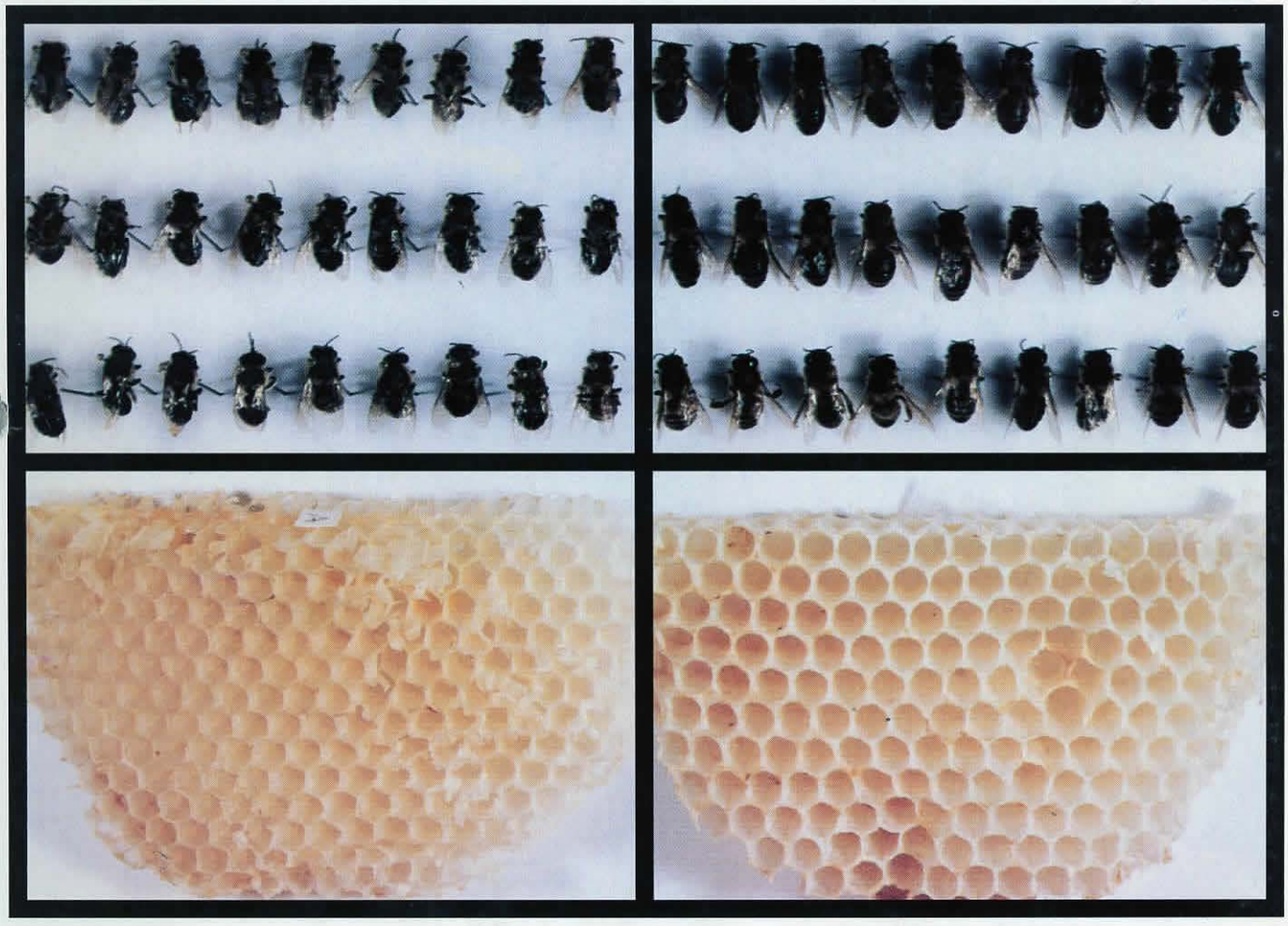
GLEANINGS IN BEE CULTURE

OCT '90



These are African Honey bees . . .

. . . and these aren't.

(For more details, see inside)

ROOT™
PUBLISHING

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

Phone No.: (216) 725-6677

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SUBSCRIPTION RATES: United States, one year, $13.95; two years, $26.50. **Newsstand Price: $1.95.** All other countries (U.S. Currency only), $7.50 per year additional for postage. Remittance should be sent by post office money order, bank draft, express money order or check. Published monthly. Subscription stopped on expiration. Change of Address: Return completed form contained inside issue. Articles are solicited. Stamps should be enclosed to insure return of manuscript to author if not printed. *Opinions expressed by the authors are not necessarily those of the publishers.* Advertising: For information on placing display advertisments only, contact Kathy Gault, 207 Cincinnati Ave., Huron, Ohio 44839 or call (419) 433-3521. Queries directed to the editorial offices will be forewarded.

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

Columns

Departments

COVER ... Captured and pinned like museum specimens, almost anyone can tell which of these is which. But when free and flying, bouncing off your veil or just landing on a flower, the differences are far more difficult to find.

Scientists at Baton Rouge Research Lab are among many who have struggled with this problem. Find out what they've found out, on page 577.

Photo by John Kucharski
Courtesy of USDA APHI

OCT. '90

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(ISSN 0017-114X) Vol. 118, No.10

117 Years Continuous Publication by the Same Organization

Features

INNER·COVER

It Was Big, Really Big.

Starting right about the end of July and running to the end of November, the phone in my office rings even more than usual. And most of these 'extra' calls deal with a singular problem a homeowner is having.

The conversations go something like this:

"Hi, I have this huge bee nest hanging from the eaves of my house, and somebody told me you would know what to do!"

Or:

"Good Morning. Yesterday afternoon I noticed a bunch of bees coming and going out of my chimney. What do I do now?"

Early in the season the calls come from the northern part of the country, and as the season progresses, the problem and the calls move south. They usually trickle out about Thanksgiving.

When I lived in Wisconsin a while back, I did extension work for a few years so answering homeowner's calls is second nature, and I've got the spiel down pretty good. I ask all the appropriate questions about location, what the bees look like, exterminators, pesticides, carpentry skill and all the rest. It's kind of like a computer program — if this then that . but if . After four summers it's pretty routine. I try to calm down the hysterical types with a clever remark or two, and assure them it's a situation that can be safely handled, without undo damage, cost or time.

But giving a five minute, five step 'bee' eradication talk is NOT the same as having to do it, which happened at the Ohio Estate last month.

We had finally decided to do something about the 31 year old aluminum siding on the house, and at the same time put some insulation on the walls — an excellent move considering the price of fuel oil these days.

The siding guys came over to start the job on a saturday morning. They walked around the house a couple of times, noting the phone hook-up, the curve of the chimney, windows — all the things that make life interesting in their line of work. When they finished, the little guy (who is the boss) came over and said, "Looks okay, but you got a big wasp nest up there in the peak. Gotta go. Get rid of it. We'll be up there Thursday. Make it gone by then. Bye."

He was right, of course. There it was, in the very peak of our two and a half story house. Way up there. And it was big, really big. You could see the little buzzers darting around if you looked hard. It was a typical gray, exactly the color of the once-white siding it was attached to. It was a bit asymmetrical, the opening just a little off center with a little twist to the front.

We figured we could reach it from a second story window, about 12 feet below and four feet to one side, with some wasp and hornet spray we bought.

So that night, long after dark, when it was cool and moist outside, we turned on the garage light so we could see the nest, opened the window and sprayed. Actually, Diana sprayed and I watched.

She gave the little beggars the what-for for a full 30 seconds, emptying half the can. My previous experience had been that, once sprayed, dead bees fell like rain for a full day. Of course my previous experience had been with wasps, NOT hornets millions and millions of nasty, angry, in-pain dealers-in-death. And they all headed straight for the garage light. So many, in fact, they almost completely blocked it out.

Needless to say, we beat a hasty retreat once the spray was over and

Continued on Page 600

Reader Assistance

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• Circulation figures may be obtained by contacting the advertising department, the editor or the subscription department. Circulation is monitored continuously by Arthur Andersen and Co., an international accounting and auditing company.

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NEXT MONTH

Hop on the Bee Line Express next month, when we take a ride on the wild side and visit the Wonderful West!

At the top, we have a terrific overview of beekeeping in the Pacific Northwest by our newest regular contributor, Mike Burgett. Stationed in Oregon, he has a particularly unique perspective on that part of the country.

Moving south, former editor Larry Goltz takes a look at equipment used in the Golden State of CA. They do some things a bit differently out there, and here's a good look at what, and why.

