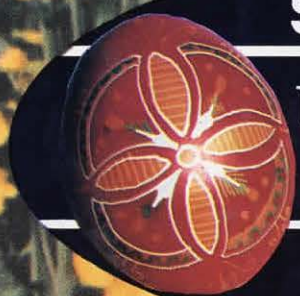
APRIL '90

GLEANINGS IN BEE CULTURE

CANOLA: SPRING GOLD

SMOKERS: FRIENDLY FIRE



SPECIAL:

UKRAINIAN Easter Egg

How-To!

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Columns

Departments

COVER .. A field of Canola in bloom will provide a bumper honey crop to any beekeeper able to take advantage of it. And there's going to be a lot more to take advantage of soon — between five and ten million acres in the next five years!
Terra Photo

APRIL '90 CONTENTS

(ISSN 0017-114X) Vol. 118, No. 4
117 Years Continuous Publication by the Same Organization

Features

INNER·COVER

For better or worse, it's pretty clear the federal government isn't going to take control of any of the situations currently raising havoc in the bee industry. For whatever reasons, they have not dealt with tracheal mites or varroa mites and it appears they won't do much when the AHB arrives.

This doesn't mean they aren't doing anything. Quite the contrary, actually. APHIS, ARS, ES and others have been busy, and in fact have made life better and easier for us because of the things they've discovered. They just aren't ready, willing or able (take your pick) to take a leadership role here.

Maybe that's not bad. After all, what has the federal government done really well lately? Or really bad for that matter. As a group, the feds tend toward the average. Some individuals really shine, and some should probably be buried, but average it is, overall.

Fortunately, some in the industry aren't waiting for the feds to get things done and have, so to speak, taken things in their own hands.

Out west, the states on the far side of the Rockies have gotten their collective acts together and devised a plan so that migratory people can move, major crops will get pollinated, bees get inspected correctly and in a timely manner, and those who don't move can expect good (if not perfect) protection.

Meanwhile, the east coast clan has come up with a workable solution, though far more restrictive than their west coast counterparts. Bees will move from FL to NY to ME (and then probably to MA, but that wasn't final at printing). And even though they've standardized testing, treating and moving, some states back east aren't playing along. The past, which we should have learned something from, sets a pretty clear precedent — play together or nobody plays at all. I'll reserve judgement on the outcome of this one.

But there's more. The AIA, in cooperation with the National Plant Board and the National Association of State Departments of Agriculture (NASDA) have hatched a plan to develop a national beekeeper certification program. The concept, while not new has some fresh ideas, significant backing and a good possibility of being funded. They've much to do yet, but their first few meetings seem to have been productive.

Certainly this idea has merit. A standardized, though regional, schedule used by every beekeeper so they could be rated is similar to many professions — pesticide applicators, teachers, and others.

The goal Register Beekeepers, not Bees would certainly be easier than trying to figure out if your bees have wings too short or their DNA isn't quite right.

I have no argument with those who wish to define bees to the nth degree, but what's the use? Train beekeepers to handle their bees, and significant problems will be held to a minimum. A well trained beekeeper isn't going to work nasty bees, and a well informed populace (an integral part of any training program) is going to make darned sure that's the way it stays.

My hat is off to the idea, and if you think about it, your's should be, too.

• • •

A Long Way To Go

April is the month that Earth Day is celebrated, and this year, being a major anniversary of the original event, considerable attention will be focused on what must still be accomplished.

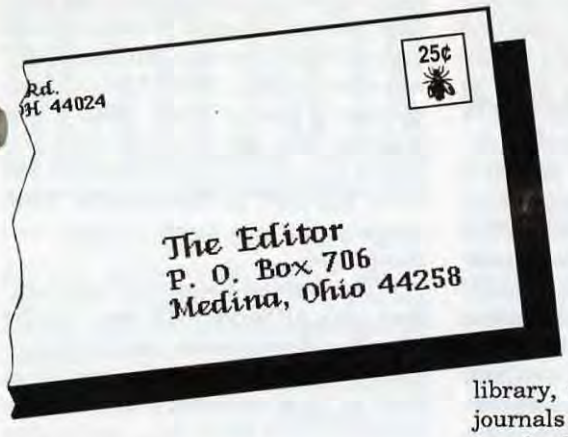
We are not better off now than then, though we are generally more attuned to the causes and cures of our planet's plagues.

Unfortunately, harnessing millions of college age people to pick up trash along roadsides, beaches and parks will not help much. But on the first Earth Day, all those years ago, it did impress upon me, and many like-minded friends, that even making a few cosmetic improvements was better than sitting on our hands. The same holds true today.

It may seem insignificant, but one less plastic bottle, one less can of deodorant, a well tuned car and all the other little things each person should do will add up.

The longest journey starts with but a single step.

Kim Flottum



MAILBOX

■ Correction!

The article published in the February issue entitled 'Strike One' was authored by Thomas Doonan, of Heber Spring, AR. Thomas has been a beekeeper for about 40 of his 85 years and has contributed his skills and efforts to The Polk County Iowa Beekeeper's Association, The Iowa State Beekeeper's Association, and the American Federation of Beekeepers. We are sorry for the error.

The Editor

■ Meeting Debate

One of the pleasures of being a beekeeper is reading the strong opinions expressed by nearly everyone in the industry. Your Inner-Cover article on the asinine situation of the two annual conventions of our National organizations was blunt, very sensible and probably very futile.

I became a beekeeper nearly 20 years ago and was immediately impressed with the sort of people whom I met. I helped form our county association which has been a constant success. I was asked to become involved in starting a state association. This was my first experience with the big egos and special interests that appear when you get involved above the local level. After watching three organizations fail through bickering, selfishness and general apathy it was apparent this was not my idea of beekeeping.

I belong to neither organization and after years of observing "Bee Politics" and this sort of nonsense I probably never will. Like the majority of beekeepers I will never be known outside my small area and my customers.

We make several tons of excellent honey each year, sell it very easily and could sell much more if we had any desire to expand. By keeping a modest library, faithfully reading the trade journals and bee supply catalogs, avoiding the loan programs and exercising good business practices we find we can survive with little higher level "support" Good relations with state bee inspectors, county health inspectors and the IRS completes the necessities.

With the problems of diseases, mites, imported honey, Africanized bees, infant botulism, adulterated honey and so on, you'd think these big egos would set aside their differences. You mention that the two organizations do cooperate on such problems on occasion but this is made necessary by the fact the problems are *so* serious they could damage the entire industry.

What many of us want is a national convention where we can go to relax a bit and see and hear what is new and not to have to worry if we picked the wrong meeting. If these big-time politicians must protect their "turf" then your offered solution should satisfy that. Keep after them!

Boyd Murdock
Heber Springs, AR

I'd like to comment critically on your editorial (*Inner Cover*, Feb '90) about the two major bee meetings held in January, as you write: "Think...of the waste, the duplication of effort and time, the expense and stupidity of this arrangement. The silliness borders on the absurd and is, in my opinion, downright dumb." And then: "Let's have only one meeting, please. Just think of the advantages."

What's that about sauces for the goose/gander? Let's see.

Why two monthly bee journals? Think of the waste, the duplication of effort and time, the expense and stupidity of this arrangement. The silliness borders on the absurd and is, in my opinion, downright dumb. Let's have only one magazine, please. Just think of the advantages — to the readers and advertisers and natural resources!

Mr. Flottum, why don't you write an editorial about what divides these two national groups of idiotic independent individualists and tell your readers why they exist (that is, why the split) and what their philosophies are and how members in each of them are millionaires at the taxpayers' expense through the honey-loan price support program which should be abolished.

Incidentally, when Assistant Professor of Entomology George Jenvey Abrams, M. S. (1965) returned from the American Beekeepers' Federation convention in Chicago, January 25-27, 1955, he became still further convinced that ABF, the only group in existence then, was not an organization for the hobbyist, as it still is not today — and proceeded to found the Easter Apicultural Society at College park, Maryland, in June 1955. That's why I belong to neither group, having never attended any of their meetings (I've seen you listed on their programs?). And this from a man who is in his 30th *consecutive* year with bees, and beekeeping.

Unity in diversity? Isn't that what democracy is all about?

John Iannuzzi
Ellicott City, MD

Some comments on the editorial in the February 1990 issue, discussing a plan where the American Beekeeping Federation (ABF) and the American Honey producers (AHP) would hold one joint meeting in the same hotel, but have separate business sessions.

THE ONE-MEETING PROPOSAL IS NOT PRACTICAL. I will try to explain.

The entire article implies that the ABF and AHP are similar organizations. This is not the case. For example, the voting privileges in AHP are limited to producers (beekeepers) while the ABF's voting list includes a number of non-producers. Our several attempts to

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explain the difference hasn't been too effective since a great deal of confusion still abounds. This is understandable since we have similarly worded bylaws and some industry folk belong to both organizations. However, year in and year out, sharp differences develop on policies. If the membership make-up and objectives were the same, I would certainly agree with Kim when he uses terms like: silliness, absurd, and downright dumb.

Flottum refers to the conventions political sessions as minor:

> "...each had their own political sessions...But these played a minor role in terms of time and effort for both of the groups."

The word "minor" would be appropriate for the non-member convention attendees, but industry leaders who are charged with the responsibility of implementing a political agenda will think otherwise. Flottum is correct when he concludes that a joint meeting would be less expensive for the exhibitors and speakers, but he fails to mention the great problems that a single meeting would create. For example, how would the ABF handle a horde of minimum-dues payers whose sole purpose was trouble? The ABF constitution provides no protection for this event. On the other hand, the AHP bylaws provide almost perfect insulation to this type of influence (AHP bylaws are similar to Farm Bureau and Farmers Union bylaws that vests control in a Board of Directors). We do not fear an invasion, but the ABF should.

Kim must have been dreaming when he wrote the following:

> "The two national groups work well in other areas of business, and even politics, so there's no reason to suspect they wouldn't work together here as well."

The AHPA and the ABF do not work well together. Over the years there have been several leadership meetings, but these amount to little more than a friendly pledge to cooperate. The exception was a meeting in Washington which forged an agreement on the honey program in the 1985 farm bill. An attempt to develop more unity of effort between ABF and AHP was made in July 1988 when the leaders met in Fargo, North Dakota. The meeting, like previous meetings, resolved to improve communication and work together in Washington when possible. But the spirit of unity was short-lived.

The "behind-the-scenes" comment from both ABF and AHP was that the other bunch were jerks. Laying uncomplimentary titles on our opponents has been so long customary that we are callous to their effect. So — we indulge in a bit of charging and counter-charging just like our famous politicians. This fruitless rhetoric nets us very little.

So how should we proceed? Should we seriously consider Flottum's recommendation of one-meeting instead of two? It is my feeling that a joint meeting would create more problems than it would solve.

Glenn Gibson
Minco, OK

Glen Gibson is the past president of the American Honey Producers.

The Editor

MAILBOX

I agree with your February Editorial and think we do need to get together on national levels. So if you are taking a poll, put me in the get together column!

Joann Olstrom
Reedsport OR

■ 47 and Counting!

In the January issue of *Bee Culture* Bill Hilker had a question about replacing brood frames because of possible change in cell size.

Recently I was cleaning some brood frames because of wax moth damage. In the process I removed the wood strip that holds the wax to the top bar. Under this strip I discovered that I had marked the date April 16, 1943 when I had originally waxed the frame. The cells looked normal to me, except for a few that showed wax moth damage.

In the course of using this frame almost 47 years, in spite of its dark color, I have always gotten light color honey of good quality and quantity.

As far as I can see the bees are all their usual size. I believe good bee pasture is the most important item for good honey.

Harry Eisman
Mack, OH

■ Insurance Fraud?

Your article Terms of Insurance (SIC) by freelance writer Pamela Moore is nothing but a plant from the insurance companies in an attempt to frighten and extort money from beekeepers!

But the attempt will fail because attempts have been thwarted for centuries.

You see, the beekeeper's Keeper protects true beekeepers, which Pamela Moore is not.

For centuries, leaders, lawmakers, judge's juries and enforcers of all types have sought to control, legislate and cast burdens on the beekeeper.

The killer bee is a good example of how men have tied their hands by these repressive laws. And now they have problems the army can't stop.

Name withheld by request

■ Seed Search

I am interested in growing some HUBAM clover for making honey. I have not been able to find anyone that sells HUBAM seeds for planting. I have talked to many beekeepers in the area and they recommend HUBAM as a good source of honey. I was wondering if you could give me some information on where to purchase it. I really look forward to each issue of *Bee Culture*.

John Minatrea
Rt. 3, Box 419-C
Cameron, TX 76520

I am trying to locate a source of Pellett Clover, also called Kura Clover or Trifollium *Ambiguum*.

I would appreciate any help beekeepers can give.

Douglas W. Gouldthorp
Lot 72, Riverview M. H. P.
8600 U. S. 1
Micco, FL 32976

■ A real Beef!

It appears to me the Government is trying to run us out of business before the African bee arrives. In the national magazine *Beef*, dated February 1990, Anita Collins was credited with the following statements:

"Collins thinks over time the hybrid bees will establish themselves in almost every region except for the coldest north central states... This means that within years, almost every feedlot owner could experience swarms of the aggressive bees."

The African bee is a tropical bee. It has stayed in Southern Africa for thousands of years. It has caused no problems in Europe. In Argentina, it has moved South to about the 32nd parallel. In the U. S. this is equivalent to the Southern border of New Mexico. In Peru, which is a tropical country, it has not moved above one mile in elevation.

In addition, the U. S. Government imported African bee semen and bred 92.5% pure African bees at Baton Rouge in 1960 and 1961. These bees were allowed to swarm and escaped into the wild. No serious problems developed from this.

Let us use rational thinking in our statements concerning the African "killer" bee.

L. Dooley Toyne
Sedgwick, CO

■ Turkish Bees

Recently I bought The Monk and the Honey Bee, a VC related to Brother Adam's work on honey bees. It is very interesting. What is more interesting for me is that he highly rates the Anatolian honey bees from Turkey. He studied many bees from different countries and he concludes in the tape as follows:

"Five bees were outstanding ... Best of all were Saharan bees of Morocco and Anatolian bees of Turkey...The outstanding characteristics of the Anatolian bee is its

NEXT MONTH

Pesticide use in America is still as perverse now as 10 or 20 years ago. Agricultural abuses tend to be flashy, sensationalized affairs, especially when food products are dumped or hundreds of innocent animals (are there ever guilty animals?) are caught — and die. These make good headlines, great photo features on the 6 o'clock news — and are forgotten almost as fast as they came.

However, pesticide use in urban and suburban America is no less perverse, and is actually on the increase. And though not flashy or newsworthy, animals are dying, people are affected, ground waters are polluted and beneficial insects (honey bees) are routinely killed. Next month we examine this rather unsensational, but nevertheless toxic, problem in 'Poison In Paradise'.

Pollination is slowly becoming more sophisticated and next month we look at two products on the market used to attract honey bees to blooming plants to increase visitation, and thus yield. We may soon be able to discard the old saying, "A rose by any other name . . ."

But we also have a real good 'How-To', dealing with a perennial problem for beekeepers, queen introduction. We'll look at some great ways to Treat Royalty Right, next month.

Finally, May is our annual Honey Report issue. This year, using statistics generated by our reporters, the USDA, ERS, and others, we'll summarize some of the major trends in honey production, numbers of beekeepers and colonies, and honey prices during the last several years. Some obvious conclusions, and a few surprises.

May — a critical look at pesticides, pollination, marketing and queen introduction— in *Bee Culture.*

Reader Assistance

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thriftiness...in winter it uses a minimum of stores which s a very important consideration...It is also a first-rate honey gatherer."

I am going to Turkey this summer for several weeks. If anyone is interested in something related to beekeeping in Turkey, let me know.

M. Sahir Erispaha
1418 Noah Rd.
North Brunswick NJ 08902

■ Breeding Varroa?

I am only a first year beekeeper, so my conclusions may be all wet, but I could not help but notice the observations in three articles: "On the Size of Cells" (by Erickson, et al); Richard Taylor's "Bee Talk"; and Dr. Morse's "Research Review" In "Bee Talk", Taylor notes that Varroa is present but not a problem in Brazil where the bees are Africanized. Morse says the reason they may cope is because of the shorter development time of the AHB, hence varroa cannot get established since the mite needs a slightly longer development time. In the article, "On the Size of Cells", the authors note that "it is not so much that AHB cells are somehow smaller, but rather the cells built by domestic strains are abnormally large," and that the cell size for feral bees is the same as for African bees and has varied little since the 1600's. In that article, few of the foundation sheets cells sizes sold in this country reside in the range of "natural" bees but are much larger.

Taking a leap of faith, maybe, with the larger bees, hence a longer development time, are we breeding for Varroa? I recognize this is an assumption, but adding the "ones" in the articles seem to give a correct answer. I would think this supposition would be easy to prove. Reduce the cell size for "European" bees to that of feral or AHB's, introduce Varroa and see if they cope like the AHB's. It is interesting that the "Cell" article said there is no correlation between the size of the bee in the colony and honey harvested by the colony. That seems to make sense, as there will be less bees in a "Large Bee" colony, so even if, individually, they gather more, the larger number of smaller bees in a "Small Bee" colony would make up the difference. Plus, I would think we would get a faster buildup in spring, not only because of a shorter development time, but also because there would have been more bees going into the winter in a "Small Bee" colony, hence more should survive, given an equal percent of winter kill between the colonies.

It would be interesting if these assumptions are true. It might be a simple solution for a complex problem. Also, it would reaffirm what many in your magazine preach, that the bees know best (as to what their size should be as well as how to get along in the world). I'm with Taylor in using the bee's nature in their management (such as taking advantage of the swarming instinct) and not to try to counter that nature, especially if there is no real advantage in doing so. It makes sense.

W. M. Truesdell
Bath, ME

■ Better Bleaching!

Well, Bunky, have I got news for you!

After reading *Brighter Than Bright* in your December 1989 issue, I thought that the method described was the best thing to happen to beeswax since the invention of sweatshirt material, and proceeded to try it out.

Twenty some phone calls later, I found that 30+% Hydrogen Peroxide (H_2O_2) was manufactured in dozens of different grades, and concentrations, with prices from $30.00 to $500.00 per gallon. I was told "it's too much trouble to order it" or "we can't sell it to you, you're not qualified to handle it" UPS will not ship more than one liter, as it is a hazardous chemical. I finally was able to order 4 liters (minimum order) of 35% technical grade, for $28.57, from a scientific supply firm, 50 miles away. By the way, the phone number listed for NORAC Chemical Co., in the article is incorrect, but this is of little consequence for should you find it they won't sell it to you anymore.

Not to be detered, and with some quick calculations, it was obvious that one could obtain the same results as given in the article by using 10 times the prescribed amount of H_2O_2 in a 3% solution found in any drug store and, since the inert ingredient is H_2O, reduce the normal amount of water 10 times. Bubbles were still rising after 10 hours of heating. When cooled the results were miraculous. I had created beautiful off white wax with the consistency of a wet sea sponge.

Going straight to the horse's mouth was the only solution. I phoned Wayne Robinson. Wayne was kind enough to explain to me:

- The wax was to be melted *without* water (additional water would slow the time for the process)
- 145° is sufficient
- 1 hour should be enough time for the solution to stop bubbling
- The Beer Keg was mentioned in reference to a convenient way to boil wax when using the burlap bag method of boiling.

I picked up the H_2O_2, and tried it in four separate batches of three pounds of beeswax each. Observations I made are as follows:

- The variables are numerous, pot size and type, ambient air temperature, technique of applying heat, etc. (N. B. Wayne Robinson used 50% solution). These factors affect the results.
- Using 35% H_2O_2 takes 2 to 4 hours to complete the reaction
- The wax became "white" in less than 1 hour
- No significant reaction occurs below 180°F
- Reducing the quantity of H_2O_2 from 1 to 1/2 oz. per pound of wax causes the

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wax to lighten to a nice yellow, but not "white" The time was reduced only slightly

- Heat *must* be kept on to maintain the reaction, ergo, a pot that dissipates heat rapidly, and low ambient air temperature are necessary, so that the mixture does not become too hot
- The aluminum pot selected should be large enough that it is 1/2 full of melted wax. This is necessary to allow for rising bubbles
- Overflow is a very distinct danger with this, or any other project, when heating beeswax
- **NEVER** leave the work area or even become distracted by phone calls when working with beeswax!
- All bubbling must stop before the wax is used to make candles. If not, the candles will have bubbles, and sputter when burning
- Aroma of the beeswax is affected.

As a note of interest: adding a small amount of Oxalic Acid Dihydrate Crystal (HOCOCOOH•$2H_2O$) (available at any hardware or paint store). Approximately two teaspoons per five pounds of wax during the boiling process will lighten the wax to a certain extent. I feel it detracts from the aroma of the beeswax. It's use may cause complications which I am not aware of.

In closing, the real answer to the age old question "what can I do with all this dark wax"? Dye it! Although this concept is devastating to the true connoisseur of 100% pure beeswax, dye it. Green Christmas trees, red Poinsettias, red hearts and such outsell natural ones twenty to one. It's a shame but true. Using most RTV silicone or polyurethane molds, with dyed wax, will stain the mold but will not affect subsequent natural beeswax pours. A separate aluminum pot should be dedicated for each dyed color. Dying is much less work, and is safer. I think I'll just dye!

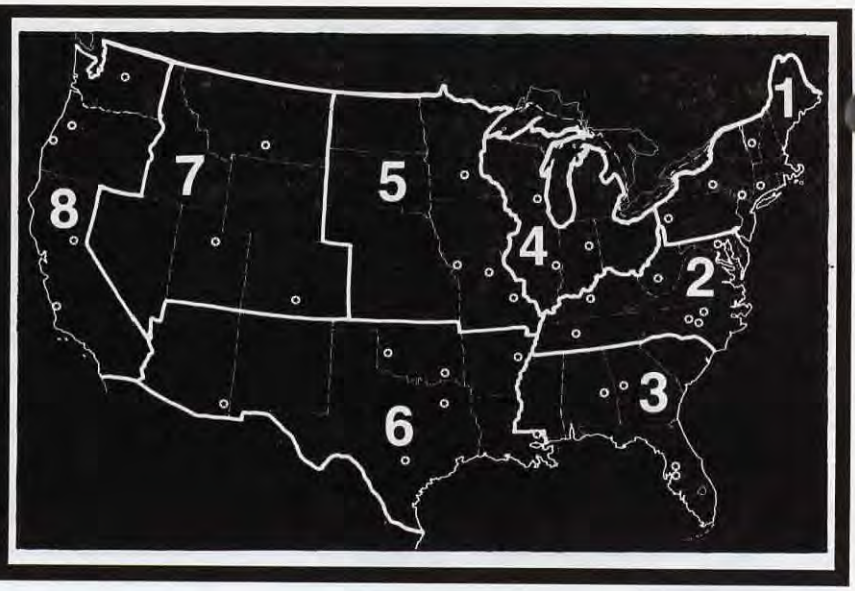
Rich Fleming
715 Timber Lane
West Chester, PA 19380
(215) 363-8232

Editor's Note: 30% H_2O_2 can be difficult to find far more so than we thought. A local drugstore was willing to order it so we suggest you start at home. If this doesn't work, contact: The Reading Scientific Co., 2200 N. 11th St., Reading, PA 19604, (215) 921-0221, Bob Fryer. We're assured they will sell quarts of H_2O_2, but shipping charges are a bit strange. Call them.

APRIL Honey Report

April 1, 1990

REPORT FEATURES SUMMARY: R=Range of al prices; A=Average prices across all regions; LM=Last month's average; and LY=Prices one year ago. Comments: Price Index is a ranking system comparing a region's prices to other regions.



