would really rather draw their own comb from scratch rather than use beeswax foundation, given a choice. I've seen bees abandon their brood when removed from a house. I've caught a tiny baseball-sized swarm off the ground in September that contained both a virgin and an older queen (why they left their bee tree, I have no idea).

I've done my own little test on the "drifty drone" theory by capturing a bunch of drones off the landing boards of two hives and painting a white dot on those landing at one hive and a green dot on those landing at the other. So far I've not found a painted drone in any but his own hive. I even tried to place a couple drones on the landing board of the wrong hive – they refused to enter and flew back to their own hives. Now I'm not saying that means drones don't drift at all, but it just never made sense to me why they would drift about freely (as is claimed).

I've also seen a hive that absolutely refused to leave a super through a Porter Bee Escape (yes it was put on correctly and yes they had space to get through it), even after the brood was all hatched out of the crescent they made in the beautiful comb honey because I stupidly pulled the Queen excluder off.

I can't tell you how much I've enjoyed working with bees but it is a bit frustrating that nearly the whole lot of them are illiterate. I mean it must be the bees are to blame. Surely it couldn't be that presumptions have been passed on as truths – no I'd dare not even suspect it. Just must be I've run across several colonies of illiterate bees.

I suspect we have alot to learn even about what we already "know."

Jack Griffes
Ottawa Lake, MI

■ Sticky?

I was sorry to see the passing of Alan Root. I was born in 1905 also, in Oklahoma Territory before OK became a state in 1907. I started keeping bees, as a sideline, in 1930, but am about out of the business now. I have a little divide I made last fall but am afraid it's too small to winter over till spring.

One of the things I am wandering about is how bees walk on wax in frames, and keep nectar and honey off their feet and legs? Is this the reason the foragers give the nectar to house bees when they return?

Perhaps some of your writers know the answer.

Raymond H. Irvin
1023 Madison
Woodward, OK 73801

■ Too Flexible?

First of all I want to commend you for doing an excellent job on your magazine, but your article *"Gotta Get A Gimmick"* hit me the wrong way. The author, when talking about naming the label, about its major floral source seemed to be very flexible about what it was. We need honesty in honey packing! You cannot change the name of a major floral source of honey because of a more appealing ring to it. I think alot of beekeepers would think of this as dishonest, or at least bordering on dishonesty to put *any* floral source label on their honey. Maybe we could sell more honey this way, but I don't want to sell more honey if I have to deceive the public in any way. This type of situation is what creates more laws and makes life tougher than it should be.

Dave Duncan
Crestline, OH

■ CA Bee King

While reading *"Flood Tides Along the Allegheny"* a local historical novel set in Western Pennsylvania and written by Francis R. Harbison, I read of John S. Harbison who was born in 1826 and lived on a farm in Lawrence County, PA.

In 1854, John Harbison joined the rearguard of the Gold Rush to California. He tried gold mining but abandoned it to start a fruit and ornamental tree nursery in Sacramento. He made importations of the choicest stock from the eastern nurseries, and from this humble beginning were started the great and profitable fruit orchards of northern California. In 1857 he bought and shipped 67 colonies of honey bees and continued the importation until 1874. He then settled in San Diego where he had previously located a number of apiaries in the mountain canyon. Mr. Harbison was known as the Bee King of California and shipped honey by the carloads to the eastern states. He invented the section honey box which he patented and which is now used in nearly every apiary in the country. He published *The Beekeepers Directory* which for a generation was recognized as an authority upon bee culture in all its branches.

Continued on Next Page

MAILBOX

I found this information very interesting and thought I would share it with your readers.

Kleber J. Minich
1414 Third Street
Natrona Heights, PA 15065

■ Good Reading

I am not a beekeeper – yet. I have, however, become fascinated by the literature of apiculture. I appreciated Richard Taylor recommending in his December 1991 *"Bee Talk"* an article about AHB's which appeared in *New Yorker*, September 16, 1991. The article was indeed "comprehensive and objective," but it made some generalizations that might lead someone unfamiliar with bee culture to reach incorrect conclusions. It also raised a possibility that might have a larger impact on beekeeping in the New World than the AHB.

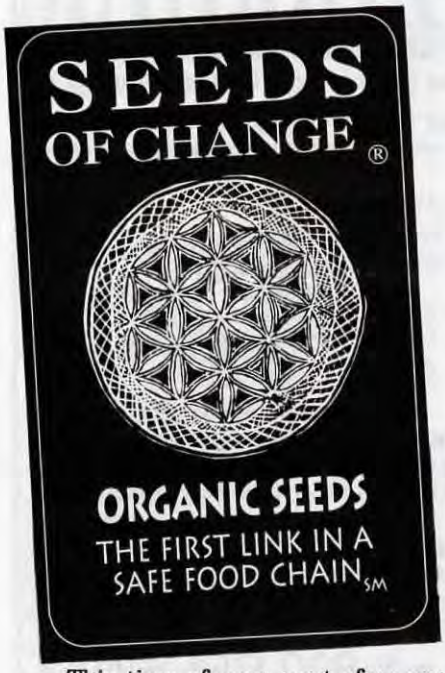
Early in the article, Wallace White parenthetically explains that "Smoke causes bees to become sluggish." From what I understand, bees are not calmed by just any kind of smoke. I think the bees' reaction to cool smoke is a little more interesting and is not as simple as becoming sluggish. Also near the beginning of the article, White states that "Honey bees of the species *A. mellifera*, which appear to have originated in western Asia, spread to other parts of the world thousands of years ago ." and mentions that American bees are descendants of European races without explaining that *mellifera* is just as much an import as *scutellata*.

And the validity of importation underlies a suggestion made in White's article by his casual mention of work being done by Dr. Kerr (who introduced the Americas to AHB's) with *Melipona scutellaris*, a stingless honey bee. About a century and a half ago, apiculture displaced meliponiculture in South America. Imported European *Apis mellifera* was apparently easier to manage than any of the hundred species of *Melipona*. Now that imported African *Apis mellifera* is unwelcome in the U.S., could there one day be a return to meliponiculture? Although AHBs can be kept successfully in apiaries, it is the feral colonies which have doomed them in the eyes of the public. A stingless bee would certainly be better received and, who knows, given modern technology, more easily kept.

Another article about "killer bees" which might be of interest to *Bee Culture* readers appeared, coincidentally, in the September 1991 issue of *Smithsonian*. It is by Sue Hubbel, a beekeeper and writer. But to become thoroughly educated about AHBs, *The "African" Honey Bee*, edited by Marla Spivak, David J.C. Fletcher, and Michael Breed (Westview Press, 1991) is required reading.

Bill Ware
Cleburne, TX

NEW FOR YOU



This time of year most of us are overwhelmed with catalogs from companies selling gardening supplies, seeds and other 'natural' order products. And most of them are more or less the same.

But we recently received one that stands out, and if you are a gardener, and concerned with the environmental side of life, you should consider this catalog.

"Seeds of Change" offers seeds grown organically, but it has a whole lot more.

It has greens, root vegetables, vine crops, lots of beans, grains, herbs, flowers and fiber plant seeds. It has everything you need for a regular everyday garden, with a touch of the organic.

But there any similarity with a seed catalog ends. The folks who put this together have a social conscience that exceeds any I've seen. They explore such things as weeds, garden planning, environmental issues and gardening, Adopt a Native Elder program, The Bioneers, human rights, nutritional gardening, recipes, and lots, lots more. (And it's printed with soy ink on recycled paper.)

If you garden, try this catalog.

Seeds of Change
1364 Rufina Circle #5
Santa Fe, NM 87501
(505) 438-8080

NUC BOX

Nucleus Specialities, in Traverse City, MI have developed a four frame nuc box constructed from corrugated plastic. Excellent to use as a pollination unit, these boxes can be closed and easily transported, even during daylight hours.

Equipped with a removable lid, complete with feeding hole, a sturdy wire handle and a ventilation port, both the box and top fold flat for storage.

Shipped in lots of 10 or more, these units are inexpensive (price wasn't firm at press), and will easily pay for themselves in reduced freight and labor.

The durable plastic will last many years if not abused, especially if used only during spring pollination and, perhaps for queen rearing.

For more information, contact Nucleus Specialities, 526 W. 14th St., Suite 146, Traverse City, MI 49685. □

Bee Ware

A Beekeeper's Computerized Record System

Requirements: IBM Compatible System, 512K or greater memory, Dual Drives (3-1/2" or 5-1/4"), 2.1 DOS or higher

This is a hive management program designed for beekeepers that incorporates nearly every record keeping idea a beekeeper could imagine.

It works for owners of five to 1000 colonies as individuals; or it looks at apiary sites, and handles as many as 400 of these as units.

The basics of this program are the worksheets it generates. A worksheet tells every conceivable detail about a colony – medication, equipment inventory, location, queen source, temperament and more – as of your last visit, and allows space to enter information for the next visit. It also signals when certain tasks need attention (medicating, requeening, etc.), and keeps tabs on production, disease, color etc.

You can generate tables and data that will compare colonies at a location, between locations or different locations.

It also serves as a perfect work assignment tool for commercial operations. When a sheet is generated it details what needs doing to what colonies, and where each is located. It makes preparation less haphazard because employees know how much of what to bring, and how long it should take.

The programers say the package is being considered for translation into Spanish and Italian, and periodic updates are being planned. A queen rearing program is in the works for commercial, sideline operations and producers.

Drawbacks? Certainly the major problem is data entry. Up-to-date information must be keyed in on a regular basis to keep data current. But, say the developers, this isn't as bad as it seems, and after trying it for awhile I agree.

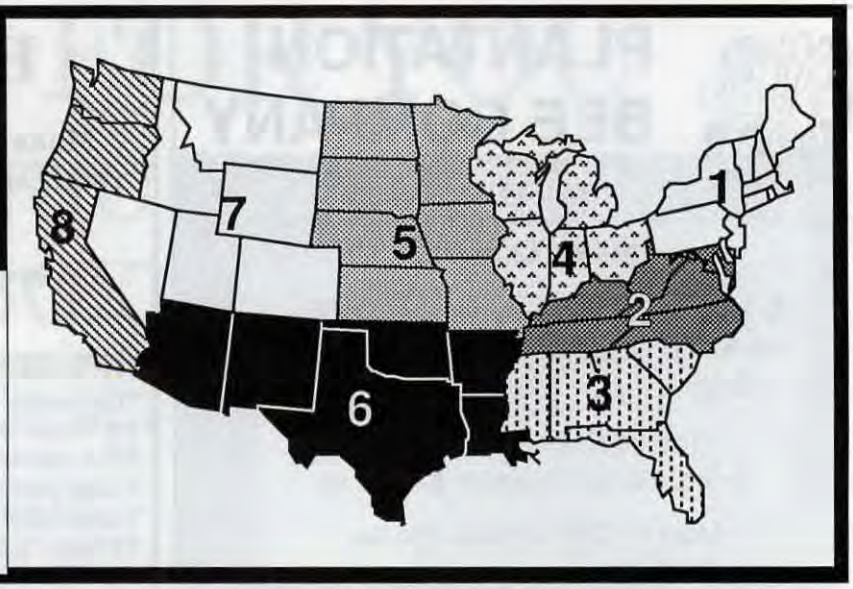
In fact, a 1000 hive, 300 location operation took about five hours to set up (enter basic data, inventory, etc.) and only requires about two hours/week to maintain. Even if you're very slow and it takes twice that time – that's not bad.

At $235.00 for the whole package you can't miss, and if you save two colonies in one year, it's paid for.

Kim Flottum

MARCH Honey Report

March 1, 1992



REPORT FEATURES

Prices shown are averages from many reporters living in a region, and reflect a 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.	45.72	45.63	37.23	40.50	42.47	41.79	45.67	40.50	31.80-60.00	43.57	41.50	41.11
60 # Am.	42.43	42.46	34.57	40.29	40.10	39.75	41.75	36.00	28.20-52.00	40.49	39.70	37.64
55 gal. Wh.	.643	.625	.609	.561	.625	.566	.615	.573	.46-.77	.602	.583	.53
55 gal. Am.	.584	.560	.550	.520	.585	.521	.515	.498	.44-.68	.540	.544	.48
Wholesale – Case Lots												
1/2 # 24's	20.34	21.82	22.32	20.20	25.70	21.45	21.95	21.50	16.50-30.00	21.39	19.29	-
1 # 24's	29.21	29.83	27.13	25.45	25.76	28.39	31.68	27.55	16.75-38.40	28.19	28.80	28.38
2 # 12's	27.48	28.70	25.20	26.39	23.26	26.71	27.88	29.01	21.84-37.20	27.01	26.99	26.43
12 oz. Bears 24's	26.55	25.66	25.44	24.07	22.92	25.73	26.44	25.63	15.00-36.00	25.38	26.50	-
5 # 6's	31.20	28.43	29.15	30.52	24.62	32.48	28.04	27.75	24.00-38.50	28.33	29.29	28.95
Retail Honey Prices												
1/2 #	1.12	1.22	1.04	1.30	1.38	1.13	1.16	1.36	.82-1.94	1.21	1.14	1.08
12 oz. Plas.	1.65	1.65	1.51	1.54	1.15	1.42	1.46	1.48	1.04-1.98	1.51	1.47	1.47
1 #	1.75	1.74	1.72	1.81	1.52	1.60	2.05	1.79	1.37-2.25	1.72	1.70	1.66
2 #	3.37	3.06	2.83	3.22	2.67	2.92	2.97	2.77	2.38-3.94	3.00	3.00	3.03
3 #	4.12	4.15	4.00	4.02	3.71	4.05	3.92	4.26	3.44-4.50	4.04	3.90	3.92
4 #	5.64	5.21	5.15	5.05	4.34	4.85	5.07	5.00	3.99-6.39	5.10	5.02	5.02
5 #	7.16	6.24	5.75	6.66	5.09	6.19	5.48	6.24	5.20-8.75	6.28	6.46	6.30
1 # Cream	2.24	2.33	2.09	1.94	1.47	2.18	2.11	2.11	1.09-2.95	2.16	2.09	2.04
1 # Comb	3.22	2.57	2.66	2.19	1.65	2.55	2.66	2.61	1.65-3.70	2.64	2.87	2.46
Round Plas.	2.56	2.25	2.85	2.50	2.19	2.39	3.52	2.45	1.80-4.50	2.54	2.47	2.12
Wax (Light)	2.80	1.20	1.40	1.40	1.30	1.27	1.12	1.20	1.00-3.80	1.55	1.41	1.27
Wax (Dark)	2.25	1.12	1.18	1.03	1.18	1.09	1.03	1.08	.95-2.75	1.26	1.18	1.09
Poll./Col.	32.40	27.50	27.50	32.50	28.00	27.50	30.00	34.33	22.00-41.00	31.13	30.86	29.33

MARKET SHARE

March is the make or break month for lots of people (just ask those in southern CA). Queen and package producers need good weather now to produce their products on time.

Pollinators and those who get pollinated also need good weather so flowers stay on the trees and bees get a chance to visit them.

Good weather means early buildup and strong colonies for almost everybody so watch the weather, it will determine *your* market share this year season.

Region 1

Sales strong and steady, but not gaining on last year. Prices steady, but since costs are up, little ground being gained. Bees seem in good shape, but mites won't show for another month or so. Look for shortages by spring, both in the hive, and in beekeepers bottles.

Region 2

Sales of non-specialty crops steady, but certainly setting no records. Mild winter, generally, will increase consumption, and feeding should be watched for. Mites still causing problems, so initiate treatments ASAP.

Region 3

Sales steady to increasing, with steady prices, and the demand seems steady. Early nectar and pollen flows appear strong, and, if the rain holds off will help build colonies early.

Region 4

Sales seem to be picking up, especially in larger urban areas, but overall only steady. Prices are improving gradually, but not keeping up with equipment and labor costs. Mild winter has increased feeding, but allowed cleansing flights. Mites, too, causing problems, but too early to see how bad.

Region 5

Sales steady, even increasing, with prices holding and moving up. Weather typical, with adequate snow cover and enough cold weather to restrict flights. Mites seem to have not abated, and untreated colonies in jeopardy.

Region 6

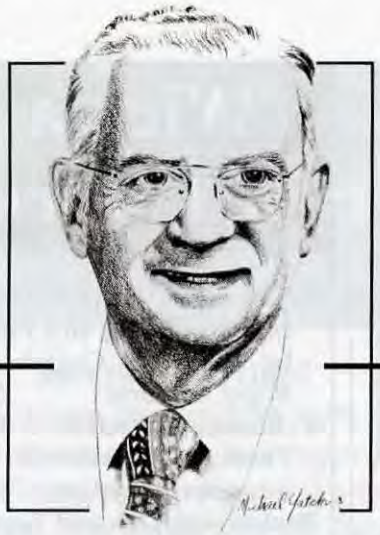
Sales steady but prices not great. Wet weather slowing early buildup, and long range forecast calls for more. Be prepared.

Region 7

Sales, as usual, strong, but prices only steady. Supplies good. Colonies seem in good shape, but watch for feeding, and watch for mites.

Region 8

Sales and honey prices taking a back seat to pollination this month. Almond contracts overbooked in some areas, lowering prices for a change. Colony strength being checked, mites taking their toll. So far, weather hasn't hurt build-up or early flights. Out-of-state beekeepers looking for good crops.



RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

"Mite Free Queens – No Problem!"

Progress is being made in developing a method for growing both varroa and tracheal mites in the laboratory. The purpose is to grow mites where they can be easily observed so as to learn more about their biology, including their reproduction, food needs, etc. The hope, of course, is to find a weakness in their life cycle that may be exploited and used in control.

What has been discovered is that a synthetic membrane can be made using parafilm, a common laboratory wax paper, that stretches, used for sealing jars and vials. The membrane can be stretched so thin that the mites can puncture it with their mouthparts and feed through it. Interestingly, despite the fact that tracheal and varroa mites are very different species, both can penetrate the stretched parafilm with their mouthparts.

The next step in this research will be to try to develop a diet on which the mites can develop; the food would be placed on the opposite side of the parafilm from the mites. While this research has good prospects, there is still not enough information about the biology of either mite to rear them artificially.

Varroa In Queen Cells

Female varroa mites rarely enter queen cells and deposit eggs. In the experiments reported in the paper below they did not do so in lightly infested colonies. And, even in colonies with no drone or worker brood, only a very small number of female mites entered queen cells and deposited eggs. Under no circumstances do varroa mites have time to develop fully or to reproduce when they are reared in a queen cell. Queen pupae in capped cells develop in eight days and it takes ten days for even the first female varroa to develop after the cell is capped. Queens develop in a total of 16 days, workers in 21 and drones in 24. It is well-known that varroa mites prefer drone brood over worker brood and with the good reason they need the additional time to develop.

The researcher undertaking this study concludes, "So it appears that Varroa mites may not interfere with quality queen production in commercial operations."

Varroa Mites & Other Insects

The chief way in which varroa mites are spread from one colony to another is through drifting and robbing. However, evidence is accumulating to show that they may drop off foraging bees and onto flowers, where they are picked up by other bees. Adult varroa mites have been held for about a week in a laboratory. They have been kept alive on flowers for six days.

Varroa mites have been found in wasp colonies, though they probably do not survive for very long. There are no data to suggest they may reproduce in a wasp nest or anywhere outside of a honey bee colony. Varroa have also been found on several species of flower-feeding insects including a bumble bee, syrphid fly, and a beetle. We presume the mites were picked up from flowers by these insects while the latter were foraging.