But California holds a great deal of interest in other areas too. Pollination is big, big business out there, and Eric Mussen, another of our regular contributors gives a run down of what's pollinated, where and how in this biggest bee state. "Fully 70% of *all* U. S. pollination takes place here," he said, "and here's why".

We'll take a quick look at one of the finer honey plants in the Southwest — Mesquite. Producing a truly delightful product, the plant plays a greater role in the changing environment.

There's also an excellent article from Dr. Eric Erickson, of the Tucson Bee Lab. Dr. Erickson presents the next step in his evolutionary process of understanding stress, and how it affects honey bees. Many stress factors can be controlled by beekeepers, and it is obvious they should be. Don't miss this one.

But there's lots more. To complement this month's article on making rolled foundation candles, we'll have a piece on making honey candy. Lots and lots of recipes, collected from lots and lots of places, so you can make holiday treats, give sweet gifts, or just treat your family.

November — a trip out west you won't want to miss. Next month in *Bee Culture!* □

MAILBOX

■ Poetic Praise

I was so pleased to see my poem, "Hay Day" published in the July '90 issue of *Bee Culture*. I thought it was well presented in the context in which it was published.

Best wishes to you on your continued success with producing a consistently high-quality magazine like *Gleanings in Bee Culture*.

Teresa T. Crone
Cincinnati, OH

■ Honey Board Harpooned!

The August article "Meet the Press" which was co-authored by Mary Humann of the National Honey Board, was very informative and presented three styles of expository writing.

First, the article provided a useful sequence of instructions which drew my concurrence.

Second, the article was laden with irony. Dan Hall's resignation/dismissal(?) instantly came to my mind.

Last, the article was rife with hypocrisy (i.e., "anticipate questions — prepare answers", "help reporters", "tell the truth", "do not be evasive or say 'no comment' ").

The NHB's message in this case seemed to be "Do as we say, but not as we might do" Not since reading Jonathan Swifts, *A Modest Proposal* have I had to pause and scratch my head.

Aside: All three journals should have applied for the details of Dan Halls' dispatching via the Freedom of Information Act. The public has a right to know, whether it is Jimmy Swaggart, Marion Berry, Pete Rose or Dan Hall who has to 'leave the kitchen'

Henry Mulzac
Brooklyn, New York

Mr. Mulzac is a Detective on the New York Police Force.

■ Mead Makers Unite!

The alcohol industry has been targeted as a sacrificial lamb in the current discussion to reduce the federal deficit. Plans are in the works to increase the Federal "special occupation" tax for wineries nationwide. (The special occupation tax is levied on any business involved in the production and sale of alcohol.) Currently, small wineries pay $500 per year while big wineries pay $1000.

If the new tax goes through, wineries across the board will pay a yearly special occupational tax of $19,000. The second phase of this plan is to raise the Federal excise tax from the current rate of $.17 per gallon of wine to $5.00 per gallon.

And how will the wine industry change if these proposals go through? "The small to medium wineries will not survive," said Donnie Winchell, Exec. Dir. of the Ohio Wine Producers. "Instead of a diversified network of regional wineries, there will be only a few of the giant wineries left."

The purpose of all of this, remember, is to raise revenue to help cover the Federal deficit. But according to Winchell, the revenue will not be there because so many wineries will simply close their doors.

Write your congressmen and tell them that you oppose this plan. Winchell suggests that you stress the economic importance of local wineries and meaderies, how they encourage tourism and provide jobs. Wineries are part of the "specialty" agricultural industry; their owners are responsible farmers who care for the land.

Perhaps you think, "They can't (or won't) do that", but they can, particularly if no one objects. Given the rising anti-alcohol sentiment in this country, politicians are subject to a lot of well-financed, organized pressure.

Perhaps you think, "I don't make mead. They're not goring my sacred ox". At the risk of being a trifle melodramatic, consider the quote from Pastor Martin Niemoller:

"In Germany they first came for the Communists and I didn't speak up because I wasn't a Communist. Then they came for the Jews, and I didn't speak up because I wasn't a Jew. Then they came for the trade unionists, and I didn't speak up because I wasn't a trade unionist. They came for the Catholics, and I didn't speak up because I was a Protestant. Then they came for me — and by that time no one was left to speak up."

Make your voice heard in protest to this assault on independent small businesses, the alcohol industry in general and mead businesses in particular.

Pamela J. Spence
American Mead Association

Ed. Note: This is particularly appropriate since October is National Mead Month.

Continued on Next Page

MAILBOX

■ Northern Queens Wanted

In your April 1978 *Bee Culture*, Asbury Bishop ran an ad for *Alaskan Sun Queens*. Does anyone still sell them?

Andrew Mulchinski
Roslyn Heights, Ny 11577

■ African Trials

I read Steve Taber's article in September's *Bee Culture* and would like to challenge him to take a few hives of pure Africans into one of the cold northern states, say in December, and then check them in April and see what happened. There should be someone who feels like he does, willing to do that.

They most likely will not swarm during those months and should be "depopulated" in April if there is any need for that by that time.

It would certainly show what effect it will have if the Africanized bee gets to Texas and their queens are shipped north.

I would also like to know if he is experimenting with Africanized bees in France now?

Gerhard K. Guth
Auburn, NH

■ Less Finance

I enjoy reading the *Inner Cover*, your monthly contribution. The "Woodpile" piece was excellent. I'm afraid too many of us are oblivious to the small, delicate and beautiful balance of nature going on all around us. The incredible pace demanded of most of us dulls the senses, I'm afraid.

I also think there is too much emphasis on money in beekeeping. I wonder how many of your readers never sell a pound, or only a few pounds each year. I understand the problems of the commercial beekeeper but even they should take some time to reflect on life in the bee yard.

I started taking this magazine about 13 years ago, and it seems there are fewer and fewer articles by the simple backyarders. I especially enjoy your articles and those by Richard Taylor, Charles Mraz, and the 'Old Timer' Thank you.

Gerald Ruska

■ Easy Sell, Hard Work

I was very interested in all the articles relating to marketing honey in your September issue. I find marketing the hardest job relating to honey so I spend more time thinking about it than any other aspect of handling honey (which is more than I can say for most of my hobby beekeeper friends).

I was disappointed that I did not see any mention of how the different socio-economic groups respond to honey. I have read in the Honey Board's profile of the honey user that the more affluent people use more honey. I sell most of my honey at arts and crafts shows in the fall and have found this to be true of my customers. The educated more affluent customers are nutrition conscious and are usually very interested in talking about any scientific aspect of bees or beekeeping. Many of them are familiar with the idea that honey is a remedy for allergies. I can make no statement about this one way or another, but I do not try to stop them from buying the honey. A large percentage of my sales are due to this. In general, selling under such conditions is a very pleasant way to spend time.

I was also interested in Roger Morse's article about removing bees from walls (August). I would have to disagree about how much money there is to be made in doing this. I have found that a majority of the people who call me for this want me to accept the bees as payment. And many times it is a church group that expects it to be done for nothing anyhow. I made so many trips (sometims a forty mile round trip) for which I got no money that I had to make a minimum charge to cover my expenses if they did not want the work done after I arrived and made an estimate of the cost. Sometimes I could not even collect that much. I have decided it is not worth the trouble. I have found it to be a hot, exasperating, and some-

MAILBOX

times dangerous job at best.

You have a good magazine. Keep up the good work.

Boice Burns
Houston, TX

■ Deregulation

The recent finding of fluvalinate in honey and the subsequent press stories and FDA investigations of insecticides in honey should send the beekeeping industry a clear message. We must not use unapproved chemicals near honey. We must follow directions exactly in the use of approved chemicals around honey and bees.

Recognizing these facts, let's take a giant step forward and learn from our past mistakes. After the discovery of the tracheal mite, all kinds of quarantines, embargo's and bureaucratic regulations failed completely to control nationwide spread of this pest. Now, the mite is recognized for what it is — a management problem. Many state regulators hardly raise an eyebrow about tracheal mites anymore.

We must recognize *Varroa* for what it really is a management problem. We can avoid all of the expensive stress-causing rules and regulations that have troubled us through the tracheal mite problem. Three years from now, varroa mites will be recognized as another management problem to be dealt with by beekeepers. Successful beekeepers will manage bees properly and keep them reasonably disease free and capable of producing a good honey crop. Unsuccessful beekeepers will have serious problems, lost colonies, have unprofitable operations and eventually fail.