	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8	R	A	LM	LY
Extracted honey sold bulk to Packers orProcessors												
Wholesale Extracted												
60 # Wh.	40.67	41.47	39.00	35.30	38.00	46.17	40.50	40.25	30.00-57.87	40.66	42.88	38.78
60 # Am.	40.33	33.93	39.00	33.25	30.00	41.88	37.67	38.00	30.00-52.75	37.50	38.34	35.51
55 gal. Wh.	.49	.61	.55	.51	.45	.68	.57	.58	.42-.89	.57	.52	.51
55 gal. Am.	.48	.51	.43	.49	.40	.59	.53	.53	.40-.56	.52	.50	.47
Case lots — Wholesale												
1 # 24's	27.63	28.74	32.80	22.80	21.04	25.17	28.75	28.75	20.40-39.60	27.75	28.03	26.20
2 # 12's	26.37	26.05	31.10	22.50	25.11	25.28	28.75	27.60	20.40-37.20	26.59	26.61	25.78
5 # 6's	30.55	24.63	24.00	26.25	26.00	26.30	26.40	27.00	24.00-32.25	26.91	26.58	26.49
Retail Honey Prices												
1/2 #	.90	1.07	1.08	1.50	1.00	.82	1.02	.94	.69-1.39	1.01	1.02	.97
12 oz. Plas.	1.45	1.52	1.40	1.51	1.12	1.18	1.30	1.27	1.10-1.89	1.36	1.41	1.34
1 #	1.63	1.74	1.58	1.65	1.56	1.57	1.52	1.47	1.24-1.99	1.61	1.61	1.58
2 #	2.75	2.96	2.96	3.28	2.69	2.85	2.82	2.00	2.00-4.00	2.86	2.94	2.79
2-1/2 #	3.10	3.89	3.25	3.21	3.35	3.05	3.85	2.25	2.25-4.85	3.37	3.38	3.39
3 #	3.75	4.18	3.50	3.75	3.79	3.70	3.90	3.67	2.75-4.30	3.84	3.93	3.82
4 #	3.75	5.10	4.69	4.50	4.21	4.30	4.68	4.50	3.75-5.25	4.59	4.60	4.73
5 #	6.53	6.10	5.94	6.28	5.99	5.53	5.80	5.95	5.10-7.25	6.03	6.00	5.87
1 # Cr.	2.13	.99	1.67	1.50	1.69	1.43	1.76	2.00	.99-2.50	1.72	1.71	1.65
1 # Cb.	2.17	1.85	2.00	2.10	2.25	2.02	2.59	3.38	1.25-4.50	2.28	2.30	2.46
Round Plas.	2.12	2.25	2.00	1.79	1.90	1.55	1.85	1.75	1.15-2.25	1.90	2.00	1.90
Wax (Light)	1.47	1.10	1.05	1.25	1.10	.95	.97	1.20	.93-2.00	1.15	1.09	1.10
Wax (Dark)	1.37	1.00	.97	1.00	1.01	.83	.88	1.00	.77-2.00	1.04	1.01	.96
Poll./Col.	26.83	25.00	18.00	30.00	19.00	21.00	26.50	26.67	15.00-32.50	24.15	24.60	26.56

MARKET SHARE

When reviewing the results of the above report, remember these figures are averages of several reporters in each region including hobbyists, commercial wholesalers and packers. The inherent differences between these groups are most apparent in bulk honey prices, but show up in others as well. As a result, prices are never as high, or as low, as some would believe. This survey is intended as a guide so honey sellers are not operating completely in isolation, in their respecive regions, or overall in the industry.

Region 1

Price Index 1.00. Prices and demand increasing a bit after December's warm spell slump. The warm weather also increased feeding, which means light colonies this spring. Some speciality crops doing well. Mites raising havoc, but starvation also a problem.

Region 2

Price Index .95. Prices increasing due to a somewhat increased demand. Some shortages reported. Early warm weather caused maples and other early bloomers to produce ahead of schedule, helping hungry or mite laden hives. Good weather may be the perfect 'spring tonic' for this area.

Region 3

Price Index 1.00. Sales strong and steady, prices increasing due to shortages. Mites causing problems, but weak fall flows mean hungry hives this spring. Early warm weather will help, if it holds.

Region 4

Price Index .87. Prices beginning to inch upwards, weak demand, but short supplies make market difficult to predict. Mites a problem, but early rains helping dry areas and early flows.

Region 5

Price Index .87. Prices increasing slowly, demand steady but supplies shaky in areas due to very poor production last year. Many areas still dry, but southern region getting better.

Region 6

Price Index .99. Prices steady to increasing a bit as demand and supplies bounce back and forth. Warm and wet weather helping early splits and honey flows.

Region 7

Price Index .99. Sales strong to average, and increased prices generally reflecting increased demand. Drought conditions exist in most areas, but good snow cover last winter will help, but not cure the problem.

Region 8

Price Index .97. Prices steady to lowering just a bit as the weather warms. Pollination prices edging upwards, a reflection of fewer colonies and increased crop acres. Mites devastating in some areas, especially where treatments not made last fall. Much of area still dry, and rain still needed.

Interested in becoming a "Honey Reporter"? Contact the Editor today!

Tracking Tracheal Mites

DIANA SAMMATARO

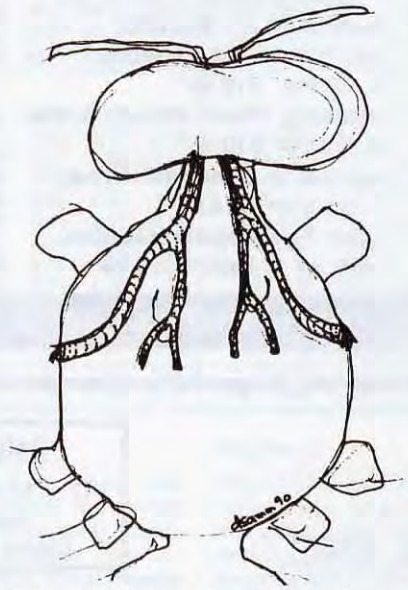
On reviewing my winter losses this spring, I was concerned at the number of colonies that were strong going into the winter, had lots of stores, yet died suddenly in February. From what I have been reading, this was a classic symptom of tracheal mites.

I needed to test the surviving colonies to determine whether or not they needed treatment with menthol crystals. I called a few folks who knew how to do this and thought I would share with you how easy it is to test for mites.

What you will need

You need a good dissecting microscope of at least 50X magnification, the kind with two eyepieces. Either buy one or see if you can use a high school, vocational or college biology lab. Better yet, see if you can convince a high school biology teacher that it would make an interesting project for the class.

There are three techniques currently used to detect the mite. The first includes taking slices of the thorax and soaking them in a solution to dissolve the tissue. I find this takes too much time and material. If you are borrowing equipment, you want to be in and out as fast as possible. So I will concentrate on the other two techniques.

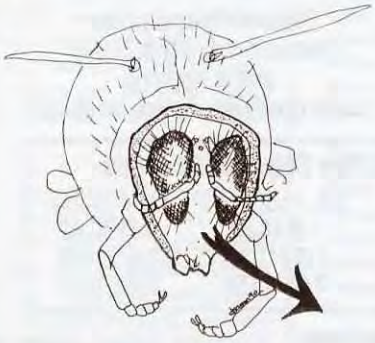


The tracheal system involved in the first method.

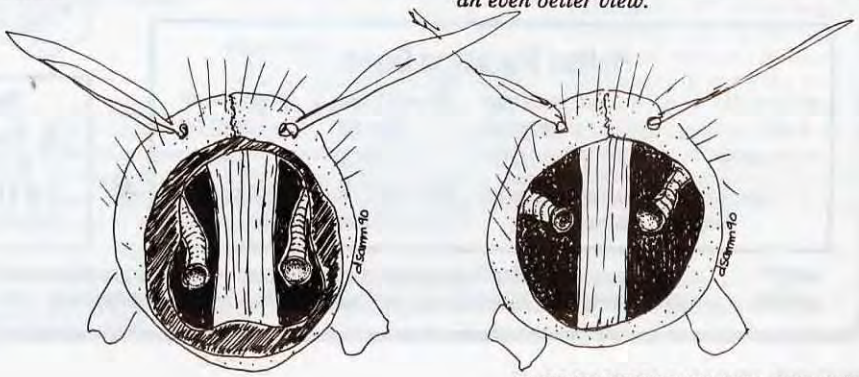
Thoracic Dissection

This procedure was demonstrated at the WAS conference in San Fransisco last August by Lynn Royce (see reference).

Use only freshly caught or freshly frozen bees. During this time of year (mid-spring) bees from anywhere in the hive are alright. But those from on top of the inner cover or at the landing board are best. Testing bees already dead will not work well. If live bees are used, put them into the refrigerator to



Remove the head by quickly pulling up and away.



BELOW LEFT: This is what you will see. The two main tracheal trunks on either side and a large muscle in the center. BELOW RIGHT: If you remove the collar you will get an even better view.

cool down so you can handle them more easily. Yes, you must sacrifice bees to find these mites.

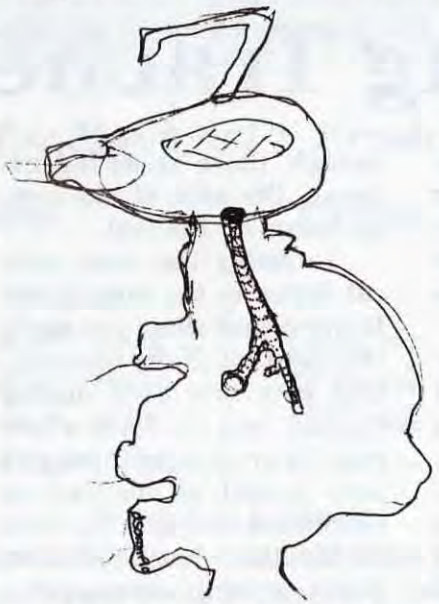
Now set up your scope and light so you can see clearly through the lenses. Pick up a bee and pull off and discard the abdomen so you don't get stung. Then, holding the bee by the wings and legs facing you, pull off the head and first pair of legs. You can do this by grabbing the wings and legs with the thumb and forefinger of your hand and with the other hand or tweezers, grasp the head and pull straight towards you. If the first pair of legs come off, so much the better.

Now, hold the thorax straight up so you can see it in the microscope and adjust the focus so you can see into the opening of the thorax. The tracheal tubes are the white thread-like structures on either side. If the bee is heavily infested, you should be able to see dark spots or stains on the white trachea now visible.

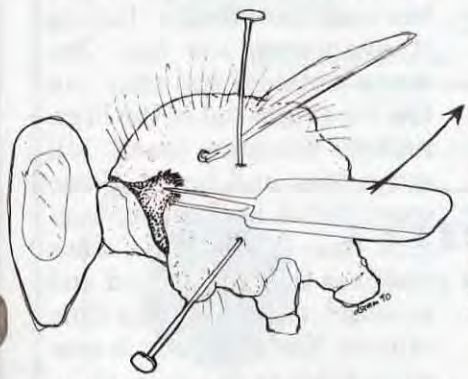
If you don't see any spots on the trachea, go a little deeper. You must now pull off the pro-thoracic collar. For this you will need a pair of needle point biological tweezers or watch maker forceps #3 or #5. You should be able to order these from a good biological supply house or try your local jewelers.

Grasp the collar on one side and pull upwards and around, following the ring of the collar. You will be able to see the suture line where the collar joins with the thorax. It will come off easily. Once off, you have an even better opening to see into the thorax. The trachea will be more exposed. Again, look for spots and stains. If you are still not sure, take your tweezers and pull out the trachea.

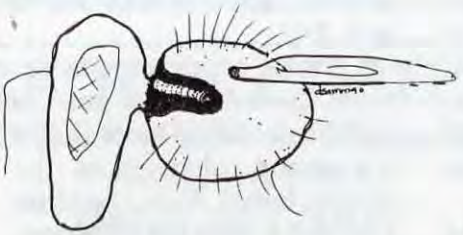
Place it on a glass microscope slide. You can put several bee tracheas on one slide, even your entire sample bee yard. They are small and you will save slides.



A side view showing the location of the tracheal trunk when the bee is on its side.



With the bee firmly held in place, grasp the oval plate and pull away quickly.



The tracheal trunk will lay exposed.

The trachea can then be teased apart with a minute insect pin. If using live bees, the mites will crawl out onto the slide. The first time I saw this, it gave me a deep appreciation for what the bees must live with. Imagine a cockroach living inside your lungs!

Tracheal Grab

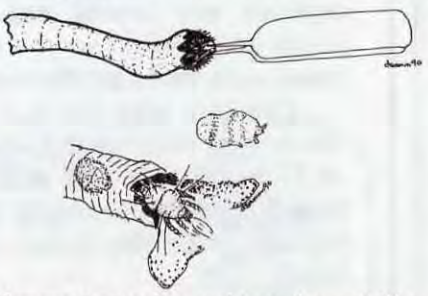
Another, and perhaps faster, technique was developed by Glen Needham and Alan Smith at Ohio State University and was shown to me by Dave Heilman of ATI at Wooster. For this you will still need a dissecting scope, a wax-filled dissecting dish, some insect pins and a very fine pair of tweezers.

Use freshly caught live or frozen bees. I stress live bees, because if mites are present, they are much easier to see when moving around in the trachea.

Now adjust your scope and pin the bee on its side, onto the wax dish. Use two pins so it will be held firmly in place. With the fine tweezers, pull off the hair on the thorax in a patch between the head and the wing. Once exposed, you will see an oval flap which covers the main thoracic trachea.

Grasp the bottom edge of the flap with the tweezers and pull in one motion, up and parallel to the body. When done right, the flap and the trachea will come out as one piece. When fully revealed, you will see the shiny white thread-like trachea. Place it on a glass microscope slide if you want to examine it further. If you see spots and staining on the tube, you know that mites are present. Turn the bee over and do the other side as a double check.

If you pull too much or too hard, part



Remove the trachea and tease it apart. You will see mites scurrying out (if you have an infestation).

of the chitinous covering will come off, exposing more of the trachea. You can then pull it out for closer examination. If, despite the best of intentions, you completely destroy your bee, turn it over and try again. Or, you can always go back to the first technique of pulling off the head and going into the bee from the front.

I have done all of the techniques, and the last two are by far the fastest and easiest to date. I think it is extremely important to know how to find tracheal mites, or to teach someone else to do it. We cannot indiscriminately treat our bees for unknown diseases, because it only wastes money and resources. □

Our friend, up close and personal. (Royce Photo)

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Treating Tracheal Mites

If your colonies are infested with tracheal mites or you strongly suspect they are, it's wise to treat them with menthol as soon as possible this spring.

The recommended treatment calls for using 50 grams (1.8 oz.) of menthol crystals or pellets for each treatment.

To treat, use a piece of plastic or metal screen cut to about 10" x 7.5" Place the menthol on the screen, fold it over and staple the three sides shut. Make sure the crystals are spread out as much as possible so you get maximum fume production.

Crystals may fall out of the screen and not get used, so to avoid this, use aluminum foil or cardboard on the bottom, with the screen on top.

Of course the pellets work equally well, and though there is added expense, the ease of use compensates for the cost.

Probably the most critical factor is the outside air temperature when you apply the menthol. If the temperature gets over 80°F during the day, and you have a normal to strong population, put your packet of menthol on the bottom board, in the back third of the colony. However, if the outside temperature doesn't get above 60°F, place your packet on the top bars, directly over the brood nest. The next question, of course, is what do you do between 60 and 80°?

If the colony tends toward the weak side, put the packet on the top bars. But, if it's strong, place it on the bottom board. Every location and every colony is different, and each beekeeper needs to test their treatment technique to see what works best.

Ideally, you want 10-14 days of strong menthol fumes in the colony for best control. If the weather is fairly warm you may need to make two applications of menthol because of the rapid evaporation. With cooler weather you may have good success with only one treatment.

One caution: by adding too much menthol, or having it evaporate too fast (too warm outside) you may run the bees right out of the hive, and in extreme cases, kill some bees and brood. Some commercial beekeepers suggest that this is O.K., since the bees that die are old and infested, especially this time of year. Not everyone is convinced this is the case. □

RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

"After 11 years in Europe, varroa has taught us something."

Varroa mites were first found in Germany in 1977. A paper that reviews events in that country since that time has just appeared. It contains much information that will be of use to beekeepers and researchers here.

Initially, some beekeepers and researchers thought that varroa mites could be contained through quarantines and the eradication of infested colonies. Other people thought that if the colonies were kept in excellent condition---that is, if they were well fed and kept free of other diseases---the bees could tolerate the mites. Both of these thoughts proved false and without treatment all varroa-infested colonies eventually died.

During the past 11 years a great variety of chemicals and treatment methods have been tested in Germany. It has been found that only a slow-release chemical treatment method that lasts for 30 days, but that kills at least 50 percent of the exposed mites each day, will give good varroa control that will protect the colony for a year. The chief problem, of course, is that the mites in sealed brood cells are protected and the miticide must last long enough for these mites to emerge and attach to adult bees where they will come into contact with the chemical.

The most effective treatment for varroa that has been found in Germany is the use of plastic strips impregnated with one of the pyrethroids (synthetic pyrethrins). Two companies, Zoëcon and Bayer, make suitable products that appear to work about equally against varroa. One has the trade name Apistan, which contains the pyrethroid fluvalinate; it is the product that is currently registered and is being used in the U.S. today. The other product has the trade name Bayvarol; I am not aware if it is being tested or considered for use in the U.S. at the present time. Neither of these materials is now registered for use in Germany, where the "debate on the possible harm to mammals and humans, however, continues and may be growing." In talking to toxicologists in this country I have learned that one of the great things about the synthetic pyrethroids is their low toxicity to humans. Pyrethrins, after which the synthetic materials are patterned, have been used as insecticides for centuries. They are derived from the petals of daisy-like flowers and are natural insecticides.

In Germany it has been found that the treatment should be given after the honey crop has been removed. Properly used, the above chemicals have no adverse effects on the bees. The amount of chemical removed from a carrier strip in a day is lower than can be detected. Residues have been detected in beeswax but not in honey. "The plastic strips ensure a very high degree of safety for the user, and incorrect doses are virtually impossible."

Amitraz, which is thought well of in the U.S., and is being considered for registration here, is mentioned in only one sentence in the review article mentioned below. It is said that while amitraz is popular in France it is under suspect for adverse qualities in Germany.

The authors below emphasize that it has been clearly demonstrated that control methods that rely exclusively on chemicals are often not satisfactory in the long run. There are too many problems with resistance and possible adverse side effects. It therefore behooves us to search harder for a natural method of control. In this regard the mites might already be exerting some influence. Mites that kill off a colony will also die; it has been observed in Germany that when a bee colony dies from varroa only a fraction of the mites survive by making their way into nearby colonies, even under favorable conditions. We can logically expect that traits that reduce the harmfulness of the mites should be favored by the mites themselves.

Koeniger, N. and S. Fuchs. *Eleven years with varroa — experiences, retrospects and prospects. Bee World 70: 148-159. 1989.*

Big Farms Getting Bigger

There isn't much question that the trend in the U.S. is for large farms to become larger. The figures from the 1987 census were released recently and some are startling. The census reveals there are 2,087,759 farms in the U.S.A. farm is defined as an agricultural business having more than $1000 worth of sales in a year.

A mere 469 (.02%) farms accounted for 10% of the total sales of agricultural crops in the U.S. in 1987; they averaged about $29 million each. 50% of the sales were from 75,682 farms. The other 50% of sales were on the part of a few over two million farms. This same census reports that there were 38,625 farms where bees were part of the operation in 1987; that figure is down from 1982, when 46,833 farms were listed as owning at least some bee colonies.

Census of Agriculture. Volume 1. Geographic Area Series, Part 51. United States Summary and State Data. U.S. Bureau of Commerce. Bureau of Census. 1989.

SPRING GOLD

PAMELA MOORE

"If you can't say something good about something, don't say it at all." There must be a lot of good involved with one of the newest crops grown by grain farmers and used by beekeepers, because most everyone is touting its virtues as if it were the best thing to come along since the movable frame!

Having been both a bee and grain crop in Canada for 15 years, it is now making its way to the states, and if our neighbors to the north are right, it will benefit both the farmer and beekeeper. Only minor adjustments must be made to turn the plants into money here in the U. S.

Don Boehm, Seed Marketing Manager for Terra International, is giving glowing reports on the growing end of the plant, and said, "We will need seven to ten million acres in the U. S. by the mid 90's.

"We do not see canola replacing crops. It's just another element to add diversity to the farmer's crops," he reports. He also adds that it will be a help to the farmer who can now utilize his time and equipment during a period when his machinery would otherwise sit idle. Although there are spring planted varieties, most U. S. canola is seeded in the early fall, (fall varieties) and blooms from late April to late May. When the plant sets seeds, it will have about 270 pods per plant. Each pod is filled with seeds about the size of a pencil point.

Boehm also advises that farmers will be able to use existing equipment, with some "fine tuning" for the seed size.

Because the plant is new enough to the United States, there have not been many pests associated with it. Flea Beetles, pod weevils and aphids may become a problem, but the U. S. Canola Association reports the beetles can be controlled with seed treatment and others with pesticides if absolutely necessary. In the first year or two, the farmer may not experience pests, which means no chemicals, which is good news for bees.

When planting, The Canola Association suggests starting with a weed free bed, as canola does not compete well with weeds during early development. A preplant herbicide may be used where weeds are anticipated, but once the plant is established, canola provides its own weed control through the growing season. In fact, canola is often used by home gardeners as a weed control, green manure and cover crop. Also, a well drained, non-crusting loam soil is suggested as canola is not tolerant of standing water.

Diseases in canola are best controlled by using certified seed that has been fungicide treated. The Canola Association suggests that most diseases are best controlled with long rotations. The cooperative Extension Service reports that Canola is susceptible to Sclerotinia wilt, where high moisture and lack of air movement increases the likelihood of this disease. They also recommend to not plant sugarbeets in rotation with canola. In Canada and North Dakota, canola follows a cereal grain in rotation, and canola plantings should be at least four years apart. Canola may also be susceptible to white rust, downy mildew and alternaria blackspot.

"We will need seven to ten million acres of canola in the U. S. in another five years"
Don Boehm

Boehm suggests that when farmers start with canola, they should try at least 20 acres the first time. He also cautions that only "certified" seed can be planted. Because canola is a low acid rapeseed, seed companies sell only the low acid varieties. This is the only variety that is acceptable for human consumption, and the acid content will be checked when delivering seed to the elevator.

Expectations have been met for production by farmers, with an average of 45 50-pound bushels per acre, and Boehm reports he has seen 80 bushels per acre with good management. In 1988, farm price at harvest time paid by Archer Daniels Midland was $7 per 50 pound bushel. Though this price is not as high as soybeans, the two crops tend to rise and fall together, since they are both valued primarily for their oil.

With more and more interest growing in canola, the farmer has more local elevators accepting seed. "The elevators also had to make some adjustments in accepting the seed, and they've done a good job with it," said Boehm. So the long trips to some of Canada's processing plants are not always necessary to sell the crop.

Farmers are encouraged not to save their own seed for next year's production. In the first place, elevators will only accept crops that have been grown with certified seed. Secondly, canola does not store well, as the seed is small enough to pass through many bin aeration floors. It also may go through a "sweat" for up to six weeks after har-

By late fall the plants are 4-7" tall and ready to overwinter.

vest so heating and spoilage can occur even at 9 - 10% moisture levels.

"Canola will probably be the next multiflora rose," one agricultural teacher was overheard saying recently. He was referring to the multiflora rose that was introduced as an excellent fence row bush, and got out of hand when birds ate the hips and deposited seeds throughout the farmer's fields. They have been difficult to destroy since.

Due to the fact that canola is not a woody plant, and there are several herbicides registered to control members of the Brassica family, extension agents are discounting this rumor, and do not see canola as an unruly threat. However, it will probably be an escape, and thrive on field edges and in fence rows for at least a couple of years after harvesting. This will be mostly good for beekeepers because it will be an added nectar source. Also, soybeans and wheat, the two most common rotation crops, are seldom treated.

But in dry years soybeans are treated, and bee losses were reported last year. And though wheat is treated even less often, the recent introduction of the Russian wheat aphid, and the destruction it has caused has led to some crops being treated.

With all the glowing reports from seed companies and agricultural services, through, more and more farmers are jumping on the canola bandwagon. What would be the strongest draw for a farmer to become involved in a crop that sounds so good?

Steve Arters, a third generation Ohio grain farmer, with 1300 acres in

Canola plants will survive nearly any winter temperatures, but there are limits.

What's In A Name?

"All Canola is rapeseed, but not all rapeseed is Canola," states the Ameri-Can Seed Company. That doesn't do much to explain what it is to the vast majority of the population who have not been in industry, or feeding hogs, for the past 50 years.

Rapeseed is a plant grown for its oil, which is extracted from the small dark seeds which line the siliques or seed pods. It has been used as a non-drying or semidrying oil, and industrially, as a lubricant and an illuminant. More recently it has been used as an additive in cosmetics and plastics and as a raw material in the chemical industry.

Rape has also been used as a forage crop for sheep and pigs, and the seeds for bird food.

Historically, some members of the Brassica family (which includes cabbage, broccoli and thus Canola) have been used as a medicinal herb to produce vomiting. (This is mentioned for background only. Do not try it.)

During the '60s, research began concerning the negative health effects associated with the consumption of erucic acid in rapeseed oil. Canada led the field in research and produced a rape variety with a very low erucic acid content. The United States Food and Drug Administration ruled in 1985 that low Erucic acid rapeseed oil is Generally Recognized As Safe (GRAS) and therefore may be used in U. S. food products.