This review is helpful and comes at a time when a small number of states are still using quarantines to control varroa spread and thinking about varroa eradication. Varroa mites are insidious creatures and have many ways of dispersing, as is shown in this review. We still do not have an efficient way of dealing with them or coping with their spread. □

References

Bruce, W.A., R.B. Henegar and K.J. Hackett. *An artificial membrane for* in vitro *feeding of* Varroa jacobsoni *and* Acarapis woodi, *mite parasites of honey bees.* Apidologie 22: 503-507. 1991.

Harizanis, P. C. *Infestation of queen cells by the mite* Varroa jacobsoni. Apidologie 22: 533-538. 1991.

Kevan, P.G., T.M. Laverty and H.A. Denmark. *Association of* Varroa jacobsoni *with organisms other than honey bees and implications for its dispersal.* Bee World 71: 119-121. 1990.

You probably won't ever find varroa *mites in queen cells – a very good thing!*

? DO YOU KNOW ?

MITES ASSOCIATED WITH HONEY BEES

CLARENCE H. COLLISON

The honey bee tracheal mite, *Acarapis woodi*, and the varroa mite *Varroa jocobsoni*, have both had devastating effects on the beekeeping industry. Regulatory efforts to halt their spread have disrupted the queen and package bee business and affected many migratory operations. Heavy winter losses and intentional depopulations associated with eradication efforts have significantly reduced colony numbers in this country. Reduced honey production and increased control costs have further compounded the problem. Unfortunately, there are no easy answers.

In addition, there are several *other* species of mites associated with honey bees throughout the world, of which several are present on this continent. Take a few minutes and answer the following questions to see how familiar you are with the mites associated with honey bees.

Match the following information with the appropriate mite. (1 point each)

A) *Acarapis dorsalis* B) *Varroa jacobsoni* C) *Acarapis externus* D) *Melittiphis alvearius* E) *Acarapis woodi*

1. ___ Feed on larval, pupal and adult honey bees.
2. ___ Lives externally on the dorsal surface of the thorax and at the wing bases of adult honey bees.
3. ___ Males are not capable of feeding, mouthparts are modified for sperm transfer rather than obtaining food.
4. ___ Lives externally on the ventral neck region or back of the adult honey bee head.
5. ___ Recently introduced into Canada in package bees purchased from New Zealand.
6. ___ Believed to have killed about 90% of the honey bee colonies in Great Britain between 1900 - 1920.
7. ___ Eggs are glued together by a semi-transparent mucilaginous substance.
8. ___ Originally discovered in Java (Indonesia).
9. ___ Probably feeds on eggs of other insects and mites found in the honey bee colony.

Multiple Choice (1 point each)

10. ___ Adult honey bee workers and queens are most susceptible to tracheal mites when they are:
A) 1-2 days old; B) 5-6 days old; C) 8-10 days old; D) 12-14 days old; E) 16-18 days old
11. ___ Female varroa mites survive during broodless periods in the hive by:
A) burrowing into pollen cells; B) becoming inactive and going into diapause; C) attaching themselves to worker honey bees and sucking blood; D) living off from internal nutrients they have stored E) feeding on honey stores found within the hive
12. ___ Apistan strips are registered for varroa mite control in the United States and contain the active ingredient:
A) amitraz; B) carbaryl; C) formic acid; D) menthol; E) fluvalinate
13. ___ The tracheal mite life cycle consists of:
A) egg, larva, inactive nymph, adult; B) egg, protonymph, deutonymph, adult; C) egg, larva, protonymph, adult; D) egg, larva, adult; E) egg, larva, protonymph, deutonymph, adult
14. ___ The external *Acarapis* mites feed on:
A) blood of adult bees; B) pollen adhering to bee's body; C) blood of bee brood (larvae and pupae); D) honey; E) royal jelly
15. ___ The original host of varroa mites was the:
A) Western honey bee, *Apis mellifera;* B) Giant honey bee, *Apis dorsata;* C) Dwarf or tiny honey bee, *Apis florea;* D) Africanized honey bee, *Apis mellifera scutellata;* E) Eastern honey bee, *Apis cerana*
16. ___ The varroa mite life cycle consists of:
A) egg, larva, inactive nymph, adult; B) egg, protonymph, deutonymph, adult; C) egg, larva, protonymph, adult; D) egg, larva, adult; E) egg, larva, protonymph, deutonymph, adult
17. ___ The original host of the tracheal mite was:
A) Western honey bee, *Apis mellifera;* B) Giant honey bee, *Apis dorsata;* C) Dwarf or tiny honey bee, *Apis florea;* D) Africanized honey bee, *Apis mellifera scutellata;* E) Eastern honey bee, *Apis cerana*
18. ___ Varroa mites were first found in the U.S. in:
A) 1985 B) 1986 C) 1988 D) 1987 E) 1984

True & False (1 point each). Place **T** in front of the statement if entirely true and **F** if any part of the statement is incorrect.

19. ___ Male varroa and tracheal mites develop faster than female mites.
20. ___ Menthol and formic acid, two chemicals reported to be effective against tracheal mites, may occur naturally in honey.
21. ___ Tracheal mites have been found in all states except Hawaii.
22. Please describe where varroa and tracheal mites mate. (2 points)
23. Please indicate how you would tell the difference between male and female tracheal mites. (2 points)

Answers on Page 170

TRY TWO Q·U·E·E·N·S

O.B. WISER

Last November, the article entitled *"The Wall Street Beekeeper,"* mentioned the two-queen system I have been using over the years. It is the result of an evolution from many mistakes and attempts to come up with a method that uses the advantages of two laying queens in one hive; but more importantly, a manipulation program that is ***usable*** and more important, ***practical***.

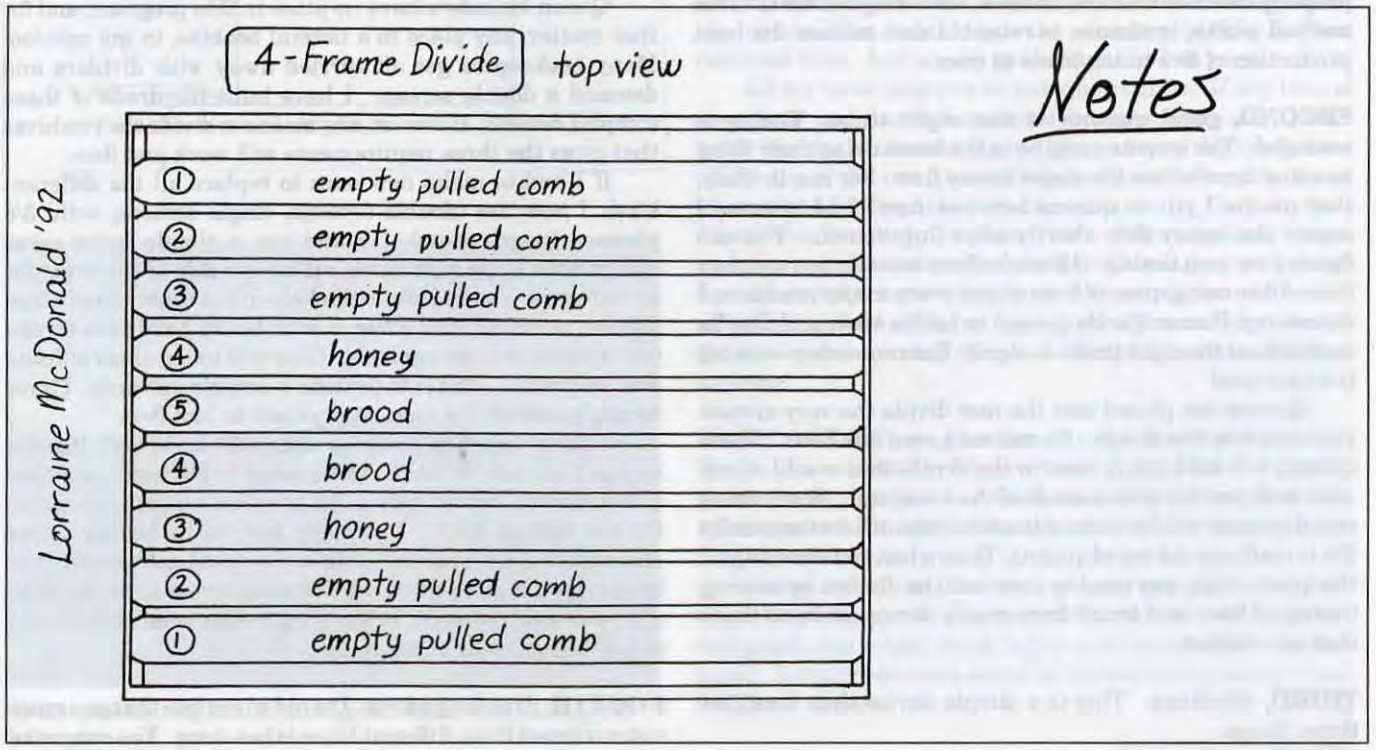
I have had numerous letters (and the Editor has had more) requesting additional details on the beekeeping practices outlined in that November article. Several asked from what material I developed the approach I presented. The answer to that is the *Book of Hard Knocks*. I am not aware of other discussions of this method because I think it originates with me. However, I am sure any beekeeper willing to research what is out there, as I did, and try all the different methods would come to the same conclusions. It is just common bee sense.

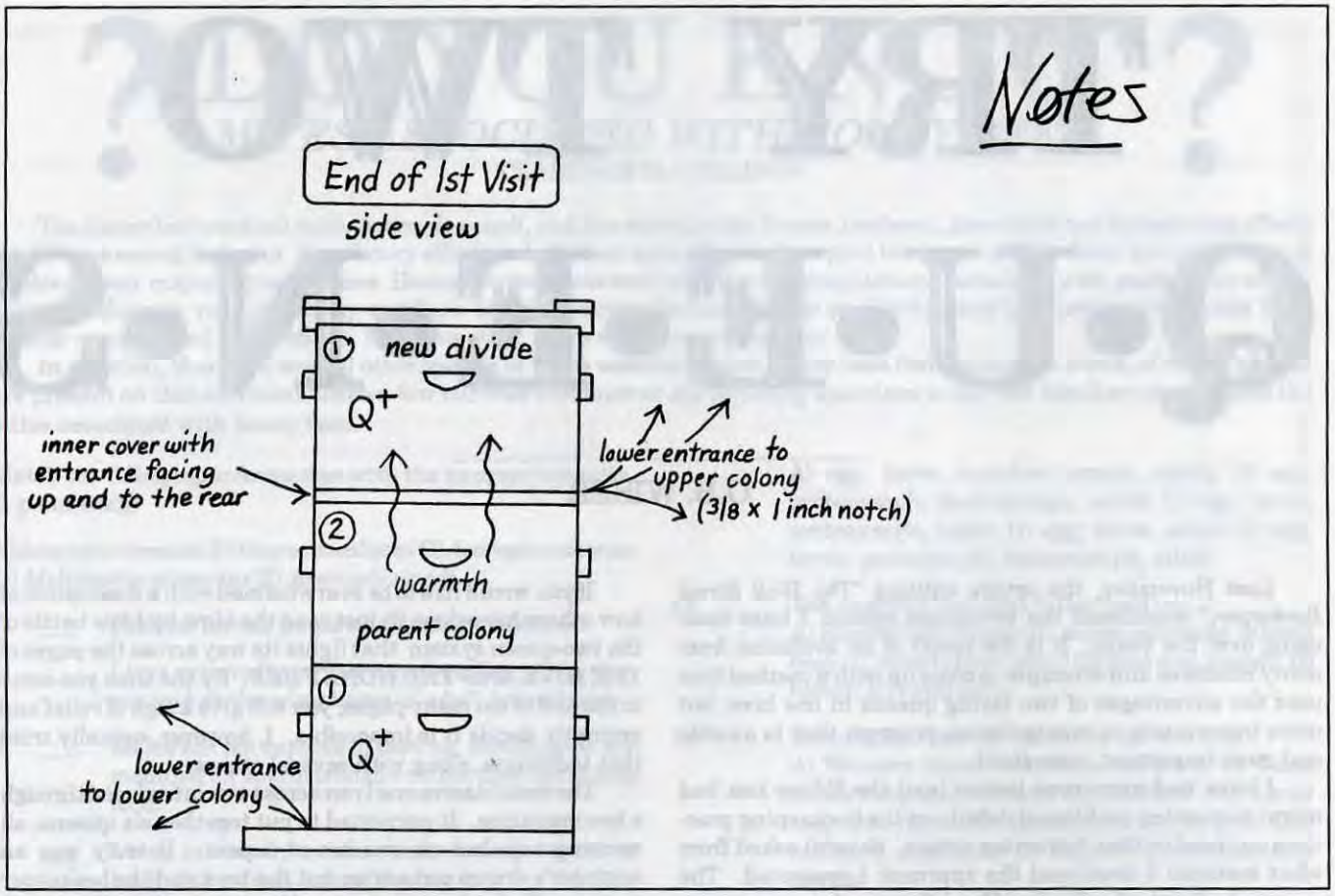
If you would like to be overwhelmed with a description of how others have done it, just read the blow-by-blow battle of the two-queen system that fights its way across the pages of *THE HIVE AND THE HONEY BEE*. By the time you come to the end of too many pages, you will give a sigh of relief and promptly decide it is impossible. I, however, actually tried that technique, along with several others.

The most bizarre one I ran across was introduced through a bee magazine. It purported to put together six queens, all working together on one set of supers. It truly was an engineer's dream come true, but the bees and the beekeeper went totally bonkers with it and besides it did not work. It looked good, but it did not work.

So let's look at a third generation two-queen system that has worked for me – where others have failed and failed miserably.

Continued on Next Page





TRY TWO QUEENS... Cont. From Page 137

What You Need

FIRST, strong, heavy hives in the Spring. Proper wintering in whatever climate you live in is required. For those of you in a cold climate that means *packing bees,* properly (see *Bee Culture,* **March, and August 1991**). This method works, is simple, is reusable and utilizes the heat production of five to ten hives at once.

SECOND, good queens at the right time. Timing is essential. The queens must be in the hives doing their thing so many days before the major honey flow. For me, in Utah, that means I put in queens between April 7-14 because I expect the honey flow shortly after July fourth. You can figure your own timing – 12 weeks from installation to honey flow. After using queens from about every major producer, I discovered Homer Park's queens to be the best, and they're available at the right time – in April. But remember – timing is important!

Queens are placed into the new divide the very minute you complete the divide. Do not wait even one hour. These queens will hold many bees in the divide that would otherwise seek out the queen smell of the lower unit. Some times caged queens will be more attractive than others (especially if it is really an old caged queen). Then when you come to pull the queen cage, you need to even out the divides by moving frames of bees and brood from overly strong units to those that are weaker.

THIRD, dividers. This is a simple device that does just three things.

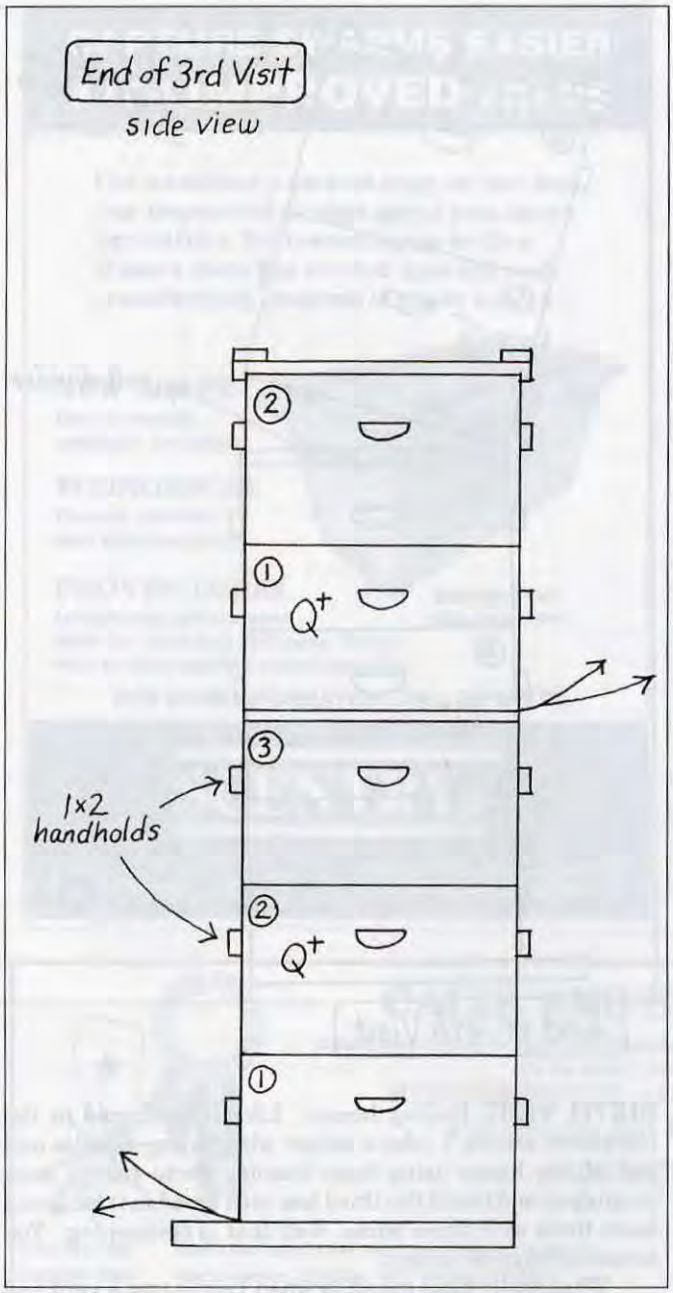
(1) Keeps the two colonies totally separated from each other as they are stacked **on top of each other.**
(2) Allows heat to warm the upper hive unit.
(3) Provides an entrance for the upper hive .

Queen excluders have no place in this program, and for that matter, any place in a normal beehive, in my opinion. Many beekeepers get all carried away with dividers and demand a double screen. I have built hundreds of these complex devices. However, any means to divide the two hives that gives the three requirements will work just fine.

If I had to make new ones to replace all the different kinds I now use (double screens, single screens, solid 3/8 plywood inner covers), I would use a simple inner cover design with a one inch notch cut on one side of the cover for an entrance. I would also cut a hole in the center five inches square, or round, and cover it with heavy hardware screen (six squares or more per inch). Glue it in using **clear** silicone seal and nails. This is to provide warm air upwards. I have found, however, the ones on plywood do just fine.

A large upper entrance is not needed. In fact, the one inch is all I use. When the inner cover is not used for a two-queen system, turn it over and it provides an upper entrance for the bottom hive. I strongly believe in having upper entrances all year round. This is a natural entrance for the bees to have and it provides quick, easy access to the outside, even on marginal days. It always provides ventilation to get rid of the moist air of the hive.

FOURTH, dividing hives. The old wives tale that you must not mix brood from different hives is bee dung. You can make



My two queeners, right after pulling the dividers and adding the first supers.

a divide and put it on top of any hive in the yard or anywhere else for that matter. I often put a divide on top of colonies too weak to take a divide from, making sure they will be strong for the flow.

I use standard 4-6 frame divides – two frames of bees and honey and two frames of bees and brood. I adjust that to the situation. If I have too many bees, I make the divides bigger; or if less strong, I may make a three-frame divide, *with two frames of honey always*. The difference is in the number of brood frames. Of course, all brood frames are not the same. There are ones that are real heavy with brood, and those that have lots of honey and some brood. I try to pick real heavy brood frames and sometimes throw in a frame I call honey that has some brood on it. Remember to always put the frames of honey on the outside of the brood and situate the divide in the center of the brood chamber. Always place the divide into the center of the Nuc box with the honey frames on the outside of the brood. Take a look at the diagram. As soon as the divide is made, whether from the lower hive or from others, it is set on top of a strong hive, divider in place and one of my new queens installed. Immediately.