Looking back at 50 years of American foulbrood regulations, 20-20 hindsight reveals a replay of the very same thing. We have not been able to eradicate American foulbrood, and we will never completely eliminate it. In the meantime we lose thousands of dollars per year to quarantines and various inspection services, state and county fees, etc.

May we now get together, as a group of progressive, forward looking beekeepers, and step over the next hurdle without all the expense and problems that go with it. There is no known treatment to eradicate varroa, no known way to stop it's spread. Spring, 1991, testing will show nationwide distribution of this pest.

By cooperating with our regulatory agencies we can develop a plan of deregulation for beekeepers. Then we could move from state to state, and pollination job to pollination job, with freedom and flexibility. Then we can focus on new improved treatments and controls for varroa and Africanized honey bees. How nice it would be to look forward to a season of hassle-free operation.

Many people worked hard to develop a western states mite agreement. However (I understand) that due to various local problems the wheels have fallen off this agreement and it is not legally possible to move colonies with traces of *varroa* mites into many states. We need to unite, and the people who need pollination service should come on board and join us in presenting a sensible, united, de-regulation request to the regulators.

Neil Miller
Miller's Honey Farms, Inc.
Blackfoot, ID

■ Be Prepared

I read your article in the September issue, *Massachusetts Madness*. We are, as a rule extremely careful to prevent such things. Your article serves as a reminder as to why the incident may and/or could be blown out of proportion.

An industry newsletter I received said the un-named source had over stated things. I believe it was!

I've got the newspaper article you referenced, your article and my newsletter. So now I can prepare a response to inquiries. You're correct in your article about not giving poor answers, criticism or no comments. We should respond accurately and sensibly.

George J. Masciarelli
Nashua, NH

■ Ag Czar?

Your editorial in the September issue should have been laid on us several years ago. The crowd that would rather be ruined with praise than saved by criticism will moan and groan, but I doubt if any of them will say anything sensible.

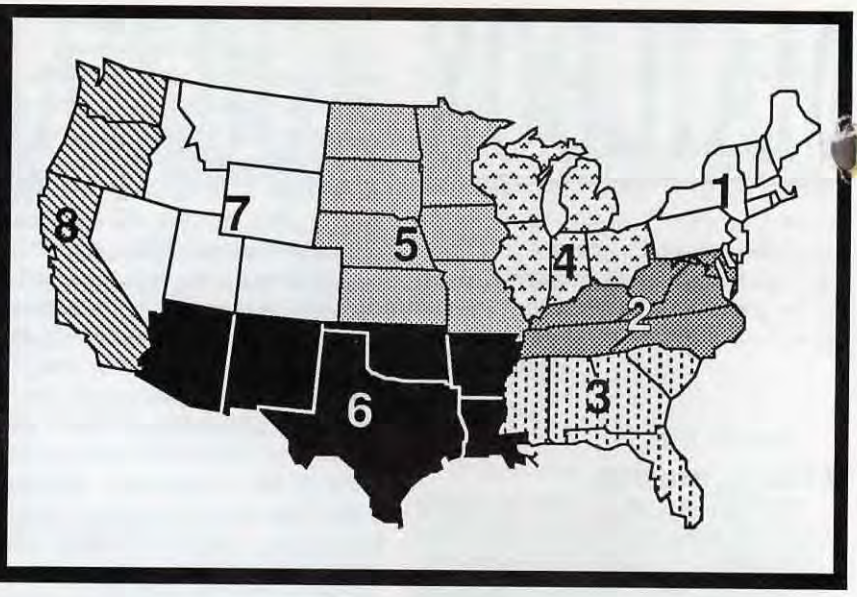
Some will probably take you to task about your reference to too much control from the Secretary of Agriculture. If this develops, please have them contact me, as I have loads of material that explains a master plan to rid the U.S. of small producers. The Economic Community's, (EC) farm program is also designed to eliminate the small producer. If the USDA and the EC are successful with their programs to eliminate the family farmer, who will produce and who will handle the produce? Kraft, Archer Daniels Midland, Cargill Grain, Philip Morris, Heinz, et al, that's who. And the price? In my opinion, our biggy honey packers are not big enough to play the game. Peanut stand size operators will survive, but their prices will be set by the biggies. Bureaucrats will be happy since they will be dealing with a few large producers.

Glen Gibson
Minco, OK

OCTOBER
Honey Report

October 1, 1990

REPORT FEATURES SUMMARY: R=Range of all prices; A=Average prices across all regions; LM=Last month's average; and LY=prices one year ago.



	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.	47.40	42.60	41.50	41.10	40.00	45.00	47.95	41.10	40.00-52.00	43.91	40.35	39.73
60 # Am.	44.50	37.00	39.01	39.00	38.55	43.15	41.50	37.10	35.50-46.00	39.75	37.70	36.18
55 gal. Wh.	.53	.50	.48	.44	.48	.47	.45	.50	.41-.67	.48	.48	.50
55 gal. Am.	.54	.48	.41	.43	.40	.45	.41	.49	.39-.58	.47	.45	.45
Case lots — Wholesale												
1 # 24's	29.51	29.15	29.15	20.40	22.95	24.00	25.95	28.80	20.40-34.25	27.83	25.94	26.42
2 # 12's	26.95	25.03	30.25	20.95	22.55	23.10	27.17	29.30	20.40-32.10	25.98	26.40	25.28
5 # 6's	32.72	25.33	24.00	25.33	21.00	22.39	28.00	26.00	21.00-38.50	26.70	27.22	27.40
Retail Honey Prices												
1/2 #	.95	1.11	1.00	1.44	1.10	.99	1.05	1.22	.89-1.79	1.11	1.06	.95
12 oz. Plas.	1.44	1.39	1.50	1.53	1.15	1.21	1.45	1.52	1.15-1.93	1.42	1.37	1.35
1 #	1.65	1.70	1.50	2.07	1.50	1.55	1.65	1.52	1.20-2.05	1.63	1.66	1.55
2 #	2.95	2.80	3.00	4.00	2.45	2.77	3.19	2.75	2.00-4.00	2.91	2.82	2.77
2-1/2 #	3.60	3.50	3.75	3.25	3.50	3.29	3.69	2.37	2.37-3.79	3.39	3.64	3.68
3 #	3.63	3.90	4.45	3.91	3.95	3.77	3.91	3.30	2.39-4.50	3.77	3.92	3.87
4 #	3.75	5.08	5.25	5.15	4.79	4.00	4.95	4.50	3.75-5.25	4.72	4.93	4.85
5 #	6.42	6.09	6.29	7.00	5.77	5.05	6.18	5.92	4.51-7.50	6.12	5.97	6.06
1 # Cr.	2.25	.95	1.19	1.29	1.19	1.80	1.74	1.93	.95-2.50	1.73	1.70	1.64
1 # Cb.	2.33	1.92	1.75	2.00	2.16	2.00	2.12	3.27	1.05-4.50	2.26	2.52	2.37
Round Plas.	2.25	1.50	3.00	2.71	1.94	1.95	1.95	1.97	1.00-3.00	2.09	1.97	2.05
Wax (Light)	1.52	1.00	1.18	2.05	1.00	1.00	1.02	1.30	1.00-2.05	1.26	1.16	1.05
Wax (Dark)	1.43	.92	1.15	1.00	.95	.90	.95	1.01	.95-2.00	1.07	1.06	.92
Poll./Col.	32.50	20.00	25.00	30.00		25.00		24.00	20.00-35.00	26.63	26.88	24.20

MARKET SHARE

A quick glance at this month's prices, compared to last month's and last year's, should give you an acute case of the yawns. Nothing much has changed. Why not?

A local specialty gift store had the following honey prices — 4 oz. shaker - $2.75; 8 oz. - $1.00; 12 oz. comb $3.00; 12 oz. bear - $1.59; 1# jar - $2.00; 2# jar $4.00; 2# mug $5.49; 4# jar $8.00.

"I have to have two suppliers, because one can't keep up," says the manager with a very profitable smile.

Region 1

All reporters have the same message this month. Sales are good to better than expected, prices stink, and they *will* go up. And production is down. Which should reinforce the first two.

Region 2

Sales seasonable to strong, especially for new crops — specialty honeys are always popular, but all crops selling well. Production, overall, about average, which is up from the last couple crops.

Region 3

Sales seasonally slow, but predictable. Some areas still dry, while others too wet. A mixed bag in production, with some crops doing exceptionally well, while other areas feeding. Mites taking their toll, though.

Region 4

Sales steady, prices steady too. Colonies in good shape due to adequate rain and good fall flows — better than expected. Production generally down though, especially from major flows earlier this season.