When the Canadians developed their safe variety of rapeseed, they named it Canola. Don Boehm, Seed Marketing Manager for Terra Seed, said the name breaks down to mean:

CAN	Canada
O	Oil
L	Low
A	Acid

Steve Arters, a crop farmer from Ohio, checks his new canola crop in February, when it looks very different from the large blossoming plants of early spring.

crops, said, "You have to keep on top of things. If one crop fails, there has to be another that doesn't. I am diversifying and splitting my risk. I've heard so much good about canola, I have to try it," Arters has a trial 20 acres in canola and enjoys getting a ribbing about his "granola" crop. "People keep asking me when my granola will be ready, and I tell them that we'll have granola bars in the spring," he jokes.

The Soil and Water Conservation District has also encouraged Arters to plant canola because of its ability to prevent soil erosion. "Those raindrops just pound the big leaves and trickle off into the soil, instead of hitting the soil directly," he said. The canola plant also aerates the soil, producing a tap root that can reach more than 10" into the soil.

In February, Arter's crop looked like someone had dumped a lot of cabbage leaves on an open field, but the leaves were green, tinged with purple, and new growth could be seen at the base of the plant.

Arters plans on using existing equipment to harvest the canola and has been in contact with the U. S. Canola Growers Association and his local extension office for advice. "I am a member of the Soybean Association, and I think they are getting a little nervous about canola that farmers who once grew soy will now switch," said Arters.

There shouldn't be much switching from traditional nectar producing crops to canola blossoms for beekeepers though, due to the early season blooming time for the new crop. Also, there's some mixed reviews by honey packers on the taste of canola honey.

Ernest Groeb, Jr., of Groeb Farms, Onsted, MI, said, "Canola honey is bitter tasting and I do not feel it is table grade. Because it crystalizes quickly, it doesn't have a very long shelf life."

Groeb sees canola honey as a benefit to beekeepers because, "Although the world honey market was up 1.0% last year, the U. S. Market was down 17% in 1988. Canola will add more bee pasture and increase the poundage for those beekeepers who work a little harder," he said.

Although Groeb has not yet accepted any honey that he knows was strictly canola, he is ready to buy canola honey. Because he blends honey for sale to large food processing companies, he is looking forward to the abundance of the new crop.

Groeb sees canola honey as an industrial product and sells his products to large food processing companies like Nabisco. "They will blend it with other, stronger tasting honeys and it works well. The longest canola honey can be held in the warehouse is two months, so it has to be used in a hurry," said Groeb. Groeb Farms packs and sells 22 million pounds of honey a year.

How does he view the market for beekeepers? "They may have to take a bit less a pound for the honey, but they will make up for it in quantity," he reports.

The opposite side of the taste bud is represented in Larry Bacholo, of Portage La Prairie, Canada. Bachalo has been using his bees on his brother's canola fields for 15 years and says, "It's delicious, somewhat like spun or whipped honey. Even when it crystalizes, the crystals are very smooth. It's definitely table grade and is similar to clover honey."

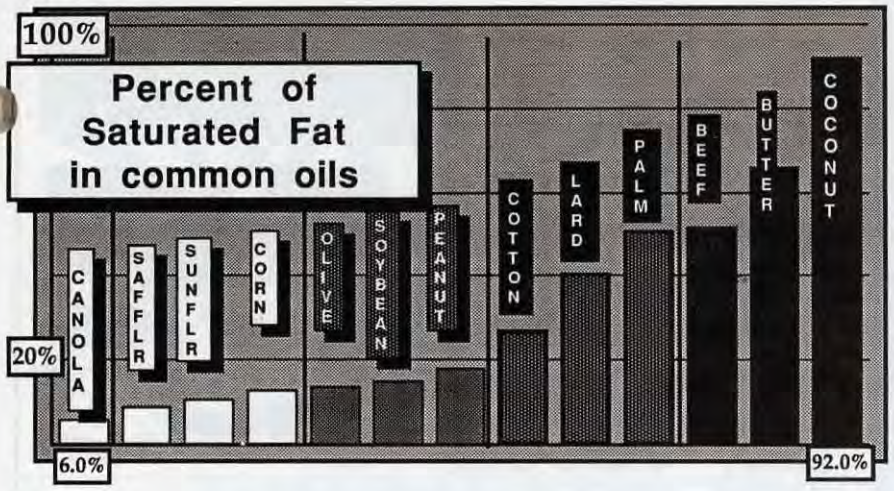
Bacholo, who has 450 hives and reports, "that's plenty", sells his honey to a co-op in Winnepeg, Manitoba. "I think they ruin it (canola honey) by blending it with stronger honeys," he said. Instead of blending to decrease crystallization, Bacholo reports that by freezing the liquid before it begins to crystalize, it can be stored for longer periods of time. Are consumers ready for honey in the frozen food department?

Ninety percent of his honey is canola, with the other 10% coming from his fall "Heinz 57 varieties" and from spring trees and bushes. He said that the canola keeps him busiest, because he is taking 10 to 15 pounds of honey a day for eight to ten days from each of his 450 hives. "It will change the way a beekeeper plans his work, and he has to be fast and change his schedule to fit the plant. If a beekeeper can manage 600 hives on canola — that is excellent.

"The bees really like canola," continues Bacholo. "You can even see the droplets of nectar on the blossoms and they are about half the size of a pin head," he said.

Bacholo also reminds farmers of what a great crop they will have by growing canola. "Farmers have been selling the seed to companies in Canada, which turn it into oil then export a large quantity to Japan where they have been using it for some time," he said.

Roger Congdon, another Canadian with extensive canola experience also has high praise for the crop. In his area, Cottam Ontario, the canola crop is



about three quarters spring crop (planted in spring and harvested in the fall) and about one quarter fall crop, like the U. S.

Roger, who is also president of the Canadian Honey Council, reports that canola has a very high yield primarily because it blooms to maturity, unlike clover or alfalfa, that are usually cut early.

And yes, it does crystalize fast, and beekeepers will need to pull supers during bloom to avoid solid combs. Extraction three to five days after pulling is as long as you want to wait. However, it is a low moisture honey to begin with, so pulling 'green' doesn't cause problems. "In fact, you pull almost all of it green", he says, "but we've never had a moisture problem because of it."

What the Japanese have known, we are learning in the United States. Canola oil has six percent saturated fat and no cholesterol. These numbers can be compared to Olive oil at 14 percent fat, or vegetable shortening at 26 percent. Butter contains 54 percent fat and 33 percent cholesterol, and every doctor has been hounding patients to look for low fat, low cholesterol foods.

Health conscious Americans have provided a market for canola oil that is not likely to slow down for some time. Puritan Oil, manufactured by Proctor and Gamble, has been on the shelves for more than two years, but few people know it is made from 100% canola oil. Newspaper articles and magazines such as *Organic Gardening*, have attempted to present the story, and as health concerns continue to escalate, the demand will continue to grow.

The oil also has a high smoke point, which makes it excellent for high temperature cooking, and it contains 100 calories per tablespoonful. Those who have tasted pure canola oil are as split on its taste, much like the honey tasters. Comments ranging from "It's tasteless," to "It has a clean, pure taste," are heard. Perhaps the market will require both pure canola oil and an option of blended canola oil to increase sales.

Current users of the oil are "McDonalds®, in making their muffins, and Frito Lay® in corn chips," said Boehm. "Sometimes it's a matter of making junk food healthier," he added, noting the additional markets for canola oil. Reading labels on oil-containing foods will probably disclose a wide variety of products that have been made healthier.

It isn't often that something comes along for the beekeeper that benefits not only his honey production, but also the farmer growing crops, and the general population who consumes the ultimate product. The key will be in management. The consumer has begun to manage his diet and become health conscious. The farmer will have to "fine tune" his equipment to deal with small seed to get his early crop. And the beekeeper will either have to invest in roller skates to take care of all his hives, or learn to manage this crop in new ways to take full advantage of what will indeed be — Spring Gold. □

Pamela Moore is a free lance writer from Medina, Ohio. She has written numerous articles for agricultural publications covering subjects ranging from bees to dairy to pesticides.

Swarm Traps

JUSTIN O. SCHMIDT[1], STEVEN C. THOENES[1] and RICH HURLEY[2]

An idea whose time has come.

Swarm traps ("bait hives") for attracting and capturing honey bee swarms need not be flashy or expensive to be effective. The swarm traps we have developed over the last three years are plain brown, common-looking devices made with inexpensive materials. But don't let looks deceive you these devices are not only the result of careful design and research, but they also work better and with less hassle than any other swarm trap design.

The basic swarm trap consists of two pieces — a top and a body chamber both composed of reinforced wood pulp. This wood pulp material is made from recycled newspapers, plus an asphalt reinforcer, and mold, rot, and termite inhibitors. This material is not only inexpensive, readily available, and ecologically sound, but it is probably also the best possible material for the job. In three years of use under conditions of intense sun and heat in Arizona, we have detected no decomposition or deterioration. In two years of use in Costa Rica under conditions of high temperatures, humidity, winds and rainfall, we have observed only a slight softening of the material. The material will, however, soften and decompose within about a year if it is filled with moist soil, or resting on moist ground.

A cluster of swarm traps in a mesquite tree along a dry wash in Arizona.

Termites, one of the worst pests in the tropics of wood products and hive materials, do not eat the pulp because of the added inhibitor and asphalt. They will, however, construct tunnels over the surface of the traps, even if they will not consume them.

Wood pulp has four other advantages as a material for constructing swarm traps. It keeps light out, so there is a dark, secure-looking cavity for a swarm; it consists of a somewhat flexible, air containing material that permits better thermal insulation than metal, plastic, or ceramic/pottery; it is very strong; and it can be inexpensively molded into almost any size and shape.

The importance of strength was readily noted when we shipped 150 traps by parcel post to Costa Rica with no packing other than shrink plastic and strapping tape — not one trap was damaged enough to preclude its use. A final test of strength came when a 12" diameter tree fell down during a wind storm sandwiching the attached trap between the tree trunk and a large rock. Only moderate damage was done.

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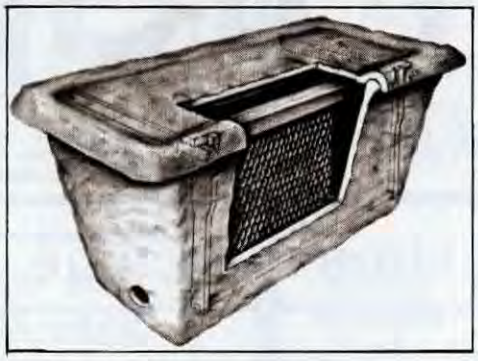
The swarm trap body is approximately 16" high and 16" in diameter at the top, tapering to about 10-1/2" diameter at the bottom and has an inside volume of approximately 9 gallons. The trap weighs just over three pounds and can be stacked like drinking cups for shipping. Inside the top there are four ridges spaced 1-3/8" apart to serve as possible comb attachment sites for the swarm. A bead of wax can be applied to the ridges if desired. The bottom part of the trap has a 1-1/4" diameter hole at the edge where the bottom meets the side which serves as the entrance for the bees.

The trap has eight 1/6" grommet

Swarm trap conveniently attached to a tool shed.

Second Generation Swarm Trap Available



Three years ago Scentry Inc. introduced a commercially available, paper-pulp bee swarm trap that was patterned after a swarm trap originated by Justin Schmidt of the USDA Bee Lab in Tucson, AZ. He and his coworkers demonstrated that the trap, combined with a pheromone lure, is ideal for attracting honey bee swarms.

Beekeepers, who have used the trap commercially during the past two years enthusiastically report captures of three or more swarms during a single season.

Scentry, in cooperation with the above authors has designed a second generation trap that combines all of the advantages of the original swarm trap model plus additional features that make the new trap much more versatile.

The new trap is rectangular in shape, has a volume of over 8 gallons and measures 23" x 13" x 12" at the top, tapering to 19" x 9" x 9" at the bottom. The lid has an inner grooved channel that fits snugly over the molded lip of the box. The trap resembles the bark of a tree in color and texture and is made of strengthened paper pulp containing mold, rot and termite inhibitors to insure long life. The 1-1/4" entrance hole is located at the lower edge of the end panel.

A major addition is that the box is designed to accommodate up to five full-sized frames along with two shallow super frames. This allows the box to be used in several ways. It can be used as a "nuc box", a swarm trap when a pheromone lure is added or a disposable hive for research work or for commercial use as a temporary nucleus hive.

When used as a nuc box or disposable hive its advantages are its light weight, ease in handling and moving, and economy when a research hive is to be destroyed.

The box containing one or more frames of foundation comb may be used as a trap by adding a bait or lure containing the synthetic pheromone. The pheromone lure is formulated in a plastic capsule that allows the scent to be released through its walls. Fastened in the trap at the beginning of swarm season the lure will continue to release pheromone for the entire season. Tests by Schmidt show that the color, size and texture of the trap combined with the pheromone lure make the trap ideally attractive as a nest site. With frames of foundation in place the swarm can go right to work and the beekeeper can move the swarm to a regular hive body at his or her convenience. When the swarm and frames are transferred to a standard hive body, new frames can be inserted in the trap making it ready to capture additional swarms. □

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holes, four equally spaced about 1" below the rim for inserting nails through to tightly anchor the thick cork-like top piece, and four in two opposite pairs 3-5/8" below the rim and 5" apart. These two sets are used for attaching the traps with wire to a tree or other object. The thick cork-like top has a square top flange with grommets in each corner. It is designed to fit firmly into the body where it can, if desired, be readily anchored there with a nail. The corner grommets allow easy wire attachment of the trap to a tree, limb or other attachment object.

The smallest and a very important final part of the trap is the pheromone lure (bait) that is used to attract swarms to the trap. The pheromone lure has been tested and modified over a three year period so we now have a very attractive and enduring lure. It consists of two, 400 microliter polyethylene Ependorf disposable centrifuge tubes, each containing 100 microliters of pheromone solution. After the pheromone is added, the caps of the tubes are closed and the tubes are wrapped in porous black paper to form a light protective packet about 1" x 3" in size. This packet should be stored below freezing to reduce pheromone release until needed; at that time it is attached with a thumb tack or staple to the inside of the trap just above the entrance hole.

Once assembled, the trap is ready to deploy. We usually attach the traps to a tree or a structure at a height of about 9-10 feet. One of the easiest means of attachment and the one that we usually use is to string flexible iron wire (bailing wire works well) through the grommets and around the outside of the trap to nails driven into the tree. The wires can be run around the tree in lieu of driving nails. When the wires are drawn snug a very secure attachment is achieved. A variety of other creative means can be developed depending on the situation at hand.

The grommet holes and the trap lids were designed to allow flexibility of attachment. For example, as part of their research at the USDA bee laboratory in Weslaco, Texas Bill Rubink and Bill Wilson have very successfully deployed traps in pairs by placing the traps horizontally, top-to-top, joining them with wires through the grommet holes in their lids, and hanging them with rebar hooks from tree branches.

Home is where...

Termite galleries (the lighter smooth areas on the trap) covering swarm traps in Costa Rica. The termites did not enter or eat any of our traps.

Pair of swarm traps hung from a branch. In this design a captured swarm causes one end of the pair to tilt toward the ground.

The swarm traps described above and their earlier models were tested in 1986, 1987 and 1988 in Tucson, Arizona. The tests were designed to evaluate different factors of importance in trap design. To do so, each year traps with different factors were deployed in each of 22 to 25 stations. At each of these locations sets of traps containing one model of each design were attached to the same tree, thereby allowing direct comparison of the effectiveness of the various designs and placements. (Detailed results of the data from these experiments are available from the authors.)

The experiments conducted in Tucson were not designed to determine the percent of traps that caught swarms and, therefore, we can only approximate that data. Overall, and despite the shortcomings inherent in determining the trap catch with our designs, the swarm traps caught on average at least 0.85 swarms per trap per year over the three years of testing. Our best locations have yielded seven swarms per trap and three or four swarms per trap are commonly observed.

Like most equipment, some design factors are important to the functioning of swarm traps and some are unimportant. We have found in our studies that the material of a swarm trap is crucial. Cardboard, waxed cardboard, plastic, polystyrene, hardboard, etc. are not very good materials. Wood is fine except that it is expensive, labor intensive to make into a swarm trap, rots, and is eaten by termites. Pulp, as in our traps, is the material of choice: it is cheap, strong and light, does not readily rot or decay, is not eaten by termites, is waterproof yet breathes, is easy to mold into the desired shape, and is easy to attach to a tree.

The volume of a swarm trap is important. Although we do not know the optimum volume, we do know that a volume of about 9 gallons, (slightly less than a full-depth super), is very effective.

Much discussion had been generated about lures for use in swarm traps for attracting swarms. Again, although we do not yet know the perfect lure, we do know that the three-part blend of Nasonov gland components (citral: geraniol: nerolic & geranic acids) developed by Dr. John Free of Rothamsted, UK works extremely well. We have formulated this pheromone into slow-release polyethylene tubes and find it to be attractive for about a year. A good working system consists of two tubes, each with 100 microliters of pheromone. Our experience indicates that

Continued on Page 223

Justin Schmidt and the wood pulp constructed swarm trap showing construction and shape.

Ukrainian Easter

DIANA SAMMATARO

The egg is one of the oldest known symbols to mankind. From ancient Egyptian, Hindu and Persian creation legends to Christian resurrection, it's importance is worldwide. It has symbolized the universe, rebirth, spring, and fertility for its seeming life-from-death hatching miracle.

Coloring eggs is an ancient European Christian tradition dating back to the thirteenth century. In some countries, eggs are given as gifts on the morning of the Resurrection; some are dyed red, for Christ's blood. For others, the rolling of Easter eggs symbolizes the stone being rolled away from the Tomb. Today, it is a symbol of Easter, when the family colors eggs, hides them and possibly adorns a tree with the colorful egg ornaments.

Perhaps the most beautifully decorated eggs are from the Ukraine, Poland and other Slavic nations. The most famous of these is called *pysanky* from the Ukraninian verb *pysaty*, to write.

Pysanky predates Christianity where decorated eggs symbolized the power of the sun and spirit worlds; made in the spring, the eggs reflected the sun's power to melt the bitter winter snow and cause the return of life to the Steppes. In 988 A.D. when Christian missionaries arrived, the Son took the place of the sun and pysanky became a religious symbol.

It is believed still that the fate of the world depends on pysanky. As long as it continues, the world exists. But if the custom ceases, an evil monster will break its chains and destroy the world. The annual decorating of eggs are the chains which hold the monster in check.

Over the years, a large Ukrainian population settled in the Canadian prairies and in the Minnesota area. They still hold yearly egg-decorating contests, keeping alive this custom, and the monster firmly chained. The traditional symbols and colors are still painted on the eggs – like Mary's tear drops, wheat, fish and the triangle (for the Trinity). For more information on the symbolism, I suggest reading some of the books listed below.

How To Start

Ukrainian Easter eggs are not hard to make, but do require some special tools. They are available from

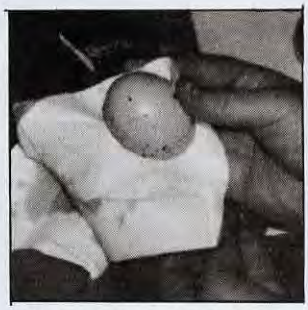
Draw your design on the egg using a pencil. DO NOT ERASE MISTAKES!

Your tools — beeswax and the Kistka. The Kistka is really a small metal funnel with a very small opening. Heat funnel then scrape wax.

Then heat it in the flame, melting the wax. This in turn will run out the opening and you can 'draw' with a bead of wax. Practice makes perfect, and paper is cheaper than eggs.

Trace over your design. Any blobs or errors are forever, but you can incorporate them into your design. Be creative!

When the first design is covered, put your egg in the dye.



When sufficiently colored, remove and pat (don't wipe) dry.

Add the next design over the dye.

When the last dye has been applied (usually dark blue or black), begin removing the wax. To do this hold the egg on the side of the flame (the coolest part) until the wax on that part of the egg starts to run off ...

the sources cited at the end of this article. Since pysanky uses beeswax, beekeepers and craft persons can join forces to produce this beautiful and unique ornament. Here's how.

First, the dyes. I use 2-1/2 pound square honey jars, its perfect size and wide mouth make dyeing the eggs easy. You can use natural dyes, (safe to eat) such as onion skins, saffron, fresh beets, or others. But to obtain the spectacular colors, I suggest using regular Easter egg or psyanky dyes, or a good batik or fabric dye.

Prepare dyes by following package directions. I use yellow, blue, red, orange and black, and can make green by mixing yellow and blue. Now gather some newspapers, cotton swabs, a candle, a spoon, some beeswax, paper towels, and a #2 or 3 pencil.

The Eggs

White farm-fresh eggs from chickens, ducks, geese (or even ostrich eggs) are used. Select only those that are unblemished with no weak spots, lumps or bumps. I pick through three or four dozen medium or large eggs in the store if I can't buy fresh eggs, then I rinse them in a quart of warm water and 2 Tbls. of white vinegar. Blot dry. All eggs should be at room temperature.

Traditionally, eggs should be used whole, and not blown. Eventually, the yolk and white inside will dry out, if well ventilated, but as I like to hang mine, I generally blow them out before I decorate, to save the insides for cooking. Pierce a small hole in the top and bottom of the egg, pucker up and blow.

I found an easier way by getting an old lab syringe, poking a small hole in one end and filling the egg with air. Eventually, the insides will come out, but don't blow too fast or hard as weak-shelled eggs will crack. After blowing, I rinse the inside with the vinegar/water solution.

The Technique

When you first paint wax on a white (or brown) egg, then dip it in the first color, yellow, all the lines you first painted will be white (or brown). Then you paint on the yellow egg, the next set of lines will be yellow. As you go on, you will be painting red, orange, blue etc. lines until your last coat. The final coat will dye anything not painted with wax.

... then gently wipe the melted wax off the egg. Your colorful design will begin to show through. When completely finished add clear acrylic or varnish to seal the egg and give it luster.

Making these eggs can be as simple or complex as you want, and can be an activity the whole family will enjoy.

Basic Division A

First vertical line. Turn egg 180° and draw a second vertical line.

Top view

Divide egg horizontally

Basic Division B

After finishing A, start at the center intersection and divide the egg into 16 equal parts.

White Yellow

Green Orange

Red

The Tools

The writing tool used to make the intricate designs is called a kistka which comes in a variety of styles. You can make one, but to start I would buy the kind used with a candle (instead of an electric one). The funnel of the kistka is heated by a candle flame, then is used to scoop up a small amount of beeswax. Beeswax is applied because it is more flexible, has a high melting point and gives greater resistance to dye. (Many *resist* dye processes, like **batik** or the painting on fabric instead of eggs, use beeswax for this purpose).

Practice writing with the kistka and melted wax on a sheet of paper or newspaper before starting on the egg.

Time To Start

With a pencil, take your cleaned egg in your *just-washed* hands and draw a light line dividing the egg in half, vertically. If you make a mistake, DO NOT erase, as this will leave a mark on the egg which will destroy your design.

Now divide the egg into fourths, vertically (see illus.). Now divide it horizontally. This is called the ***Basic Division A.***

Once you have divided the egg vertically and horizontally, you need to divide it into equal portions. Now, put a mark dividing the quartered egg into eights and draw diagonal lines. Do the same on the other side by drawing diagonal lines from the center intersection. This divides the egg into 16 equal parts. This is ***Division B.***

Historical Note:

A symbol of hard work and pleasantness, bees represent all good insects which should not be killed. In Ukrainian folklore and life, a bee is treated with honor and respect. Bees are held in such esteem that Ukrainians have a special verb to describe the death of a bee *(zahynula)*.

Step One

Pencil in the design on **Step 1**, then heat up the kistka and wax over the lines. If you make a mistake, or a blob of wax lands where it shouldn't, you live with it. Make it part of your design, because you can't scrape it off.

The kistka should be kept at a right angle to the egg. Work with a steady hand, and draw the lines in a few strokes. If you want the wax to show up better, mix a little of the black carbon soot into the wax. It will turn the wax black and you can see your lines better. Remember: you cannot go back over the lines without leaving an imperfection in the final design.

Dye Baths

Once finished with **Step 1**, dip your egg in the first light color, yellow. If you blew out your eggs, first cover the holes with wax so the egg won't fill up. You may have to place a smaller jar on top of the egg to hold it down. Keep it in until the desired color intensity is reached, a few minutes to a few hours.

Step Two And Three

Remove egg with a spoon, pat dry with a paper towel. Do not rub hard. The lines you drew first will be white. Now look at **Step 2** and draw in the lines with the kistka that will be yellow. (Look closely at the two designs. Doesn't it remind you of the game–How are these two pictures different?)

Once you have finished the yellow lines, dip the cotton swab into the green dye and daub over the design where indicated to make green in **Step 3**. Pat dry then cover the green with wax, and place the egg in the orange wash.