Management

FIRST VISIT Divides are made here in Utah as early as possible, hopefully in the front half of April. All old hives are left two boxes high with a single divide left on top, a divider between, giving the upper hive a small lower entrance. **The entrance of the top unit is to the rear (back) of the hive, opposite of the bottom hive.**

SECOND VISIT Two weeks or so later, I return to remove queen cages, check to see if the new queen is laying, and to equalize the divides. I also check the lower units for queens and add a super. To check the lower unit, you simply place the first two-queen system off the parent hive onto the ground and put a top on it. Then when you open the next two-queen unit you simply pick up the single box, divider and all, and put it on the first hive's lower unit. Got it? You only move the top hive once and that is to the vacant spot left by the last removed hive. And so you go through the bee yard.

All my hives may not be two-queen units. If any hive is queenless and needs a queen, I have ready-to-use Queen units (divides) and move them right on top of the needy hive off the top of the two-queen hive. Let me add here for those of you who do not want to have two-queen units, the best place for a divide is on top of a parent hive. When the time comes and you want to increase the number of hives, just set it down near by and you have a new hive. Of course, you can haul it off so there is less drift, but I put them right on the ground in the same yard since my hives are all right next to each other anyway.

THIRD VISIT Timing on this visit depends on the weather. If it is cold and wet in May, with little time for the bees to gather honey, I maybe wait until June. If it is warm and nice, I visit sooner. Usually I do not check the lower hive once the first super has been put on it.

At the end of the third visit most hives will be five full-depth boxes high, or the equivalent in shallows. If things are real great, you might check below and have to add a second super. A super has been added to the top unit making it two full depth supers.

Continued on Next Page

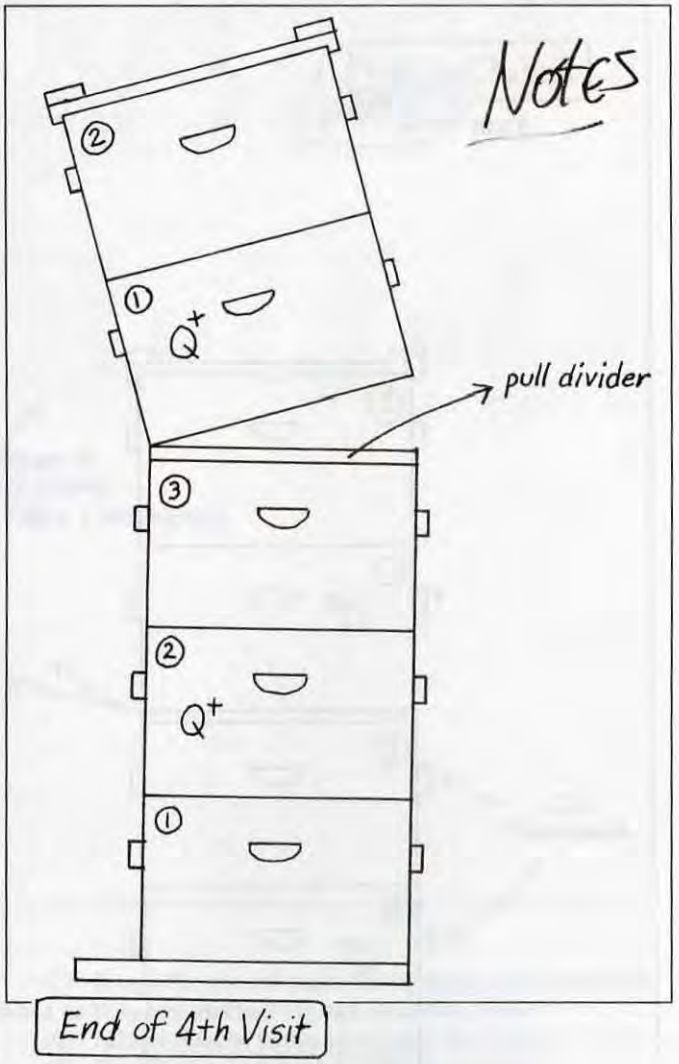
TRY TWO QUEENS ... Cont. From Page 139

FOURTH VISIT Just prior to the major honey flow, *pull the divider.* This is the first week of July in Utah. To do this though, I don't lift heavy boxes of honey. I simply pivot the top unit back on the lower divider and pull out the divider. I take a quick look at the *top* of the *bottom* hive to determine how much honey it has and, of course, since I am leaning the top unit back, my fingers have gauged how much honey is in the top unit. Normally, I will then add one full depth super to the top of the now single hive stack; but only if the top unit was very full of honey. Admittedly, this skill takes some practice to obtain, but a season or two should do it.

The queens are left in each unit and often they will both continue to lay eggs for some time. I make no attempt to find a queen. I do not use newspaper or queen excluders. I simply lean the top unit back, pull the divider, look down below for honey, feel the weight of the top unit, and put it down. It takes about as long to do it as to read it. Then I put on a super, if needed.

I usually will not add any more supers unless I see hives hanging out, a sign they have plugged out. My goal is to have the hives plug all boxes full and especially to force all brood out of the upper boxes making sure the second box from the bottom is plugged full.

FIFTH VISIT Checking the towers. During this visit I like to check the hive for stability, because the tops get heavier. I love to take two or so hives apart down to **their toenails,** as it were. That simply means I pull a couple hives apart to the bottom box and get a feel for what is going on in the yard. One year after doing this, I had to super the whole yard making them all seven full-depth supers high, and some of them went eight high.



SIXTH VISIT Pulling honey. Like I mentioned in the November article, I take a helper with strong muscles and pull all my honey using fume boards. Some years I have misjudged and found the third box with brood in it, so then I leave them with three boxes. Well that is beekeeping. You cannot always be perfect.

What really ticks me off is when I come into a yard and all the bees are hanging out, the hive is plugged to the bottom board, and I have lost 20-30 pounds of honey per colony. I came to a whole yard of bees like this once, nestled on the side of a mountain in our high valley called Cache Valley. Back then I left two inches between hives for some unknown reason. Well anyway, the bees were hanging in that space between hives, and they had put a two inch slab of honey between all the hives. What a mess that was.

The last visits of the year are involved in making the rows even in height, then I pack the bees for winter by the end of September. I enjoy the packing process because I know I am doing what is best for the bees, and I have learned that what is good for the bees is good for the beekeeper – and **I Learned *that* the Hard way.** □

the Backyard

PRIVATE LABEL

For the person who keeps bees for the joy of it, a honey crop is a precious commodity requiring a distinctive package that is representative of the beekeeper, his (or her) bees and backyard. Besides impressing friends and family with a distinctive product, the small producer can improve sales and marketing opportunities with a package that is representative of the "limited edition" he produces with his limited number of colonies. We live in an era that prefers the limited and hand produced over the mass produced. the pure, all natural product over the processed, homogenized product. Why then, shouldn't the backyard beekeeper capitalize on what is the essence of his product? To do this, his package should convey the personal, hands-on, limited production nature of his operation as well as being representative of his place, the locale, and of the beekeeper himself.

However, producing honey is one thing, producing a package is another unless you are so inclined. Or so you may think. Any backyard beekeeper can produce his own package if he has the interest and a little spare time. It's not as easy as sticking a stock label on a jar, but the rewards make it worthwhile. My interest in keeping bees was not for the honey they would produce, but I confess to experiencing considerable excitement and pride when I removed the surplus honey the second year of keeping bees. Since most of my friends, family and clients think this interest in bees is more than a little eccentric, I was really looking forward to presenting them with a sample trophy of my mid-life eccentricity. Naturally the package had to be a little special for this very special honey.

My second confession is that I am a graphic designer as well as a beekeeper. I could have pulled out all the stops in producing my private label, but I felt the package had to be as simple and honest as the contents. It had to be done by hand with economy and ingenuity. It had to be done by me, the beekeeper, not me, the designer. What follows is a step-by-step description of how I packaged my honey with my own private label. See it as an illustration of the basics of doing it yourself. The emphasis is on basics because the possibilities are virtually limitless.

When it comes to doing your own package, think small. Remember, the idea is to represent the nature of your product: limited, personally produced, real, unadulterated, unslick. Be mindful that hand-made packages are labor intensive and time consuming. The objective is to be distinctive in ways that identify your product as yours; not to overwhelm or compromise the integrity of the product with inappropriate novelties and frills.

Since most of my first harvest would be given to friends, family, associates, and clients, I wanted a package that would be acceptable as a gift, yet not look gift-wrapped. I wanted it to look believable on a store shelf to look real and not the product of a hobby. It had to be relatively inexpensive and I didn't want to spend months or even weeks getting it done.

Before making any decisions on the packaging elements, I concentrated on a name. There is nothing extraordinary about my place or location, but I do have a small pond where the bees get their

water. A friend made a ceramic castle-fountain for the pond which has become the focal point of the pond. Watching the bees flying about the castle looking for vacant spaces on lily pads, I decided "Water Castle" would be my mark, (though in retrospect "water" is not a particularly good word to use in connection with honey).

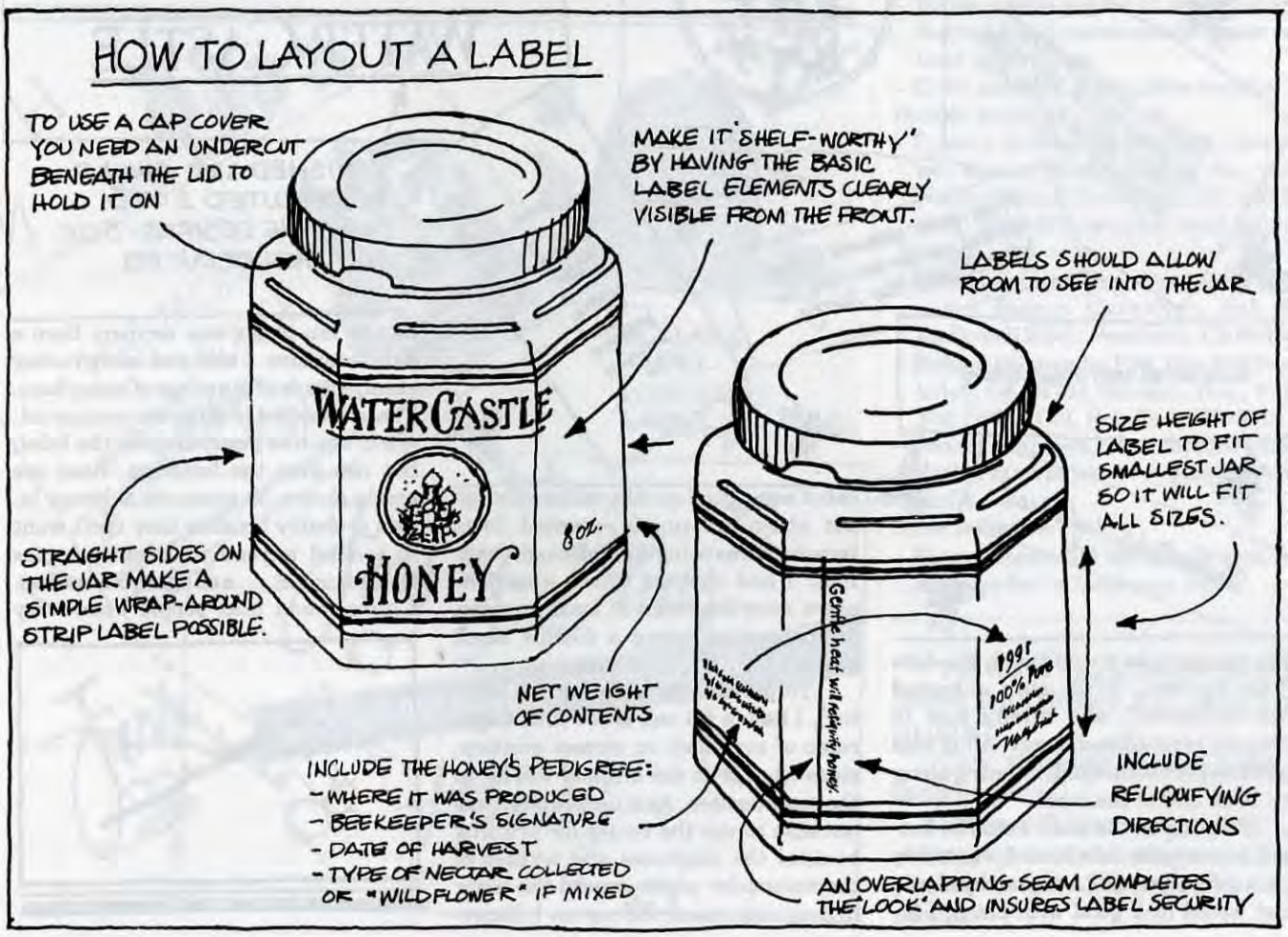
The name helped me to limit the considerations in selecting a container. I looked through the various supply catalogs to see what was available. Obviously a squeeze bear would not be appropriate, nor would *anything* plastic. After all I was packaging a pure and natural product, and in profiting from the environment I wanted my package to be environmentally correct. I wanted clear glass in a classic shape. The queenline jar has become the generic honey jar, particularly noticeable on supermarket shelves, and not classy enough for a private label. Also it is a flat-faced jar with curved profile requiring a "patch" label rather than a wrap-around label. I wanted a straight-sided jar I could wrap a simple rectangular strip around. This would save a lot of cutting time. I decided on the six-sided (hexagonal) jar which was available in several sizes. I chose the 8 oz. and 16 oz. sizes, both of which would accept the same sized label, keeping the process simple.

If you know anything about printing, you know that for the most efficient use of the paper, you must eliminate scrap as much as possible. I planned on using the office copier to print my labels, which accepts 8-1/2" by 14" paper. I divided that size into five 2-1/2" by 8-1/2" strips, leaving a 1-1/2" scrap. I taped a plain strip of paper cut to label size on one of the jars and roughly drew in the various graphic elements for layout and size purposes. I chose a straightforward traditional layout right off the Campbell's Soup can . name at the top, decorative element in the middle, and name of contents at the bottom, all centered. Anything else would go on the sides and rear. I marked the dummy label to show where each of the six sides of the jar were located in order to fit the design of the label to the shape of the jar. On a round or circular jar this would not be necessary.

The art for the label, I decided, would be loose... all freehand. I wanted it to be informal but not contrived or purposely naive. I could have used "instant lettering", the type on wax-backed sheets you rub down with a blunt point. This comes in hundreds of styles and sizes, and is readily available at art suppliers. Or I could have simply copied type or lettering on a copier, cutting and pasting the letters together as a collage. Another solution would be to simply write the wording of the label in longhand. In all cases, it's easier to accom-

Continued on Next Page

"When it comes to doing your own package, think small."



LABEL ... Cont. From Pg. 143

plish if done two or even three times larger than label size, and then reduced photostatically or on a copier with this facility. In doing this, be aware that the line weight will reduce along with the overall size, so if longhand is used it should be executed with a thicker point, such as a marker.

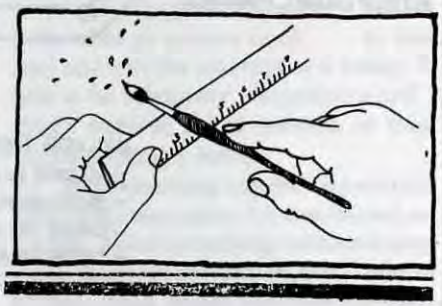
For decoration I did a small sketch of the water castle and simple line borders for the top and bottom edges. Decorative borders, emblems, spot illustrations and the like are available in books specializing in copyright-free material. These are available in libraries, book stores and art supply stores. Since my label would be used for two different sizes, I left the weight off the printed label to be hand written later on each. I included some information on my bees, the location of the hives (which

was the same as my address), the date of the harvest, "100% pure unheated and unfiltered", and briefly how to reliquify crystallized honey. All of this information was in small lettering along the back half of the label.

Printing on the label would be limited to one color, black, so I wanted to use a colored stock . . an earthy shade that would look good with black. I located some good quality watercolor paper at an art supply, marked down because it was being discontinued. Originally I had planned to see what leftovers were available at local printers, or to consider using a fibrous Kraft paper.

To prepare for printing (or copying), I had to fill one sheet with duplicates of my label, in correct position, since what is on the original will be on the reproduction. As it turned out I was not able to use the copier for printing because the thickness and texture of the watercolor paper caused the toner to drag and smear the copies. I discovered that the local quick print shop could print the labels on offset at a very reasonable price so I was able to use the textured watercolor paper. To add more color, I used a spatter of watercolors, applied by tapping a loaded brush against a ruler about 12" above the uncut printed sheet. The watercolors were diluted so that the spatter of color

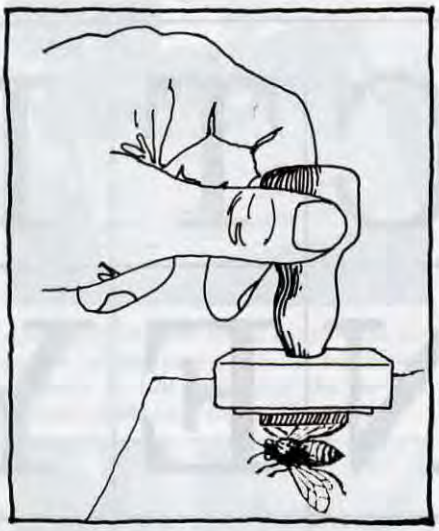
on the tan paper was no more than a subtle texture. I also had some rubber stamps made of drawings of honey bees. These I applied in different opaque colors in bee-like groups across the label, but not over the lettering. Bees are rarely shown on commercial honey labels probably because they don't want to remind anyone that honey comes from an insect . a stinging one at that. I have found that people know very



little about bees and honey, but are very interested in knowing more, so there never was any doubt that I would have bees on my label, and not cute anthropomorphic cartoons, but the real thing.

Once the sheets of labels were spattered and stamped, I sprayed them lightly with a matte fixative for moisture protection, (the watercolor spatter will come off on fingers without it, but the rest is permanent). Then I cut the labels apart on a paper cutter, using the fine crop lines I added to the original as a guide. The labels are applied to filled, clean jars by spraying the reverse sides with a spray adhesive. I used a double-side cello tape to hold the seam together.

To finish the package, I covered the caps with squares of paper onto which I had rubber stamped a larger bee using embossing ink. When sprinkled with gold powder and passed over a heat source the powder melts leaving a raised image. I tied the covers tightly below the lid with raffia, which is available at florists or florist suppliers. Hemp or sisal twine from a hardware store would have a similar effect. This year, besides honey, I produced creamed honey and



honey with fruit. I differentiated the packages by using different papers for the cap covers, and by adding small tags on the labels which identified the product. These small tags were printed on the scrap strip of the label paper so there was no waste and I still could use one universal label. It took me two evenings last year to execute the art for the label which I reused this year with only minor modifications. The rest of the process took about four evenings, packaging about 150 lbs. of honey in one pound and half pound jars. With two people the time could be cut in half.

The reception of Water Castle private label honey has been well worth the effort. Most gratifying for me is that the honey is perceived through the presentation as being something very special even before it is tasted. And of course it is, but there's nothing like a little respect to heighten the taste buds. The recipients of my first harvest have become my customers this year purchasing jars of Water Castle honey to give to their friends and relations. But for me the best return of my private label is that it has come to represent my beekeeping experience. It represents me and my surroundings, and most of all my reverence for the creatures who make it possible. □

Sources:

Art, Decorative Graphics (copyright free)
–The Dover Pictorial Archive Series at libraries, national book stores, art suppliers, or: Dover Publications, 180 Varick Street, New York, NY 10014

Papers
– Water, pastel papers at art supplier.
– Recycled and remaindered paper at local print shops.
– Kraft paper at art or office supplier.