Region 5

Prices going up somewhat, which is a good sign. Southern areas have adequate soil moisture, northern areas drying and need some for fall crops. Production good this year, and quality excellent.

Region 6

Sales slow to average, but slowly building. Weather has been great, average or terrible — take your pick. Good weather has made good crops. Bad weather, and no crops. A real checkerboard of production.

Region 7

Sales steady in mountain area, but then they always are. Prices do well here, too. Crops average to just above, where the fires haven't played havoc. Last year's fire areas producing some fireweed honey, and expect bumper crops next year.

Region 8

Sales pretty good throughout region, but some areas have pretty depressed prices. Northern region doing well for production, but southern areas spotty. Cotton seems to be doing well everywhere this year, and CA no exception.

RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

"One does not need expensive equipment to study mating biology or drone congregation areas."

Our methods of open-mating queen honey bees are as primitive today as they were 100 years ago. The only way one can obtain pure matings is to move the queens and drones to an island or remote mountain, desert or similarly isolated area where there are not bees for 12 or more miles. Instrumental insemination of queen honey bees is possible and is an excellent research tool. However, instrumentally inseminated queens cannot be used in practical beekeeping as they do not have the life and number of sperm necessary to head a normal colony.

Our search and selection of stock resistant to mites would be speeded up greatly if we had better control over mating. I write about some of what is known, as I have done before, in hopes that someone might come up with some new ideas.

When Mating Occurs

Honey bees never mate in the hive. Queens and drones of mating age may pass and even touch one another in a hive and show no interest in each other. Queens and drones mate outdoors, usually at a height of 20 to 80 feet. Bees fly for mating only on warm, sunny afternoons. When conditions are right for mating one will see drones at colony entrances, otherwise they remain in the hive.

The Sex Attractant

Dr. Norman Gary of the University of California at Davis discovered the sex attractant in honey bees in 1961. It is produced in the mandibular glands of queen honey bees. It has been synthesized and several people in the U.S. have samples; however, I don't think it is marketed anywhere. One can observe drones in a mating position by tethering a queen several feet under a helium filled toy balloon that is elevated in the right area. Even dead queens are attractive to drones for one or two years after they die. Drones may be attracted to cotton balls or sticks on which a small amount of the sex attractant is placed. I demonstrate this activity to my students every fall and it is interesting to watch the drone comets as they pursue queens. Under normal circumstances one cannot see drones pursuing queens because they fly so fast. A drone comet may be made up of a few or several hundred drones. They fly in a triangular shaped formation that in some ways reminds one of a flock of geese.

Drone Congregation Areas

In 1962, Dr. Cyprian Zmarlicki discovered that queens and drones mate in specific areas he called drone congregation areas. These are areas that are about 50 to 100 yards in diameter. Their shape is irregular; they may be found almost anywhere. Many years ago Dr. C. G. Butler placed some honey bee sex attractant on the masthead of his sailing boat and a year later, when sailing in a swampy area, observed drones were attracted to it over the water. Drone congregation areas have been found in lowlands, highlands, protected and unprotected areas.

What is especially interesting is that drone congregation areas remain the same year after year. We have found that places in which we could attract drones 25 years ago are the same today; however, the number of drones in an area appears to change suggesting that the number found in any one congregation area depends on the number of colonies in the vicinity.

Drone congregation areas may be found by elevating a tethered queen and walking around in open fields until drones appear. There is no pattern as regards the frequency with which areas are found. As much as 100 years ago beekeepers wrote about places where they could hear, but not see, bees flying around in large numbers fairly high above their heads. While people speculated that these might be mating areas, final proof came only after Zmarlicki's discovery.

Low Level Drones

Part of what prompts me to write about this subject now is a recent paper by G. D. Tribe about a drone congregation area he found in Australia. He observed drones pursuing queens "below head height" Tribe wrote they "could be attracted down to ground level" Several comets of drones were seen crashing onto the ground. While this has been reported before it is seen only under unusual conditions and is a spectacular sight from the one description I have read. I have never seen mating comets consistently close to the ground. When drones fly close to the ground it is because of air turbulence, says Tribe. He concludes that "climatic conditions possibly play a much larger role in the formation of congregation areas than previously thought." He may very well be right.

The fact is that many good mind

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RESEARCH . . . Cont. from 572

have studied drone congregation areas. It is also a fact that we do not understand how they are formed much better than we did several years ago. It is a subject that is worthy of further study.

One does not need expensive or sophisticated equipment to study congregation areas. All one needs is a light weight fishline, a helium or hydrogen filled balloon, a queen, patience, good weather and time to walk around to find an active site. □

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Pacific

NORTHWEST Tracheal Mite Survey

B. A. STRINGER
MICHAEL BURGETT

Over the past two years beekeepers in the Pacific Northwest have reported steadily increasing winter losses. During this time the Oregon State Beekeepers Association, along with The Oregon State University Honey Bee Lab, have surveyed beekeepers to try and find out why.

The first survey, conducted in 1988, pointed to tracheal mites, *Acarapis woodi*. First detected in the Pacific Northwest in November, 1985, their first apparent economic impact on colony survival was noted in the spring of 1989. According to data collected by the Oregon Department of Agriculture, tracheal mites have become well established throughout the main beekeeping areas in the state, although isolated areas may still be free of mites. Dr. Lynn Royce, mite researcher at OSU, has also found swarms of some feral colonies to be infested.

Varroa mites were first detected in Oregon in October, 1989 and further tests have found them in several locations. These interceptions have most often been detected in Oregon bees that have been out-of-state. We assume that Varroa is not yet affecting the majority of respondents' colonies.

Survey responses were divided into two groups according to the number of hives in the operation: commercial and semi-commercial operations own more than 100 colonies; and hobbyists individually own fewer than 100 colonies.

In an article published in June, we indicated that the 1989/1990 winter losses for commercial and semi-commercial beekeepers were nearly identical to those in the previous year. Infestation by the tracheal mite was considered a factor in the losses both years. However, mortality rates for hobbyist colonies were almost the same as for the commercial group this time, which is a distinct change from the previous survey. Increased' winter losses by hobbyists' in 1989/1990 indicates the tracheal mite has spread into "back yard bee hives"

Winter Mortality

	1988/1989	1989/1990
Hobbyist	13.0%	22.3%
Commercial	21.7%	21.3%

Last year we noted hobbyists' winter loss was 13.0%, not significantly different from average expected losses in previous winters. There was an increase in hobbyist colony loss this year to 22.3%, comparable to that experienced by commercial outfits. Most commercial operations were known or expected to be infested at the time of the first survey, whereas many hobbyist colonies were probably still uninfested. Current survey results indicate the spread of tracheal mites into hobbyist colonies, resulting in their higher mortality.

Commercial colony loss for the current survey averaged 21.3%, nearly identical to last year's 21.7%. These operations have been exposed to tracheal mites for several years through migratory practices.

Many commercial beekeepers move their colonies to California in early spring for almond pollination. The 24 migratory beekeepers who responded, own a total of 22,766 colonies, and reported losses in both Oregon (2245 colonies - 56% of the loss) and California (1796 - 44% of the loss). Of these 24 beekeepers, only three did not treat their hives with menthol for tracheal mites, which does not provide sufficient basis for comparing treated and untreated colonies.

Data from the 1988/89 survey suggested that treatment with menthol was beneficial,

The second year's data is even more conclusive. And hobbyists are catching up to commercial operations.

when untreated colonies averaged 30.9% mortality, almost three times the loss of treated colonies (11.4%).

To see the effect of treatment this year, we compared colony mortality from 36 beekeepers each owning more than 100 colonies. A total of 23,374 colonies in 25 operations were treated for tracheal mites, with a resultant average loss of 21.6%. The 11 beekeepers who did not treat their hives owned a total of 1,978 colonies, and experienced 20.6% winter loss. These almost identical figures agree with general beekeeper sentiment that menthol had little or no effect on their colonies' survival in Oregon in this year. Only four of 41 hobbyists treated their colonies, too few to give meaningful data.

Recognizing that mites are only part of the winter stress factors affecting bee hives, we considered the effect of treating for Nosema along with treatment for mites on the mortality of the hives. Those beekeepers who fed fumagillin had marginally better colony survival, and, as expected, the highest mortality was seen in colonies not treated for Nosema or for mites. Ironically, the lowest mortality was seen in the group not treated for mites but which had been fed fumagillin.