Step Four And Five

This will remove any excess green dye in case you made a mistake. Wait until egg turns orange then apply wax to make **Step 4** and when finished, place egg in the red dye. Apply wax where needed for **Step 5** and place egg in final dark color: dark red, purple, blue, dark green, wine, brick or black. All the areas not covered with wax will be the final color.

When the desired shade is reached, remove egg and pat dry. Now you are ready to take off the wax. Hold the egg to the side of the candle flame to melt a small section of wax. Once melted, rub egg wax onto a clean paper towel and your design will be revealed. Continue until all the wax is removed. Now you are ready for the final coat.

Final Coat

Make an egg rack by pushing three small nails or tacks through cardboard to form a triangle. Place the egg on top of the points so it cannot touch the cardboard. Spray your egg with a clear, high gloss polyurethane varnish or take your finger and smear the egg with it. Put on several coats, allowing it to dry overnite between coats. This will protect your egg and keep your dyes from running.

Keep your eggs out of direct sunlight, in an egg carton or rack. Or you can sell them or give them as gifts or hang them as ornaments. Above all, have fun with this fascinating and delightful way to use beeswax.

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Ukrainian Gift Shop
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(612) 788-2545

The Ukrainian Museum
203 2nd Ave.
New York City, NY 10003
(212) 228-0110

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TRAPS... Continued from Page 219

polyethylene tubes and not those made of polypropylene or other high density polymers should be used to obtain proper levels of pheromone release. Also the cap on the pheromone tube should be closed to ensure the slow release via diffusion through the plastic container (an open cap will deplete the pheromone too rapidly).

If a pheromone lure is present in a swarm trap, other potential attractants appear to be unimportant. We have found no enhancement of trap catch with the addition of beeswax or comb. If pheromone is absent, comb, beeswax, lemon grass and other materials might be of some value.

Placement of the swarm trap can dramatically affect its effectiveness. In southern Arizona, where trees are short and provide only partial shade, we have found that traps placed about 10 feet high in partial shade on the trunk of a tree do well. Traps placed lower are much less effective.

To further enhance trap catch we place traps along the edges of streams or dry washes where they are readily visible to scouts flying along the water course. Other places, such as at the edge of a forest, along a fence row, or along a prominent geographic formation where the bees can fly along and readily discover the traps are probably additional good choices. And, of course, near an apiary is a good choice for setting up swarm traps.

In areas outside the desert southwest, and especially in cold climates, temperature and moisture are factors to be considered in swarm trap deployment. Partial sun exposure and areas of dryness are probably important. Height of trap attachment might also be increased if the trees are tall.

Home Sweet Home

We have developed a swarm trap that is extremely effective in attracting and capturing honey bee swarms. The major features responsible for the effectiveness of this swarm trap are its wood pulp construction, its pheromone lure, and its volume. It is ideal for use to capture swarms for addition to an apiary, or for civil authorities and pest control operators to use for trapping and destroying unwanted swarms, such as those of Africanized bees. It is also an ideal tool for quarantine surveys and for scientific research on bees. □

Smokers

MICHAEL FERRACANE - Cornell University

The smoker is unquestionably beekeeping's most valuable tool. With its help a beekeeper can turn an irascible, difficult-to-handle colony into one that's docile and easy-to-manage. A smoker achieves this remarkable transformation by disorienting and routing the hive's guard bees, causing them to engorge with honey. Smoke also interferes with the bees' detection of alarm pheromone, further reducing the colony's defensiveness. The repellant action of smoke is also used to move bees out of harm's way so that frames and hive bodies can be manipulated with minimal bee injury. Thus, the skillful application of smoke allows the beekeeper to work more quickly and efficiently with less fear of stings.

Besides the immediate benefits to the beekeeper, though, skillful smoking reduces the risk of neighbors and others being stung. Certainly something all beekeepers, particularly those in populated areas, should be aware of in these days of rampant litigation coupled with public paranoia of Africanized bees. All beekeepers must master the use of the smoker and to use it, or at least have it ready to use, every time they examine a colony of bees.

A Little History

The effect of smoke on honey bees has been known since before recorded history. Ancient cave drawings in Africa depict honey gatherers using the smoke from torches to repel the bees so that their nest could be plundered. This crude method of applying smoke is still used in harvesting honey in many parts of Africa and Asia. As man went from simply plundering feral bee colonies to keeping bees in primitive hives, smoke made the transition with him, although the use of smoke was still mostly confined to those rare occasions when moving hives or harvesting honey. For these purposes the smoke produced by a smoldering torch or a camp fire was probably adequate. However, the advent of modern beekeeping using moveable frame hives necessitated regular inspections and manipulation of frames. This made a more efficient means of applying smoke necessary.

Early devices for applying smoke were little more than holders for smoldering coals. While better than previous methods of applying smoke, these devices were still not very efficient at controlling the amount of smoke produced or directing it to where it was needed. Many beekeepers learned how to use tobacco smoke, which they blew from their mouths, to control bees. This technique also had serious shortcomings as only small amounts of smoke could be produced and, perhaps even more importantly, beekeepers could not sustain this method of application for very long. Early attempts at more efficient smokers included modified pipe designs through which the beekeeper blew to deliver smoke. Again, shortness of breath and a tendency for the fire to die out prevented this from being an efficient smoker.

It was not until 1875, well af-

The Classic Smoker

ter L. L. Langstroth patented his moveable-frame hive in 1851, that a truly workable smoker appeared on the beekeeping scene. In that year a progressive New York beekeeper named Moses Quinby designed a smoker with an attached bellows. The addition of bellows meant that the fire could be easily fanned to keep it burning. It also allowed the beekeeper to produce copious amounts of smoke whenever needed and to precisely direct this smoke into the hive.

Quinby's smoker had an important flaw, however. In his design, air from the bellows was pumped through the top of the fire chamber, instead of being forced through the burning fuel itself. This design stemmed from a belief that the smoke produced by blowing air through a fire would be too hot for the bees. However, this proved an unnecessary concern and the subsequent modifications on Quinby's design made by T. F. Bingham and A. I. Root over the next few years had the bellows blowing air into the bottom of the fire chamber.

Another important modification changed the connection between the bellows and the fire chamber from continuous to discontinuous to facilitate ventilation and to allow for an updraft when the bellows was not being pumped. This enabled the fire to obtain ample oxygen and thereby allowed combustion to continue unabated. With these changes the smoker, as we know it, had arrived. Since then, only minor changes in design have occurred.

To build a smoker...

The modern smoker is relatively simple in design, consisting of a metal cylinder, the fire chamber, in which the fuel is burned; an attached bellows, which forces air through the fire chamber; and a nozzle-lid, which closes the fire chamber and serves to funnel and direct the smoke. In the bottom of the fire chamber a metal grating raises the fuel above the air intake hole.

Smokers are constructed from a variety of metals including copper, tin-plated steel, stainless steel, and aluminum. With proper care any type of smoker will last a long time. Eventually, however, most models will begin to rust or eventually wear out. For this reason it is probably more economical in the long run to buy a good stainless steel smoker, since they will last indefinitely with minimal care. Some companies also sell more expensive smokers made from copper or aluminum. While copper smokers are quite attractive when new, they quickly oxidize and it is questionable whether they are worth the extra money. Aluminum smokers, while light in weight, are generally not as sturdy as those made from steel.

Over the years, smokers have been manufactured in a number of sizes. Today, however, smokers are commonly available in only two sizes, 4 x 7 inches and 4 x 10 inches. The 4 x 7 inch smoker is the size usually included in beginners' packages. This size smoker is quite functional but its smaller volume may not have sufficient fuel capacity for beekeepers with more than a few colonies. The 4 x 10 inch smoker, often referred to as the Jumbo, has become an industry standard and is the size used by most commercial beekeepers. Its larger size provides ample fuel capacity without being overly cumbersome to use.

Most smokers are available with an optional shield around the fire chamber. The shield protects the beekeeper from the hot metal and reduces the possibility of accidentally starting a fire. It is a good safety feature that is worth the added expense. Also, I find that my hive tool fits snugly between the shield and the smoker, providing a convenient storage place.

One additional feature that you can add to your smoker is a place for storing matches. A metal box, such as is used for throat lozenges, attached to the back of the bellows is ideal for this purpose. This simple enhancement will save you lots of time and insure that you always have dry matches handy when you need them.

What to burn...

Anything that produces a nontoxic smoke can be used as smoker fuel. Commonly used materials include cardboard, burlap, corn cobs, twigs, wood chips, dry rotten wood, old rags, leaves, untreated straw, pine needles, and paper. Baling twine makes excellent smoker fuel, as long as it has not been treated with pesticides. Always carry ample fuel with you into the apiary, since the you may not always be able to find dry material at the apiary site to burn. A burlap bag or other porous bag makes a convenient holder

Three steps in lighting a smoker. First, put in dry tinder-like material. A small piece of paper works well. Light the paper and puff the bellows. Then, begin adding larger fuel, like dry grass, cardboard and the like.

that is easily transportable.

...And how to burn

The key to lighting a smoker is getting a hot fire going with plenty of embers prior to adding the bulk of your fuel. The failure to do this is probably the biggest mistake that novices make in lighting their smokers and the reason that their smokers usually go out. A second mistake is to attempt to relight the fuel from the top, instead of emptying it out and starting over. This seldom succeeds.

To light a smoker, start with a wad of paper or other easy to burn material. Drop this into the smoker and wait for it to start burning well. Start adding small items of fuel, such as wood chips or twigs, that will leave some embers behind. Continue to pump the bellows gently. Once the fire is burning well and embers have accumulated, start adding your primary fuel while continuing to gently pump the smoker. Continue pumping until billows of smoke are coming out of the nozzle. At this point the fire should be self-sustaining. This is the time to add a handful of green grass or leaves to the very top of the fuel chamber if you wish to help the smoke cool.

Smoke gets in *their* eyes ...

The repellant action of smoke on honey bees was undoubtedly the first effect recognized by man and put to use in his plunders of feral colonies. The second effect of smoke on bees, engorgement, is probably the more important of the two in the management of honey bee colonies, because it reduces the likelihood of stinging. This was demonstrated in experiments by J. B. Free of Great Britain, who found that the bees most likely to sting a moving cloth ball (among groups of 20 guard bees collected from a smoked colony) were those with the smaller crop loads (i.e.,

Continue puffing to make sure this material is burning. When ample smoke is produced add your main fuel — dry wood, burlap or whatever fuel you have chosen. Keep puffing occasionally to keep the embers lit.

SOME HISTORY

1 Clark's Cold Blast Smoker
2, 3- Early Quinby Smokers
4 Woodman Smoker
5 Later Model of Clark's Smoker
6, 7, 8 Woodman Smokers

Boyd Musgrave is a beekeeper who lives in Banta, Indiana. He, along with his wife Madonna, operate a general store that sells bee supplies. The store is 100 years old this year. They have been selling bee supplies since 1979, and Boyd has been keeping bees since 1975.

The store is a meeting place for beekeepers, friends and neighbors. A room on the east side of the building is where the bee supplies are kept and is where the huckster wagons were stored in the early 1900's. People who have trouble with their bees or need someone to pick up a swarm call Boyd. Recently I was visiting with Boyd while looking over his antique collection of smokers, some of which date back to the late 1800's. Boyd and I did some research and found that the oldest smokers were patented in 1878.

A letter was sent to Wyatt Mangum in Raleigh, North Carolina, to find out more about Boyd's smokers. He sent back a copy of T. F. Bingham's Patent No. 199, 611 dated January 29, 1878, along with an advertisement that came from *The American Bee Journal* in 1891. These smokers were made to last a long time, and we are still able to use them. In fact we fired up one of the smokers and went outside to take pictures.

The evolution of bee smokers is interesting, but collecting them is even more exciting. Recently there has been a big increase in antique shops and malls — good places to look for old bee smokers. Boyd takes trips to the local flea market to check on any new additions to the tables since his last trip. He never knows when he will discover an old smoker to add to his collection.

Smokers play an important role in beekeeping, but if you are ever in Banta, Indiana, stop in to see Boyd and Madonna Musgrave. They are always willing to talk bees, and smokers, and sell bee supplies.

Claude Wade

those that had engorged less). While no one knows for sure why engorged bees are less inclined to sting, several possible explanations have been offered. One is that engorgement makes it more difficult for a bee to bend her abdomen to insert her stinger. Another is that due to its increased mass an engorged bee doesn't fly very well and is thus less inclined to attack an intruder. Indeed, there is some evidence that guard bees carry less food in their crops than typical hive bees. Although engorgement may cause some temporary physical impairments that could have some effect on reducing the likelihood of a bee stinging an intruder, there are probably, as yet, unknown underlying physiological mechanisms that may be of equal or greater importance in causing engorged bees to behave less defensively.

Why bees engorge in the presence of smoke is unclear. One often hears that bees fill up with honey in preparation for flight from the perceived fire that is approaching. There is sufficient evidence to refute this explanation for modern honey bees, but it may well have been true for some distant ancestor. Thus, engorgement by honey bees in response to smoke could be vestigial, at present, serving no useful purpose, but having served one in the past. Whatever the reason, it is fortuitous for beekeepers that honey bees react to smoke as they do.

Another way in which smoke may reduce the defensive behavior of honey bees is by interfering with their detection of alarm pheromone, *isopentyl acetate*. Recent experiments have found that the sensory nerve cells involved in the detection of alarm odor are less likely to respond to isopentyl acetate in the presence of smoke. Beekeepers make use of this principle when they apply smoke to an area of their body that has recently been stung to prevent further stinging to that area.

To Smoke!

The first step in smoking a colony of bees is to blow several puffs of smoke into the entrance. As previously discussed, this repels the guard bees and forces them back into the hive, where they engorge on honey. Smoking the entrance is an important step in reducing a colony's defensive behavior, but one that many beekeepers neglect. If the guard bees are not driven back into the hive by smoke, many will likely take

After smoking the entrance and waiting for a couple of minutes, smoke under the cover. Then, carefully lift the inner cover and put two or three puffs under it. Then wait a couple more minutes. If you have more than one colony it may pay to make these initial visits to the next colony or two you will visit to avoid delays in examinations.

to the air to attack you, or at least check out what's going on. Once this happens, smoke is of little use in controlling these bees, which often continue to harass you long after you have finished with the colony.

After smoking the entrance and waiting a few minutes for these bees to fully engorge, remove the outer hive cover. Smoke any bees on the surface of the inner cover and then direct several good puffs through the inner cover hole. Pry up the inner cover gently while simultaneously blowing smoke over the top bars of the super. If you don't have an inner cover, gently lift the top lid and puff four or five good puffs across the frame tops. Replace the cover and wait a minute or two. Only then should the cover, (or inner cover) be removed.

Simplicity Cold Blast Smoker, home made. Photo by Paul Jackson

After exposing the frames, direct several more puffs of smoke down between them. Replace the inner cover and wait at least two minutes before proceeding. This insures that a maximum number of bees will be fully engorged. When you split hive bodies apart or expose new bees, follow the same procedure.

One thing to keep in mind when applying smoke is that its effect on the colony is generally not long lasting. Research by D. C. Newton in France found that 10 minutes after smoking the entrance of a colony the number of guard bees at the entrance increased to or above its original level. Therefore, for maximum effectiveness, smoke the colony entrance periodically. Apply additional smoke to the rest of the hive as necessary. The amount of smoke needed to keep a colony in check depends on a number of factors that include time of day, weather conditions, presence or absence of a nectar flow, presence or absence of a queen, the handling ability of the beekeeper, as well as the genetic make-up of the bees.

Knowing when to apply more smoke comes with experience. General indications that more smoke is necessary are the presence of large numbers of bees peering up at you from between the top bars as well as bees that follow your movements, poised to attack.

One practice that often impedes detecting the need to apply more smoke is the use of bee gloves. Gloves shield you from stings and can prevent you from applying smoke as soon as it is needed. This can allow a colony to get out of hand and make subsequent use of smoke less effective. For this reason, beginners should learn to work barehanded as soon as possible.

It is important when working nucs or other small colonies not to apply too much smoke, particularly during periods of nectar dearth when there is a significant possibility of robbing. If too much smoke is applied, the colony could be rendered momentarily defenseless and susceptible to plundering by robbers. Colonies that appear vulnerable after handling should have their entrances reduced temporarily, using a handful of dead grass or a small twig.

One beekeeping chore that calls for particularly skillful and judicious use of smoke is searching for queens. If too much smoke is used, the queen may begin running, making her extremely difficult to find. For this reason, it is

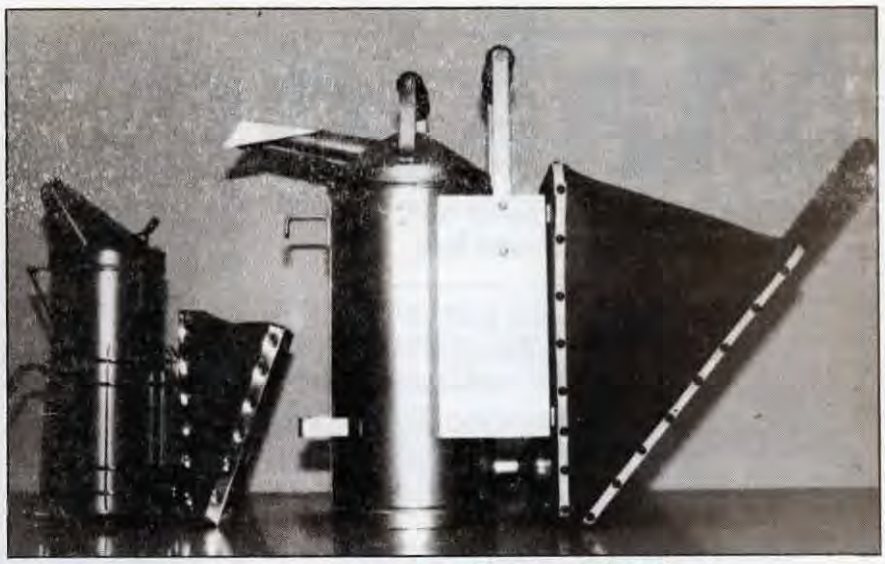
best whenever possible to search for queens under optimal weather and foraging conditions when minimal smoke is necessary to control the bees.

Take Care of Your Friend...

Smokers actually require little care, particularly those constructed from stainless steel. To keep a smoker in good shape you need only store it in a dry, protected location. If you own a tin-plated smoker the tinning will wear off with age, allowing the metal to rust. While a light coating of rust is tolerable, a heavy accumulation should be removed with kitchen scouring powder or other mild abrasive.

Over time, smokers accumulate a deposit of creosote on the inside, especially in the lid, that can constrict air flow from the nozzle. This material should be removed periodically by scraping or burning. I find the easiest way to remove creosote build-up is to burn it out. To do this, get a brisk fire going in the smoker by pumping the bellows vigorously with the lid open. Once the fire is hot, close the lid loosely and pump the bellows forcefully to allow the flames to burn out the creosote. When using this procedure, take care not to burn yourself or to overheat the smoker.

Smokers are very sturdy and usually last a long time. Typically, the first thing to wear out is the bellows, since this is the only moving part. A hole or tear in the leather or vinyl fabric can usually be repaired with duct tape. Eventually, however, the bellows will need to be replaced. Several supply companies sell extra bellows. This is a very economical way to extend the useful life of a smoker.



On the left is a regular 4" x 10" smoker; on the right a typical smoker used when working African honey bees.

Safety First!

Since a smoker contains burning fuel and hot embers the same precautions involved in general fire safety apply. Ashes and embers should be disposed of properly and stamped out before leaving an area to insure that they do not start a fire. When transporting a smoker in the back of a pick-up truck, the nozzle should be plugged or the smoker should be emptied. Otherwise, the current of air created by the moving vehicle can increase the rate of combustion in the smoker, causing it to burn intensely and possibly start a fire in the truck bed. Many beekeepers have a metal box with a tight fitting lid they use to transport a smoker. Obviously, carrying a smoker that is lit inside a vehicle is unwise.

The smoker should be your most useful tool, and when used properly will enable you to work your colonies with a minimum of trouble for you, and, it is hoped, none for anyone nearby.

Making Nucs

ED WEISS

Ed Weiss makes and sells nucs every spring. He uses his own bees, so is comfortable with their source and makes much of the equipment he uses, too. Whether you want to increase your own apiary, or sell to others, making nucs is a sure fire way to safely increase stock.

In the last 100 years or so, almost all really successful beekeepers have practiced the art of "Self-Dependence" It would appear this desirable trait is required of beekeepers now more than ever.

If the impulse to expand your apiary, or just replace some lost colonies hits you, explore the fabulous feat of multiplying your very own honey bees. Make one or more NUCS now and have that many more colonies ready for this summer's honeyflows.

The first step in establishing your new miniature colony is to carefully select the parent. Pick out your strongest colony (or colonies), for this. An end-of-March inspection of this colony should reveal 6-8 frames of brood in various stages of development — eggs, larvae and sealed brood. Of course, this may vary depending upon your location. In southwest Connecticut this schedule occurs under normal conditions. Feeding sugar syrup and pollen substitute patties as early as possible, or as the weather permits in your part of the country is strongly suggested.

This discussion is based on constructing a five-frame nuc, but, as we mentioned last time, nucs of three or four frames are also common. Certainly use what you have available, and adjust this information to fit your situation.

Now, back to your strong colony. It is this colony from which you will select frames of brood, honey and pollen right about now, the middle of April. If you have additional strong colonies you may draw on them also. For instance, you could take one frame of honey and pollen from one parent colony and one frame of pollen and honey from another colony — all for only one nuc, or several. The bees from each of these parent colonies are removed from the frames so no harm is done when mixed-source frames are used in the same nuc. Even a third colony can be employed as a parent to supply frames of sealed or open brood. The frames of brood that you take will be covered with nurse bees. Keep these on the frame because they will go into the new nuc. CAUTION: You must be confident that the parent hives are disease free!

Now, depending on the size of nuc you have chosen, you will have frames of pollen and honey and a frame or two of brood. If you have a five frame nuc, you should have two frames of brood, and two frames of mixed honey/pollen. My fifth frame contains only foundation, which gives the nuc room to grow (see sidebar). However, if you are using three, or four frame nucs you won't have this luxury. Therefore, when choosing frames for these smaller units, try to pick some with empty cells, that way leaving room for growth.

The typical five frame nuc. When putting one of these together, use two frames of honey/pollen and two frames of brood (not eggs or just hatched larvae). In the center add a frame of foundation, not comb. Remember, this nuc needs room to grow.

When you have chosen all the frames you need, replaced the empty slots with frames you had on hand (see below) and placed the nuc in its final spot, it's time to introduce the queen.

Remove the cork from the candy end of the queen cage and slide it into the entrance of the nuc with the screen facing up. Use your hive tool to push it back as far as you can. See that it is just to one side and under the middle frame(s). This way the bees will have easy access to her. Remember to remove the cork or disc from the candy side. I recall coming back to one of my nucs a week after queen introduction to check on queen acceptance and there she was, healthy as can be but still in her cage because I forgot to pull the cork.

I always check after four or five days to see how she's doing. Merely finding the empty queen cage does not constitute queen acceptance however. If she is not in the cage, fine! She has been released. Now look for eggs. Find them in the empty cells you provided and examine the pattern. Are they well placed? In the center of the cells or are they laying against the cell sides? Qualify that queen right now or certainly within the next week.

"So that's all that's to it" you say.

Continued on Page 232

NUCS ... Continued from Page 230

Well no, not really, because even though you have accomplished all the big moves, you'll find out that it's the little things that count ... that are ever so important.

Below is a check list, or a duty list if you will, of the things you should be on the look out for, and that should get done so you are successful...

1. Locate the Nuc where the final colony will reside. Don't make the nuc on one side of your yard when you know you want the colony setup on the other side. Incidentally, if you make your nuc in the same yard as the parent, don't be concerned when some of the foragers fly back to the parent; it's the nurse bees that you want with the nuc. However, if not enough bees came along with the brood frames, shake a few off of some other brood frames into the nuc and return the shook frames back to the parents.
2. Stuff the nuc's entrance with grass or paper and cover the nuc as each brood frame is added. If possible, do your nuc building in the afternoon, and keep the nuc closed until the next morning.
3. Plan ahead and have ready a like number of frames to replace those that you remove from the parent colonies. Even when you have comb available as replacement frames I prefer foundation because it gives the adult colony something to do, right around swarm time. Certainly reducing congestion in the brood nest during this time of year will reduce swarming.
4. Plan your adventure well ahead to allow purchase and delivery of your Queen to arrive the day of your nuc-making or at least not earlier than the day before. An early April call for a mid-April or early May project should be adequate.