Rubber Stamps
– Stamps made from your art: American Stamp Manufacturing Co., 121 Fulton Street, New York, NY 10038, (212) 227-1877; or check local yellow pages.
– Catalogs of stamps and supplies: Personal Stamp Exchange, 345 S. McDowell Blvd., Petaluma, CA 94954
– Rubber Stampede, P.O. Box 246 Berkeley, CA 94701, Bizzaro, INc., P.O. Box 246 16160, Rumford, RI 02916
– also art suppliers, office suppliers and rubber stamps kiosks or pushcarts in malls.

Label Adhesive
– Spray Mount, 3M spray adhesive, at art supplier or hardware store.

The Walter Swartz Design Group is located at 87 Midland Ave., Montclair, NJ 07042.

They specialize in retail promotional graphics.

Walter will answer any questions you may have on label design providing you enclose a SASE, and as his time permits.

SECTION HONEY HOW TO

Successful comb honey production is both an art and a science. A beekeeper who has never made comb honey should not expect success the first time. However, with a little experience one can make good, saleable sections. To my mind there is nothing so satisfying as producing a super full of clean, glistening sections of comb honey. Probably the chief reason that more beekeepers do not produce comb honey is the cost of the equipment and the time involved in colony manipulations.

Types of Sections

It is much easier to produce comb honey in round sections than in square or rectangular ones. Honey bees do not care to fill the corners in sections with square corners. Equally important is the fact that it takes less honey to fill a round section. Only about eight ounces of honey are required. Four by five inch rectangular sections are easier to fill than square sections because they are better centered over the brood nest (discussed more fully below). However, they require about twelve ounces of honey to fill them.

Square sections are the most difficult to produce for all of the above reasons and will weigh another ounce. While these amounts of honey are not much they make quite a difference when one is trying to force bees to fill a super or more. However, in the market all three types of comb honey sections sell for about the same price.

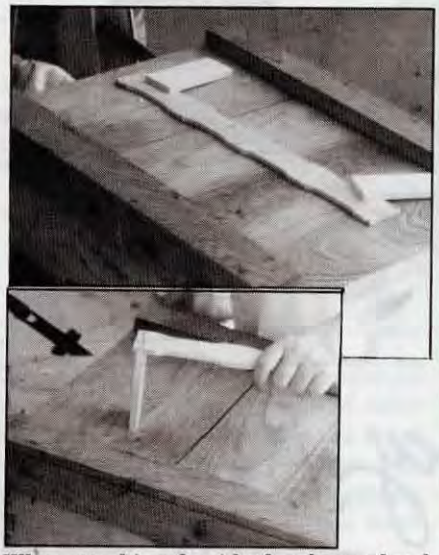
One may also produce cut comb honey, that is pieces of comb about four by four inches cut from shallow frames and packed in plastic boxes, easier than one can produce comb honey. The same techniques are used to produce cut comb honey as are used to produce comb honey. Producing cut comb honey is easier because the colonies are less congested and require less attention.

SUPER SUPER

To produce comb honey requires a working knowledge of honey bee behavior, a full understanding of the local environment your bees are in, including bloom time of honey plants, a feel for honey flow strengths and lengths and, sometimes, good luck.

But comb honey production, especially in wooden sections, is truly an art, and an integral part of the whole is making a perfect super. Here's How.

Lay out the bottom and sides of the holders, making sure the groove on each end of the bottom is up. This groove receives the sides.



When attaching the sides lay down a bead of wood glue first, then finish with nails.

ROGER MORSE
KIM FLOTTUM

Producing comb and cut comb honey costs more money, requires special equipment, and takes much more time than does producing liquid honey. One cannot afford to have unfilled sections that have no sale value. Thus, one must manage colonies and the section supers differently from the way in which one manages colonies for liquid honey production.

Where?

It is not possible to produce first class comb honey sections everywhere in the country. You need an abundance of honey plants and a rapid, intense honey flow to make the best comb honey sections. In areas where the honey flow is prolonged, sections left on colonies for long periods of time will be heavily travel stained. Travel stain is nothing more than the slow deposition of pollen and propolis on the comb and section surfaces. While this does no real harm, travel stained sections are often unsightly. A good honey flow is also needed to fill the sections completely, especially those with square corners.

How Many Colonies?

Most beekeepers agree that it takes three to five years to determine how many colonies may be kept in an apiary profitably. Commercial beekeepers prefer to have 50 or more colonies in one location or else they spend too much time on the road between apiaries, relighting smokers etc. However, not all locations where bees may be kept have a sufficient number of honey plants to have apiaries this large. When one is producing comb honey the question becomes more sensitive.

Raymond Churchill is a northern New York State beekeeper who has won many silver bowls and blue ribbons for his comb honey entries at the Eastern Apicultural Society and other honey shows. He told me that in some years he would place a single colony in a carefully selected location where the bees would not be in competition with bees from other colonies. A single colony of bees in an isolated location will be able to forage closer to the hive and presumably spend less energy searching for food. Making the effort to have only one colony in a location takes time but it is one way of obtaining sections worthy of showing.

After attaching the metal supports to the bottom of the super, lay the completed supports in like this. Note the vertical spacers on the long side of the super.

Before bending the individual boxes, make sure you wet the joints to soften the wood. Use a wet rag on each joint, and drip some down each groove from the top.

Carefully bend the box and fasten the loose ends by carefully fitting the interlocking joints. This step requires lots of patience, and care. Don't be in a hurry.

The Right Colony!

The colonies used to make comb honey should have young queens. Colonies with old queens are about twice as likely to swarm as are those with young queens. The frames and hive bodies should be in good condition because they will be manipulated frequently. At the time the honey flow starts and the section supers are added, the colony should have eight to 10 frames more or less filled with brood.

Leveling?

Colonies used for comb honey production should be level. Note that when colonies are tipped forward that the bees will work more in the rear parts of the super than the front parts. This is called the "chimney effect" and means merely that bees prefer to work and to store honey and build new comb directly above the brood nest.

Stay Below!

Comb honey producing colonies should have a single entrance. Upper entrances should be closed because bees may enter the section supers laden with

Continued on Next Page

SECTION ... Cont. From Pg. 147

pollen and propolis and stain the new sections.

The Colony

There are a few beekeepers who advocate producing comb honey over colonies with a brood nest in two supers. I do not. In fact, even in good honey-producing areas I think it is bad practice. If two standard Langstroth supers are used, the bees will usually plug the second super with honey before they start to make new wax and fill the comb honey sections.

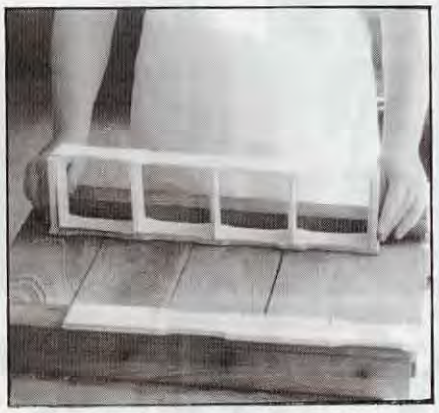
However, reducing a three or four story colony to a single brood nest causes congestion of the brood nest and congestion is the primary cause of swarming. It is for this reason, too, that a short, intense honey flow is best for comb honey production.

When a multi-story colony is reduced to one super the beekeeper should use 10 frames in a 10 frame super, not nine as most liquid honey producers use. When the colony is reduced to one super the frames that are placed in the bottom super should contain the capped brood and not so many eggs and larvae. In this way the emerging brood will provide bees for honey processing and production and empty cells in which the queen may lay. This will help to reduce congestion for several days.

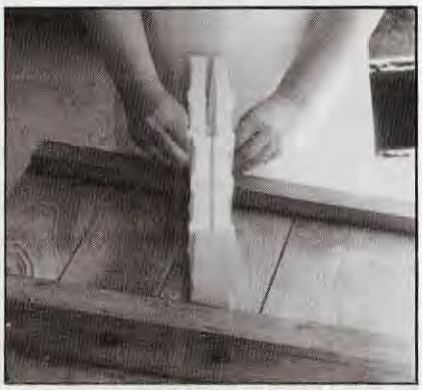
Comb honey producing colonies should be inspected every seven days for queen cells and these are removed if present.

Big Doors!

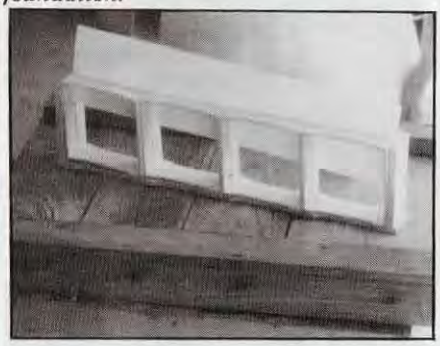
Since upper entrances are closed, and brood nests congested in comb honey producing colonies, it is best to use a deeper than normal bottomboard. This provides the colony with ample space for ventilation. A lack of ventilation can contribute to congestion and swarming. It is necessary to place some kind of rack in the bottomboard, about three eights of an inch under the bottom bars of the brood nest frames. This rack prevents the bees from building comb down into the deep bottomboard.



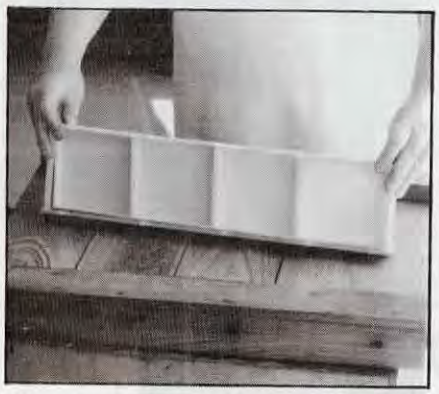
When setting the boxes in the holder, make sure none of the splits are on the bottom.



Carefully pull apart each section box about a half inch or so to make room for the foundation.



Section foundation is cut to exactly fit a four-section holder.



When inserted correctly the sections will close exactly, with no gaps or holes. This is critical for good comb foundation.

The Supers

One does not use an excluder when producing comb honey. When there are 10 factory-made frames with their wide top bars in the brood nest super, the frames themselves, in part, will act as an excluder. In fact, the wide top bar was designed for use in comb honey production. However, equally important is rotating the comb honey supers as new supers are put onto the colony. Queens will rarely, but sometimes, lay eggs in comb honey sections. This may be avoided by placing the supers with the new foundation *on top* of the brood nest *and under* the other comb honey supers. This is called bottom supering. The fullest super is kept on top where it is also easiest to remove.

Bait Sections

Bait sections are comb honey sections made the year before that have the foundation drawn out about one eighth to one quarter of an inch. Bait sections are usually specially prepared for that specific purpose. The presence of a single bait section in a super will cause the bees to move into and start to draw cells in a comb honey super a little earlier than when no new comb is present. One may use a partially drawn section that may have contained some honey the year before but if this is done be sure not to sell them. When older sections are used as bait sections the

bees usually add more wax and the combs are tougher to chew.

Full?

The best way to remove comb honey supers is to use a bee escape. If bees in a comb honey super are smoked they will immediately open some cells and eat honey. This may cause the sections to leak honey. Sections leaking honey are unsightly. Bits of soot may also be left on the comb surface if a smoker is used too much. Using repellents to remove comb honey sections may work but since a puff or two of smoke is usually required to start the bees in a downward direction there is the same problem with bees opening cells of honey.

Finis!

Wax moths are capable of destroying the appearance of comb honey sections and one should always suspect that some wax moth eggs may be present in a comb honey supers. One method of killing the eggs is to place the new sections in a freezer for 24 to 48 hours. On a commercial basis, beekeepers will sometimes place comb honey sections in a room or chamber filled with carbon dioxide in which the wax moths cannot live.

Comb honey should be sold as soon as possible. There are several dangers when one stores comb honey sections for more than a few months. The honey may lose flavor. Crystallization is always a danger. Noxious insects may attack the stored honey. Comb honey should be stored at room temperature and if you live in an area where the humidity is high it is best to use a dehumidifier to reduce the amount of water in the air of the storage area.

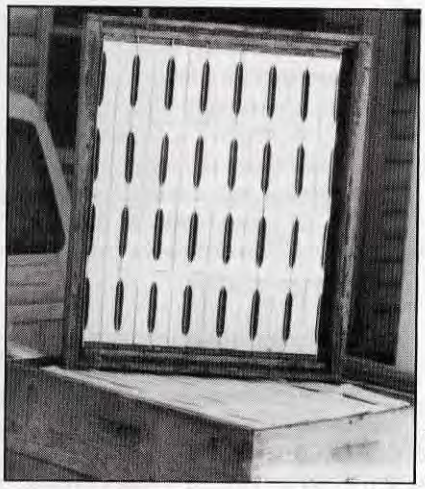
Dividers, or M-Fences are next. These are placed between each holder, and when placed correctly, maintain the bee space so that comb does not extend past the edge of the box, and keeps the boxes 'individual', and easily removed.

Conclusion

A beekeeper who produces excellent comb honey sections year after year must know and understand bee biology thoroughly and follow a fixed routine. Still, nothing is more satisfying than the production of comb honey. □

Super springs are applied to the long side of the super to keep the squares snug. Apply them to the spacer side of the super (see Top photo, pg. 147).

But on the other sides the wedges are used, and should be firmly inserted to anchor the sections the other way. When springs and wedges are in place, carefully level the sections as much as possible. The flatter the surface, the less chance there is for propolis or burr comb to appear.



A finished super. On the right side are the supports and springs, and on top and bottom are the wedges.

HOME HARMONY

ANN HARMAN
6511 Griffith Road • Laytonsville, MD 20882

ALMONDS

Almonds are an extremely versatile nut. After glancing through several cookbooks I found that almonds can be used at any meal with just about any food.

Breakfast: a cereal mixture with grain flakes and dried fruits.

Lunch: cream of almond soup or perhaps a salad with almond dressing.

Snack: a chocolate bar – with almonds, of course

Dinner: a chicken dish with almonds; green beans highlighted with almonds sauteed in butter; almond baked potatoes

Dessert: countless cookies, cakes, baklava and other sweets.

And then the pure essence of almonds: marzipan. What would cooking be without almonds? Less interesting. But what would the almond be without the honey bee. No where, that's where!

Honey bees are essential for cross-pollination of the almond flower. Since California is the prime state for almond production, thousands of colonies are moved into the orchards during blossom. You can read elsewhere in this issue the role of the honey bee (and beekeeper) in almond production.

Almonds are available to us in many ways. Almonds, in the shell, are a delight to eat since the shell is so easy to crack open. You can buy almonds unblanched or blanched. You can buy them whole, sliced, slivered, chopped, or toasted. Unblanched almonds are a delightful brown color, while blanched are pale creamy white. The contrast between the two, along with their shape, makes almonds a useful nut for decorating our food.

If all you found in your cupboard was unblanched almonds and you wish blanched, the process is very easy. Plunge the nuts in boiling water for 30 seconds, remove and let cool. The brown skin will slip off when rubbed. If you wish to increase the flavor of almonds, toast them on a cookie sheet for about 10 minutes in a 350° oven. A few drops of almond extract can be added to recipes containing almonds to enhance the almond flavor.

Nutritionally, almonds are a good source of balanced proteins, a fair source of Vitamin B and iron. However, they are also moderately high in fat.

> Nuts frequently have to be chopped or ground for use in a recipe. Chopping conserves the nut's oil within the nutmeat and is the most common treatment. Chopping can be done with a knife, a food processor or with a nut chopper. Grinding nuts squeezes oil from the nutmeat and produces a crumbly paste. Grinding is usually done in a meat grinder but a blender will give the same results. It is important to follow the instructions given in the recipe for the correct treatment of nuts. □

If you acquire a large quantity of almonds – more than you would use in a few weeks – store them in the freezer. In fact, all nuts should be stored in the freezer to prevent them from turning rancid.

Anyone with a nice supply of honey has probably looked longingly at the recipe for baklava – that famous combination of honey and almonds – and wondered if it would be difficult to make. With the increased availability of the thin sheets of already-prepared phyllo dough, baklava is not at all difficult to make. Try it and then make some for dinner guests. They will probably be very impressed with your cooking skills. Now you are faced with the decision of telling them how easy it is – and selling them some of your honey for cooking it – or not telling anyone and enjoying the appreciation.

Here are a few helpful hints to make your construction of baklava foolproof. First, read the recipe instructions carefully. Then assemble all the ingredients except the phyllo dough (more on that in a minute). Have the blanched, chopped almonds ready to be sprinkled. Melt the butter and have a pastry brush ready. The big secret for the phyllo dough is NOT to let it dry out. Have a clean, damp towel ready to cover the sheets even though you are using them. During periods of low household humidity keeping the phyllo sheets damp is crucial to your success. Check with the bakery when you purchase the phyllo dough for any helpful hints they have for ease in working with the dough. Ready?

Baklava

10-15 sheets phyllo dough (or 1 package strudel leaves)
1 cup unsalted butter, melted
8 ounces almonds, blanched, chopped
1 cup honey (your favorite flavor)
grated peel of 1 orange or lemon
2 tsp cinnamon
1-1/4 cups water

Butter a 9"x13"x2" baking pan and line the bottom with 2 sheets of phyllo. Sprinkle with melted butter and scatter on some chopped almonds. Put on another layer of phyllo, sprinkle with melted butter and alternate layers of chopped almonds and

sheets of phyllo, sprinkling butter on each layer until about 1-1/2" thick. Finish with three layers of phyllo. Sprinkle with more melted butter. With a sharp knife, cut the baklava into diamond shapes through the top layers only. Bake at 350° for 30 minutes, then increase the heat to 400° and continue baking for another 30 minutes, until top is golden brown. Let cool. Boil the honey, peel, cinnamon and water together, adding a little more water if necessary to produce a pouring syrup. Pour the hot syrup over the cold baklava and let cool. The baklava should absorb the syrup; it may not be necessary to use all of it. Continue cutting through all the layers and serve in the diamond shaped pieces.

The Honey Kitchen
ed. Dadant & Co.

The almond confection known as Marzipan is wonderful for children to make since it sort of resembles modeling clay. Marzipan made with honey will absorb moisture, especially in humid weather. Therefore Marzipan with honey should be kept in a closed container if not used promptly.

Marzipan can be formed into any shape you wish, although the most common shapes are fruits. Actually shapes like strawberries, bananas are very easy. An ideal size for Marzipan fruits is about 3/4"

Marzipan is colored with ordinary food coloring but use caution! Add a tiny drop at a time and mix well before adding more coloring. Marzipan can be "painted" using a small watercolor brush and food coloring as "paint". In this way a marzipan peach can be given a blush of pink, strawberries given dots of yellow and bananas a touch of brown. Experimenting is really the only way to learn how to work with Marzipan.

Marzipan

2 cups blanched almonds
1 Tbs honey

Grind the nuts in a meat grinder. This is one time you wish the nuts to be pasty, not dry. Mix in the honey adding a little at a time. Do not let the mixture become too sticky. Separate the paste into desired sections for coloring. Add the food color a small drop at a time and mix well to achieve the desired shade. Form the Marzipan into desired shapes and let sit in a dry place overnight. Decorate with a paint brush dipped into food coloring. Store in a dry place.

Almonds, like other nuts, are a source of oil. Almond oil can be obtained in some specialty grocery stores and health food stores. This next recipe, containing beeswax – not honey – makes a pleasant hand cream.

Beeswax-Almond Hand Cream

1/4 cup beeswax
1/2 cup coconut oil
1/2 cup almond oil
1/4 cup rosewater

Melt the beeswax and coconut oil over a double boiler. Add the remaining ingredients and heat and stir until well mixed, several minutes. Pour into a container while still hot; it hardens as it cools.