Effect of Nosema and Mite treatments on colony mortality

	% Mortality	
	Mite	No Mite
Treatment	Treatment	Treatment
Nosema	19.64%	15.67%
None	24.00%	26.80%

Other stresses on a colony over winter include poor honey stores, low pollen supplies and fewer bees in the overwintering cluster. Beekeepers had remarked on a pollen dearth last fall and on smaller clusters. We attempted to quantify beekeeper observations to see if these factors were linked to the colony losses. All survey respondents who provided this information (53 people) were included in this section's analysis, in which low, average and high levels of honey, pollen and bees were compared with colony mortality.

Honey stores appeared to have little effect on survival, possibly because many beekeepers feed syrup when needed. Colonies with good pollen stores fared marginally better than those low on pollen. Pollen or protein supplement may also be fed when the need is recognized. The clearest correlation in this section is that of bee numbers to average mortality. Colonies with high numbers of bees, i.e., "strong", averaged 15.9% mortality, while colonies low on bees, or "weak", averaged 37.1%. Colony survival appears to be significantly improved by the presence of larger numbers of worker bees in the hive.

The final question on our survey asked what beekeepers were doing differently now to combat higher expected winter losses. In general, the comments reflected a commitment to better management and a disillusionment with the effectiveness of menthol as a treatment against tracheal mites. Those beekeepers whose colonies wintered comparatively well last year have some important management practices in common:

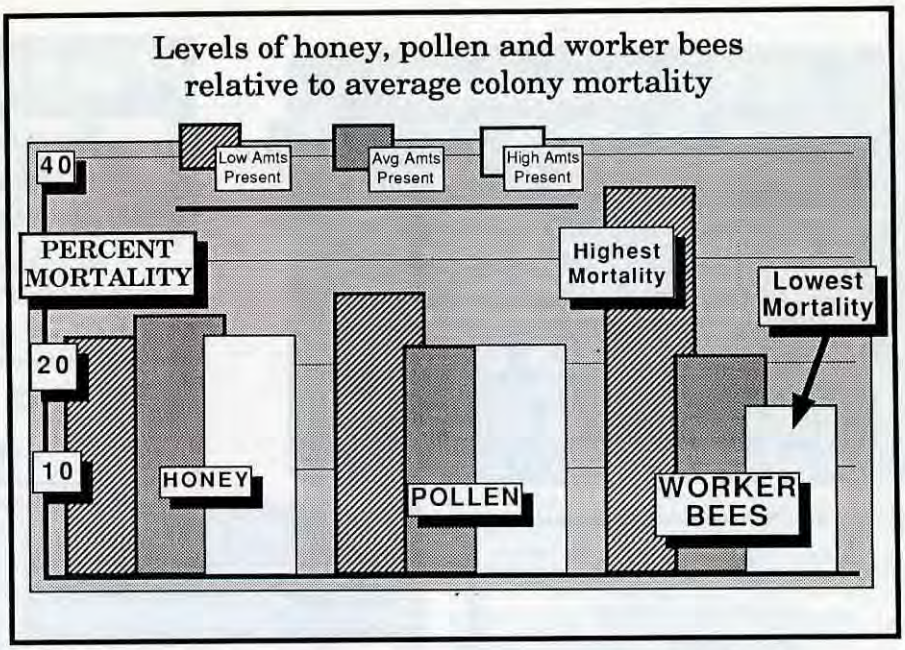
- Medicated bees against AFB and Nosema
- Fed heavy and early in fall for late brood cycle stimulation
- Fed syrup and pollen, or supplement, in spring for early brood stimulation
- Requeened heavily

All of these practices reduce stress on bees and foster high numbers of healthy young bees in strong colonies. Other recommendations from these beekeepers include:

- Better wintering yards with windbreaks and good exposure
- Fewer moves of colonies
- Leaving more stores on the colony for winter
- Breeding queens from your own best stock

Isolated, permanent locations still benefit the few uninfested hives of a hobbyist. However, as some feral swarm samples are already found to be mite infested, even these hobbyist beekeepers should prepare for the eventual effect of mites on their hives.

The results of this survey indicate that tracheal mites probably do contribute to elevated winter losses and that increased attention to good management can improve survival of stressed colonies. □



BATON ROUGE

MARSHALL DUNHAM

Current Research at the Honey Bee Genetics Laboratory

"The United States is a great country because you can afford to do pure research," says Dr. Ben Oldroyd, an Australian geneticist working at the Honey Bee Breeding, Genetics and Physiology Laboratory in Baton Rouge, LA. "I feel I'm quite lucky to be working here because this laboratory is the best in the world for honey bee genetics," he adds.

Dr. Oldroyd's pride and enthusiasm seems to be shared by all of the twenty scientists, graduate students, technicians and clerical workers who staff this United States Department of Agriculture (USDA) research facility.

"There is a larger bee genetics lab in the Soviet Union," says Dr. Thomas E. Rinderer, Research Leader at the Baton Rouge lab. "They have twice as many people but we do far more work."

The two major concerns at this USDA laboratory are the Africanized Honey Bee and the Varroa mite. In recent years, the Africanized Honey Bee severely disrupted the beekeeping industry in South and Central America and Varroa mites have decimated the European beekeeping industry. The simultaneous arrival of both of these pests in the U. S. poses a significant threat to the beekeeping industry, the agricultural sector, and the American consumer.

With at least ten billion dollars worth of insect pollinated agricultural commodities depending on a healthy U.S. honey bee industry, the Agricultural Research Service (ARS) personnel at the lab know that their work is timely and important. There is a sense of urgency and excitement at the laboratory. Doors are usually open and informal conferences are constantly in progress as some of the best minds in the bee research business try to figure out what their data show, what is really happening, and where to proceed from there.

Located just south of the city of Baton Rouge and the campus of Louisiana State University, the lab is a modern, single-story cinder block building, surrounded by lush, subtropical farmland. They keep about five hundred colonies at the main lab and in thirty outyards to supply research material. One of the outyards is a certified quarantine facility on Grand Terre Island, just off the coast of LA, where imported stock can be held while it is observed for pests and diseases.

The Baton Rouge lab was established in 1928 as the Southern States Bee Culture Laboratory, largely through the efforts of the beekeeping industry. The Africanized honey bees were not a problem at that time but the institution turned out to be well located for the study of these tropical insects.

Fingerprinting Honey Bees

In the biotechnology and morphology laboratories at Baton Rouge, a major effort is underway to discriminate between the European and African honey bees by assessing their respective genomes. "The aim is to unambiguously assign genomic DNA as either European or African via restriction fragment length polymorphism (RFLP). Once this technique is in place it is possible to follow gene frequency changes as the two populations hybridize," says Dr. Allen Sylvester who is leading the research in this area. "We are 'fingerprinting' honey bees' DNA, using techniques similar to those used in police forensic laboratories."

Currently, there is a debate among bee geneticists about whether or not the Africanized Honey Bees are breeding with European Honey Bees. Regarding reports that AHBs are not hybridizing, Rinderer said, "I consider those reports preliminary. In fact, recent studies at both the Baton Rouge and Beltsville Labs indicate that the populations of African honey bees in the America's are hybrids. Studies in Argentina have demonstrated extensive gene flow. There are intermediates between AHB's and EHB's in many colonies. A thorough test of whether or not hybrids

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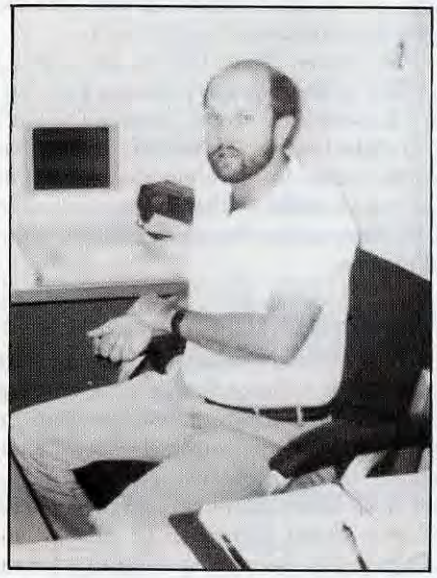
Dr. Tom Rinderer, Research Leader.



Dr. Rich Hellmich, Researcher.

Lilia Ibay, Graduate Student, dissecting honey bees.

form and how long they will persist in populations will come from studying far more samples and extracting information about mitochondrial DNA, morphology and behavior.

Regarding the delayed arrival of the AHB's, Rinderer said, "Some say the delay has been due to the weather, but I say it might be due to the APHIS program of trapping swarms and encouraging the maintenance of the European bee industry. Let's give them the credit they deserve."