NEW NUC MATH

First —

- A competent queen lays about 1200 eggs daily, if sufficient pollen is stored from last summer;
- And, enough bees are present to incubate the brood from this amount of output.
- And the latter part of February and March are not subzero.

Remember —

- A deep frame of foundation contains about 3500 cells per side — (7000 both sides). Figure 5000 cells per total frame since *not* all cells are used.
- Then it will take the queen four days to fill one frame with eggs. (1200 eggs per day multiplied by 4 days = 4800 cells = 1 frame).
- Egg to adult worker = 21 days.
- So, in 35 days, there will be between seven and eight frames of brood — in all stages. Then, 35 days divided by (four days per frame) = eight frames ... plus one complete emergence of adults, plus another emergence in one week.
- So far, this has been five weeks, or 35 days that began Feb. 20th.
- Then, from Feb. 20th, 21 days until March 14th when 1200 bees emerge.
- Figure that another 1200 bees emerge *everyday* after that.
- Which means that from the 15th of March to April 1st you have 20,000 bees!
- And from April 1 to May 1 — you have yet another 30,000 bees!

So —

- 20,000 plus 30,000 = 50,000 bees (less some attrition).

There's not much room inside come May 1st because it takes one cell of pollen plus one cell of honey for each new bee to be raised!

Of course, if you have several colonies, one of them could serve as a Queen Bank. If you are going to make several nucs, you might order several Queens. What do you do with them? Well, choose one colony to be your Queen Holding Colony. Remove the outer and inner covers on a colony *without* surplus supers. Add two Queen Excluders, one on top of the other, right over the top bars. Place your Queen Cages screen face down, on top of the two Queen Excluders. Make or devise a shallow rim (super) 2"-3" high and place this on top of the excluders. This provides the necessary room over the queen cages when the inner and outer covers are replaced.

The Queen Bank bees will feed and care for your queens until you are ready to use them. Be certain that the corks and discs on the queen cages are firmly in place. If one escapes, she can, conceivably, kill the other queens.

5. After you have introduced the queen cage remove some of the grass stuffed in the entrance, by the next morning for sure. The entrance is closed only to hold the bees inside until they realize that they have a Queen.
6. When selecting the brood frames for the nuc, it is imperative that they do not contain eggs, or larvae that have just hatched. If either is present it will make the acceptance of your new Queen quite difficult, if not impossible. Also, watch for the parent queen. Do not accidentally move her out.

Underside of nuc cover to display screening method over feeding hole.

7. Fit a home made entrance reducer to the nuc box with an opening that will allow a couple of bees to pass each other. It will prevent this little colony from being attacked and robbed out. After a week or so you will notice strength shown at the entrance by the number of bees moving in and out. An inspection will probably reveal emerged brood and re-egged cells. Judgement at this time may permit a larger entrance opening. Do not open it fully just yet; another week, perhaps two, and they can defend their new home.
8. Feeding a nuc sugar syrup is important if it is to build up rapidly. A 1:1, sugar:water solution is fed with the use of a boardman-type feeder in the entrance.

   If skunks and raccoons give you any trouble with the feeder, then use the cover method. Make a hole in the center of the cover which will permit the feeder cap to fit snugly. Screen the underside of the hole so that changing jars will be effortless. Make sure the bees can reach the cap on the jar. Use another box of some kind (super) to hide the jar of syrup. If they (the skunks) don't see it they won't bother it.

If you go into the business of making nucs, a considerable amount of inventory may be built up. These can be made new or from pieces salvaged from your old 10-framers. Either way, remember, it is a cost to store these and it must be considered when selling the product.

9. Very few of us are aware of the tremendous activity inside a colony from late February to the first of May. In order to qualify the parent colony or colonies upon which you will draw the "makings" of the nuc, this concept of the activity will be helpful. See "New Nuc Math"

When your nucleus finally becomes a flourishing colony you have reached the first rung on the ladder of Self-Dependence. There are more, but none more important. Enjoy the challenge, and the results. □

For more information on making or selling nucs, you can contact Ed at 3 Whipstick Rd., Wilton, CT 06897.

BEE TALK

RICHARD TAYLOR

9374 Route 89, Trumansburg, NY 14886

"Here's how to get lots of apple honey AND money for pollination at the same time!"

We got a fairly warm day in mid-February, so I drove around a couple of my apiaries to get an idea how well they were wintering. I didn't take any smoker or anything. In one yard of eighteen colonies I got the impression that three were dead, and in the other yard, of fifteen colonies, it looked like four were probably dead. That's got to be tracheal mites, because I never lose a colony to starvation. All the hives were heavy with stores. But what I'm pleased about is that the loss to mites is not worse. I don't use menthol or anything else, nor do I ever feed sugar syrup. My view is that tracheal mites take advantage of colonies that are already weakened, by hunger or some other form of stress. If the bees are all in good condition in the fall, strong and heavy with stores, then the tracheal mite loss will be negligible. Come spring, I'll just split some combs of brood and bees from my other colonies and give them to the mite-killed ones, requeen, and I'll be ready to go again.

What I really want to talk about this time, though, is a highly productive system of beekeeping that has been developed by some of the members of our bee club. The basic system was devised by Mr. Louis Cranson, who doubles his honey crops by means of it. But recently I was talking with Mr. Duane Waid, who has combined the system with a highly profitable system for renting some of his bees out for pollination and at the same time doing what very few beekeepers are able to do, namely, get an early, harvestable crop from the apple trees.

Here is how Mr. Waid does it.

Around the first of April he reverses each colony. (All of his bees are wintered in two full-depth hive bodies). This reversal puts the heaviest story and, almost invariably, the queen, on the bottom. About three weeks later, around April 20, he slips a queen excluder between the two stories. A few days later he checks to make sure the queen is in the bottom, by seeing which half has eggs, and, in the unlikely event that she is not down there, he finds her and puts her there. At the same time, he replaces the queen excluder with an inner cover, and inserts a little stick or pebble on the inner cover edge, to the back, to provide an entrance for the bees in the top, and he requeens this top story. A few days after that, around the first of May, when the apple orchards are getting ready to bloom, he sets that top story, with its new queen, off to one side on another bottom board, gives it a shallow super or two, and adds a full-depth super of extracting combs to the hive that was left on the original stand, with the old queen. That hive, with the old queen, is now ready to go to the orchards, but one other easy manipulation is needed first; namely, three or four combs of brood from the bottom story are exchanged for empty combs from the top, making sure the queen does not get moved up accidentally, and the queen excluder is left in place between the two stories.

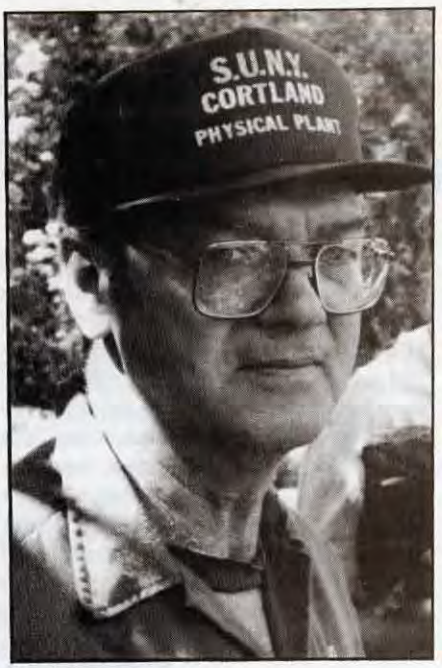
That is to keep an open brood nest down below, or in other words, empty combs for the queen to lay eggs in. That keeps swarming down. Mr. Waid found that, before he started doing that, his bees were doing a better job producing swarms in the orchards than gathering apple blossom honey. But that simple step, of exchanging brood combs for empty ones, solved that problem.

So then the bees are moved to the orchards, very early in May, before the bloom comes on. Mr. Waid gets nice big cash pollination fees for this, and each year rents out about sixty to eighty colonies. And there is a bonus, in the form of a crop of delicious apple blossom honey, about a ton of it, which Mr. Waid gets extracted early in the season and sold at a premium price, before it can get mingled with other sources.

When the fruit bloom is over, Mr. Waid moves the bees back to their apiaries, setting each colony down next to the half that was left there, and proceeds to get the remaining honey flows off the hives and extracted in October. Thus does this outstanding beekeeper not only get a bountiful honey crop, including the honey from fruit bloom, which most beekeepers are seldom able to harvest, he also gets the pollination fees.

It will have been noticed that, when the two-story hives are divided and the queenless half requeened, that requeened half was put *on top* of the other, over an inner cover. The reason for this is to produce maximum population for the part that is going to be moved to the orchards. A hive used for pollination needs not only lots of bees, but lots of foraging bees. So then, when that top story is set off on its own stand, a few days later, and the other story gotten ready for the move to the orchards, the foraging bees all join the hive that is going to the orchards, resulting in a colony that is not only up to the job of pollinating, but of getting that apple blossom crop as well.

Mr. Cranson, the originator of this



Louis Cranson

basic system who uses his bees only for honey production and not for pollinating, does things a little differently. For one thing, he does everything a few weeks later, since he does not have to race against the impending fruit bloom. And he sets the requeened half off to one side from the beginning, rather than on top of the other half, thereby keeping the two halves more or less equal in population, to get maximum production from each. But otherwise, the systems are much the same. □

(Questions and comments are welcomed. Enclose stamped envelope for prompt response. Use Trumansburg address. No phone calls, please.)

QUESTIONS? ANSWERS!

Richard Taylor

Get To Work!

Q. I move my apiaries three times each year, to catch the flows from huckleberry, wildflower and fireweed, and average about 150-200 pounds per colony. I added a standard two-story hive to my apiary to try producing some round sections, but had no luck. The bees never went up into the supers in any significant numbers, even though that colony was as strong as my others. How come? How do you get the bees to work in round section supers?

Leo M. Chandler
Rochester, WA

A. To produce section comb honey, whether round or square, you need at least one intense honey flow. A succession of moderate flows will not give good results. In addition, it is usually necessary to use a small hive, in order to crowd the bees into the supers. This can be done either by using a one-and-a-half story hive year round, as I do, or, more laboriously, by reducing the hive to a single story when the flow begins. In general, the bees will not make much use of section supers until they have made maximum use of their regular, full-size combs. It is very easy to produce comb honey once these basic principles are applied and swarm prevention measures are put in place.

Long Live The Queen

Q. I have three colonies each in full two-story hives which I wish to divide without, if possible, having to find the queens, requeening the queenless halves. What is the best way to do this? Do I set the top story off to one side after shaking most of the bees off and then insert the new queen cage after releasing the attendant bees? And should the queen cage be dipped in sugar syrup?

B. P. Lockstampfor
Newport News, VA

A. It is not necessary to locate the queen before splitting a colony. Some beekeepers, including myself, have had success by simply setting the bottom story off on a new bottom board and hive stand and letting whichever half was made queenless raise its own queen. But a better method is as follows: Set the bottom story off on a new hive stand, leaving the top story, containing most of the honey, on the original stand. (This will prevent the bees from robbing the honey out and taking it back home, that is, to the original stand.) The original queen should also remain at the original stand, so that moved half, containing mostly young bees, will be the queenless half, (the older flying bees having all returned to the original stand). Make sure the hive on the new location has at least three, preferably more, combs with brood in them. Now, if you have reason to think the old queen is at the original stand, where she should be, just insert the new queen and cage, attendants and all, between two frames of the moved hive, and the job is done. If you do not know where the old queen is, wait four days and see which half has eggs in the combs. If she's on the original stand, proceed as above. If she's in the moved half, remove the attendant workers and requeen the other half. Note that it is much easier to get the moved half requeened, since it will be made up almost entirely of young, gentle bees.

Nosema

Q. I lost several colonies this winter, apparently to nosema. The fronts of the hives and tops of the frames are stained from dysentery. Some of the combs still have lots of honey in them. Can these combs be given to surviving colonies without undue risk of spreading nosema?

Douglas Lake
Dedham, MA

A. Yes. I have found that bees are able to control and overcome nosema once the weather warms up, the hives become well-ventilated, and the bees are able to fly daily.

A Warm Bath, Please...

Q. Last summer my bees used my neighbor's birdbath for a water source. I put a birdbath in my own yard, but the bees ignored it. How can I keep the bees away from my neighbor's birdbath?

Albert Morgan
Austin, TX

A. Have your own birdbath in the warm sun, try to get your neighbor to leave his dry this spring until your bees have become oriented to yours, and see whether your neighbor would be willing to put his in a shadier spot. Bees like to sip water from a warm source and, once they have found a suitable source, it is very hard to get them to change.

Time's Up!

Q. Most experts say that a hive should not be worked too long at any one time. What is too long? And is the reason security from other colonies or does the colony itself suffer from extended intrusions?

W. S.
Montclair, NJ

A. This advice seems to me virtually meaningless. There is no particular harm in opening up a hive for an extended period on a nice warm day, and there is no danger of stimulating robbing except during periods of dearth of nectar. But there also is no point in opening a hive and just fooling around with it. In general, do not open a hive except for a specific purpose, and then, having done what needed to be done, however long that may take, close it up.

(Questions are welcomed. Enclose stamped addressed envelope for prompt response. Address: Dr.Richard Taylor, 9374 Route 89, Trumansburg, NY 14886. No phone calls please.)

GLEANINGS GLOBE

APRIL, 1990 ALL THE NEWS THAT FITS

42 Years of Bees

JACK MATTHENIUS RETIRES AS NJ STATE APIARIST

JACK MATTHENIUS

Jacob C. Matthenius will retire as State Apiarist as of March 1990, after 42 years of service to the beekeeping industry.

Jake started with the New Jersey Department of Agriculture in 1947 as Deputy Bee Inspector. In 1953 he became Inspector of Bee Culture, under Mr. Paul Holcomb. Jake became supervisor of Bee Culture in 1956. In 1980 he became the State Apiarist for New Jersey.

He was the first to use ethylene oxide to fumigate diseased bee equipment in the U. S. He developed a pollen trap to reduce beekill during aerial spray programs, for which he received the New Jersey Taxpayers Association Award in September, 1976, for improving the service and decreasing the cost of Government.

Mr. Matthenius also worked with the United States Department of Agriculture in many cooperative research projects for which he received recognition. New Jersey was the first to do research with menthol to reduce the damage from tracheal mites in colonies of honey bees with the assistance of USDA.

While in high school Jake was employed by the Stricker Apiaries painting and repairing equipment and assisted in the management of 1,000 colonies for pollination and honey production.

In October of 1950, he was inducted into the United States Army during the Korean War and returned to the New Jersey Department of agriculture in November, 1952.

Jake was involved in many organizations and served as past president of Eastern Beekeeper Pollination Association, Professional Apiculture Society, Eastern Apiculture Society of North American, New Jersey Beekeepers Association, and North West Jersey Beekeepers Association. He edited the New Jersey Beekeeping newsletter for the last 25 years. He also served as Chairman of The Board of Directors for the Eastern Apiculture Society of North America for five and one half years and edited the *Eastern Apiculture Society Journal* for the first twelve years of its existence. Jake assisted in teaching Beekeeping Short Courses at Rutgers University, New Brunswick, New Jersey and Delaware Valley College, Doylestown Pennsylvania for thirty years.

Tradition Continues

1990 HONEY ROYALTY CROWNED IN VEGAS

Vanessa Polley was selected as the 1990 American Honey Queen at the American Beekeeping Federation's Las Vegas convention. She is from Morristown, TN.

The 1990 American Honey Princess is Ann Kerian of Minot, N.D.

MITE RESISTANT BEES RELEASED

Imported honey bees that were bred for resistance to Varroa mites in Yugoslavia were brought out of quarantine this week to be studied at a USDA bee lab in Baton Rouge, LA in early March.

Thomas E. Rinderer said the lab will study the bees to see how they resist mite attack, in hopes of learning how to check a colony for resistance and then breed for it. They would then pass the findings on to breeders.

"That way, breeders would always have the technology to produce resistant bees to sell to

See page 239

TABER MOVES TO FRANCE

Steve Taber, of Honey Bee Genetics, Vacaville, CA will be moving to France this summer to pursue his research on breeding for mite and disease resistance in honey bees.

Tom Parisian also of Honey Bee Genetics, will continue the U. S. operation, focusing on selecting bees resistant to *Acarapis woodi*, the tracheal mite.

Taber will be living near Toulouse, France and will continue another project started in CA, in cooperation with Dr. Martha Gilliam, USDA, Tucson, AZ, selecting bees resistant to chalkbrood.

"France was chosen because of the reduced restrictions for importing bees", said Taber, "and they are in need of a varroa resistant strain there as much as anywhere."

Losses Increasing

MANITOBA BEEKEEPERS FIGHT MITES, REGULATIONS

The Manitoba Beekeepers Association has begun a fund to help compensate beekeepers for the loss of colonies because of the tracheal mite.

The compensation has been set at C$30 a colony less 10% to account for winter losses. One third of this amount is to be borne by the producer affected and the remaining two thirds to be obtained by the industry, including government participation.

With 620 colonies depopulated, the total amount needed to compensate for 1989 losses is C$12,400. The association believes if the industry raises half of this amount, the provincial government will contribute the other half.

There is no legal vehicle for the association to impose a levy on producers to raise the industry's C$6,200 share. Thus it is asking for contributions on a voluntary basis at the same time warning that failure to raise the money could result in the deregulation of tracheal mites in the province.

"We're hopeing to get menthol registered."

The association has also established a committee to look at ways to implement legislation to enable the collection of a producer levy. Money from such a levy would be used to pay for everything from colony depopulation to research and honey promotion.

Meantime, in the continuing battle against the mite, the association's board of directors, in negotiations with affected producers and the provincial government, successfully proposed that producers with mite infested colonies be allowed to keep their apiaries under quarantine until after the removal of the crop when the colonies would be destroyed. It was also decided that specific yard sites would be set aside for the purpose of conducting tracheal mite control research.

Meantime, with the supply of imported bees from the U. S. cut off, the Manitoba association is concerned that the quality of bees in the province may be declining due to random matings of locally produced drones and queens. To counter this, the association is recommending that it join with the Canadian Honey Council to promote a queen breeding program to maintain high quality disease resistant stock.

The association, noting that it appears menthol can be an effective treatment for tracheal mite, has also decided to ask the federal government to register menthol for the use of beekeepers. It is also supporting the University of Guelph's efforts to introduce mite resistant stock into Canada as quickly as possible.

Manitoba beekeepers reported a mixed year in 1989. Spring and early summer conditions were generally good to excellent for colony build up. However, hot, dry weather that persisted for much of July cut the honey flow short for many beekeepers.

As a result, overall honey production was estimated to be down in 1989 to 140 pounds a colony, compared to 185 pounds in 1988.

With an estimated 87,000 producing colonies in 1989, this resulted in a total provincial production of 12.2 millions pounds, down from 61.3 million pounds the previous year.

Those 87,000 colonies — made up of 81,600 colonies wintered, 2,400 packages imported, and 3,000 domestic nucs, packages and colonies — show a levelling off of a drop in numbers going back to 1985 when they peaked at 120,000.

BRANDI ELECTED ABF PRESIDENT

Bob Brandi of Los Banos, CA was elected president of the American Beekeeping Federation at the organization's annual convention held in Las Vegas, January 15-19. Mr. Brandi operates a commercial honey production and pollination business. He migrates to North Dakota for summer honey production.

Don Schmidt, a commercial honey producer from Winner, SD was elected to succeed Mr. Brandi as vice president.

New members of the ABF Executive committee are Anita Collins of Weslaco, Texas, and Dave Hackenberg of Lewisburg, PA. Re-elected to the Executive Committee was Bill Shearman of Wimauma, FL. Incumbent committee members are Ed Doan of Hamlin, NY and David Sundberg of Fergus Falls, MN. Past President Reg Wilbanks of Claxton, GA completes the Executive Committee.

The convention was the Federation's first in Las Vegas, and the venue proved not to be distractive to the conduct of ABF business.

Mite Resistant Bees Released,

Continued

beekeeper clients", said Rinderer of USDA's ARS.

Rinderer said the imported bees, quarantinedoff the Louisiana coast, were bred in a five-year joint project between the ARS Lab in Baton Rouge and Jovan M. Kulincevic of the PKB Institute "Agroekonomik" in Belgrade, Yugoslavia. USDA's Office of International Cooperation and Development sponsored the project.

Kulincevic did the bee breeding at his lab. "He had already started to look for resistance before we discovered the mite in Wisconsin and Florida," Rinderer said. "So, we thought we should benefit from those three or four years of work instead of starting over."

After importing the resistant bees from slavia last August, Rinderer and agues quarantined them on Grand Terre Island, about 32 miles off the cosst of Louisiana, to ensure they carrid no exotic disease or parasites.

To find more resistant colonies, Kulincevic periodically fumigated hives to kill Varroa mites infesting bee hives. Then he let hives naturally reinfest and fumigated again, this time counting the number of mites that fell to the bottom of the hive. He noted which hives had fewer mites and were therefore less prone to mite attacks.

He took the most resistant bees and bred new generations from them.

Display Index

1990 Directory of Who's Who in Apiculture

Who's Who is a handy reference of State and Provincial Apiary Inspectors, Beekeepers' Associations, Extension Workers in beekeeping, and other information needed by readers and Industry Leaders, effective April 1, 1990.