A Honey Of A Cookbook, Vol. II
Alberta Beekeepers Association

Enjoy cooking with almonds but be certain you say "thank you" to the honey bees. □

To Bee or Not to Bee

Such a pointed question

By John Bianchi

It was my first look down into an active beehive, and what I saw was a swarming, pulsating mass of some 60,000 humming honey bees. I was standing with the local bee expert, Russ, who had just sold me this, my first colony of bees, and who was about to give me Lesson Number One in elementary apiculture – Inspection of the Hive.

"Take a look in there," he said, prying up the inside cover and motioning me closer.

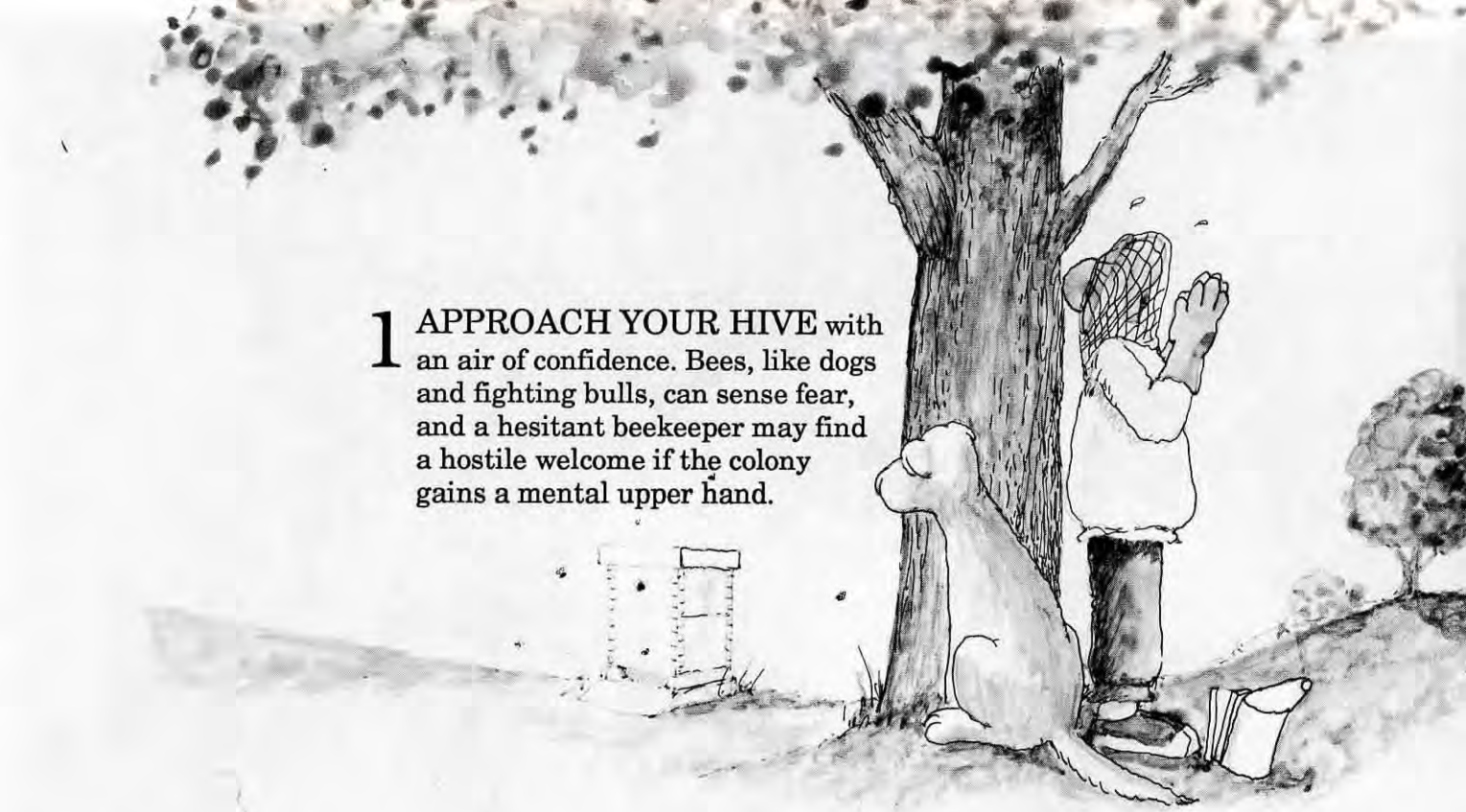
"Shouldn't we be wearing some sort of protective clothing?" I asked, not at all comforted by the fact that these were now my very own bees, dependent upon me and my good husbandry to see them through the coming winters. One look, and I envisioned the need for some good, substantial beeproof gear, something resembling a cross between a mediaeval suit of armor and an Apollo XV space uniform.

"Nah," snarled Russ, with no attempt to disguise his contempt. "It's spring. They won't bother ya." The words were barely out of his mouth before an irate guard bee flew straight up into Russ's face and stung him on the left eyelid. Within seconds, the eye had swollen shut, but Russ calmly replaced the hive cover and swung smoothly into Less Number Two: Removal of Stinger from Human Flesh.

Since then, both lessons have proved invaluable, although over the years, I have observed that the better you learn Lesson One, the less you need Lesson Two. Trepidation, of course, is part of the fascination of beekeeping and the following advice is offered to all who would venture into the beeyard. The novice could do worse than to heed these words. Much worse.

Reprinted from Harrowsmith Magazine
Telemedia Publishing, Inc.

Courtesy of CAN-AM Apiaries, Orland, California



1 APPROACH YOUR HIVE with an air of confidence. Bees, like dogs and fighting bulls, can sense fear, and a hesitant beekeeper may find a hostile welcome if the colony gains a mental upper hand.

2 USE THE SMOKER SPARINGLY. Smoke instantly molifies angry bees; but never overdo it. Too much smoke can have the reverse effect, triggering the bees' instinctive fear of forest fires.

3 TAKE ADVANTAGE of the honey bee's inclination to ignore you. Open the hive gently and without rapid movements. The bees will be so hard at work, they should act as if you weren't even there.

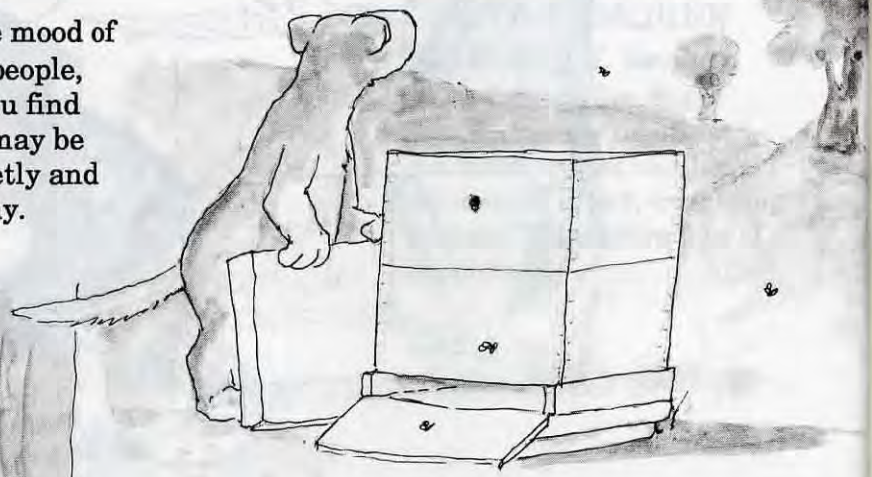
4 **RESIST THE TEMPTATION** to let familiarity breed contempt. If a few guard bees buzz around you, ignore them. There is, as you will see, very good reason not to antagonize them.

5 **ACCEPT THE FACT** that you will be stung. Any beekeeper worthy of the name develops an attitude of sublime indifference to the occasional mishap. Overreacting can only make the situation worse.

6 **ONCE STUNG,** close the gap in your protective clothing. If one bee can find an opening, others will be drawn to the same spot.

7 ALWAYS keep plenty of matches on hand. The bellows smoker, invented in 1870 by Moses Quinby, was a great advance over earlier models, but it has one serious defect: It seems to go out just when you need it.

8 BE SENSITIVE to the mood of your colonies. Bees, like people, have their bad days. If you find them especially testy, it may be best to close the hive quietly and plan to return another day.



9 SHARE THE WEALTH. You will have worked hard for the first year's crop, but there is no finer pleasure than letting others sample your very own harvest of honey. □

S·P·R·I·N·G
YES, THEY MADE IT!

DEWEY M. CARON

They're alive!!

Oh my gosh! My bees survived the winter! What do I do now? Now where did I put that pamphlet – do I have to feed my bees? Do I have to super them? No, not yet! Do I have to find the queen where is my hive tool? Is the weather O.K. to look at them? Is it too early? How do I stop them from swarming?

Whoa – slow down. You passed the first "test" – or your bees did!

Your colony of bees survived their first winter!! There really are bees flying about your hive. You can see foragers – lots of them hopefully – bringing a bright orange pollen into the colony you set up in your backyard last year. Great! Just like they were supposed to do!

So what do you do now?

Honey bees are really a remarkable social organism. A colony of bees can get along very well without our assistance. They have lived for centuries, in tree hollows, caves and in cavities of virtually every size and shape. They do not need us to survive – but we persist in trying to help.

If you are a beekeeper of a few months or of many months, this five point survival guide offers a few no-nonsense suggestions for what-to-do next! It is, if you will, advice on how not to over-manage a bee colony that has just survived winter.

Manage For Success

People keep bee colonies for different reasons. Few hobbyists care if the bees pay their own way and the opportunity to harvest some honey, not the maximum possible, is all that is expected. Hobbyist management is different from management needed by the sideliner or commercial beekeeper where location, intensity and timing are critical factors influencing the bottom line.

Managing for success means keeping the bees alive during the critical early spring and allowing the colony to expand as forage conditions improve. Later you want to super in time to allow the bees to store a surplus that you can harvest. The key to inspecting a colony is to have fun doing the work and to learn something about the bees that will help make your next management decision easier.

In the spring a bee colony expands very rapidly from the annual low population level. Small populations are vulnerable early in the year, especially if the weather changes rapidly. You can feed your bee colony extra sugar (as a syrup, mixed with water) to keep them alive or to stimulate brood production.

As spring weather improves, colonies are a delight to inspect. You can really see changes from one inspection to the next. The bees do all the work and you need only to try to stimulate weak colonies. But as conditions improve some colonies expand to the point where they prepare to swarm. You can watch the process; sometimes even do something to keep them from leaving.

You need to know your level of commitment and plan your management accordingly. Whether for fun or gain, spring is when you can readily affect what will happen the rest of the year in your colony.

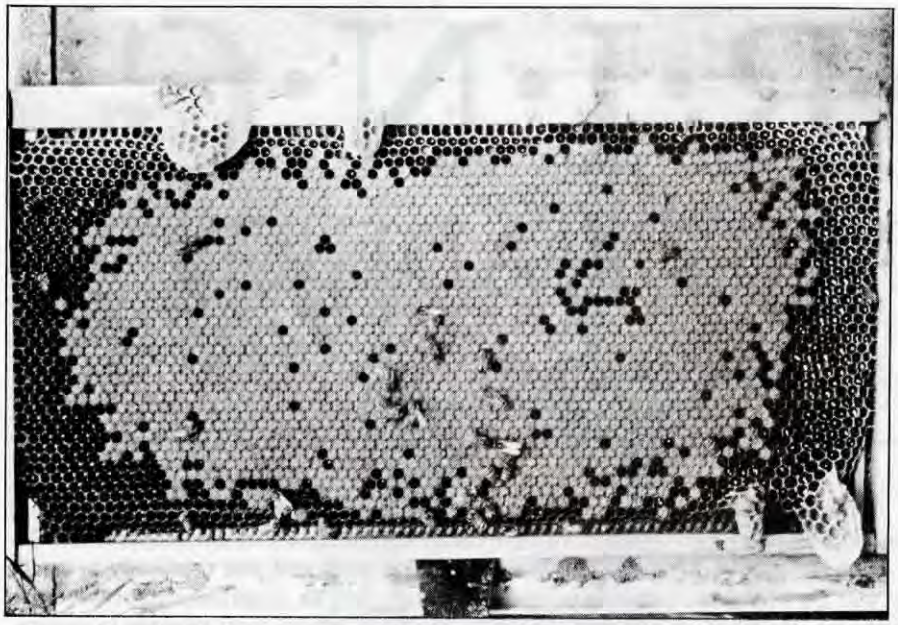
Watching The Entrance

Watching bees at the colony entrances can tell you quite a lot about the colony. Bees in the spring need pollen to raise young so you should see pollen foragers. The pollen will be orange to yellow to white with probably one color predominating. There should be lots of bees about the entrance on a warm, sunny day. Some will be learning landmarks to find out where they live. Others will be functioning as guards to smell each incoming bee. The foragers will be the most intensive as they fly directly from the entrance and disappear quickly inside when they return with their collected bounty.

The bees won't necessarily use the entrance you provide if alternatives are available. Holes in the corners of the boxes,

Continued on Next Page

Bees at the colony entrance. We see guards smelling returning foragers but no pollen foragers in this photo.



Frame of brood with fresh nectar at side and top margin. Proper spring management will result in colonies ready to store surplus nectar for our use.

SPRING ... Cont. From Pg. 157

holes drilled for added ventilation or areas between poorly fitting equipment that are not completely filled with propolis will all serve as flight entrances for foragers.

You will see entrance signs if you had a mouse or other winter-time visitor. The bees should have an open and free entry/exit area. Clean out accumulated debris and even remove boxes and clean the bottom board of debris to insure unrestricted entrance for the bees. If you have entrance reducers in place, you should leave them intact until the weather becomes warmer and flight activity is reliable every day. If you discover a mouse nest you can throw it out or remove the young to another site nearby. Block the reentry of the adult mouse by using an entrance reducer or wire of sufficiently small mesh to limit her reentry while still permitting the bees to come and go easily. If the colony has any tilt backward so the bottom board accumulates moisture, prop up the back so rain or moisture will not accumulate inside the colony.

O.K. To Inspect?

You should want to minimize the negative effects of disturbing the colony when you inspect. This means waiting until the bees have had a couple of consecutive days of flight. Open the colony to inspect only when the apiary site is warmed, usually the middle of the day in the spring months, and the sun is out. It is better to avoid exposing the colony to strong winds since the wind can quickly dry out and may chill the brood. Apiary sites that include southern exposure, a bowl effect to gather heat and a wind break will provide less harmful spring inspections to the bees. If it's not warm, don't inspect.

Spring inspections should not be prolonged. If you remove boxes with bees cover them with an extra cover, the inner cover, or a cloth, especially if they have brood in them, to help the bees preserve heat. Pull frames only partially out of the box, look at them and then replace them in the same sequence without delay. Try not to scatter the brood sphere, so carefully arranged by your bees. Individual colonies probably should not be opened for more than five minutes; less time is usually better. It should take you longer to get the smoker going than it should to manipulate an opened colony during the spring.

Time To Super?

It is remarkable how rapidly a bee colony can expand. We add supers to permit normal expansion, to reduce swarming and to obtain surplus honey. In most cases we are probably late to add supers for maximum effect but we shouldn't be concerned unless we really are trying to maximize profits.

The queen and bees prefer to expand their brood sphere upward and are slower to expand it sideways and even more reluctant to extend downward. Expansion may be impeded by honey filled frames to the sides and cold, damp conditions from below. Two story colonies that are expanding with four six frames of brood beneath the inner cover can be reversed. To reverse, exchange the top box position with the lower box. The bottom board can be scraped clean as you reverse if soggy or cluttered.

If you add boxes on top of your colony without reversing, the lower boxes may not be utilized by the bees

Spring colony. Notice entrance reducer in place. This colony might be reversed because the bees have reached the top super, and probably a super should be added over a queen excluder after we complete the spring inspection.

and your colony becomes a stack of equipment. A queen excluder will limit upward movement of the brood but only if put on *before* the boxes are placed on top. Reversing below the queen excluder helps insure brood expansion often resulting in a more populous colony. Supers for honey that are added early in the nectar gathering season are sometimes utilized by the bees resulting in an unexpected surplus. Generally, the earlier you add the super, the better it is to use the queen excluder unless you don't mind brood expansions upward in your bee colony. Remember, harvesting honey frames with brood in them wastes brood, and makes uncapping and extraction more difficult.

What About Swarming?

The behavior of swarming is probably one of the most dramatic occurrences in the life of a bee colony and in your beekeeping. Swarming is the natural method of colony reproduction. In the U.S., swarming becomes a management "challenge" the further north you go. Our bee colonies swarm every year or every other year if left unmanaged – by comparison the African bee in the American tropics will swarm three to four times in a year from unmanaged colonies. Our bee in the same tropical or subtropical climate rarely swarms.

We do not fully understand the factors that lead to swarming in colonies. They are complex because swarming is a fundamental behavior. Usually we recognize that bees have begun swarming preparations only after they are well underway – we see developing queen cells! Our remedial measures are more limited the further along the colony is in the swarming event. Thus as beekeepers we are merely trying to catch up and modify what the bees are doing.

Allowing bees to have an expansive area for brood can reduce swarming and young queens heading colonies also reduces the likelihood of a colony swarming. Unless you have had several years experience, it is difficult to inspect for and stop a colony preparing to swarm. But we don't need to concede defeat. Try to avoid restricting hive space, add a super or two above a queen excluder and hopefully your bee colony will not swarm this season. If it does, you may have an interesting adventure to tell fellow beekeepers and friends about the swarm that got away, or, your great adventure in how you captured the swarm that emerged from your successfully overwintered colony. □

FEAR & LOATHING ON INTERSTATE 5

MARSHALL DUNHAM

Ever wondered what it is like to ride along on a bee truck bound for California almonds? I've done it a few times, but the most interesting trip I ever made was in the big flood of 1986.

On the night of Feb. 10, 1986, I helped Kenny Williams of Wild Harvest Honey load up his 1955 Studebaker Transtar with about 100 hives of bees. The boxes were two westerns with nailed-on bottom boards and migratory lids. Kenny loaded them with an ancient, overbuilt Walt Kelley Bee Boom. My job was smoking and screening the entrances of each box, then tying off each row as it was placed on the bed. The hives were stacked two deep for the trip south. By the time we were done, it was about midnight. I went home for three hours of sleep.

At 4:00 in the morning on Feb. 11, I was half-awake and standing by the road, sipping instant coffee from a plastic cup and listening for the wheezing of the old Studebaker. A few minutes later, the rumbling, grumbling, almost overloaded rig arrived. Most of my gear – a bee suit, a change of clothes, an old sleeping bag – was packed in a couple of four-gallon square honey buckets. A small pack held my thermos, lunch, and a few other things. I lashed my buckets on the back of the truck, behind the last row of hives, and crammed the little pack in the crowded cab.

There wasn't much room in that cab. Most of the nooks and crannies were full of tools and bee gear. The windshield wipers barely worked, the window rolled only part-way down, and the air inside was warmed by exhaust fumes. An aroma of gas, grease, WD-40, propolis, wax and honey surrounded us.

"How you doing?" I asked the driver.

"I'm tired!" said Kenny, who'd been up late packing his gear.

"Want some coffee?"

"What kind of coffee?"

"Good strong instant coffee – what do you expect at four in the morning?"

"Yeah, sure, I'll drink some of that."