Dr. Rinderer also had some encouraging words on the educational program in Mexico. "As best as anybody can tell, AHB's have been responsible for the deaths of only six people in Mexico in the last three years. In the first five years of AHB's in Venezuela, they killed a minimum of 75 people a year. These statistics probably reflect better education and that hybridization is causing the bees to become more gentle," Rinderer concluded.

Mating Biology

Much of the lab's recent research concerns the sex lives of honey bees. Drs. Richard Hellmich, Robert Danka, and Tom Rinderer have collaborated on several research papers concerning various aspects of honey bee mating biology. Before her promotion to Research Leader at the Weslaco, TX laboratory, Dr. Anita Collins also worked with this group.

They have studied such things as the flight time of drones, methods of drone trapping, and ways to measure mating control. After studying Africanized bees in Venezuela and Mexico, Hellmich is now working with U. S. queen breeders on ways to control open matings. He believes it will be possible for queen breeders in southern states to produce predominantly desirable EHB stock, primarily through drone saturation of mating areas.

Both Rinderer and Hellmich agree that the AHB does not have a "mating advantage" over the EHB. In the tropics, the tropical AHB has a general *survival* advantage over the EHB because bees from temperate zones never flourished there. Vast areas of South American jungles and forests had no *Apis mellifera* at all until swarms of AHB's arrived. Today, AHB's greatly

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outnumber EHB's in the American tropics. This situation probably will be reversed, however, when the tropical bees arrive in the temperate zone.

Dr. Hellmich explains that the honey bees of Africa never invaded Europe because that part of the world is full of bees which act as genetic buffer zones. As the AHB's spread into temperate areas, large EHB populations will act as genetic buffers. Temperately adapted EHB's should have a "numerical mating advantage" over tropical bees in most of the United States. At least this appears to be the case in Argentina.

AHB Abatement

Another recent ARS pilot project under development is the efficient elimination of unwanted bees. Although most insecticides will kill bees, finding the safest chemical and method for destroying bee colonies in crowded areas was a job undertaken by Dr. John Williams and Dr. Robert Danka and is being studied in collaboration with the Tucson Bee Lab. They found a treatment system that is selective for honey bees, fast acting, and relatively safe. They also developed a syrup feeder for administering the toxin efficiently. When the feeder is discovered by a feral colony, foragers transport the poison back home and the majority of the population, including the queen, is dead in a fairly short time. This technique, when perfected, is expected to be used primarily in crowded areas such as parks, recreational areas, and college campuses.

Instrumental Insemination

While some researchers try to control open mating, others are working on methods for field selection using controlled breeding systems. Dr. John Harbo is a leading authority on artificially breeding queen bees. He developed the now widely accepted Harbo syringe for instrumental insemination that holds semen from one or dozens of drones and can precisely measure the volume of semen given to a queen.

One of Harbo's techniques for selecting stock involves equalizing inseminations among a group of queens. A large quantity of sperm is collected and mixed prior to inseminating queens that are to be tested in field colonies. In this way, all queens can be evaluated against the same genetic background because each queen will have been given the same population of sperm in her spermatheca. Thus, the only genetic differences among the test colonies would be from the queen herself, not from the male parentage of the colony (the sperm stored by each queen in her spermatheca). If the original sperm mixture was taken from the drones of a single queen or a single inbred line, one could evaluate how well certain stocks (represented by queens) combine with that particular selection. If the original sperm mixture was very diverse (perhaps collected from a hundred colonies or more) one could evaluate the general combinability of the stocks being tested. This technique is being used to study resistance to the varroa mite.

The latest program involves importing Brother Adam's Queens from England

Laying Workers

One of Dr. Harbo's graduate students, Jeff Harris, was investigating the "laying worker" phenomenon before graduation. He found it is easy to get workers to lay eggs — just remove the queen and brood and provide pollen. Some workers will develop ovaries and begin laying unfertilized eggs in as few as seven days or as many as thirty. It is thought that this is a dying colony's last chance to contribute to the gene pool. One of Harris' most interesting observations is that there is some kind of a "group effect" that acts on laying workers. The larger the group of bees, the faster the workers develop ovaries. Some researchers have wondered if sub-families competed against each other in ovary development, but the observed group effect seemed to indicate that competition isn't what was happening.

Sub-families

Among the researchers investigating the "sub-family problem" is Ben Oldroyd. Because queens mate with many drones, a colony is made up of several "sub-families" or "super sisters" — daughters who had the same father. Having the same mother but different fathers makes most of the workers "half-sisters". Questions arise such as, do workers tend to favor, and thus rear full sisters as queens? Do workers look after their brother drones better than unrelated drones? So far, there appears to be no large differences, or if there are, researchers aren't sure what significance they may have. Perhaps the most important practical question is: how many disease resistant subfamilies are needed in a hive in order to make it disease resistant? Such questions have important ramifications for the design of future bee breeding programs.

Oldroyd uses instrumental insemination to create colonies with one, two, or more sub-families for his studies. He also uses techniques like gassing a virgin queen with carbon dioxide to turn her into a drone layer to maintain his inbred lines.

"Up until the last ten years, there was no scientific selection of bees," says Oldroyd. "Breeding bees was not scientific until the development of instrumental insemination made it possible to completely control mating.

Varroa Research

For the past five years, the Baton Rouge Lab has been developing a strain of Varroa resistant bees. A colleague in Yugoslavia, Dr. Jovan Kulincevic, has created the strain by counting mites in 100 brood cells of each colony ten times a year and breeding the colonies that show the lowest average infestation. After five years, the resistant strain shows half as many infesting mites as the controls.

"This summer we brought the strain to our quarantine island off the coast of Louisiana," Rinderer said. "This is a Carnica strain with all the desirable attributes of that stock — gentle, quiet on the comb, good producers, sensitive to flow conditions, conservative cluster, good overwintering, white cappings on comb honey — and now, Varroa resistance as well. After six months in quarantine, they were propagated at the Baton Rouge Lab and sent to Florida for testing.

"The bees are now being raised in Florida," says Rinderer. "We are working with a Florida beekeeper there, Horace Bell, who has supplied us with colonies, equipment, feed, secure sites

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One of the many nuc yards maintained by the lab's staff.

and all the rest of the things needed to do good field research.

"This strain is not immune to Varroa," Rinderer cautions. "It still must be treated, but it may need treatment less often. This is important because fewer treatments reduces the possibility that the mites themselves will become resistant to acaricides. We have one chemical registered for Varroa treatment Fluvalinate. Indiscriminate use of miticides will cause resistance to develop rapidly. We hope to have a Varroa resistant stock to release in three to five years."

Lilia Armendez Ibay, a doctoral student and the most recent addition to the Baton Rouge Lab's staff, will be in charge of propagating the Varroa-resistant lines. One of her challenges is to figure out what makes these bees less susceptible to Varroa infestation.

Cecropin

Dr. Sylvester and his colleagues in biotechnology are also doing some genetic engineering research with a protein from the Cecropia moth, which contains the genetic instructions to manufacture an anti-bacterial and anti-fungal compound called cecropin. Since three major bee diseases American foulbrood, European foulbrood, and chalkbrood — are caused by bacteria or fungi, a bee which could produce cecropin might be virtually disease-free. The problem faced by scientists is transferring the cecropin-genes to honey bee chromosomes a formidable but not impossible task. Similar transfers have been done with other organisms.

Support Staff

The scientists and graduate students at the Baton Rouge lab are supported by a staff of technicians and clerical workers. The Chief Technician is Eugene Jensen, who grew up on a thousand colony operation in Mississippi and was a commercial operator for many years. Today he oversees the keeping of about 500 colonies, providing bees, brood, and equipment for the researchers or the staff.

Freelance artist Gerry Perrone is one of the top hands on the technical staff. A graduate of the L.S.U. art school, he started working at the lab as an undergraduate, and was invited to work full time after graduation. When not working at the lab, he makes sculptures from wood and glass in his home studio. Gerry has found that bees influence his art, and vice-versa. When scientists on the staff need special equipment built for experiments, they often rely on Gerry's creative abilities. After building some customized observation hives, Perrone is now designing a sculpture which incorporates live bees.