State or Province	Bees on Combs Admitted	Apiary Register. Required	Fee	Secretary — State Association Address & Phone Number
AL*	Not Allowed	Yes	Yes	Bill Gafford, 1121 Mobile Rd., Greenville, 36037
AK	None	No	No	Fletcher Miller, Box 140173, Anchorage, 99508, Ph. (907) 338-4694
Alt.*	Not Allowed	Yes	No	Jean Guilbault, 12919 135th St., Edmonton
AZ*	Cer. & Per.	Yes	No	Barbara Stockwell, Box 368, Arivaca, 85601, Ph. 398-2366
AR*	Cer. & Per.	Yes	No	Darrel Jester, Rt. 1, Box 489, Osceola, 72370
B.C.*	Not Allowed	Yes	No	Steve Mitchell, 4321 Majestic Dr., Victoria, V8N 3H1, Ph. (604) 477-9248
CA*	Certificate	Yes	No	Carol Penner, 19980 Pine Creek Road, Red Bluff, 96080
CO*	Cer. & Per.	Yes	Yes	Mrs. Tom Jones, 605 No. Columbus, Yuma, 80559
CT*	Cer. & Per.	Yes	No	Isabelle Muzekevik, 226 Charter Oak St., Manchester, 06040, Ph. (203) 649-1746
DE*	Cer. & Per.	Yes	No	Robert Mitchell, 2320 S. duPont Hwy., Dover, 19901, Ph. (302) 736-4811
FL*	Cer. & Per.	No	No	Ms. L. Cutts, 2237 NW 16th Ave., Gainseville, 33156
GA*	Pending	Yes	No	Cecil T. Sheppard, 4054 Briarglade Way, Doraville, 30340-5112, (404) 491-3734
HI*	Not Allowed	No	No	Lee Ong Chun, 2115 N. School St., Honolulu, 96819, (808) 841-6440
IA*	Cer. & Per.	Yes	No	Dan Sowers, Rt. #2, Maxwell, 50161, Ph. (515) 387-8814
ID	Certificate	Yes	Yes	Jim Ellis, 3615 W. Idaho Blvd., Emmett, 83617, Ph. (308) 265-2732
IL*	Cer. & Per.	Yes	No	Rita Taylor, Rt. 2, Box 249, Pleasant Plains, 62677, Ph. (217) 626-1319
IN*	Cer. & Per.	Yes	No	Claude F. Wade, Room 613, St. Of. Bldg., Indianapolis, 46204, Ph. (317) 232-4120
KS*	Cer. & Per.	Opt.	Yes	Ron Fleming, Box 818, Ogden, 66517, Ph. (913) 776-4560(H), (913) 532-6702(W)
KY*	Cer. & Per.	Yes	Yes	Wilbur Hudson, 1525 Conner Rd., Hebron, 41048
LA*	Not Allowed	Yes	Yes	Jim Stotts, 222 Lyons St., Lafayette, 70506 (318) 981-8470
Man.*	Not Allowed	Yes	No	Don Dixon, 911 Norquoy Bldg., Winnepeg R3C 0P8, Ph. (204) 945-3861
ME*	None	Yes	Yes	Helen Brown, 239 Greenly Rd., Cumberland, 04021
MD*	Permit	Yes	No	John Romanik, 3200 Pine Orchard Lane, Ellicot Cit, 21043, Ph. (301) 465-1809
MA*	Cer. & Per.	Pend.	Pend.	Ellis B. Hayden, Jr., 62 Main St., Norfolk, 02056, (617) 528-5362
MI*	Cer. & Per.	Yes	Yes	Millie Hathaway, P. O. Box 333, Suttons Bay, 49682, (616) 271-3192
MN*	Cer. & Per.	Yes	Yes	Gary Oberton, RR 1, Box 89A, Randall, 56475
MS*	Pending	Yes	No	Harry R. Fulton, P. O. Box 5207, Mississippi State, 39762, (601) 325-3390
MO*	Cer. & Per.	No	No	Jim Thaxter, Rt. 4, Box 60E, Moberly, 65270, (816) 263-2694
MT	Cer. & Per.	Yes	Yes	Gloria Buhmann, P. O. Box 861, Zurich, 59547, Ph. (406) 357-3558
NE*	Cer. & Per.	Yes	No	Sally Leu, Rt. 4, Box 194, Norfolk, 68701, (402) 371-0636
NV*	Permit	Yes	Yes	Bill Goff, 14060 Edmands Dr., Reno, 89511, (702) 851-1888
N.B.	Not Allowed	Yes	No	Fred B. Ervine, Site 3, Box 13, R. R. #9, Fredericton, NB, E3B 4X9
NH*	Certificate	Yes	No	Franics W. Dodge, P. O. Box 91, Goffstown, 03045, Ph. 497-4507
NJ*	Certificate	No	No	Gary L. Bradshaw, 32 Hewitt Rd., Stockton, 08559, Ph. (201) 996-6331
NM*	Certificate	Yes	Yes	Mrs. Betty J. Cole, 600 N. Bosque Loop, Bosque Farms, 87068, Ph. (505) 869-2841
NY*	Certificate	No	No	Judith A. Doan, 1263 Redman Rd., Hamlin, 14464, (716) 964-3121
NC*	Not Allowed	No	No	John Ambrose, Box 7626, NC State Univ., Raleigh, 27695-7626, Ph. (919) 737-3183
ND*	Cer. & Per.	Yes	Yes	Mike Stewart, R. R. 1, Box 87C, Rolette, 58366, Ph. (701) 246-3741
N.S.*	Not Allowed	No	Yes	Earl Blades, P. O. Box 550, Truro, B2N 5E3, (906) 895-1571
OH*	Cer. & Per.	Yes	Yes	Jim Thompson, 8227 Eby Rd., Smithvile, 44677, (216) 669-3352
OK*	Cer. & Per.	Yes	No	Glenda Ross,Rt. 2, Box 35, Mineo, 73059, (405) 352-4125
Ont.*	None	Yes	No	Patricia Westlake, RR #3, Bayfield, Ont. NOM 1G0, (519) 565-2622
OR*	Certificate	Yes	Yes	Phyllis Shoemake, 1874 Winchester, Salem, 97304, Ph. (503) 364-8401
PA*	Cer. & Per.	No	No	Yvonne Crimbring, R.D. 1, Box 315, Canton, 17724, (717) 673-8201
P.E.I.*	Not Allowed	Yes	No	G. Paynter, P.O. Box 1114, Charlottetown, C1A 7MB PEI
P. Rico	Not Allowed	No	No	Tito Nieves, P. O. Box 471, Lares, 00669
Que.*	Not Allowed	No	No	L. Dion, C.P., 656 St. Hyacinthe, Que.
RI*	Certificate	Yes	No	Bernard Bieder, 140 Coldbrook Rd., Warwick, 02888, Ph. (401) 463-8654
Sask.*	Not Allowed	Yes	No	Sandra Slusar, Box 306, Nipawin, SOE 1EO, (306) 862-2404
SC	Certificate	No	No	William L. Baker, 2663 Ford St., Sumter, 29150
SD*	Cer. & Per.	Yes	Yes	Bret Adee, Pox 368, Bruce, 59220, (605)627-5529
TN*	Cer. & Per.	Yes	No	William D. Lane, 5801 Vassar St., Memphis, 38119, (901) 683-7494
TX*	Cer. & Per.	Yes	Yes	Marilyn Wilkerson, 3800 Hatcher, Waco, 76705
UT	Certificate	Yes	Yes	William R. Jones, 286 Andrew Lane, Murray, 84107
VT*	Limited	Yes	No	Michele Beebe, 116 State St., State Office Bldg., Montpelier, 05602
VA*	Cer. & Per.	Yes	No	Rick Fell, VA Tech. Price Hall, Blacksburg, 24060
WA*	Certificate	Yes	No	Alice Bounds, P. O. Box 602, Toppenish, 98948, (509) 865-2279
WV*	Cer. & Per.	Yes	No	Ron Duncan, Rt. 3, Box 176A, Bridgeport, WV 26330, (304) 842-4567
WI*	Cer. & Per.	No	No	Judy Lapp, 500 S. Main St., Reeseville, 53599, (414) 927-3848
WY*	Certificate	Yes	Yes	Richard Sackett, SR1, Box 39A, Sundance, 82729

*Publish a newsletter sent to State Association Members

State or Province	Beekeeping Professor (Write: cc/o State Univ.)	Beekeeping Extension (Write: c/o State Univ.)	Inspectors (Write: Dept. of Agric., State Capital)
AL	Dr. James H. Cane	Eric Benson, (205) 844-6393	Guy Karr, Montogmery 36193
AK	n/a	Wayne Vandre	John Cramer, Bx 949, Palmer 99645
Alta.	Dennis McKenna	D. MacDonald, Falher TOH 1MO	D. Colter, Falher, TOH 1MO
AZ	Eric H. Erickson, Tucson	n/a	Larry Sanford, Phoenix 85007, 255-4393
AR	n/a	Dr. L. O. Warren, Fayettville	Donald E. Bailey, Little Rock 72205
B.C.	Dr. Mark Winston, Burnaby	Douglas McCutcheon,(604) 576-2911	Douglas McCutcheon, Surrey V35 4W7
CA	Dr. Norman Gary, Davis	Dr. Eric C. Mussen, Davis	James Paswater, Sacramento 95814
CO	Dr. Robert Simpson, Ft. Collins	n/a	Leslie A. Zermuehlen, Denver 80203
CT		Dr. Louis Magnarelle New Haven	Harold Nelson, P. O. Box 1106, New Haven, 06504, (203) 789-7236
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FL	Dr. M. Tom Sanford, Gainesville	Dr. M. Tom Sanford, Gainesville	Laurence Cutts, Gainesville, 32602 (904) 372-3505, Ext. 128
GA			Dr. Keith Delaplane, Atlanta 30334 (404) 542-3685
HI	n/a	n/a	George Funasaki, Honolulu, 96814
ID	n/a	Lois Nadonly, (208) 334-2986	Dr. Roger Vaga, Boise 83707
IL	Gene Robinson (217) 333-6843	E. E. Killion, Paris	Scott Beam, Springfield, 62974
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KS	n/a	n/a	Gary R. Ross, Topeka 66612, (913) 296-3016
KY	Dr. Glenn Hayes, Richmond	Dr. R. Scheibner, Lexington	Dr. R. Schiebner, Lexington
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ME	n/a	Anthony Jadczak, Augusta	Anthony Jadczak, Augusta 04333
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MD	Gordon Allen-Wardell	Gordon Allen-Wardell, College Park	Barton Smith, Jr., Annapolis 21401
MA	Richard Bonney, Amherst	Richard Bonney, Amherst	Alfred R. Carl, Jr., Springfield 01089 (413) 736-2764
MI	Dr. R. Hoopingarner, E. Lansing	Dr. R. Hoopingarner, E. Lansing	Sitaraman Ravagopal, Lansing 48909
MN	Dr. Basil Furgala, St. Paul	Dr. Basil Furgala, St. Paul	Blaine White, St. Paul 55107 (612) 246-0591
MS	Dr. Clarence Collison	n/a Dr. James Jarratt, Starkville, MS	Harry R. Fulton, Starkville 39762 (601) 325-3390
MO	Dr. Flernoy Jones, Columbia	Dr. Flernoy Jones, Columbia	Joseph Francka, Jefferson City 65102
MT	n/a	n/a	Willard A. Kissinger, Helena 59601 (406) 444-3730
NE	Cliff Walstrom, Lincoln, 68583	Fred Bayendale, Lincoln	Marion D. Ellis, Lincoln 68509
NV	Dr. Harold Arnett, Reno	n/a	John O'Brien, Dept. of Ag., Reno 89510 (702) 789-0181
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NC	Dr. John Ambrose, Raleigh	Dr. John Ambrose, Raleigh	Logan Williams, Raleigh 27647 (919) 733-3610
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NJ	n/a	n/a	Pending
NM	n/a	n/a	Carol Sutherland, Las Cruces 88003
NY	Dr. Roger A. Morse, Ithaca	Dr. Roger A. Morse, Ithaca	Robert J. Mungari, Albany (518) 457-2734
ND	Dean McBride, Fargo 58103	Dr. Dennis Kopp, Fargo	Judy Carlson, Bismarck 58505 (701) 224-4997
N.S.	n/a	Dick Rogers, Truro	Dick Rogers, Truro (906) 895-1571
OH	n/a	Dr. James Tew, ATI, Wooster	Gordon Rudloff, Reynoldsburg 43068
OK	Dr. William A. Drew, Stillwater	Darrell Suffridge, Ext. Ctr., Ada	Nancy Lovelace, 2800 N. Lincoln, OK City 73105, (405) 521-3864
Ont.	Dr. C. Scott-Dupree, Guelph	Doug McRory, Milton	Doug McRory, Milton L9T 3J7 (519) 767-3124
OR	Dr. D. M. Burgett, Corvallis	Dr. D. M. Burgett, Corvallis	David Turner, Salem 97310
PA	Dr. Robert Berthold, Doylestown	n/a	James Steinhauer, Harrisburg 17120 (717) 787-4843
P. E. I.	n/a	Elaine Clark, Charlottetown	Elaine Clark, Charlottetown C1A 7J8
P. Rico	Dr. M. Moya, Quintana	Jose Munoz, Humacao	n/a
Que.	Dr. J. Louis Villeneuve, Sainte Foy	Dr. J. Louis Villeneuve, Sainte Foy	Armand Methot, Granby
RI	n/a	n/a	Robert Relli, N. Scituate, 02857
Sask.	John Gruska, Prince Albert	John Gruszka, Prince Albert	John Gruszka, Prince Albert
SC	Dave Alverson, Clemson	Mike Hood, Clemson	Mike Hood, Clemson 29621 (803) 656-3006
SD	Dr. Robert Walstrom, Brookings	n/a	Bob Reiners, Pierre 57501
TN	Dr. Charles Pless, Knoxville	Harry E. Williams, Knoxville	Thomas Hart, Nashville 37204 (615) 360-0137
TX	Dr. Bernard Vaisierere, Col. St.	Dr. John Thomas, College Station	Paul Jackson, College Station 77843
UT	Prof. Wm. P. Nye, Logan	Jay B. Karren, Logan	Ed Bianco, Salt Lake 84116
VT	n/a	n/a	Richard Drutchas, Montpelier 05602
VA	Dr. Richard Fell, VPI, Blacksburg	Dr. Richard Fell, Blacksburg	Frank Fulgam, Richmond 23209
WA	Dr. Dan Mayer, Prosser	Dr. Dan Mayer, Prosser	James C. Bach, Olympia 98504 (206) 872-6005
WV	Dr. James Amrine, Morgantown	n/a	Mat Cochran, Charleston, (304) 348-2212
WI	Dr. Walter Gojmerac, Madison	Dr. Walter Gojmerac, Madison	Marlin Conrad, Madison 53707
WY	n/a	n/a	Walter Patch, Cheyenne 82002

Industry Organizations

- **American Bee Breeders Association.** Sec-Treas. Coralyn Harrell, Hayneville, AL.
- **American Beekeeping Federation.** Sec.-Treas., Troy Fore, P.O. Box 1038, Jesup, GA 31545.
- **American Honey Producers Association.** Richard Adee, P. O. Box 368, Bruce, SD 57220, (605) 627-5621.
- **Apiary Inspectors of America.** Pres., James Bach; Washington Dept. of Agric., Plant Services Branch, P. O. Box 1064, Kent, WA 98032;
- **Eastern Apicultural Society of North America, Inc.** Sec. Loretta Surprenant, Miner Institute, Chazy, NY 12921, (518) 846-8020.
- **Western Apicultural Society of North America.** Eric Mussen, Entomology Extension, University of CA, Davis, CA 95616.
- **Honey Industry Council of America.** Binford Weaver, Rt. 1, Box 256, Navasota, TX 77868, (409) 825-2312;
- **Ladie's Auxiliary of ABF.** Kathi Brandi, 1518 Paradise Lane, Los Banos, CA 93635;
- **National Honey Board.** Chairman, Dan Hall, 9595 Nelson Road, Longmont, Colorado, (303) 776-2337.
- **Mid-U.S. Honey Producers Marketing Association.** Gary Reynolds, Box 363, Concordia, KS 66901, (913) 243-3619;
- **National Honey Packers & Dealers Association.** Neil Miller, Miller Honey Farm, 1167 N. 600 W., Blackfoot, ID 83221.
- **Professional Apiculturists Association.** Malcolm T. Sanford, Entomology Extension Dept., University of Florida, Gainesville, FL 32611, (904) 392-1801.
- **Southern States Beekeepers Federation.** Dr. John Ambrose, Dept. of Entomology, Box 7626, Raleigh, NC 27695, (919) 737-3140.
- **The Canadian Honey Council.** Pres., Roger Congdon, R. R. #1, Cottam, Ontario NOR 1BO.
- **Canadian Association of Professional Apiculturists.** Don Dixon, 911 Norguay Bldg., Winnepeg, Manitoba R3C OP8;
- **Agricultural Technical Institute, Beekeeping.** Dr. James Tew, Wooster, Ohio 44691. 1-800-647-8283.

Government Agencies

- **USDA — Agricultural Research Service.** National Program Staff, Dr. James E. Wright, Room 225, Bldg. 005, BARC-W, Beltsville, MD 20705. (301) 344-3301.
- **Beneficial Insects Lab.** Dr. John J. Drea, Rm. 100, Bldg. 476, BARC-East, Beltsville, MD 20705. (301) 344-2205.
- **Honeybee Breeding and Genetics & Physiology Research Lab.** Dr. Thomas E. Rinderer, Research Leader, 1157 Ben Hur Rd., Baton Rouge, LA 70820. (504) 766-6064.
- **Agric. Research Service.** Dr. Anita Collins, Research Leader, 509 W. 4th St., Weslaco, TX 78596. (512) 968-3159.
- **Bee Biology & Systematics Laboratory.** Dr. John Vandenberg, Laboratory Leader, Utah State University, Logan, UT84322-5310.
- **Carl Hayden Bee Research Center.** Dr. Eric H. Erickson, Center Director, 2000 E. Allen Road, Tucson, AZ 85719. (602) 629-6380.
- **Honey Market News.** Linda Verstrate, USDA-AMS, Fruit & Vegetable Div., 2015 So. 1st St., Rm. 4, Yakima, WA 98903. (509) 575-2492.
- **Price Support Program.** Jane Phillips, Commodity Analysis Div., Agricultural Stabilization and Conservation Service, USDA, Washington, DC 20250. (202) 447-7602.
- **Extension Service (Federal).** Dr. Ricardo Gomez, ES USDA PPMS, RM 3347S, South Bldg., Independance Ave., Washington, DC 20250. (202) 447-2471.
- **Biosystematics Research Centre.** Dr. R. J. T. Trottier, Director, Rm. B149, K. W. Neatby Building, Ottawa, Ontario, Canada K1A OC6. (613) 996-1665.
- **Agriculture Canada..** Dr. D. L. Nelson, Dr. T. P. Liu and Dr. T. I. Szabo, Research Station, Research Branch, Agriculture Canada, P. O. Box 29, Beaverlodge, Alta., Canada TOH OCO. (403) 354-2212.

Organizations Dealing with Africanized Honey Bees

■ Government

United States Department of Agriculture (USDA)

Animal Plant Health Inspection Service (APHIS)
- Mr. Charles H. Bare
  6505 Belcrest Road
  PPQ APHIS
  Room 663, FC BG 1
  Hyattsville, MD 20785
- Mr. Ralph H. Iwamoto, Jr.
  APHIS USDA
  US Embassy Mexico City
  P. O. Box 3085
  Laredo, TX 78044

Agricultural Research Service (ARS)
- Dr. Ralph Bram
  NPL ARS
  Insects Affecting Man & Animals
  Room 211, B 005
  Beltsville, MD 20705

Federal Extension Service
- Dr. James E. Tew
  NPL, Apiculture
  Extension Service, USDA
  ATI / The Ohio State Univ.
  Wooster, OH 44691

■ Industry

The American Farm Bureau
- Ms. Ann Sorensen
  NER Div
  American Farm Bureau
  325 Touhy Avenue
  Park Ridge, IL 60068

The American Beekeeping Federation
- P. O. Box 1038
  Jesup, GA 31545
  (912) 427-8447

American Honey Producers
- P. O. Box 368
  Bruce, SD 57220
  (60) 627-5621

International Organizations

- **Int'l. Bee Research Ass'n.** David Francis, 18 North Road, Cardiff, CF1 3DY, UK. Phone: (0222) 372409, Telex: 23152 monref G 8390.
- **Apimondia.** Intl. Fed. of Beekeepers' Ass'n.s: Pres., Raymond Borneck, Rue Du Creux, Montbarrey, France, 3y; Periodical: Apiacta (quarterly).

Regional Associations

ALABAMA
- **ETOWAH CO BEEKEEPERS** — James Walker, 419 Cove Creek Rd., East Gadsden, 35903
- **JEFFERSON CO BEEKEEPERS** — Ms. Robert Musgrove, 3418 Venus Ln., Fultondale, 35068
- **MOBILE CO BEEKEEPERS** — Ben Cox, 7751 Prince James Dr., Mobile, 36619

ALASKA
- **INTERIOR AK BEEKEEPERS** — Stephen Peterson, 1153 Donna Dr., Fairbanks, 99712
- **KENAI BEEKEEPERS ASSC.** — Edmund Knutsen, P.O. Box 1525, Soldotna, 99669
- **SOUTH CENTRAL AK BEEKEEPERS** — Richard Hensil, P.O. Box 141976, Anchorage, 99514

ARIZONA
- **CTRL AZ BEEKEEPERS** — M. Kuzmik, 1544 W. 6 St., Tempe, 85281
- **SABA** — Ed Lusby, 3832 E. Golf Link Rd., Tucson 85713

ARKANSAS
- **CTL ARKANSAS BEEKEEPERS** — Bob Sterling, 17 N. Meadow Cliff, Little Rock, 72209
- **WESTERN ARKANSAS BEEKEEPERS** — Anson Gregory, 1520 N. 49th St., Fort Smith, 72904

CALIFORNIA
- **ALAMEDA CO BEEKEEPERS ASSN** — C.C. Rubins, 1 Gable Ln., Lafayette, 94549
- **BEEKEEPERS ASSN, SO CA** — Richard Rosewitz, 18151 Campanario Dr., Rowland Heights, 91748
- **CALIFORNIA BEE BREEDERS** — M C West, 703 Apricot, Winters, 95697
- **HUMBOLDT BEEKEEPERS ASSN** — Bob Hitte, 44 Wagon Jack Lane, Arcata, 95521
- **LOS ANGELES CO BEEKEEPERS** — 9421 Louise Ave., Northridge, 91325
- **NEVADA COUNTY BEEKEEPERS** — P.O. Box 1262, Cedar Ridge, 95924
- **ORANGE COUNTY BEEKEEPERS** — Berta Nagel, 7565 El Escorial Way, Buena Park, 90620
- **SACRAMENTO AREA BEEKEEPERS** — William Taylor, 4821 Arboleda Dr., Fair Oaks, 95628
- **SAN FRANCISCO BEE CLUB** — Nash Khayat, 686 Corbett Ave., San Francisco, 94114
- **SAN FRANCISCO BEEKEEPERS** — Lenore Bravo, 47 Levant St., San

Francisco, 94114
• **SAN FRANCISCO HOBBY BEEKEEPERS** — John McClure, 810 Gonzalez Dr., 2H, San Francisco, 94132
• **SONOMA CO BEE CLUB** — Chuck Sharp, 1246 Enos Ave., Sebastopol, 95472
• **VALLEY HONEY ASSN** — P.O. Box 1241, Stockton, 95201
• **VENTURA BEEKEEPERS** — Mary Eisman, P.O. Box 7554, Ventura, 93006

COLORADO

• **BOULDER CO BEEKEEPERS ASSN** — Lee Brown, 1431 Coring Place, Northglenn, 80233
• **NORTHERN CO BEEKEEPERS** — Michael Whiteside, 1541 W. Hilltop Dr., Loveland, 80537

CONNECTICUT

• **EASTERN CT BEEKEEPERS** — Timothy Grilley, P. O. Box 571, E. Lyme, 06333
• **HAMPDEN CO BEEKEEPERS** — Linda Canders, 108 S. Water St., Warehouse Point, 06088
• **WESTERN CT BEEKEEPERS ASSN** — Ralph Harrison, 46 Oregon Ave. No., Milford, 06460

DELAWARE

• **SUSSEX CO BEEKEEPERS** — Karen Hall, 10th & Arch St., Seaford, 19973

FLORIDA

• **BROWARD CO BEEKEEPERS** — Helena Brown, 3000 SW 26th Terr., Ft. Lauderdale, 33312
• **CENTRAL FL BEEKEEPERS** — Luella Bell, 1058 S. Ridgewood Ave., Deland, 32720
• **ESCAROSO BEEKEEPERS ASSN** — Sylvia Bullard, 9801 Lyman Dr., Pensacola, 32514
• **INDIANA RIVER DIST BEEKEEPERS** — Sara Davis, 4111 Oleander Ave., Fort Pierce, 33450
• **LEE CO BEEKEEPERS ASSN** — W H Lohrey, 107 E Lake Dr., Lehigh Acres, 33936
• **N CENTRAL FL BEEKEEPRS** — Tom Cutts, 1741, NW 7th Ave., Gainesville, 32601
• **NE FL BEEKEEPERS** — Catherine Fleming, 3238 Bessent Rd., Jacksonville, 32218
• **ORANGE BLOSSOM BEEKEEPERS** — Martha Black, P.O. Box 317, Trilby, 34271
• **PALM BEACH CO BEEKEEPERS** — Rosa Durando, 10308 Heritage Farms, Lake Worth, 33463
• **POLK CO BEEKEEPRS** — Charles Moore, 149 Winston Ave., Lake Wales, 33853
• **SOUTH FL BEEKEEPERS** — Ken Tabler, 3821 SE 11th Ave., Cape Coral, 33904
• **SUB TROPICAL BEEKEEPERS** — Lorrain Mann, 15750 SW 217 Ave., Miami, 33187
• **TAMPA BAY BEEKEEPER ASSN** — Diane Cornwell, P.O. Box 5861, Sun City, 33571
• **TUPELO BEEKEEPERS** — Benita Wiggins, Rt. 5., Box 3908, Tallahassee, 32301
• **WEST CENTRAL FL BEEKEEPERS** — A. Murray, Rt. 3, Box 762-B, Summerfield, 32691

GEORGIA

• **ATHENS AREA BEEKEEPERS** — Ronald Carey, Rt. 1, Box 169, Hull, 30646
• **COASTAL EMPIRE BEEKEEPERS** — Alan Townley, 923 Dutchtown Rd., Savannah, 31406
• **MACON BEEKEEPERS** — G. S. Moon, P.O. Box 5153, Macon 31208
• **METRO ATLANTA BEEKEEPERS** — Edwin Trausneck, 690 Farrar Ct., Decatur, 30033
• **SPALDING CO BEEKEEPERS** — J R New, P.O. Box 1000, Griffin, 30223
• **WALKER CO BEEKEEPERS ASSN** — Ms. Louis Huggins, Rt.1, Rossville, 30741
• **WHITFIELD CO BEEKEEPERS** — M. B. Davis, 213 W. Gordon, Dalton, 30720