I poured a plastic cup half-full and passed it over. Keeping the driver awake is an important part of helping on a bee truck. We were rolling down a narrow, potholed blacktop mountain road, through a tunnel of trees, watching for the gleam of deer eyes in the headlights. Deer are one of the greatest traffic hazards in the Coast Mountains of Oregon. The crumbling asphalt road wound up and around and over and down a series of steep ridges, often with vertical cliffs on either side, one straight up, the other straight down, no shoulder, no guard rails, a miniscule margin of error on both edges, the road barely wide enough for two long trucks to pass – no place for a sleepy driver in a loaded bee truck.

"What's that?" asked Kenny as we approached an old train stop-settlement called Devitt.

"What?"

"Does it smell like a manifold leak?"

"You mean that exhaust? It always smells like exhaust in here."

"I don't know – I'm going to check–"

So we made the first of our emergency roadside pit stops, not five miles from the start of the trip. Kenny checked his manifolds with a flashlight, but couldn't see a big leak. Then he explored other alternatives, finally discovering a can of WD-40 in a toolbox with its cap off – apparently Kenny smelled a WD-40 leak. We got back on the road in a few minutes.

"Here's a tape Jane loaned us for the trip," Kenny says, handing me a cassette from his jacket pocket. Jane is Kenny's massage therapist. A guy who hauls bees in a 1955 Studebaker needs a massage therapist. I took it out of the box, plugged it into the tape player and The Red Clay Ramblers filled the speakers with some hard-driving bluegrass music.

A few drops of rain splattered the windshield as we rolled eastward and downhill, out of the Oregon Coast Mountains. We had the narrow asphalt road all to ourselves. Even the log truck drivers weren't up so early. We reached the Willamette Valley at Philomath, a small town noted for its sawmills and speedtraps, where we turned south on the back-roads of the valley, rolling past Christmas tree farms and rye grass fields. Some of the world's finest agricultural land, with topsoil a hundred feet deep in places, is used to grow such necessities as lawn seed and holiday decorations (kill a tree for Christmas! Oregon needs the money). In the darkness at 5:00 on a February morning, even the hard-working farmers were asleep and the roads were empty.

This part of the trip was actually very pleasant, being early in the day with empty roads and good music on the stereo. We didn't mind a little rain on the windshield – we were bound for California, land of sunshine, oranges, lemons, olives,

Continued on Next Page

FEAR & LOATHING ... Cont. From Pg. 161

almonds! After months of the gloomy Oregon winter, we were bound for the Central Valley of the Golden State! You can have California in the summer, but it isn't half bad in the winter. Usually. Had we known what we were heading for we might not have enjoyed that part of the drive so much.

We stopped for a greasy breakfast and more incredibly bad coffee at a 24 hour restaurant in Eugene. Then we filled the gas tank, topped off the engine oil, cleaned the windshield and checked the running lights. The hardest pull lay just ahead – the long climb to the top of Oregon's major mountain range.

Dawn was starting to break over the Cascade Mountains when we left Eugene behind and turned onto Highway 58 for the climb up the Willamette Pass. We were just outside of Oakridge, laboring up a 13 mile grade, when the driver said, "Look at that!"

Coming at us in the downhill lane was an 18 wheel semi-truck with smoke billowing from his brakes. We were as far to the right as a rig could get without plunging over a cliff into an icy river so there was no room to take any evasive action. All we could do was sit tight and hold on and hope the other driver didn't lose control. The big truck went hurtling past, spewing flames and smoke and bits of burning brake lining. We never did find out if the driver made it or if the rig cracked up. He was below the last runaway escape ramp. Just another working day, business as usual on the Willamette Pass.

There was precious little snow on the mountains that year. Just over the top, I took the wheel and Kenny took a nap. We came down onto Highway 97, a fairly flat, fairly straight stretch, through forests of pine trees being decimated by blister beetles. Several thousand years ago, a nearby volcano called Mt. Mazama erupted and covered the surrounding area with a layer of pumice that buried all the small hills and valleys. The ancient eruption left a huge caldera which filled with water and was mis-named Crater Lake, now Oregon's only national park. The pumice-fill created ideal conditions for the truck and train routes of the modern era.

We plugged along at a steady 55, trying not to hit any pot holes. The challenge of driving a bee truck is keeping your load alive and aboard. We tried to stop as infrequently as possible. Even with screened entrances, some bees always come out when the truck stops and they are inevitably lost. Hard bumps and shocks can also kill queens and bees, and the springs on the old Studebaker were not very soft.

The scenery is spectacular around Klamath Lake, if you like birds. North of town were flocks of ducks and geese, down from Alaska and Canada for the winter. The town of Klamath Falls is one of the few places where you can see bald eagles sitting on perches beside the highway. You can also see bald eagles standing in the fields, waiting patiently at the entrance of gopher holes. And there were flocks of swans in the distance and even a few antelope way back at the edge of the lake. South of Klamath Falls, the road crossed the old lake bed where the ground is so soft that a few miles of telephone poles are tipped at the same 45 degree angle.

The road ran in a fairly straight line all the way to the little town of Doris which is too small to afford a speed bump. In order to slow down truck traffic, the main street was built with a sudden ninety-degree left turn. The spot is marked by an old garage bearing a sign that says "Malfunction Junction" and scars from a multitude of rigs that didn't make the corner.

Just past Doris, we made a brief but unavoidable stop at the California Department of Agriculture Inspection Station. After displaying all the necessary paperwork and permits, we were allowed to proceed.

We were scarcely over the California line when the rain began in earnest and the passenger side windshield wiper began to flop. This required a scenic tour of beautiful downtown Weed, California, where we searched hardware stores for a suitable retainer spring for the wiper arm. Finally we found a spring that was made for something else and adapted it to fit the wiper assembly. We got it working just in time for some major storm activity as we rolled up the ramp on Interstate Five and sloshed past Mt. Shasta.

We were just north of Sacramento and darkness had fallen when I went to shift gears and found the clutch suddenly disassembled. The pedal slammed to the floor and I started cussing as I hit the emergency flashers and looked for a safe place to pull over. Fortunately, only a cotter pin was loose and we were able to replace it and get rolling.

When we reached Sacramento, we eased the truck into the third lane of the freeway and went straight through town, avoiding all the turn and exit-only lanes. I was fervently hoping nothing would break in the sea of traffic, and we got lucky.

At 1:00 a.m. on February 12, we pulled into the yard at Tom Dimantine's honey warehouse on Ripon Road near Manteca. Just as we got there, the rain front that had been tagging along all the way from Weed, arrived. Our original plan had been to get a couple hours of sleep and unload before dawn.

When we went into the trailer that served as Dimantine's office, we found Vince Vaza wrapped in a serepe asleep on the floor, looking like an extra in a Clint Eastwood movie. He woke quickly, roused mostly by the slamming of rain on the roof.

"You better unload right away," he said. "This storm could make it impossible to get in and out of the orchard if you wait." So we climbed wearily back into the truck and followed Vince out to "our" orchard.

Vince was driving a flatbed Ford loaded with pallets and pulling a forklift. The bees he had ready would finish the farmer's order. When we got to the orchard, Vince told us where to put our hives and went off to unload his truck at the other end of the orchard. Using a forklift and palletized hives, he would be unloaded in a matter of minutes. But back on the Walt Kelley bee boom, it was another story.

At 2:00 a.m., with rain gushing down, we began to unload. Kenny unlashed the boom cradle, punched the up button, and nothing happened. "Uh oh," he said tiredly, "the battery wasn't charging." Even with the engine running, we did not have enough juice to unload the beehives.

There was only one thing we could do. Muttering and cursing, with rain pouring through the open weave bee hats we wore, we began unloading by "The Armstrong Method." The wind howled and petals of almond flowers came down in the rain. The mud of the orchard floor grew deeper and we tried to unload faster. Usually there were two of us lifting down one hive, but sometimes when Kenny was moving the truck, I got

impatient and set them off by myself. We were soon soaked, shivering and utterly miserable. We finally finished about 3:00 a.m. and went to a truck stop for breakfast. By the time we got back to Tom's warehouse and swept off a couple of spots in the loft, we had been up 24 hours, with only about three hours of sleep in the last 48.

The weather got worse the next day. I had intended to hitchhike home after getting the bees in the orchard, but the weather was so bad I decided to wait until it cleared up. After all, it never rains much in California.

After a day of rest, we decided to take the tour of the Blue Diamond Almond processing plant. The tour begins and ends in an all-you-can-eat-free almond snack bar featuring about 37 flavors of roasted almonds. In between gorging on the product, we watched a movie and learned that almonds are the fourth largest legal crop in California and that they lead the world in almond production. Almonds flower in early spring and are heavily dependent on insect pollination, and there are far more almond trees than available bees in California, so beekeepers come from around the nation to help "set" the crop.

When the harvested almonds are brought into the factory, they are fumigated with methyl bromide, dried and shelled. Defects are culled, and perfect nuts go into the food processing line where they are roasted and flavored. Inside the warehouse, the almonds are handled by the ton in special cardboard bins, shuttled around with electric forklifts.

A couple of days later and I was still waiting. I found a little work on Vince's crew, cleaning up some dead-outs he'd gotten from another outfit. The deal was that he would establish new colonies, rent them out, and return them. The only good thing about cleaning up dead-outs is that you get to see everything that kills bees – mainly starvation and disease – and you get to see all the critters that can live in bee boxes – including mice, centipedes, millipedes, wax moths, snakes – and black-widow spiders. We burned frames that had diseases – foulbrood and chalkbrood – and too many wax moths. Frames from starved colonies were brushed off and recycled, if the comb was good and there wasn't too much mold from the dead bees. The interior division board feeders were full of dead bees and crystalized sugar that made a sticky, stinking mess. There was also burr comb to scrape and bottom boards thick with crud to clean off. We put the boxes back together with drawn comb, foundation, and feed comb distributed evenly so new bees could be shaken in and a caged queen added, then stacked everything on pallets, ready to go to the orchards.

When the job was done, the rain was still falling and the river was rising. The big excitement was going down to the bridge to see how high the water was. Soon it became clear the place was about to flood. Although I love an adventure, I didn't want to be wading around Manteca when the levee broke.

Six days after I arrived Dave and Rose Kerr rolled into the yard at Tom's driving their three-ton International, loaded with 19,000 Pierco™ Plastic Frames. They had been down to the factory near Los Angeles and loaded up with big cardboard cartons of frames for their own honey supers and some of their friends. Several beekeepers had gone in together to buy a truckload.

When I asked if I might catch a ride north Dave said, "Well, we aren't going directly back – we might have some work to do in Chico."

"We were bound for California, land of sunshine, oranges and almonds."

"Want any help?" I asked.

Dave looked at Rose, who said, "We might be needing some help, yes."

I got my pack and climbed aboard, glad to be getting out ahead of the flood. The CB radio was squawking road reports in truckdriver-twang as we plowed furrows in the water on the road, taking the shortest route to the freeway. The clouds were black and the raindrops were knocking the petals off almond flowers from mile after mile of trees. The cream-colored blossoms looked like frosting on the muddy orchard floors and the whole scene was about as dismal as any nut farmer or beekeeper would ever want to see.

As the truck climbed the bridge over the Sacramento River, we looked down to see the water was exactly even with the top of the levee. All eyes went from the black, rolling waters of the rain swollen river to the vast expanse of lowlands that lay ahead. It was a long stretch to the next high ground. As soon as we came down off the bridge, we would be below the water line. If the levee broke before we got across, we could lose our load. The tarps would keep rain off, but if we got caught in water deeper than the bed of the truck, the cardboard boxes would dissolve and we would be left with 19,000 pieces of plastic halfway tied up in trucker's tarps.

Rose looked up from the nearly overflowing river and said, "I don't think we better be stopping for pie and coffee just now." Nobody argued with that observation and Dave didn't seem overly concerned about getting a speeding ticket when we came down off the long, high bridge.

We were making good time, kicking up a wake, with the windshield wipers on high and the CB chatter relaying road reports, with Dave telling how he rode his bicycle through Mexico when he was a kid running away from home, when we pulled out to pass a slower truck.

The freeway was four lanes wide with ten feet of median down the center. We were in the left lane in the passing mode when we all saw a truck in the oncoming lane start to hydroplane. He was making good time when he hit water deeper than expected and kicked up a big wave, then began drifting directly at us. His 18 wheels had lost all contact with the pavement and were now sliding on a thin layer of water, coming dead at us, and there was nothing we could do about it. We all thought we'd had it when a wall of mud and steam slammed into the windshield and we flashed by the oncoming truck which had stuck up to its axles in the muddy median. We had missed by inches, way too close for comfort.

Shortly after we made it to higher ground, the levee gave way. Although we avoided that deluge, we weren't out of the rain yet . .

That afternoon we got to one of Kerr's sets in a Bank of America almond orchard near Chico, on the northern edge of almond growing country. The Bank of America orchard was a huge industrial conglomerate which

Continued on Next Page

FEAR & LOATHING ... Cont. From Pg. 163

"... those Oregon bees fly pretty good in the rain."

stretched for miles in all directions. We drove out to check the bees that had been dropped there. All the pallets were above water, but some hives had their lids off. The orchardists hire bee inspectors to make sure they are getting what they are renting – hives which are strong pollinating units. Checking requires cutting the metal band which secures the hive bodies and lid to the pallet. Some of the lids had blown off and we had to stop and put them back and band them down. As we worked, a huge helicopter was spraying Benlate™ on the orchard to try to stop the blossom drop and fungus caused by the moisture. The Benlate™ didn't kill the bees but it sure made them mad. The boxes without lids were particularly upset. We should have been able to replace the lids without any protective gear but we wound up digging out suits and veils because we were getting stung so often.

After all the bees in that drop were squared away, we headed for the next orchard. The nearest bridge, at Hamilton City, was washed out, so we detoured around to the next-nearest bridge, at Corning. It, too, was closed due to flooding. The only possible way to get to the next orchard was to go around to the north side, 39 miles to Red Bluff. By the time we finally got to the orchard, it was late in the afternoon.

As the grey, sodden daylight was fading, we turned down a gravel farm road, passed some orchards and a pheasant farm that were untouched by flooding, then dropped down a short, steep slope into the old river bed. Before us lay a wide lake, studded with row upon regular row of almond trees, each one weeping blossoms in the rain. A ripling torrent flowed diagonally across the orchard, showing the direction the water originally preferred on its downhill journey to the sea. The drainage ditch along the headland was deep and overflowing in places. The excess water was fairly shallow in the orchard, but there was plenty of room to drown a foot off the headland on the right hand side.

At the nearest edge of the lake, a dozen sodden nut farmers had rallied to save the bees which had been washed away when the levee broke earlier in the day. Several were wading around in the mud while another drove a three-wheel all-terrain fat-tired motorcycle with a trailer. They had been picking up pallets one by one and towing them back to land. The local bee inspector had brought his forklift and all the extra bee-gear he could find. He was loading the dripping, muddy pallets on Kerr's flatbed trailer, which had been dropped at the farm along with the bees that were on it when the Kerrs went south to the Pierco factory.

"We got them all, thirty three pallets," the farm manager reported as he brought in the last pallet. "Most of them are still alive – these Oregon bees fly pretty good in the rain."

The load of floor-swamped pallets was a sorry looking sight with mud dripping out the hive entrances. Yet some boxes still had bees flying out the upper entrances – 5/8" holes that beekeepers in snow country add to their brood chambers. The upper entrances saved the bees when the lower entrances were blocked.

"We hauled a rabbit out on top of one pallet," the manager said with a laugh. "It was sitting on the hives when we came up and it just hunkered down and stayed right there till we got to land, and then it was off like a shot."

So there we were at the edge of the flooded orchard, a bunch of soaked and muddy nut farmers and a few worried beekeepers. The rain was still falling, the light was fading fast, and everybody was standing around chewing the fat like it was Thursday afternoon at the livestock auction, when one of the last farmers to slog in out of the lake said, "Hey, look at this!" He was carrying a wet wad of feathers that had two sets of powerful talons clamped to the finger of a leather glove.

"You know what kind of hawk this is?" he asked the senior farmer in he crowd.

"No," said the older man, "I don't know my raptors that well."

"It isn't a sparrow hawk," said the finder. "I had a sparrow hawk once."

"Could it be a merlin?" I asked.

"Could be, or a marsh hawk," said the finder. "Looks like it got a dislocated wing."

"You ought to take it to the rehabilitation center," said one of the farmers. "They'd know what to do."

"Should I wrap it up or something?"

"Hold on," said Dave. He rummaged through the cab of his truck and came back with an old sock. With a slice of his pocket knife, he made a hole in the toe and slipped it over the bird, immobilizing the wings but leaving the head free. The hawk regarded us with fatalistic calm.

After the fellow with the bird left, the rest of the crowd stood around to talk some more. Finally, the rescuers of 132 beehives, one rabbit and an injured hawk decided to go home and dry out. I guess they wouldn't have stood around talking so late if they weren't having a good time. Californians seem to be at their best in times of disaster. Maybe it just takes a crisis to bring out the best in them.

We hooked up the trailer and towed it up to a barnyard where we could clean up the mess. The bee inspector followed with his forklift. After we dropped the bees, we waited while Dave and the inspector worked out a rental agreement for the forklift. As the inspector was leaving, the owner of the farm, Mr. Hanagan, came by.

"Did the bees have any good flying weather?" Dave asked.

"Well, on Monday, the nighttime low was 35 and the high was 51 and they had an hour of flight but only got three trees from the hive. On Tuesday, the nighttime low was 38 and the daytime high got up to 55, but the rain was so heavy they couldn't get out at all. On Wednesday. " This was the most precise weather report Dave had gotten all day and the conversation went on at length.

Finally, long after dark, when the barn owls had begun to fly, we headed for town where we got a couple of rooms at a local motel. After camping in the loft of Tom Dimantine's honey warehouse for the last several days, the motel was a luxury.

The next morning, we had a big breakfast at the restaurant next door, then went around to a couple of hardware stores to get rubber boots, hoses, scrapers, and some other items. We also went to a bee supply store to pick up several bags of drivert sugar for emergency supplemental feed for the bees.

Late that morning, we were back at the barnyard, donning bee suits, raincoats, and rubber boots. Rain was falling as we began dismantling hives. The colonies consisted of a deep ten-frame brood chamber with nine frames and a feeder, sitting on top of a western honey super. The supers had been full of feed honey at the start of the winter, but all were empty now and the queen and cluster had moved up high in the top box. In most cases, there was little mud in the deep brood box. Had the boxes been reversed before the flood, losses would have been severe. As it was, we had mostly honey supers of drawn comb filled with fine silty mud and a thick layer of heavier mud on the bottom boards. We scraped the bottom boards off with drywall knives, then flushed out each frame with a gentle spray from a garden hose. Each super had nine frames to wash and each frame had two sides. We put in two long days at the job. I was impressed by the way Rose Kerr worked right along with us, picking up heavy deeps and mud-filled westerns all day, then putting on her high heels to go out to dinner at night.

We had a little sunshine between the clouds on the second day and finished cleaning that afternoon. The farm manager came by and asked Dave if he wanted to risk putting his bees back out in the orchard. They reckoned the storm was over and there was still a chance of setting a crop because a few blossoms were left on the trees. Dave figured it was worth a try, if they could find something to use for hive stands. The manager asked if tote boxes – the cubical wooden crates used to haul the harvest to the factory – would work. Dave and the manager took off to get some tote boxes while Rose and I fed the bees some drivert and banded the hives to the pallets.

When Dave got back, we had enough time to go into town for supper. A couple hours after dark, we were back in the barnyard, loading the trailer with pallets.

The forklift was useless in the flooded orchard. The manager had found an ancient crawler-type tractor to pull the trailer and recruited a crew of five Mexican laborers to help unload. We were back to "The Armstrong Method" again. It might have worked better if we'd had more bee suits, but there were only two extra besides the ones Dave and I were wearing. Dave gave his suit to the biggest Mexican on the crew. At the time, I thought it was a generous gesture. Had I been as smart as Dave, I'd have done the same, but I didn't, and soon regretted it.