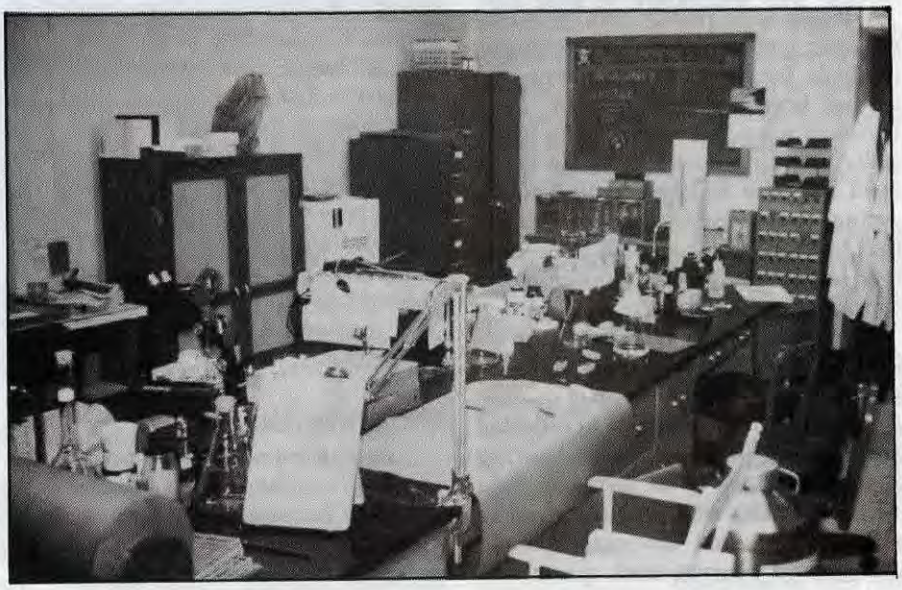
Among the outstanding technicians is Lorraine Davis, a hard-working and multi-talented helper who is called upon to do a wide range of tasks around the lab. Other staff technicians include Tony Stelzer, Sandy Kleinpeter, Dan Winfrey, Rita Riggio, Robert Daniel, Garry Delatte and Dan Perceval.

Perhaps the most important people at the lab are the secretaries who process all the paperwork that keeps the institution going. Rachel Gibson and Susan Adams perform the clerical duties in the front office, making it possible for the lab to function.

Conclusion

The researchers at the Baton Rouge USDA Honey Bee Breeding, Genetics and Physiology Laboratory are leading the way in coping with the enormous problems faced by the U.S. beekeeping industry today. Although the challenges are great, beekeepers and the general public can be confident that the issues are being addressed by some of the best minds in the apicultural research world. □

A busy lab bench typifies a busy lab staff.



WINTERING NUCS INDOORS

D. NELSON and D. McKENNA

A brief look at the costs and benefits of keeping nucs.

During two recent winters, Fairview College and the Beaverlodge Research Station in Canada have been cooperating on the evaluation of small colonies wintered indoors, especially six-frame nuclei. There is a trend developing to winter smaller colonies, which goes hand-in-hand with summer and fall increases, rather than spring divisions. These smaller units have also proven to be equal to or better than packages as far as production is concerned and offer considerable flexibility in management.

Six-frame nuclei were evaluated primarily with the idea of overwintering units to replace spring packages. Smaller nucs, split brood chambers, etc., may also be used in the same manner. Six-frame nuclei were chosen so that ample bees and stores would be available to overwinter. Also, three six-frame nucs take the same space as two Langstroth hives, both for size and number of frames. After the nucs are made up, if a nectar flow occurs, three nucs can be pushed together with two queen excluders and honey supers.

Some of the reasons for wintering nucs are to reduce the cost of wintering, increase the number of colonies that can be wintered in a given facility, have a source of extra queens in the spring, take advantage of locally reared queens, and ease of spring management.

Nuclei were prepared in late June and allowed to develop during the rest of the summer.

In the fall, each nuc was checked to ensure it was queen right and then fed about 21 lbs. of sugar as winter feed. Nucs were weighed and moved inside in early November and held at about 40°F over the winter. In the spring, colonies were weighed when moved outside and placed into full brood chambers that had been prepared with honey, pollen and combs for the queen to lay in.

In the spring, Langstroth brood chambers were prepared with stores the same as for package bees except the middle three frames were removed. When the nucs were moved out of the wintering facility, they were moved to the spring yard along with the prepared brood chambers and three of the six frames with bees were transferred from the nucs into the center of the prepared brood chamber.

The building used to overwinter the nucs in was 40' x 60' and 12' high (27,612 cu ft.) and cost about $40,000C to construct. It had a cement floor, exhaust fans and ceiling circulation fans, as well as small heaters, should extra heat be required. The cost, if amortized over 20 years, would be $5,832C per year. This figure is used in the calculations shown in the results. Volume of space per unit would be 18 cu. ft. for singles and 11.5 cu. ft. for six-frame nuclei.

The results of wintering nucs and the relative costs are presented in the Cost Table. As outlined, the annual cost for the building amortized over 20 years is $5,832C. The costs of preparations, wintering and the annual building cost for a single chambered colony was $29.41C and for that of six-frame nuc was $22.98C — about a 12% difference.

The mean weight loss of the nucs was 13.5 lbs. (chart). This compares to about 27 lbs. and 53 lbs. for single and double chambered colonies. Of the 595 colonies wintered, 25 (4.2%) died during the winter, 15 (2.5%) were weak or queenless after the transfer to full brood chambers and the first queen check and nine (1.5%) were requeened before June 20th, for a total loss of 49 (8.2%).

The preparation and wintering of nuclei indoors is a viable option for summer and fall increase and for those that want to purchase or rear their own cells or queens. The production from these units appears to be equal or better than packages. However, to use small colonies, a basic change in management must occur.

The traditional method of making spring divisions from strong colonies and introducing a purchased queen may not be acceptable because of the many changes that have oc-

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Overwintering nucs can be profitable, and can reduce or eliminate package purchase costs each spring. The facility to overwinter nucs in is somewhat sensitive, but can be justified in the longrun.

curred in the industry. A much better option is to make up smaller colonies before, during, or after the honey flow. This, however, requires that you purchase queens, rear cells, or begin a queen rearing program for your own operation. Queens reared during summer are excellent because of large drone populations and ideal weather conditions. Probably the greatest advantage is this method uses brood chambers that have been prepared with pollen and honey just as is the practice for package bees. □

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Reprinted from Alberta Beekeeper's Association Newsletter, July 1989.

Weight loss (in lbs.) for Indoor Wintered Colonies.

Colony Type	Avg. Wt. Into Bldg.	Avg. Wt. Out of Bldg.	Avg. Wt. Loss	Range of Wt. Loss
6-frame nuc*	51.3	37.8	13.5	9 21
singles**			27.0	22 35
doubles**			53.0	41 63

*Data collected at Fairview College, 1988-89
**Data collected at Beaverlodge, 1974-77

Cost of Wintering Colonies Indoors

Single Brood Chamber

$5,832 annual building cost divided by 1,500 singles	$3.89
$1,500 maintenance and utilities divided by 1,500	$1.00
42 lbs. sugar ($25.40 per bag), 42 lbs. x $0.29/lb.	$12.18
cost if 15% loss occurs	$3.84
TOTAL	**$29.41**

Six-Frame Nuclei

$5,832 annual building cost divided by 2,400 nucs	$2.43
$1,500 maintenance and utilities divided by 2,400	$ .63
drugs	$1.00
21 lbs. sugar x $0.29/lb.	$6.09
queen	$7.00
depreciation on specialized equipment	$2.00
cost if 20% loss occurs	$3.83
TOTAL	**$22.98**

SUE COBEY

KIM FLOTTUM

Sue Cobey grew up in the 1960's, surrounded by the rolling hills and beautiful farms of Lancaster, Pennsylvania. The traditional values and strong emphasis on the work ethic practiced in that part of the country were certainly influential during her childhood, but like many of that era, she felt a need to move, to explore, to find out.

She started by going to the University of Delaware for an undergraduate degree in entomology and while there, signed up for a student exchange program at, of all places, Oregon State University. It was there that she met Mike Burgett, and beekeeping.

After a year's introduction, she headed to northern California and worked for Wenner Honey Farms, doing general beekeeping and some queen rearing. From there she moved to Montana and worked for Harvey Kindel, another commercial operator.

After Montana's wide open spaces, Sue went to work for Genetic Systems Inc., in LaBelle, Florida, producing queens on a large scale.

"I learned the business side of commercial beekeeping and queen rearing with these jobs. Each gave me a unique perspective on the business and the skills needed to survive," she said. "The experience was invaluable."

When she'd soaked up as much as she could from the Florida operation, she headed west again, deciding to try the academic side of the business. Dr. Norm Gary needed a technician to support his bee behavior research, and Sue fit exactly into his plans.