HAWAII

• **BIG ISLAND BEEKEEPERS** — P.O. Box 116, Hakalau, 96710

IDAHO

• **IDAHO BEEKEEPERS ASSOC** — Golden Millet, 1 Box 8 Bee, Marsing, 83639

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• **COOK-DUPAGE BEEKEEPERS** — Charles Williams, 22W 424 Techwood Dr., Glen Ellyn, 60137
• **CTL EASTERN IL BEE ASSOC** — Audrey Chapman, P.O. Box 297, Gifford, 61847
• **HEART OF IL BEEKEEPERS** — Robert DuBois, 423 N. Lawndale, Washington, 61571
• **IL VALLEY BEEKEEPERS** — John Stopa, 1831 Campbell, La Salle, 61301
• **ILLIANA BEEKEEPERS** — Damita Lewis, 603 N. Main St., Paris, 61944
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• **LAKELAND BEEKEEPERS ASSOC** — Donald Terrill, R.R. 2, Mattonnton, 60938
• **LINCOLNLAND BEEKEEPERS** — Melvin Kennerling, Rt. 12, Springfield, 62707
• **LOWER ILLINOIS VLY BEEKEEPERS** — Joseph Veith, R.R. 1, Mt. Sterling, 62353
• **NORTHERN IL BEEKEEPERS** — Larae Bisterfield, 324 Maple St., Marengo, 60152
• **ROCK RIVER VALLEY BEEKEEPERS** — Ernest Holtz, 305 N. Horace Ave., Rockford, 61103
• **SANGAMON VALLEY BEEKEEPERS** — Stephen Strober, R.R. 4, Box 31, Marion, 62959
• **SOUTHERN ILLINOIS BEEKEEPERS** — Richard Porter, 1003 Roberta Dr., Marion, 62959
• **SPOON RIVER VALLEY BEEKEEPERS** — Joan Block, RR5, Canton, 61520
• **ST CLAIR BEEKEEPERS ASSN** — Alfred Trost, 626 Evansville Ave., Waterloo, 62298
• **STATELINE BEEKEEPERS ASSN** — Nancy Ingram, 8384 N. Broadway, Apple River, 61001
• **WABASH VALLEY BEEKEEPERS** — Beverly Tanner, Rt. 1, Box 50, Noble, 62868
• **WESTERN IL BEEKEEPERS** — Lane McKinley, R.R. 1, Box 330, Viola, 61486

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• **MICHIANNA BEEKEEPERS ASSOC** — Mary Whalen, 53952 CR 17, Bristol, 46507
• **NW INDIANA BEEKEEPERS** — Frank Feher, 307 Spectacle Dr., Valpraiso, 46383
• **RIVER VALLEY BEEKEEPERS** — David Maikranz, RR2, Box 64, Oakland City, 47660
• **TRI-STATE BEEKEEPERS ASSN** — John Bittner, 17700 Owensville Rd., Evansville, 47712
• **WHITE RIVER VALLEY BEEKEEPERS** — J. O. Michael, P.O. Box 172, Washington, 47501

IOWA

• **CENTRAL IA HONEY ASSN** — Ed Zeiser, Rt. 10, Maxwell, 50161
• **IOWA HONEY PRODUCERS ASSOC** — Thomas Wood, 53 30th St., Des Moines, 50312

KANSAS

• **CENTRAL KANSAS BEEKEEPERS** — Anita Mead, Rt. 1, Box 90, Belle Plain, 67013
• **FLINT HILLS BEEKEEPERS** — Ruth Taylor, 526 S. Union, Emporia, 66801
• **KANSAS HONEY PRODUCERS** — Duane Levin, Box 10, Stuttgart, 67670
• **NORTHEASTERN KS BEE ASSOC** — Jackie Masopust, Rt. 2, Box 84-A, McLouth, 66054

KENTUCKY

• **GREENUP CO BEEKEEPER ASSN** — Carl Crabtree, Argillite, 41121
• **WHITLEY CO BEEKEEPERS** — Eddie Wells, 1917 Lake Ave., Corbin, 40701

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• **ARK-LA-TEX BEEKEEPING** — Walter White, P.O. Box 78435, Shreveport, 71137
• **BEEKEEPERS OF SE LA** — Joan Schnadelback, 4783 Friar Truck Dr., New Orleans, 70128
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• **ANNE ARUNDEL CO BEEKEEPERS** — Peter Lisko, 728 Springdale Ave., Annapolis, 21403
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• **CTL MARYLAND BEEKEEPERS** — Jerry Fischer, 7943 Dalrose Ave., Baltimore, 21237
• **HAGERSTOWN VALLEY APIAN SOC** — Gordon Davis, 25 E. Antietam St., Hagerstown, 21740
• **HOWARD CO BEEKEEPERS** — Huber Smutz, Jr., 799 Driver Rd., Marriottsville, 21104
• **MONTGOMERY CO BEEKEEPRS** — George Imirie, 12705 Circle Dr., Rockville, 20850
• **SUSQUEHANNA BEEKEEPERS** — Charles Filburn, 1707 Walters Mill Rd., Forest Hill, 21050

MAINE

• **EAST-ME ST BEEKEEPERS** — James Reed, RFD 1, Box 2625, Bar Harbor, 04609
• **TRI-COUNTY BEEKEEPERS** — Genevieve Delicata, RR1, Box 417, Stockton Springs, 04981
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• **HAMPDEN CO BEEKEEPERS** — G. H. Hughes, Kline Rd., Southwick, 01077
• **HAMPSHIRE CO BEEKEEPERS** — R. Pelissier, 136 East St., So. Hadley, 01075
• **MA FEDERATION OF BEEKEEPERS** — Vitto Marrota, 28 Hamblin's Way, Marsten Mills, 02648
• **MERRIMACK VALLEY BEEKEEPERS** — Raymond Devanney, 26 Lawrence Rd., Tyngsboro, 01879
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• **NORFOLK CO BEEKEEPERS** — Paul Ares, 275 Massapoag Ave., Sharon, 02067
• **PLYMOUTH CO BEEKEEPERS** — Frederic Magee, 148 Turnpike St., West Bridgewater, 02379
• **WORCHESTER CO BEEKEEPERS** — Gertrude Mapplebeck, 217 Wildwood Ave., Worchester, 01603

MICHIGAN

• **CHAR-EM BEEKEEPERS ASSOC** — Grace Baumgartner, P.O. Box 47, Oden 49764
• **CRANBROOK BEE CLUB** — Fritz Sanders, 29068 Lori, Livonia, 48154
• **HOLLAND AREA BEEKEEPERS** — John Kleis, 5914 Old Allegan Rd., Hamilton, 49419
• **JACKSON CO BEEKEEPER ASSN** — Kenneth Losey, 6962 Folks Rd., Horton, 49246
• **MACOMB CO BEEKEEPERS ASSN** — Ms. Kurt Ciper, 37477 Union Lake Rd., Rt. 4, Mount Clemens, 48043
• **SAGINAW BAY BEEKEEPERS** — John Kern 12740 E. Curtis, Frankenmuth, 48134
• **SOUTHEASTERN MI BEE ASSOC** — Roger Sutherland, 5488 Warren, Ann Arbor, 48105
• **SOUTHWEST MI BEEKEEPERS** — Susan Sherburn, 2945 E. Snow Rd., Barring Sprigs 49103

• **SUPERIOR BEEKEEPERS ASSN** — Robert Smith, Barbeau, 49701

MINNESOTA

• **CENTRAL MN BEEKEEPERS ASSN** — Rt. 1, Box 45, Ponsford, 56575

• **LAKE REGION BEEKEEPERS,** — Russel Hofman, Richville, 56576

• **MN BEEKEEPERS ASSN** — Jack Thomsen, Rt. 1, Glenwood, 56334

• **MN HOBBY BEEKEEPERS ASSOC** — Russell Johnson, 23115 Variolite St., Elk River, 55330

• **MN HONEY PRODUCERS** — Paul Maassel, Rt. 4, Box 52, Moorhead, 56560

• **NO CENTRAL BEEKEEPERS ASSN** — P.O. Box 294, Brainerd, 56401

MISSOURI

• **BOON REGIONAL BEEKEEPERS** — Louise Johnson, 1010 Eastwood Circle, Columbia, 65021

• **BUSHWACKERS BEEKEEPERS** —Charles Hinckley, Box 442, Nevada, 64772

• **CENTRAL MO BEEKEEPERS** — John Walther, 3026 Hogan Dr., Jefferson City, 65101

• **DALLAS CO BEEKEEPERS** — Fred Clayton, Box 54, Buffalo, 65622

• **EASTERN MO BEEKEEPER ASSN** — Carol Kaufmann, 3743 Druso, St. Louis, 63125

• **FOUR STATE BK ASSOC.** — Josephine Boyer, Rt. 1, Box 286, Seneca, 64865

• **HONEY PRODUCERS** — Phyllis Bond, Rt. 1M, Box 46, Olean, 65064

• **LACLADE CO BEEKEEPERS** — Liz Gregory, Rt. 3, Box 45, Plato, 65552

• **LINCOLN CO BEEKEEPERS** — Karen Aloneter, Rt. 1, Box 411A, Anderson, 64831

• **LITTLE DIXIE BEEKEEPERS** — Don Collop, Rt. 2, Mexico, 65265

• **MID-MO BEEKEEPERS** — Keith Brady, 506 Woodland Dr., Rolla, 65401

• **MIDWESTERN BEEKEEPER ASSN** — Roger Nichols, 8754 E 83rd St., Raytown, 64138

• **MISSOURI VALLEY BEEKEEPERS** — Bill Kohne, Rt. 2, Box 43, Sullivan, 63080

• **NORTH MISSOURI BEEKEEPERS** — Ronald Whitacre, Box 33, Glenwood, 63541

• **OZARK BEEKEEPERS ASSOC** — Dan Kelly, Rt. 6, Box 610-I, Springfield, 65803

• **OZARK MOUNTAIN BEEKEEPERS** — Walter Hess, Star Rt. 4, Box 2173, Brauson, 65616

• **PRAIRIE CO BEEKEEPERS** — Virgina Hininger, Rt. 2, Box 56, Lamar, 64759

• **SEMO HONEY PRODUCERS** — Glen Thornton, Rt. 6, Box 270-U, Replar, 63901

• **SOUTHWEST MO BEE ASSOC** — E. S. Haddock, Verona, 65769

• **TWO RIVERS BEEKEEPERS ASSN** — Synthia Bernstein, 641 Watkins Glen, St. Charles, 63303

• **WORTH CO BEEKEEPERS** — Floyd Rinehart, Rt. 1, Grant City, 64456

MONTANA

• **EASTERN MT BEEKEEPERS** — Evelyn Degenhart, 2547 Roundup Rd., RR 11, Billings, 59105

NEBRASKA

• **EASTERN NE HONEY PRODUCERS** — Marvin Dooley, Rt. 3, Box 13, Plattsmouth, 68048

• **NE HONEY PRODUCERS** — Helen Madison, 110 West 6th St., Valentine, 69201

• **NORTHEAST NE BEEKEEPERS** — Elda Pfanstiel, RR 1, McLean, 68747

NEVADA

• **SIERRA BEE BUZZ** — Bob Weiser, 5595 Lil Abner, Sun Valley, 89531

NEW HAMPSHIRE

• **MERRIMACK VLY BEEKEEPERS** — Kenneth Weyant, 3 Hoodcraft Dr., Derry, 03038

• **PAWTUCKAWAY BEEKEEPERS** — Dr. Ethan Howard, 7 Ordway Land, RR 16, Bow, 03301

• **WAINER BEEKEEPERS CLUB** — Leonard Rowell, RFD 2, Wainer, 03278

NEW JERSEY

• **CENTRAL JERSEY BEEKEEPERS** — Liz Rodrigues, 157 Five Point Rd., Colts Neck, 07722

• **MORRIS CO BEEKEEPERS** — Roha Duve, R.D. 1, Box 258-B, Washington, 07862

• **NE BEEKEEPERS ASSOC, NJ** — Alfred E. Cundall, 390 Jackson Ave., Township of Washington, 07675

• **SUSSEX CO BEEKEEPERS SOC** — Marilyn Cosh, RD 1, Box 250, Sussex, 07461

NEW YORK

• **CHAUTAUQUA CO BEEKEEPERS** — Ken Waite, Rt. 3, Box 356, Jamestown, 14701

• **LONG ISLAND BEEKEEPERS** — Ginny Lackey, 1260 Walnut Ave., Bohemia, 11716

• **MID-YORK BEEKEEPERS ASSN** — Richard Wood, Rt. 4, Soule Rd., Rome, 13440

• **MONROE CO BEEKEEPERS** — Gale Miller, 389 Dewey St., Churchville, 14428

• **S ADIRONDACK BEEKEEPERS** — Donald Tooker, RD 8, Saratoga Springs, 12866

• **SOUTHEASTERN BEEKEEPERS CLUB** — Kathleen Smith, 239 Wisner Ave., Middletown, 10940

• **SOUTHERN TIER BEEKEEPERS** — H. W. Shoemaker, 3 Spring Lane, Binghamton, 13903

• **STEUBEN CO HONEY BEE ASSN** — Charlotte Harrison, RD 4, Bath, 14810

• **SUFFOLK CO BEE CLUB** — H. D. Wells, 24 River Ave., Riverhead, 11901

• **WESTERN NY HONEY PRODUCERS** — Sally Potczak, 541 Bell Rd., Corfu, 14036

NORTH CAROLINA

• **ALAMANCE CO BEEKEEPERS** — W. Ronald Petree, 2872 S. NC 119, Mebane, 27302

• **ALBERMARLE REGIONAL BEE CLUB** — Wink Munden, 506 Hemlock Ave., Elizabeth City, 27909

• **ALLEGHANY CO BEEKEEPERS** — Bryon Woodruff, Rt. 1, Box 139, Glade Valley, 28627

• **BUNCOMBE CO BEEKEEPERS** — Jean Comyns, Rt. 2, Box 638, Asheville, 28805

• **BURKE CO BEEKEEPERS ASSN** — Rev L. N. Puette, Rt. 2, Box 958-A Connelly Springs, 28612

• **CABARRUS CO BEEKEEPERS** — Vernon Hathcock, Rt. 3, Box 139-B, China Grove, 28023

• **CARTERET CO BEEKEEPERS** — Harry Lockey, Jr., Rt. 2, Box 226, Newport, 28570

• **CASWELL CO BEEKEEPER ASSN** — Paul Myers, Rt.1, Box 133, Blanch, 27212

• **CATAWBA VALLEY BEEKEEPERS** — Jim Peeler, Rt. 11, Box 397, Hickory, 28601

• **CHATHAM CO BEEKEEPER ASSN** — Judy Ellen Pic, Rt. 1, Box 309, Pittsboro, 27312

• **CHOANOKE BEEKEEPERS ASSOC** — Frank Stevenson, 301 E. Broad St., Murfreesboro, 27855

• **COLUMBUS-BRUNSWICK BEEKEEPERS** — Sylvia Martin, Rt. 2, Box 306, Chadbourn, 28431

• **CUMBERLAND CO BEEKEEPERS** — Berline Beal, 2602 Stonehaven Dr., Fayetteville, 28306

• **DAVIE CO BEEKEEPERS ASSN** — Dorris Dillon, Rt. 3, Box 590, Mocksville, 27028

• **DURHAM CO BEE CLUB** — Ellis Selph, 2502 Winton Rd., Durham, 27707

• **EDGECOMBE CO BEEKEEPERS** — Peggy Weatherford, Rt. 2, Box 162, Battleboro, 27809

• **FORSYTH CO BEEKEEPERS ASSN** — Naomi Sloam, 1400 Demetrias Dr., Winston Salem, 27103

• **GASTON CO BEEKEEPERS ASSN** — Harold Cline, 840 Churchill Dr., Gastonia, 28052

• **GREENSBORO BEEKEEPERS** — Henry Moon, 2416 Wright Ave., Greensboro, 27403

• **GUILFORD CO BEEKEEPERS** — Edward Snyder, 5400 Bosher Lake Dr., Mcleansville, 27301

• **HAYWOOD CO BEEKEEPERS** — Cormell Hollingworth, 1322 Allens Creek, Waynesville, 28786

• **HENDERSON CO BEEKEEPERS** — Bitton Allison Jr., Horse Shoe, 28742

• **HOKE CO BEEKEEPERS ASSOC** — Betty Freeman, Rt. 2, Box 527, Raeford, 28376

• **IREDELL CO BEEKEEPERS** — Bob Kale, Rt. 2, Box 63, Catawba, 28609

• **JACKSON CO BEEKEEPERS ASSN** — Robert Anders, P.O. Box 8, Cullowhee, 28723

• **JOHNSTON CO BEEKEEPERS** — R. G. Adams, 507 Morris Ave., Benson, 27504

• **LEE CO BEEKEEPERS ASSOC** — W. Lynn Spivey, 120 E. Weatherspoon St., Sanfored, 27330

• **LENOIR CO BEEKEEPERS ASSN** — H. C. Hoffman, Rt. 7, Box 316, Kinston, 28501

• **LINCOLN CO BEEKEEPERS ASSN** — Victor Rudisoll, 926 E. Park Dr., Lincolnton, 28092

• **MACKLENBURG CO BEEKEEPERS** — Gene Shannon, 838 Burnley Rd., Charlotte, 28201

• **MITCHILL CO BEEKEEPERS ASSN** — T. V. Hall, Rt. 2, Box 1225, Spruce Pine, 28777

• **MONTGOMERY CO BEEKEEPERS** — Archie Craven, Rt. Box 231, Mount Gilead, 27306

• **NEW HANOVER CO BEEKEEPERS** — Jim Tyer, Rt. 1, Box 567, Wilmington, 28405

• **ONSLOW CO BEEKEEPERS** — Maurice Cook, Rt. 4, Box 167, Jacksonville, 28540

• **ORANGE CO BEEKEEPERS ASSOC** — Matt Thompson, 103 Lilac Dr., Carrbord, 27514

• **PAMLICO CO BEEKEEPERS** — Susan Herring, 307 Tantara Ct., Fayetteville, 28301

• **PITT CO BEEKEEPERS ASSOC** — Scott Flanagan, 501 Grimmersburg St., Farmville, 27828

• **RANDOLPH CO BEEKEEPERS** — H. J. Weiler, Jr., 1239 Thayer Dr., Asheboro, 27203

• **RICHMOND CO BEEKEEPERS** — Ruth Barbee, Rt. 3, Box 368-B, Rockingham, 28379

• **ROBESON CO BEEKEEPER ASSN** — D. S. Gillispie, 1905 Rowland Ave., Lumberton, 28358

• **ROCKINGHAM CO BEEKEEPERS** — Ms. B. P. Fox, 102 North 7th Ave., Mayodan 27027

• **ROWAN CO BEEKEEPERS ASSN** — James Ijames, 211 W McCubbins St., Salisbury, 28144

• **RUTHERFORD CO BEEKEEPERS** — Arthur Stchley, Rt. 3, Rutherfordton, 28139

• **SAMPSON CO BEEKEEPERS** — Florence Beretich, Rt. 3, Box 14, Clinton, 28328

• **SURRY CO BEEKEEPERS ASSN** — Z. Wayne Thompson, Rt. 1, Box 179, Elkin, 28621

• **SWAIN CO BEEKEEPING CPTR** — M. G. Sanderson, Rt. 2, Box 608, Bryson City, 28713

• **TRANSYLVANIA CO BEEKEEPERS** — James Bales, Star Rt. Box 580, Rosman, 28772

• **TRI-CO BEEKEEPERS ASSOC** — Allen Caldwell, 115 Peachtree St. #103, Murphy, 28906

• **WAKE CO BEEKEEPERS ASSOC** — Stanley Hodge, 1314 Dowling Rd., Raleigh, 27610

• **WATAUGA CO BEEKEEPERS** — Alicia Breton, P.O. Box 13, Todd, 28684

• **WAYNE CO BEEKEEPERS ASSOC** — Louise Sasser, 108 E. Westwood Dr., Goldsboro, 27530

• **WILKES CO BEEKEEPERS ASSN** — Grant Miller, Rt. 2, Box 321-B, Millers Creek, 28651

• **WILSON CO BEEKEEPERS ASSN** — Harvey Denton, Rt. 2, Box 50-B, Bailey, 27087

OHIO

• **ASHTABULA BEEKEEPERS** — Bill Loudon, 86 Stockwell St., Painesville, 44077

• **BUTLER CO BEEKEEPERS** — Karen Rupp, 6483 Layhigh Rd., Okeana, 45053

• **CARROLL CO BEEKEEPERS** — Kim Pallaye, 4107 Ivory Rd., NW, Carrollton, 44615

• **CENTRAL BEEKEEPERS ASSN** — Vernon Chute, 1635 N. Hague Ave., Columbus, 43204

• **CENTRAL OH BEEKEEPERS** — David Casdorph, 4111 Maize Rd., Columbus, 43224

• **CLARK CO BEEKEEPERS** — Rolland Anderson, 1312 N Lowry Ave, Springfield, 45504
• **COLUMBIANA & MAHONING CO BEEKEEPERS** — Rhoda Reynolds, 2477 Columbiana Rd., New Springfield, 44443
• **COLUMBIANA CO BEEKEEPERS** — Grace Hamilton, Rt. 1, Lisbon, 44432
• **CUYAHOGA CO BEEKEEPERS** — John Dernar, 7556 York Rd., Parma, 44130
• **FRANKLIN CO BEEKEEPERS** — Vera Gorochow, 3563 Byers Rd., Delaware, 43015
• **GEAUGA BEEKEEPERS ASSN** — Mary K. Cluts, 9799 Pekin Rd., Movelty, 44072
• **GREENE CO BEEKEEPERS** — O. K. Simison, Rt. 1, Spring Valley, 45370
• **GUERNSEY CO BEEKEEPERS** — Neal Murdock, 69615 Old 21 Rd., Cambridge, 43725
• **HEADWATERS BEEKEEPERS** — Arthur Koready, 4084 Co. Rd. 115, Mt. Gilead, 43338
• **HIGHLAND CO BEEKEEPERS** — Cora Prye, 7926 Wright Rd., Hillsboro, 45133
• **HOCKING CO BEEKEEPERS** — Annette McClain, 20193 St. Rt. 328, New Plymouth, 45654
• **JEFFERSON CO BEEKEEPERS** — John Kellis, 100 Hidden Wood Dr., Steubenville, 43952
• **KOKOSING VALLEY BEEKEEPERS** — Kenneth Neighbarger, 305 Sychar Rd., Mt. Vernon, 43050
• **KNOX CO BEEKEEPERS ASSN** — Harold Bower, 14258 Beckley Rd., Mt. Vernon, 43050
LAKE CO BEEKEEPERS ASSN — Russell Dodge, Box 36, Southern St., Unionville, 44088
• **LAWRENCE CO BEEKEEPERS** — Maxine Bowman, Rt. 3, Box 191, Ironton, 45638
• **LOGAN CO BEEKEEPERS ASSN** — Ms James Eaton, Rt. 1, Mount Victory, 43340
• **LORAIN CO BEEKEEPERS ASSN** — Melvin Thompson, 1741 Grafton Rd., Elyria, 44039
• **MARION CO BEEKEEPERS ASSN** — Brent Willis, 1955 Cramer Rd., Marion, 43302
• **MEDINA CO BEEKEEPERS** — Annie Pemberton, 3814 Beat Rd., Litchfield, 44253
• **MIAMI CO BEEKEEPERS** — Sara Newbright, 4555 Walnut Gr. Rd., Troy, 45373
• **MID-OHIO VALLEY BEEKEEPERS** — Janet Davis, Rt. 1, Box 160, Waterford, 45786
• **MONTGOMERY CO BEEKEEPERS** — Jean Allen, 828 Allenhurst Ave., Vandalia, 45377
• **MORROW CO BEE ASSN** — Rebecca Gilliland, 1299 Nancy Lane, Columbus, 43227
• **MUSKINGUM CO BEEKEEPERS** — Marilyn Dailey, 1075 Rix Mills Rd., New Concord, 43762
• **NW OHIO BEEKEEPERS ASSN** — Leroy Shoultz, 233 Elm St., Findlay, 45840
• **PORTAGE CO BEEKEEPERS** — Kathleen Zizka, 9177 Asbury Rd., Mantua, 44255
• **RICHLAND CO BEEKEEPERS** — Ralph Mitchell, Brokaw Rd., Rt. 2, Butler, 44822
• **ROSS CO BEEKEEPERS ASSN** — Fred Weaver, 27 Courtland Dr., Chillicothe, 45601
• **SCIOTO CO BEEKEEPERS** — Judy Bradbury, Rt. 2, Minford, 45653
• **SOUTH CENTRAL BK ASSN** — Fred Ginther, 122 Huntington Lane, Chillicothe, 45601
• **SOUTHWESTERN OH BEE ASSN** — Don Cooke, 731 Miami Ave., Terrace Park, 45174
• **STARK CO BEEKEEPERS** — Mary Furlong, 178 Wall Pl., SE, Massillon, 44646
• **SUMMIT CO BEEKEEPERS** — Barbara Perry, 2994 Kendall Rd., Akron, 44321
• **TRI-COUNTY BEEKEEPERS ASSN** — Jim Kinney, 1560 Woodcrest, Wooster, 44691
• **TRUMBULL CO BEEKEEPERS** — Edward G. Wason, 3254 Bradley-Brownlee Rd., Cortland, 44410-9733
• **TUSCARAWAS CO BEEKEEPERS** — Helen Ott, 28342 Cr. 281, Newcomerstown, 43832
• **WARREN CO BEEKEEPERS** — Oscar Brown, 7154 Hopkins Rd., Maineville, 45039