As it turned out, there were four of us with veils, three without. We'd all get around a pallet and lift, but halfway between the trailer and the tote-box, the bees would begin to boil out and the guys without suits tended to fade back as they got stung, leaving the four of us with veils to bear the weight of four colonies and the pallet. I was better off unloading Kenny's single hives, one at a time without the pallet. For a while, it seemed like the backbreaking ordeal would never end, but we finally placed the last pallet on the last tote box, standing knee-deep in the frigid, muddy water.

We were eager to get out of the flooded orchard, but when the manager tried to turn around, the tracks spun and the crawler began to sink into the mud. Dave did not want to leave his trailer in the quagmire, but in spite of our mightiest efforts, there was no way to get both the tractor and trailer turned around. Finally, we pulled the pin and dropped the trailer, leaving it half-turned on the headland, to be hauled out when things dried out later.

It was well after midnight when we got back to the motel for a long hot shower and a short nights sleep. It seemed like I'd barely closed my eyes when Dave was knocking on the door, saying "C'mon, let's go eat."

The sun was shining brightly through the freshly washed, cloudless sky when we left Chico and rolled north on Interstate Five. The redbud trees along the highway were starting to bloom. Spring had finally arrived in California and we were heading home to the Oregon winter. □

INNER ... Cont. From Page 124

For the more experienced try your hand at the two comb honey articles. The first, by Roger Morse et al, takes a look at section comb production – certainly an under-practiced art. The second, by Richard Taylor looks at basic beekeeping skills, applied to round comb production.

Our Older But Wiser writer details his long-awaited Two-queen system this month, in plenty of time to get it going in your yards this spring. Imagine colonies seven or eight supers high this summer! Try this technique this year for a profitable change of pace.

Marshall Dunham offers a unique look at almond pollination – going on full tilt this month in California. However, rather than just look at the everyday almond, he takes us back to the flood of '86, a year most won't forget, no matter how hard they try. Read about what happens when everything goes wrong, on a very big scale.

Finally, Clarence Collison returns to our pages for what we hope is a long and prosperous stay. He used to write a column entitled "Testing Your Beekeeping Knowledge" Well, he's back with the same sort of monthly challenge (but we changed the title for the sake of room) now called "Do You Know?" Welcome back Clarence, who in his spare time is the Head and Professor of the Entomology Department at Mississippi State.

•

There's something you should notice about the articles this month, but you need to look at all of them, all at the same time. Each author brings his own skills, preferences and experiences to the article they produce. But, underneath their surface techniques each practices good, solid beekeeping. They understand that you need to know basic honey bee biology to be an *effective* beekeeper. Effective can be just keeping a couple colonies in the backyard from swarming and being a nuisance, running thousands of colonies to California, or producing section comb honey in two or two hundred colonies.

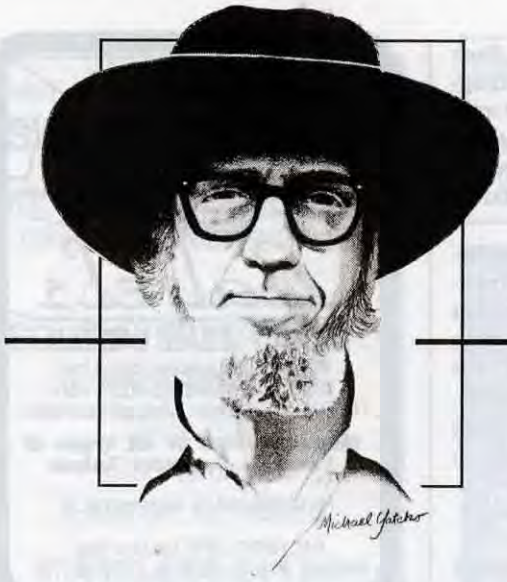
The thread of understanding honey bee biology runs though each author's thoughts and plans and techniques. Bees may not read the books, but good beekeepers do, and with practice, patience, and some rocky fits and starts, your bees will behave just the way you expect.

Contrary to popular opinion, bees are not capricious, evil-minded, strong-willed, opinionated, stubborn, stupid creatures. Rather, they pretty much go about their business, acting and reacting to their environment in a fairly predictable way.

Change that environment and expect a reaction from the bees to compensate. If your bees aren't doing what you think they should be doing, examine what *your* behavior has been. That's what our authors have done this month. Know what the bees should be doing and strive to enhance that behavior in *your* favor.

And then, you're a beekeeper. Simple, right?

Kim Flottum



BEE TALK

RICHARD TAYLOR

Box 352, Interlaken, NY 14847

"The secret is to get strong colonies, without having them swarm."

I'm going to continue with the subject I introduced last month, which is how to produce comb honey. My aim here is not to set forth all the different systems that beekeepers have developed, but rather, to describe a simple straightforward system of management which has, over the years, worked well for me. Last time I set forth some basics. This time I'll get down to some details.

One point I did not make last time, and should have, is that bees will sometimes fill supers very fast indeed. Every season this astonishes me anew. We imagine that it will surely take weeks for the bees to fill a super, starting with only foundation, and are then astonished to find it filled, sometimes, in just a few days. This is even more astonishing when you are unaware of any extensive bloom, and are left to wonder where the nectar is coming from. It is terribly important to be aware of this, however, for two reasons. The first is to avoid leaving supers on the hives after they are finished, lest they become degraded by travel stain, and the second is to keep on your toes and always have supers in reserve ready to go on. Comb honey supers are often put on too late, by the beekeeper who, unaware of how rapidly the nectar was coming in, fell behind the honey flow. It is much better to get them on sooner, rather than later.

Another point that should be brought out, because there is such widespread misunderstanding about it, is that is is *not* very important to use foundation of extreme thinness. Beekeepers tend to think that unless they start with foundation that is extremely thin, then the comb honey will be waxy, but there is a misconception there. The bees do not build their comb *upon* the foundation, as one might think. Instead, they literally *draw* the foundation out. I once saw a virgin comb that had been made starting with rather thick foundation that was colored red. Sure enough, the sides of the cells were pink, and I could see at a glance what had happened. Another experience, many years ago, taught me the same lesson. I got some comb honey foundation – "thin surplus," as it was described by the manufacturer – and was distressed to find that, while it was snow white, it was also very heavy, about as heavy, it seemed to me, as regular brood foundation. But I had no choice but to go ahead and use it. To my delight, the comb honey was delicate and beautiful, not at all waxy. The bees had *drawn* the heavy foundation out to an exquisite thinness. It was a valuable lesson.

Now I'll say something about colony management. The aim here, as in all beekeeping, is 1) to get strong colonies that, 2) will not swarm excessively. I long ago gave up on total swarm control. I expect to get a few swarms. The effort it would take to reduce swarming to zero is not worth it. But swarming must be kept to a minimum. I once read that a colony that swarms will produce no crop, but that has not been my experience. I usually get at least one super of good comb honey from such a colony, but it is nevertheless a setback. Real success rides on those colonies that do not swarm, but just get stronger and stronger, filling super after super.

If you look into a comb honey super and find it nearly empty of bees, then, unless there is something radically wrong with the colony, it has almost certainly swarmed. The converse of this is that if the super is full of bees, not just in the center but all across the super, then that super will soon be filled with honey – provided, of course, the bees do not swarm. This simple and obvious point is worth bearing in mind.

How, then, do you get strong colonies that are not likely to swarm? Well, you can concentrate on always having young queens, by requeening every spring or, at least, every other spring. But I am afraid I do not do that. I just do not have time for all that. And it is not what is most important anyway.

What causes a colony to swarm is, primarily, its becoming *congested with brood*, not with bees. Thus, as the spring warms up, brood rearing greatly accelerates. The queen starts at the center of a comb and spirals her way toward the edges until she comes to the area of the comb that contains pollen and honey. She follows this pattern with one comb after another, more or less at the same time, always working her way from the center of the brood nest outwards, and then returning to the center to repeat the pattern. And what happens is, returning to the center, she finds brood still there, in all or most of the combs? What happens is that swarm cells start getting built, and you have lost the battle against swarming. Well, not quite – you can still prevent the swarm, even after swarm cells are started. But the likelihood is that you will not know what has happened. The bees have gotten ahead of you, and you go to the apiary to find a swarm in the air, or in a tree.

The way to keep swarming down,

therefore, is to keep what is called an "open brood nest", that is, one in which there are always plenty of empty cells in the center for the queen to lay in. The hive can become as populous as you like, so populous that the bees are not only occupying the supers but even hanging out on the front of the hive, and they are still not likely to swarm if there is empty, broodless space right in the center of the brood nest.

And the way you get that, of course, is to replace the combs that are full of brood with empty ones, or with foundation. More precisely, you take out two or three or four combs of brood from the center of the brood nest – three are about right – and replace them with empty drawn combs or frames of foundation. It goes very much against the instincts of the bees to swarm when there is that kind of emptiness in the middle of the brood nest. They want to get that filled up with brood first. So, having made that exchange of empty combs for brood, you repeat the exchange in another ten days or so, to make sure that open brood nest is preserved. Then, as July approaches, you can forget about it. Your job from then on will be getting the supers harvested on time and replaced with others for the bees to fill.

Now a huge question hangs over this discussion; namely, what to do with all those combs of brood you have removed.

There are two obvious possibilities. One, having made sure (or as sure as visual inspection makes possible) that you have not removed any queens, you can put those combs of brood, together with the adhering bees, in new hive bodies, nine per hive, and give them a new queen. It won't matter if you mix brood and bees from different colonies. With all that brood, the new colony will build up fast and make you a crop of comb honey.

Or two, you can put them in nuc boxes, three or four combs with adhering bees per nuc, requeen the nucs, and sell them to the beekeepers who have lost colonies to tracheal mites or to normal winter loss.

And of course a third possibility is to make up your own winter loss or loss to tracheal mites by using these combs of brood and bees, with new queens, to revive your own dead colonies. That, it has long seemed to me, is far better than sending off for packages of bees. Because notice, you not only bring your apiaries back to their proper size at minimum cost (that is, the cost of the new queens), but you *also* reduce swarming by creating open brood nests in the colonies you've taken the brood from! Two problems are solved in one easy operation.

I'll go on with this next time, with some talk about harvesting and marketing comb honey crops. □

(Comments and questions are welcomed. Use address above and enclose a stamped envelope for reply.)

Answers To Do You Know

1. B) *Varroa jacobsoni*
2. A) *Acarapis dorsalis*
3. B) *Varroa jacobsoni*
4. C) *Acarapis externus*
5. D) *Melittiphis alvearius*
6. E) *Acarapis woodi*
7. C) *Acarapis externus*
8. B) *Varroa jacobsoni*
9. D) *Melittiphis alvearius*
10. A) 1-2 days old
11. C) attaching themselves to worker honey bees.
12. E) fluvalinate
13. A) egg, larva, inactive nymph, adult
14. A) blood of adult bees
15. E) Eastern honey bee, *Apis cerana*
16. E) egg, larva, protonymph, deutonymph, adult
17. A) Western honey bee, *Apis mellifera*
18. D) 1987
19. **True** – In both tracheal and varroa mites, the males develop faster than females. Tracheal mite: males 11-12 days, females 14-15 days. Varroa mite: males 6-7 days, females 8-9 days.
20. **True** – Menthol is found naturally in cultivated and wild mint plants. Honey and wax made from these floral sources have been found to have small quantities of menthol. Formic acid is a natural product and is also found in honey.
21. **True** – There are limited areas of some states that appear to be free of tracheal mites, however, mites have been found in every state except Hawaii.
22. Tracheal mites mate within the tracheal tubes (respiratory system) of the adult honey bee. Varroa mites mate within capped worker and drone brood cells in the hive.
23. Male tracheal mites are slightly smaller than female mites, however, the best way to differentiate between the two is differences in the fourth pair of legs. The fourth leg is much shorter and more stubby in the female than in the male. In addition the female's fourth leg lacks a claw and has two very long hairs in comparison to one long hair in the male.

There were a possible 25 points in the quiz today. Check the table below to see how well you did. More than 23 – exceptional! Less than 12 – check your bees!

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

QUESTIONS? ANSWERS!

Richard Taylor

The questions this month, bearing on comb honey production, all come from Mr. Carl C. Egolf, Newport, NY.

Hurry Up!

Q. Would dark wax melter honey, perhaps diluted in a top feeder, stimulate brood rearing and hasten drawing the foundation in section supers? Or would this result in dark, tough combs and honey storage?

A. If you are sure such honey is free of AFB spores, there is nothing wrong with diluting it and using it to stimulate spring buildup, *but,* such honey should never be on the hive after comb honey supers have been put on. It would not cause darkened comb, but the honey would be sub-standard. Note, however, that bees do not need any help drawing out foundation. They do this very quickly, easily and well if there is a nectar flow, and, if there is not, you are not going to get a comb honey crop anyway.

Bait Sections

Q. Should bait sections be put in the middle of the super, or to the side?

A. If you do use bait sections, then I am convinced they should go in the corners of the supers, never in the center.

More Bait. . .

Q. If you put unfinished sections outside for the bees to lick dry, then use these as bait sections for the next season, will they have thicker or darker comb? If so, will this be visible in the finished sections?

A. Yes, such sections will be waxier, and for this reason I think such bait sections should not be offered for sale, the more so since the heavier wax structure is not apparent to the eye. My own experience has been that bait sections are not necessary anyway.

Cappings Care

Q. Is there any way to prevent the cappings from being damaged when the sections are removed from the frame? If the damaged cappings are on the "bottom side" then honey drizzles out onto the bottom cover.

A. Some colonies tend to build a tiny bridge of burr comb from the plastic frame over to the honey comb. When the frame is then split apart to remove the sections, this burr comb pulls a few cappings off, creating the problem described. But if you break this bit of burr comb with the tip of a knife, or sometimes, with a thumbnail, the problem is solved. This tendency to attach the surface of the comb to the frame is idiosyncratic to certain colonies, and is not common. Other than this, I have had very little trouble with damaged capping. Using an opaque cover on the bottom side will, of course, conceal any dripping.

Cool Drips?

Q. Can anything be done to prevent the bleeding or oozing of honey through the cappings after the sections have been moved from a freezer to a refrigerator for gradual "thawing out"?

A. It has always been my practice to plastic bag them, twelve to the bag, before putting them into the freezer, and then move them, still in the bags, to room temperature. There is no need to detour them through a refrigerator. I get no significant weeping, as it is usually called, through the cappings, except, sometimes, when the cappings have been plastered down to the surface of the honey by the bees. (These are often called 'wet' cappings, and as in the previous question, are common in some colonies and not in others. You can select for the trait of white raised capping when rearing your own queens. Ed.)

Granulation?

Q. After the deep freeze treatment of round sections for wax moth prevention, which sections would be more likely to be granulated after one year's time, those left in the freezer, or those removed and stored at room temperature?

A. Those left in the freezer would be much less likely to granulate. Even at room temperature, however, comb honey is less liable to granulation than extracted honey. I do not know why. Honey from trees, such as basswood, and certain other honeys, can be kept almost indefinitely at room temperature without granulating, while others, such as rape and goldenrod, are very prone to granulation. Goldenrod honey kept in a good freezer is not likely to granulate, however.

(Questions are welcomed. Address Dr. Richard Taylor, Box 352, Interlaken, NY 14847, enclosing a stamped envelope.)

GLEANINGS GLOBE

MARCH, 1992 ALL THE NEWS THAT FITS

And ND Will Probably Go Along

EASTERN STATES AGREE

During the National Honey Bee Certification Workshop, the "Eastern States Agreement" was referenced frequently. Florida, Maine, New York, New Hampshire, and Pennsylvania are signatories. North Dakota has a memorandum of understanding with Florida and may sign the full agreement in the future.

The purpose of this agreement is to facilitate the timely certification of interstate movement of migratory honey bee colonies for crop pollination and honey production. These states agree to implement the treatment requirements, inspection procedures and action thresholds for American Foulbrood (AFB) and Varroa mite identified in this agreement. They also agree to share information, evaluate regulatory activities, and initiate the development of best management practices for beekeepers through cooperative research. Implementation of this agreement will address the control of AFB and Varroa mite using sound pest management strategies and will mitigate the spread of these pests between cooperating states.

A complete copy of the agreement can be provided by Dr. Malcolm T. Sanford.

SOURCE: Dr. Malcolm T. Sanford, State Extension Specialist, Beekeeping, Apiculturist, University of Florida, Gainesville, FL (904) 392-1801.

Meanwhile, financial woes continue

BLUEBERRY GROWERS LEND HAND

The Maine Blueberry Commission voted unanimously at their October 30, 1991 meeting to grant the Maine Department of Agriculture $10,000 to support the Apiary Program. This grant is in response to a request by Agriculture Commissioner Bernard Shaw in lieu of budget reductions which were going to curtail the seasonal assistant apiary inspector position.

In a letter to Commissioner Shaw from Edward J. McLaughlin, Executive Director, Maine Blueberry Commission, Mr. McLaughlin noted the blueberry industry's support and appreciation for the Department's efforts concerning the Apiary Program and its importance in blueberry pollination. The grant will allow the Department to continue inspection services during the 1992 season at last year's level.

OSU Gives Research A Hand

FELLOWSHIP AWARDED

The Herman Scullen Endowment Fund is designed to provide a Fellowship award to deserving young people and to support graduate studies in apiculture at Oregon State University. It is appropriate that this fund, created in 1986, be named for Dr. Scullen who contributed much to apiculture during his 40 year career of teaching, research and extension.

The first Herman Scullen Fellowship was presented this Fall to Miss Chutikarn Kitprasert.

Miss Kitprasert, a native of Thailand, is on leave from the Thai Ministry of Agriculture to complete a PhD program at OSU. Her research concerns the natural defenses of honey bees to parasitic brood mites.

When completed, this research that the Fund helps to support will probably be a small, but significant, addition to the larger body of scientific knowledge we will draw on to see our way through our problems.

If you would like to contribute to this worthy fund, please send donations to The E.R. Jackman Foundation, Oregon State University, Strand Agricultural Hall 122, Corvalis, OR 97331-2212, Ph (503) 737-2665.

SEND MEETING NOTICES AT *LEAST* TWO MONTHS IN ADVANCE TO ASSURE PROPER EXPOSURE

Canada, Mexico, GATT

TRADE INCREASING

U.S. Trade with Canada is about double what it was when the two countries' free-trade agreement was signed four years ago. That's an important consideration as talks continue on adding Mexico to the trade agreement. Norm Rask, agricultural economist at Ohio State University, says such discussions are particularly important to agriculture. Farm groups have been vocal in their opinions of free trade between the United States, Canada and Mexico. But despite fears to the contrary, American trade with Canada has grown since the trade pact was signed in 1987. Canada now takes $4.3 billion worth of U.S. goods, 11 percent of all U.S. exports. Only Japan, at $7.8 billion, imports more U.S. products. Down South, Mexico is now the United States' number three trade partner: $2.8 billion in 1990 and 7 percent of all American exports. The recent growth in trade between the Americans and Canadians has been the result of the encouragement of trade on both sides of the border. Rask says adding Mexico to the mix would open things further. Some U.S. producers would be hurt by imported commodities and products, Rask says. However, history indicates that more open trade would benefit overall U.S. exports in the long run.