OKLAHOMA

• **FOUR STATE BEEKEEPERS ASSN** — Louise Bean, Rt. 6, Box 467, Grove, 74344
• **INDIAN NATION BEEKEEPERS** — Wayne Richison, 2700 Jefferson Court, Muskogee, 74403
• **NE OKLAHOMA BEEKEEPERS** — James Grayson, Rt. 1, Box 189B, Owasso, 74055
• **RED RIVER BEEKEEPERS ASSN** — Louis Stallings, HC 70, Box 12, Boswell, 74727
• **SE OKLAHOMA BEEKEEPERS** — Dorothy Grigsby, Rt. 1, Box 915, Broken Bow, 74736

OREGON

• **COOS CO BEEKEEPERS** — Walt Price, P.O. Box 217, Cogville, 97423
• **LANE CO BEEKEEPERS** — James Sheridan, 1885 Norkenzie Rd., Eugene, 97401
• **TUALATIN VALLEY BEEKEEPERS** — George Robins, 1255 SW Taylors Ferry, Portland, 97219

PENNSLYVANIA

• **BUCKS CO BEEKEEPERS** Eugene Pester, 512 Feaster Ave., Feasterville, 19048
• **CENTRAL WSTRN PA BEE ASSN** — Nancy Paffenroth, Unionville Rd., Evans City, 16033
• **CLARION CO BEEKEEPER ASSN** — R. W. McHenry, Front St., Box 176, Sligo, 16255
• **DAUPHIN CO BEEKEEPERS ASSN** — Donald Zimmerman, 6249 Cider Press Rd., Harrisburg, 17111
• **FRANKLIN CO BEEKEEPERS** — Mark Burkholder, 191 Franklin Farms Lane, Chambersburg, 17201
• **LACKAWANNA CO BEEKEEPERS** — Esther Ziegler, Rt. 1, Dalton, 18414
• **LEHIGH VALLEY BEEKEEPERS** — Richard Olson, RD 1, Box 296M, Germansville, 18053
• **LUZERNE CO BEEKEEPERS** — Ernest Young, 347E Noble St., Nanticoke, 18634
• **LYCOMING CO BEEKEEPERS** — Fred Robinson, 1730 Ravine Rd., Williamsport, 17702
• **MONTGOMERY CO BEEKEEPERS** — Robert Bitterman, 3 Allendale Rd., Norristown, 19401
• **NORTHWESTERN PA BEEKEEPERS** — Jeff Allio, Rt. 3, Nickleplate Rd., Cochranton, 16314
• **POTTER CO BEEKEEPERS ASSN** — Lloyd Tyler, Rt. 3, Coudersport, 16915
• **SCHUYKILL CO BEEKEEPERS** — Richard Malick, 220 Cherry Dr., Wyomissing, 19610
• **VENANGO CO BEEKEEPERS** — Ms. Ernest Montogomery, Rt. 4, Box 14, Franklin, 16323
• **WAYNE CO BEEKEEPERS ASSN** — Evelyn Merring, RD 6, Box 6601, Lake Ariel, 18436
• **YORK CO BEEKEEPERS** — William Spahr, Rt. 1, Dover, 17315

RHODE ISLAND

• **RHODE ISLAND BEEKEEPERS** — Elizabeth Latham, 9 Fountain Spring Lane, Johnston, 02919

SOUTH CAROLINA

• **MID-STATE BEEKEEPING ASSN** — Jane Paradeses, 340 Bradley Rd., West Columbia, 29169
• **YORK CO BEEKEEPERS ASSN** — Ms. I. T. Hepp, Leslie Highway, Rock Hill, 29732

SOUTH DAKOTA

BROWN CO BEEKEEPERS — Eva Wilson, 1703 Royal Rd., Aberdeen, 57401

TENNESSEE

• **ANDERSON CO BEEKEEPERS** — Ms. William Whitters, 15 Newhope Lane, Oak Ridge, 37830
• **BEEKEEPERS OF TN** — Howard Kerr, Rt. 11, Box 7, Maryville, 37801
• **BLOUNT CO BEEKEEPERS** — John Gee, Rt. 2, Box 209, Friendsville, 37737
CHATTANOOGA AREA BEEKEEP-ERS — Houston C. Stone, 3405 Shadowlawn, Chattanooga, 37412
• **CHEROKEE BEEKEEPERS ASSN** — Ms. David Robinson, Rt. Box 606, Decatur, 37322
• **COLUMBIA BEEKEEPERS** — Lona Vaughn, Rt. 7, Box 123, Columbia, 38401
• **CUMBERLAND AREA BEEKEEPERS** — Ms. Lorraine Geer, Rt. 9, Box 146, Sparta, 38583
• **DICKSON CO AREA BEEKEEPERS** — Elaine Smith, Rt. 1, Box 74c, Cumberland Furnace, 37051
• **DUCK RIVER BEEKEEPERS ASSN** — Elaine Holcombe, P.O. Box 303, Shelbyville, 37160
• **FRANKLIN CO BEEKEEPERS** — James Duncun, Rt. 2, Winchester, 37398
• **HAMILTON CO BEEKEEPERS** — Ms. J. D. Humberd, 8528 East Brainerd Rd., NE, Chattanooga, 37421
• **HENDERSON CO BEE ASSN** — E. G. Woody, Scotts Hill, 38374
• **JACKSON CO BEE ASSN** — R. C. Smith, Gainesboro, 38562
• **KNOX CO BEEKEEPERS ASSN** — Dan Donaldson, 7836 Cedarcrest Rd., Knoxville, 37938-4405
• **LAWRENCE CO ASSOC** — Ralph Ring, Lawrenceburg, 38464
• **LEWIS CO BEEKEEPERS** — Allen Martin, RR 1 Box 321-E, Hohenwald, 38462
• **LINCOLN CO BEEKEEPERS** — Margaret Jennings, Rt. 2, Fayetteville, 37334
• **LOUDON CO BEEKEEPERS** — Jim Goodman, Rt. 4, Box 217A, Lenoir City, 37771
• **MCMINN CO BEEKEEPERS ASSN** — R. D. Malone, Lake View Farm, Niota, 37826
• **MEMPHIS AREA BEEKEEPERS** — Dean Bush, 1948 Prado Ave., Memphis, 38116
• **MONROE CO BEEKEEPERS ASSN** — E. E. Hagler, Madisonville, 37354
• **NASHVILLE AREA BEEKEEPERS** — Allan Davis, 137 Spring Valley Rd., Nashville, 37214
• **OVERTON CO BEE ASSN** — H. B. Garrison, Livingston, 38570
• **SEVIER CO BEEKEEPERS ASSN** — Harry Yarnell, P.O. Box 354, Seymour, 37265
• **STONES RIVER BEEKEEPERS** — Gerard J. Flipse, Rt. 2, Box 27G, Lascassas, 37085
• **TIPTON CO BEE ASSN** — Ira Sellers, Covington, 38019
• **TN HONEY PRODUCERS/PACKERS** — Charles Neal, 7525 Georgetown Rd., Ooltewah, 37363
• **TRI-CITY BEEKEEPERS ASSN** — John Frey, Rt. 4, Big Ridge Rd., Kingsport, 37660
UNICOI CO BEE ASSN — Enloe Hensley, Rt. 2, Erwin, 37650
• **WASHINGTON CO BEEKEEPERS** — K. Saylor, Rt. 2, Box 94, Jonesboro, 37659
• **WEAKLEY CO BEE ASSN** — A. M. Walker, Dresden, 38225
• **WILSON CO BEEKEEPERS ASSN** — Felix Preston, Rt. 7, Box 104, Lebanon, 37087

TEXAS

ALAMO AREA BEEKEEPERS ASSN — Ernest Caldwell, 2134 E. South Cross, San Antonio 78223
• **ANGELINA ASSN** — George A. Berry, Rt. 9, Box 5160, Lufkin, 75901
• **AUSTIN ASSOCIATION OF BEE STEWARDS** — Mack Ray, 10608 Macmora Rd., Austin 78758
• **BRAZOS VALLEY ASS'N** — Khris Thurmold, Rt. 4, Box 61, Belmont, College Station, 77840
• **CAPITOL AREA BEEKEEPERS** — A. J. Adaire, 1507 Summit St., Austin, 78741
• **COASTAL BEND BEEKEEPERS** — Jack Padgett, 9566 Goldcrest, Corpus Christie, 78418
• **COLLIN CO HOBBY BEEKEEPERS** — Bill Johnson, 3441 Cherrywood Lane, Plano, 75074
• **CONCHO VALLEY ASSN** — Travis Lane, 6427 Goodland Loop, San Angelo, 76901
• **EAST TEXAS ASSOCIATION** — Richard Counts, 14194 CR 371, Wiona, 75792
• **EL PASO ASSN** — O. T. Franklin, 10220 Bermuda, El Paso, 79925
• **ERATH COUNTY ASSN** — Karena Eccles, Rt. 1, Box 159, Geln Rose, 76043
• **FORT BEND ASSN** — Elton Reynolds, Rt. 1, Box 223, Rosenberg, 77471
• **GALVESTON CO ASSN** — Margie Coplin, 3512 Jack Beaver Rd., Santa

Fe, 77517
• **GOLDEN TRIANGLE ASSN** — R. C. Lawson, 1855 Fox Rd., Vidor, 77662
• **HARRIS CO ASSN**—A. J. Fucic, Rt. 1, Box 257, El Campo, 77437
• **HEART OF TX BEEKEEPERS** — Ann G. Hill, 303 W. Chantilly, Waco, 76706
• **HILL CO. BEEKEEPERS ASSN** — August A. Lutz, Sr., 916 Monroe, Kerrville, 78028
• **HOUSTON BEEKEEPERS ASSN** — Jim Rogers, 1511 W. 34th St., Houston 77018
• **MONTGOMERY CO BEEKEEPERS** — Milton Howard, Rt. 13, Box 1867, Conroe, 77303
• **NORTH HARRIS COUNTY BEEKEEPERS ASSN** — Boice Burns, 14430 Sequoia Bend, Houston 77032
• **PERMIAN BASIN ASSN** — James Brittingham, 2312 North Adams, Odessa, 79762
• **RED RIVER VALLEY ASSN** — Larry Graberholz, P. O. 2501, Wichita Falls, 76307
• **RIO GRANDE VALLEY ASSN** — Glenn Mace, P. O. Box 1473, Edinburg, 78540
• **SOUTH PLAINS BEEKEEPERS** — James Colson, P.O. Box 2247, Lubbock, 79408
• **TEXOMA ASSOCIATION** — Russell Green, P.O. Box 164, Ector, 75439
• **TRINITY VALLEY ASSN** — Glenda & Robert Hutchinson, 1802 St. Francis Ave., Dallas, 75228
• **TRI-CO AREA BEEKEEPERS** — Mike McPherren, Rt. 1, Box 1127, Kempner, 76539
• **VICTORIA CO BEEKEEPERS** — Rex Binnetson, 1208 S. Laurent, Victoria 77901
• **WALKER CO BEEKEEPERS** — Steve Laube, P.O. 3008 Powell Rd., Huntsville, 77342-7129
• **WASHINGTON CO ASSN** — E. C. Lemke, Rt. 4 Box 47B, Brenham, 77833
• **WILLIAMSON CO ASSN** — Dean Futch, 904 Chalk St., Copperas Cove, 76522

UTAH

• **WASATAH BEEKEEPERS ASSN** — Gerri Withers, 8349 S. 100 E., Sandy, 84070

VIRGINIA

• **BANV** — William Syrett, 5230 Oldcastle Lane, Springfield, 22151
• **BLUE RIDGE BEEKEEPERS ASSN** — Chuck Krole, 2354 Eden Ave., Roanoke, 24014
• **CENTRAL VA BEEKEEPERS** — Bill Reese, 2431 Huntington Rd., Charlottesville, 22901
• **GLOUCESTER BEEKEEPERS ASSN** — Ms. Carmen Stanford, Rt. 4, Box 2825, Hwy. 17, Glocester, 23061
• **GOOCHLAND BEEKEEPERS ASSN** — A. L. Hollins, Box 218-A, Sandy Hook, 23153
• **HALIFAX BEEKEEPERS ASSN** — E. Donald Chandler, P. O. 265, Virgilina, 24598
• **LOUDOUN BEEKEEPERS ASSN** — Richard Hays, Sr., P.O. Box 1030, Purcellville, 22132
• **MOUNTAIN EMPIRE BEEKEEPERS** — Edwin Wilson, P. O. 499, Wytheville, 24382
• **NASA-LANGLEY APIC CLUB** — Mary Ward, P.O. Box 712, Gloucester Point, 23062
• **NORTHERN PIEDMONT BEEKEEPERS** — Barbara Dennis, Rt. 1, Box 570, Amissville, 22002
• **NORTHERN PIEDMONT BEEKEEPERS** — Tom Ragsdale, P.O. Box 24, Orange, 22960
• **NORTHERN VA BEEKEEPERS** — Pearl Liles, 2451 S. Culpeper St., Arlington, 22206
• **PIEDMONT BEEKEEPERS ASSN** — Ms. A. A. Blanks, Rt. 1, Long Island, 24569
• **POWHATAN BEEKEEPERS ASSN** — Faye Clarke, 2802 Hill Top Lane, Powhatan, 23139
• **PRINCE WILLIAM BEEKEEPERS** — Brenda Powers, 7216 Cushing Rd., Manassa, 22110
• **RICHMOND BEEKEEPERS ASSN** — Robert C. Clark, Rt. 4, Box 310, Glen Allen, 23060
• **SHENANDOAH VLY BEEKEEPERS** — William Smoot, IV, Star Route B, Box 109, Staunton, 24401
• **SOUTHWEST PIEDMONT BEEKEEPERS** — Harry Litle, P. O. 7, Collinsville, 24078
• **TIDEWATER APIC FOUNDATION** — Anthony Moll, Rt. 2, Box 189, Newport, 24128
• **TIDEWATER BEEKEEPERS ASSN** — Doris Baker, 4221 Indian River Rd., Virginia Beach 23456
• **TRI-CITY BEEKEEPERS ASSN** — Stanley Holmes, 4800 East Gurney Ct., Richmond, 23237
• **VA COMMERCIAL BEEKEEPERS ASSN** — C. L. Burgess, 1900 Memorial Ave., Lynchburg, 24501

VERMONT

• **BENNINGTON CO BEEKEEPERS** — J. Ash, P.O. Box 723, Bennington, 05201
• **EASTERN APICULTURAL SOCIETY** — Maxine Manchester, P. O. 647, Middlebury, 05753
• **NORTHERN BERKSHIRE BEEKEEPERS** — Janice Pratt, P.O. Box 329, Pownal, 05261
• **VERMONT HONEY PROMOTION** — Pete Genier, RFD 1, Fair Haven, 05743

WASHINGTON

• **CENTRAL VALLEY BEEKEEPERS ASSN** — Rod Jackson, 18 W. Washingotn Ave., SP, Yakima, 98903
• **CLARK CO BEEKEEPERS ASSN** — Mr. Crone, 16810 NE 40th Ave., Vancouver, 98686
• **COLUMBIA BASIN BEEKEEPERS** — Meril Peterson, 1305 W. 42 Ave., Kennewick, 99336
• **COWLITZ CO BEEKEEPERS ASSN** — Eva Davis, 3956 Columbia Hts Rd., Longview, 98632
• **ISLAND EMPIRE BEEKEEPERS** — Ms. Rae Bateman, 12018 E. Boone, Spokane, 99206
• **LEWIS CITY BEEKEEPERS ASSN** — Jim Townsend, P.O. Box 245, Napavine, 98562
• **MT BAKER BEEKEEPERS ASSN** — Glenn Titus, 322 S. Forrest St., Birmingham, 98225
• **NORTHWEST DIST BEEKEEPERS** — Jean Scherrer, 5300 Menzel Lake Rd., Granite Falls, 98252
• **OLYMPIA BEEKEEPERS ASSN** — Gene Little, 4539 Shincke Rd., SE, Olympia, 98506
• **PALOUSE HILLS BEEKEEPERS** — Ed Friis, W. 125 Main St., Pullman, 99163
• **PIERCE CO BEEKEEPERS** — Rollin Morford, 1009 38th St., Gig Harbor, 98335
• **PUGET SOUND BEE ASSN** — Merrill Kuehn, 17333 Fourth, SW, Seattle, 98166
• **SKAGIT VALLEY BEEKEEPERS** — Mike Lundbert, 2757 E. Section, Mt. Vernon, 98273
• **STANWOOD-CAMINO BEEKEEPERS** — Dave Alexander, 1910 98th St., NW, Marysville, 98270
• **VASHON ISLAND BEEKEEPERS** — Miriam Bishop, Rt. 2, Box 558, Vashon Island, 98070
• **WALLA WALLA BEEKEEPERS** — Bill Strauser, P.O. Box 991, Walla Walla, 99362
• **WHIDBEY ISLAND BEEKEEPERS** — Jim Short, P.O. Box 535, Coupeville, 98239

WISCONSIN

• **BARRON CO BEEKEEPERS** — Kathryn Mansfield, Rt. 1, Box 227, Weyerhauser, 54895
• **BROWN CO BEEKEEPERS** — Thomas Cashman, 1415 E. Mason St., Green Bay, 54301
• **CHIPPEWA & EAU CLAIRE BEEKEEPERS** — Fern Eggen, Rt. 7, Box 198, Chippewa Falls, 54729
• **DANE CO BEEKEEPERS** — Earl Blizard, 119 S. Main St., Verona, 53593
• **DODGE CO BEEKEEPERS** — Vernon Lovejoy, Rt. 1, Waupun, 53963
• **JEFFERSON CO BEEKEEPERS** — Franklin Borth, N. 1605, Watertown, 53094
• **MANITOWOC CO BEEKEEPERS** — Ms. Gerald Mack, Rt. 2, Box 96, Reedsville, 54230
• **MARATHON CO BEEKEEPERS** — Ms. Albert Sahr, 1901 E. Wausau Ave., Wausau, 54401
• **OTAGAMIE CO BEEKEEPERS** — Linda Anderson, Rt. 4, Sunset Lane, New London, 54961
• **OZAUKEE-WASHINGTON CO BEEKEEPERS** — Ms. Agnes Curry, P.O. Box 391, West Bend, 53095
• **POLK-BURNETT BEEKEEPERS** — Phillip Larson, RR 2, Clayton, 54004
• **RACINE-KENOSHA CO BEEKEEPERS** — Carolyn Fanelli, W.150 S. 6959 Cornell Cir., Muskego, 53150
• **ROCK CO BEEKEEPERS** — Linda Hauri, Rt. 2, Box 32, Beloit, 53511
• **RUSK CO BEEKEEPERS** — Elenor Albrecht, Rt. 1 Box 214, Glen Flora, 54526
• **SAUK-COLUMBIA COS BEEKEEPERS** — Mrs. Roger Giese, S. 7264 Skyview Dr., Loganville, 53943
• **SHEBOYGAN CO BEEKEEPERS** — Paul Thomas, 231 Park St., Sheboygan Falls, 53085
• **SOUTHERN DIST BEE ASSN** — S. J. Ottis, 26 Breese Terrace, Madison, 53701
• **ST CROIX CO BEEKEEPERS** — D. Holmberg, Rt. 4, Box 159, New Richmond, 54017
• **TAYLOR-CLARK BEEKEEPERS** — Florette Kohn, N2580 CTE, Medford, 54451
• **WAPUACA CO BEEKEEPERS** — Alice Mueller, Rt. 1, Box 86, Ogdensburg, 54962
• **WISCONSIN HONEY PRODUCERS** — Rex Bowen, 5358 N. 64th St., Milwaukee, 53218

WEST VIRGINIA

• **BENWOOD BEEKEEPERS** — Jim Pittman, 519 Boggs Rd., Benwood, 26031
• **CABELL-WAYNE BEEKEEPERS** — Gabe Blatt, 3554 Haney's Branch Rd., Huntington, 25704
• **HAMPSHIRE CO BEEKEEPERS** — Mark Bell, Rt. 1, Box 149, Purgitsville, 26852
• **TRI STATE BEEKEEPERS ASSN** — Ellie Conlon, HCR 26160, Box 156, New Martinsville, 26155
• **WHEELING BEEKEEPERS** — Joseph Nawlik, 2745 Jacob St., Wheeling, 26003

CANADA

• **ALBERTA BEEKEEPERS ASSOC** — Gertie Adair, 16715-113th Ave., Edmonton, Alberta T5M 2X2
• **ASSOC DES AGRICULTEURA-PQ** — Robert Villeneuve, 58 Est Colomiere, Quebe G1L IRI 1R1, Que.
• **ASSOC DES APIC PROF PQ** — Roger Doyon, 57 Perrad, Napierville CO, St Remi, Que
• **BRANT DIST BEEKEEPERS ASSN** — Kenneth Crabbe, Rt. 3, Scotland, Ont
• **CARLETON CO BEEKEEPERS** — John Baird, Rt. 1, Woodstock, NB
• **CENTRAL OKANAGAN BEE ASSN** — H. C. Machneil, Peachland, BC
• **CRESTON BEEKEEPERS** — Sig Askevold, P.O. Box 877, Creston BC
• **FRASER VALLEY BEEKEEPERS** — James Medill, 14708-68 Ave., Surrey V3s 2B1, BC
• **GREY-BRUCE BEEKEEPERS ASSN** — Donald Garland, Pinkerton, Ont.
• **KALOWNA BEEKEEPERS** — W. G. Glower, 2203 Woodlawn St., Kalowna, BC
• **MANITOBA BEEKEEPERS ASSN** — Don Dixon, 911 Norguay Bldg., Winnipeg, Manitoba R3C 0P8
• **NELSON BEEKEEPERS** — Ivan Lewis, 1309 McQuarrie Ave., Prince George, Nelson, BC
• **OTTAWA VALLEY DIST BEEKEEPERS** — George Benson, 156 Pleasant Park, Ottawa, Ont
• **P E ISLAND BEE CO-OP ASSN** — J Dan Mcaskill, P.O. Box 1114, Charlottetow C1A 7MB, Prince Edward Island
• **PERTH DIST BEEKEEPERS ASSN** — Lorne Klopp, Zurich, Ont
• **PRINCE GEORGE BEEKEEPERS** — I. L. McGill, Rt. 7, Sunny Acres, BC
• **QUINTE BEEKEEPERS ASSN** — N E Orr, General Delivery, Woolerkok 3MO, Ont
• **SURREY BEEKEEPERS ASSN** — James Medill, 14708 68th Ave., Surrey, BC V3S 2B1

I was out in the shade of the grape arbor tonguing a mid-morning peanut butter sandwich off the roof of my mouth when Grandpa walked by. He was on his way to the little house out back. You know the one with the crescent moon cut into the walls for ventilation.

When Grandpa came back up the cinder path he stopped and sat down on the opposite arbor seat. After he had gotten his long legs tied up in a comfortable knot, I asked him to tell me another bee story. This is the one he told.

Beekeeper Uglie, (an old family friend) had located a good stand of yellow sweet clover that was just starting to bloom. He was going to move two of his out-yards to this location and had asked Grandpa to help with the move. The two apiaries would number between thirty-five to forty colonies. Because of the number of hives to be moved and not wanting to make more than one trip, Uglie decided to use the flat bottom hay rack instead of the spring wagon.

By dusk they had all the colonies aboard the rack and started the eight mile trip to the clover field. The first five miles were uneventful. But, then it happened.

Some critter along the side of the road spooked the horses and they started to run. They hit a rut in the old dirt road, and off came a half dozen of the bee hives. After about a mile of whoaing the horses, Grandpa finally got them under control. Uglie decided to go on to the new yard and come back later for the spilled hives or whatever was left of them.

A couple of hours later they came back to pick up the fallen hives. What a mess! Bees and hive parts scattered for a hundred yards. Remember, this was in the days before the use of insecticides and the boxes were really full of bees.

They tied down the legs of their britches and Uglie even put on a pair of gantlets, as he was never one to wear gloves. Grandpa was not that brave, so he put on a pair of bee gloves. They would pick up a hive, add the frames that were spilled out and then set it on the hay rack. Didn't know whether the frames were put back into the correct hives. Didn't much care, but hoped they didn't lose too many queens.

Have you got the picture in your mind? This was back in the 1920's. It was dark and they were using kerosene lanterns to find the spilled colonies. Well, they finally got all the spilled boxes on the rack, but left a pile of bees there. A cluster here, a cluster there — a real mess.

Grandpa said that when he got home, a little after seven o'clock, he pulled off his clothes and was red as a beet from bee stings. He had left his shirt-tails hang outside of his blue jeans. They got to him all right — about two dozen of them. Good thing he wasn't wearing his customary loose fitting bib overalls. □

In The Good 'Ole Days ...

DON COX

BOTTOM·BOARD