Meanwhile, as current negotiations on the general agreement on tariffs and trade stumble along, smaller groups of countries have moved ahead with free-trade pacts of their own. Ohio State University agricultural economists Norm Rask and Dennis Henderson say the success of regional trade agreements should show the rest of the world what can be. But apparently they make it easier for politicians to push the issue of multilateral trade to the back burner. Rask and Henderson say the European Common Market and the U.S.-Canadian free-trade agreement are examples of how countries can mutually benefit from reduced trade restrictions. And yet, many GATT negotiators continue to resist the idea, especially when it comes to free agricultural trade worldwide. That merely serves to encourage the formation of more regional trade blocs – not a bad idea, but offering a band-aid to countries' trade woes could also end up slowing world negotiations for trade liberalization even more, they say.

MORE FOOD

U.S. Food Consumption has changed dramatically in the last 20 years, says USDA economist Judith Jones Putnam. Americans are eating more food, on the whole, than ever. And, diets have shifted away from meat or animal products as the main entree to a mixture of animal products, vegetables, fruits, nuts and grains. For example, Putnam says, we're eating more breakfast cereals, pizza, pasta entrees, stir-fried meat and vegetables served on rice, salad entrees, tacos, burritos, enchiladas and fajitas.

FARMLAND PERCENT

U.S. farmland is held by fewer owners now than at any other time in this century, ERS economists say. Nearly half of all U.S. farmland is held by about four percent of all farmland owners. Over 40 percent of the 833 million acres of private farmland is held by owners or organizations who do not themselves operate farms. Increases in the ratio of owners to operators, currently about three to two, imply a larger percentage of landowners who are less involved in farm operating and marketing decisions, a spreading of risk between farmers and landlords, and greater concentration of agricultural production in fewer farm managers.

SHORTS

NO EPA CABINET

Efforts to elevate the U.S. Environmental Protection Agency to a cabinet-level Department of the Environment died during the 101st Congress but were resurrected in 1991. While the idea appears to have gained in popularity, debate continues over potential roles and responsibilities of the new department.

Ohio Senator John Glenn is the principal sponsor of an elevation bill, S.533, which was passed in the Senate by a voice vote October 1. The House Government Operations Committee is expected to take up the issue this year.

Bees Happy CONSERVATION UP

Farmers across the country are making significant strides in applying conservation tillage practices on their land, according to data from the 1991 National Survey of Conservation Tillage Practices released recently by NACD's Conservation Technology Information Center.

Of more than 281 million planted acres in the United States, 28.14 percent are now farmed in conservation tillage systems. The total area planted with conservation tillage is now 79.1 million acres, a 10.3 percent increase from 1989.

"Our survey data support the fact that U.S. farmers are making progress in getting conservation on the ground," said CTIC Executive Director Jerry Hytry. "Producers were required to have their conservation compliance plans on file by the end of 1989 and have now begun implementing those plans. When you compare this year's data with information from 1989, you see the jump in conservation tilled acres," he noted. "And a significant portion of that progress is on highly erodible land."

For specific crops and tillage practices, the increases are even greater than the overall average. For instance, a number of states show an increase of 30 percent or more in their acreage of no-till soybeans between 1989 and 1991. Among them are Indiana, Illinois, Iowa and Ohio – all states with a high percentage of highly erodible land.

Conservation tillage is a primary means of erosion control in about two-thirds of all conservation compliance plans. Under the 1985 Food Security Act, farmers with highly erodible land must implement their compliance plans by December 31, 1994 in order to remain eligible for federal farm program benefits. This also applies to beekeepers who own land and work within the system.

SAFE FOOD WINS

ORGANIC AWARDS

The Center for Science in the Public Interest (CSPI), a national health and nutrition advocacy organization, announced that nine individuals, public officials, federal agencies, institutions, and companies have won its 1991 "Safe Food Trailblazer" awards.

The winners include Rep. Jim Jontz (D-IN), author of legislation that laid the groundwork for adoption of new sustainable agriculture initiatives in the 1990 Farm Act; Steve Balling, director of Del Monte's pest management programs; American International Hospital at Zion, IL, for adopting a patient meal service that uses only certified organic food, and the U.S. Fish and Wildlife Service, for implementing its commitment to convert farming operations on its refuge lands to low-input or organic management systems.

The annual awards salute outstanding achievement in promoting consumer information and choice in the food marketplace and initiating policies and programs that help move American agriculture away from the use of potentially dangerous pesticides and veterinary drugs.

Roger Blobaum, director of CSPI's Americans for Safe Food Project, said the award winners are honored for bringing about significant change in the marketplace, the land grant university system, farm policy, the food industry, and federal agencies.

CSPI has 250,000 members nationwide. Its work in food safety and agricultural policy reform is carried out through its Americans for Safe Food project.

For more information on CSPI contact them at 1875 Connecticut Avenue, N.W., Suite 300, Washington, DC 20009-5728, ph. (202) 332-9110.

Save A Landfill?

TREES SAFE

You hear it all the time. Mail less, save a tree. Use recycled paper, save a tree. Target your mailings better, save a tree. Put your catalog on a diet, save a tree. But is tree-saving the critical environmental issue? Not according to the American Forest Council. Thanks to reforestation, U.S. forests are growing rather than shrinking they say. The council claims that about two-thirds of the forest land that faced America's discoverers exists today.

The real issue is solid-waste disposal, but "save a landfill" doesn't have the same ring. And the real issue for tree-planting is not paper-making, it's rain forests and global warming problems, both of which have nothing to do with direct marketing – the 'junk' mail so many people complain about.

SEND YOUR NEWS TO THE *GLOBE*

OBITUARY

Berthier W. "Buzz" Richardson, 91, of 241 Pommagussett Road died this past Dec., 1991 after a long illness.

His wife, Helen (Bennett), died in 1971. He was born in Worcester, MA, son of Walter & Mary (Warren) Richardson, and lived here 25 years.

Mr. Richardson was a self-taught beekeeper and supplier of beekeeping equipment for 39 years. He was interested in the medical uses of bees and once worked with Astra Pharmaceutical Products Corp. in Worcester on the medicinal propertiers of bee venom. He was a sales representative for the A.I. Root Co., Medina, OH for 39 years.

He graduated from Babson College in 1923. He studied beekeeping on his own since 1952.

He was a member of the Mass. Fed. of Beekeepers, receiving its 1982 state Beekeeper of the Year award. He was a member of the Norfolk County Beekeepers Assoc. and the Eastern Apicultural Soc. of North Amer. He was a member and honorary director of the Worcester County Beekeepers Assoc. In 1981, he was simultaneously named Beekeeper of the Year in Worcester, Norfolk and Middlesex counties.

CALENDAR

☆ CONNECTICUT ☆

The Western Connecticut Beekeepers Association will have Dr. Clarence H. Collison Chairman, Department of Entomology at Mississippi State University.

Dr. Collison's presentation will begin at approximately 8:15 p.m. on Thursday, March 19, 1992, at the Fairfield County Extension Office, 67 Stony Hill Road (Route 6) in Bethel, Connecticut.

☆ DELAWARE ☆

The Delaware Beekeepers Association annual meeting is scheduled for Saturday, March 14, 1992 at 10:00 a.m. The meeting will be held at the University of Delaware, Research and Education Center, Route 9, Georgetown, Delaware.

Guest speakers are Dr. Dewey M. Caron, University of Delaware; Mr. Rip Bechman, University of Delaware and Mr. Jerry Fisher, Maryland Department of Agriculture.

For more information contact Dr. Dewey Caron, Dept. of Entomology, Townsend Hall, University of Delaware, Newark, DE 19717, (302) 831-2526, or Robert Mitchell, Delaware Department of Agriculture, Dover, DE, (302) 739-4811.

☆ INDIANA ☆

Purdue University in conjunction with the Indiana State Beekeepers Association will be sponsoring a meeting to be held on Saturday, March 28, 1992, from 9:30 a.m. to 3:30 p.m. at the University Place Conference Center, on the campus of Indiana University-Purdue University in Indianapolis. The program will feature research and educational programs on the biology and control of Varroa and tracheal mites.

Registration will begin at 9:30 a.m. and the meeting starts at 10:00 a.m. Parking is available. For more information call Wayne Buhler (317) 494-4912 or Duane Rekeweg (219) 728-2613.

☆ IOWA ☆

The Iowa Apiary Bureau in cooperation with the Iowa State University County Extension office will be presenting Beekeeping Workshops in Waterloo and Clarinda, Iowa.

The workshops will be conducted in two parts. The first session will be "Basics of Beekeeping" and the second session "Wintering Strategies, Marketing and Disease Diagnosis-Treatment"

Waterloo's workshop will be held on March 16 & 23, 1992 at the ISU Extension office, 3420 University Ave. The Clarinda sessions will be held on April 6 & 13, 1992 at the ISU Extension office, 311 East Washington.

The time for all sessions will be from 7:00 p.m. to 9:00 p.m.

More information can be obtained by contacting the respective Extension Directors or Bob Cox, State Apiarist, IA Department of Agriculture. Des Moines, IA 50319 or phone (515) 281-5736.

☆ MAINE ☆

The Maine State Beekeepers Association will hold their annual meeting on March 28th, at the New Meadows Inn, Bath, Maine. Charles Mraz of Middlebury, Vermont and Dr. Bradford Weeks of Lebanon, New Hampshire will present the latest Apitherapy (the treatment of disease with bee venom) research finding. In addition, Jim Tabor will talk about bee forage; what varieties are best for northern New England and how to plant and grow it. Tony Jadczak, the Maine state Bee Inspector, will update the Association on the latest information on beekeeping in the state and nation.

In addition to honey cooking and bee craft contests, an auction will be held and door prizes awarded. The meeting stats at 9:30 a.m. Registration ($3) is from 8:45 a.m. If you desire to participate in a bountiful buffet lunch, the cost is $10 and includes the registration fee. If you have questions or would like to attend, contact Bill Truesdell, 207-443-1498 before March 18th.

☆ MICHIGAN ☆

The Agriculture and Natural Resources Week Beekeeping Program is March 24-25, 1992 at Michigan State University, East Lansing, MI. Dr. Larry Connor, Editor of BeeScience and Beekeeping Education Service (BES) is the principle speaker. He will talk on how to manage queens, the ecology of the bees within the hive and their environment. There will also be talks on sting allergy, two-queen colonies, a panel discussion of pollination service, and

Continued on Next Page

CALENDAR ... Cont. From Pg. 177

Simon Fraser University in British Columbia, Dr. Rob Page from U.C. Davis in California. Also joining the group from the honey bee program at Davis will be Dr. Eric Mussen. Dr. Lynn Royce from Oregon State University will provide a presentation concerning her successful work on controlled queen mating in flight chambers. To give the group a taste of eastern beekeeping Dr. Jim Tew from Wooster, Ohio and Kim Flottum from *Gleanings In Bee Culture* will provide us with the latest views from the Federal Extension Service, and the world of beekeeping publications.

After several years absence, the **W.A.S.** Loyal Order of Bee Beards will return. Social functions will include a traditional Northwest salmon bake and a banquet to be held in the "sky boxes" of the newly renovated OSU football stadium.

The organizers invite all interested beekeepers to join us in August for an exceptional social and educational experience. Please contact Dr. Michael Burgett, Entomology, OSU, Corvallis, OR 97331-2907 for further details.

☆ PENNSYLVANIA ☆

Delaware Valley College will again offer its Spring and Summer Beekeeping Short Courses. Spring – April 10 12; Summer – June 25 - 27. The courses are offered under the direction of Dr. Robert Berthold and take place on the campus.

Cost for the Spring course is $50 discounted to $40 for Delaware Valley College students, Alumni, Senior Citizens and immediate family. The cost for the advanced Summer course is $65.

You are urged to register early. For further information contact Dr. Bob Berthold, Delaware Valley College, 700 E. Butler Ave. (Rt. 202), Doylestown, PA 18901-2697 or call (215) 345-1500.

☆ SOUTH CAROLINA ☆

The South Carolina Beekeepers Association will hold their spring meeting Saturday, March 7, 1992 at the Farm Bureau Building, 724 Knox Abbott Drive, Cayce, (Columbia) SC. Registration and refreshments open at 8:00 a.m. and the meeting will begin at 9:00.

Speakers include Mr. Troy Fore, and Steve Forrest.

Topics include: Taking Beekeeping to the Public, Spring Management and Honey Extracting Equipment.

For more information call Mike Hood, (803) 656-3106.

BEEKEEPERS MEETING

BOTTOM BOARD...Cont. From Pg. 184

fore got pasturage lasting "from two to five years, or the very best quality of honey, at the small cost of $7.50 for one hundred acres." Some other beekeepers estimated that Alsike would produce 500 pounds of honey per acre in a good season.

Alsike Clover has small rosy pink or white, fragrant flowers which are well worked by honey bees for nectar and abundant pollen. It usually blooms for about three weeks from early to mid summer, the flower stems forking rather than arising directly from the ground like white clover. The honey is light with a heavy body, delicate flavor and pleasant aroma.

Widely planted in the north-eastern United States and Canada as a soil rejuvenator, Alsike Clover easily reseeds along roadsides and in waste places. The plant has a branching habit, like Red Clover, and its foliage and seeds are relished by a variety of wildlife. Although Linnaeus named the plant *Trifolium hybridum*, supposing it to be a hybrid between red and white clovers, it is now believed to be a distinct species.

The utility of Alsike Clover as bee pasturage became well known. The 1901 *ABC of Bee Culture* stated that "Alsike and white Dutch clover, buckwheat, rape, mustard and the like, it will do to invest in Buckwheat, rape and Alsike Clover are the only cultivated plants that have given paying crops of honey, without question, so far as we have been informed."

Alsike clover grown alone or in combination with grasses, was found to be especially valuable for producing a fine, soft hay which was nearly all consumed by livestock. It is particularly well suited to moist, cool areas. According to Joseph E. Wing, editorial correspondent for the *Breeders' Gazette* in Ohio, (1907), "On certain soils, rather inclined to wetness, alsike clover thrives better than the red clover, and is an excellent forage and bee pasture." Such positive recommendations in the agricultural arena helped maintain the popularity of Alsike clover for many years.

Mr. John Lovell suggested in *Honey Plants of North America* "Beekeepers should not only preach the gospel of sowing alsike, but should also offer to pay a part of the cost of the seed . . .The quality of the hay is improved and the quantity of the honey increased". The value of the plant appears to depend on the region, as Lovell describes it is occasionally failing to yield due to drought (in Ontario) or very wet weather (in New York) or as being "fickle" in Oregon.

In 1974, the Illinois Department of Conservation began a roadside management plan to provide nesting sites and protective cover for native birds and animals, including pheasants. The plan was based on research done by the State Natural History Survey, which showed that replacement of legume plantings by increased use of agricultural chemicals, clean row-crop culture and reduction in livestock and pastures had all contributed to a 75% decline in pheasant numbers between 1962 and 1966.

Mr. Eugene Killion, supervisor of apiary inspection at the time, suggested including clovers in the seeding mix. The Illinois State Beekeepers Association donated 240 pounds of Alsike Clover seed, which was sown in a mix of 10 lb. clover: 60 lb. alfalfa at 20 lb./acre.

The benefits of the plantings were long-term and widespread. Bird and bee pasturage increased up to 50%; the seeded areas were almost maintenance-free; the roadside was beautified; the Alsike established quickly, decreasing erosion and increasing nutrients to the soil; and bees visited the Alsike and pollinated the alfalfa, providing reseeding at no further cost.

Signs posted along the highway read: "Roadsides remain unmowed and have been reseeded with the cooperation of farm operators to provide nesting cover for pheasants and for the associated benefits to all wildlife species."

The current *Oregon Interagency Guide for Conservation and Forage Plantings* seeding recommendations include Alsike clover in mixes for upland game birds and waterfowl. Consider asking your county Soil Conservation Service and Highways Department to consider including Alsike clover in their areas of use. □

Display Index

A Wonderful Plant – Alsike Clover

B. A. STRINGER

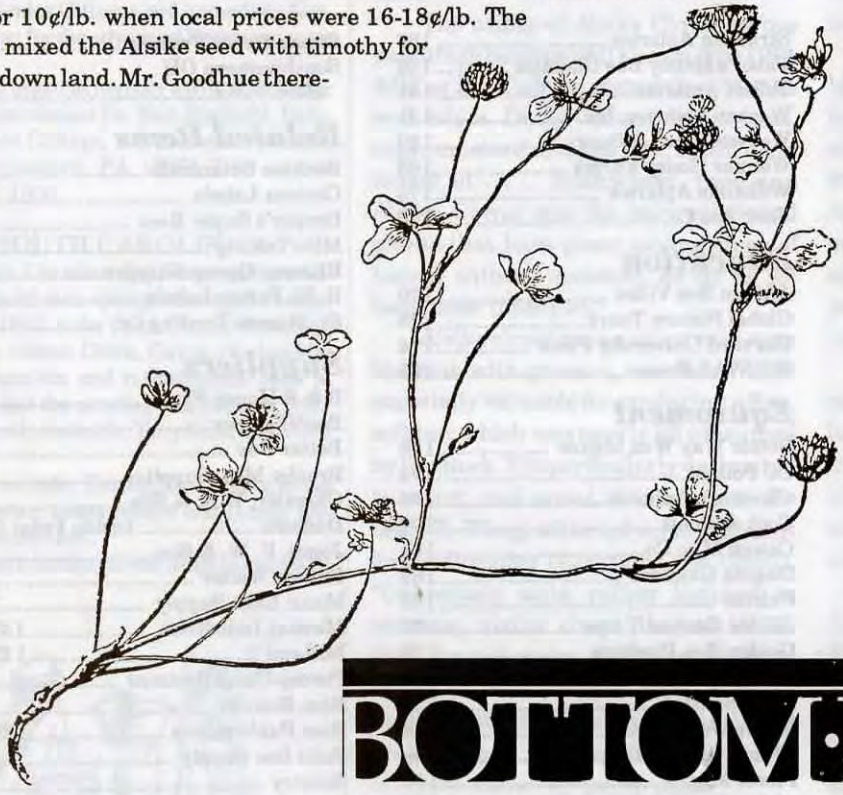
Alsike Clover seems to have been the first plant to receive serious beekeeper attention, according to Frank Pellet in *The History of American Beekeeping*. Because farmers were amenable to its propagation for pasture and for hay, the plant spread rapidly over a wide range, improving pasturage for bees and beasts.

Alsike Clover, a native of northern Europe, is also called Swedish Clover after the country of its origin. Alsike is the name of a parish in Upland, Sweden, where the plant was first discovered and where it is very abundant. The seed was brought to England in 1834 and the plant was introduced into the United States in 1839 by editors of the *Genesee Farmer* who distributed seed to their readers. By 1866 it had a widespread reputation as a good honey plant, as can be seen by Moses Quinby's comments in *Mysteries of Beekeeping Explained*: "The Alsike or Swedish White Clover also has much to recommend it. The plant being valuable for soiling cattle, or for hay, would be a desirable acquisition to the beekeeping farmer, as well as to others on whose land it will thrive."

Seed companies were quick to recognize the market for bee plants and, in 1868, J.M. Thorburn & Company, New York, advertised Alsike, along with Bokhara Clover, migonette and chicory for sale.

Query number 151 in the November, 1885, *American Bee Journal* echoed the interest of beekeepers in planting for bees: "What seed is best to sow this fall or next spring for honey-plants for bees?" The editor responded "I know of nothing better than Alsike Clover. I do not know of any seed that will pay to sow for honey alone." Professor A.J. Cook added that "Alsike Clover is splendid."

In 1886, *Gleanings in Bee Culture* received a letter from an enterprising gentleman who had increased bee pasturage around his apiaries by sowing Alsike Clover. Mr. Geo. O. Goodhue bought Alsike seed in bulk for 12¢/lb., and sold seed to farmers within two miles of his yards for 10¢/lb. when local prices were 16-18¢/lb. The farmers mixed the Alsike seed with timothy for seeding down land. Mr. Goodhue there-



BOTTOM·BOARD