Known internationally for her experience in honey bee Instrumental Insemination, this quiet and gentle beekeeper now calls Ohio home.

Her work at Davis was exacting, and led to another job at the USDA Honey Bee Research Lab at Baton Rouge, LA, working for Dr. John Harbo. It was with Dr. Harbo that she perfected the techniques and skills needed for large scale, successful instrumental insemination (II) of honey bee queens.

At the end of this term, Sue and Tim Lawrence, (they met while at Wenner Honey Farms), moved to Vacaville, CA to start their own business Vaca Valley Apiaries.

The business specialized in producing breeder stock for queen producers and special stock for researchers. Instrumentally inseminated queens are generally used only to produce the production stock of a queen breeder.

To choose the best available stock, they maintained a closed population breeding program, modeled after the Page-Laidlaw system developed in Davis, and to some extent in Madison, WI when Page held a Post Doctoral position there.

A program like this is expensive to maintain though, since about 200 colonies are needed which produce little honey and each must be meticulously maintained. As it turned out, sales of II queens were slow at first because many in the industry

Continued on Next Page

COBEY . . . Cont. from Page 585

felt they didn't need a high-priced, though well tested, breeder stock.

To supplement income, Sue and Tim increased their sales of II equipment and began training people in the techniques and requirements of II.

The position of research associate ("Apiarist" in Ohio State University language) opened when Kim Fondrk went to Davis with Rob Page. The University then had the opportunity to build the department nearly any way they wanted and so started with the Professor in charge, Dr. Brian Smith, with input from him on what he needed and wanted in the Apiarist Position.

Since Dr. Smith's research focus is on honey bee learning and physiology, his greatest need was (1) a honey bee population to work with, and (2) the means to select from that population specific characteristics to study.

Sue's experience in commercial beekeeping, queen rearing and the finer aspects of II were just what the Doctor ordered and she took over the position the beginning of July this year.

Her first duty was to get the University's bees in shape. With the help of Brian Burrell, a graduate student and part time assistant, Sue spent the better part of six weeks locating the apiaries, getting colonies up to strength, feeding, cleaning and all the other chores needed to get things running smoothly — 'her' way.

She was just finishing these 'introductory' chores when we dropped in for a visit this fall. She was sitting in the conference room of the new Rothenbuhler Honey Bee Research Center, located on the edge of Columbus, Ohio.

"I've been doing a lot of requeening the last couple of weeks," she said, "using stock from the closed population we brought from Vaca Valley Apiaries.

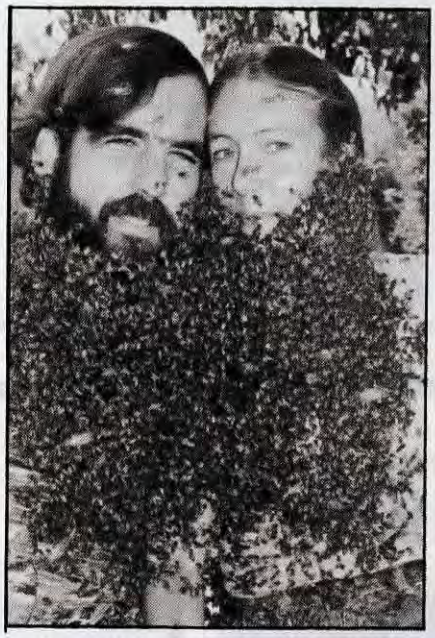
"We had that system running for eight years and were producing some pretty nice stock, I think," she said.

When the system was up and running in California, Tim was the basic beekeeper and did most of the day-to-day work.

"He's actually a great beekeeper," said Sue, "while I sort of tend to the details. He ran the business and made sure I was doing what needed doing," she added, with a hint of a smile.

There are some pretty ambitious plans shaping up in this new lab, though. Sue's responsibilities, besides maintaining the labs 130 colonies, include working with Dr. Smith on the biochemical projects, helping with electrophorisis chores, dissecting nerves of bees, and other basic lab work.

However, immediate plans call for construction of a flight chamber in the lab which will require a significant amount of work.



Sue, with husband Tim. This 'double beard' photo is from their wedding.

Teaching an introductory level beekeeping course will also be on the agenda since that's one of Dr. Smith's assignments and, between travels and other tasks, he will need fill-in help.

"I've attended a LOT of courses in my day," said Sue, "and I've taught a lot, too, so this shouldn't be too difficult — and it certainly beats trying to keep bees in December in Ohio!"

Another project Cobey will be involved in is a pilot project in conjunction with Dr. Glen Needham, studying the particulars of the affects of vegetable oil on the honey bee-tracheal mite relationship.

"That's real-life practical research," said Sue, "and that's the kind of work I can get my teeth into."

But sitting on a back burner, at least for the moment, is the most exciting project of all.

"As soon as we can, we want to set up a stock center, of sorts," Sue said.

"We (Tim, Brian and I) envision a program where drawing on the credibility of the University, we can set up a stock center to provide breeder stock for the commercial beekeeping industry.

"We would produce queens with certain 'selected' traits and feel many queen breeders will play a part."

When asked about the 'traits' she mentioned, Sue listed a few honey production (a very nebulous term), wintering, gentleness, tracheal and varroa mite resistance and even more.

"It would be designed and run much like the plant stock centers in various parts of the country," she said, "but instead of apple trees, we'd raise queen honey bees."

Along with and complementing this program, would be an education section aimed at teaching bee genetics, practical aspects of selection, instrumental insemination and perhaps even a certification type program teaching beekeepers to be better beekeepers.

"Of course the details haven't been worked out, funding located and a million other things," said Dr. Smith who fully supports the idea.

"We want it to work and think it can because of the excellent facilities we have here and the fact that we have good people. Besides Sue and Brian, there's Jim Tew up at ATI who's a wealth of knowledge and information," Smith said.

But, for the moment, the biggest road block is the funding required to set-up and get the program running, even on a small scale. And, with the bee industry in the midst of several other battles at the moment, strong and continued support from that arena isn't feasible — at least in the near future.

Dr. Brian Smith, Assistant Professor of Entomology, OSU, outside the new research facility he and Sue share.

Or, at least that was the thought until the Ohio State Beekeepers Association met in July.

"After they (Brian and Sue) finished their talks," said Pat Radloff, assistant program chairman of OSBA, "the group voted over $1,200.00 right there on the spot to help get the project started."

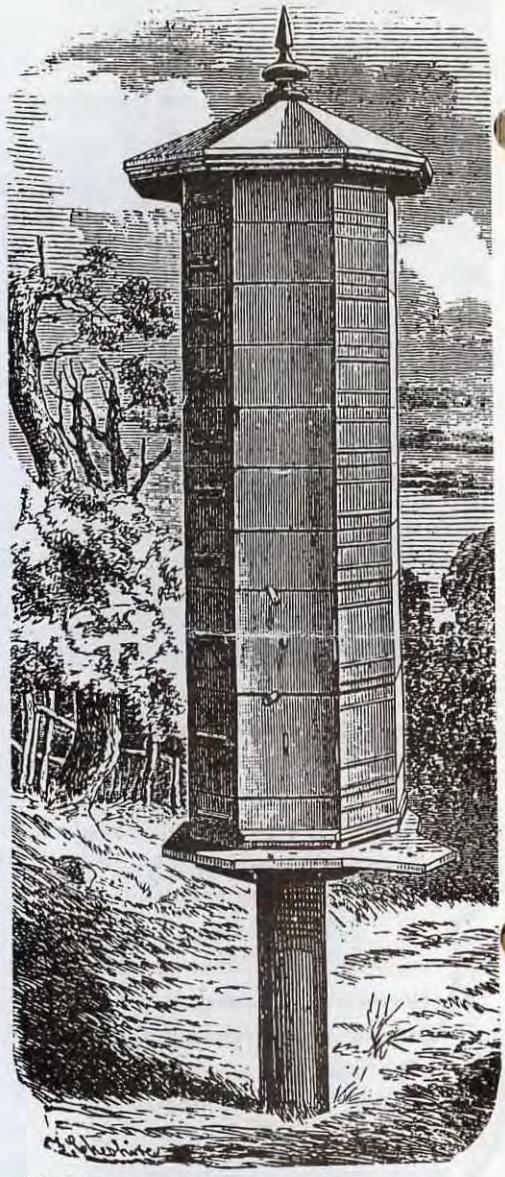
"Where there's involvement and enthusiasm from one side," said Pat, "there's pride and a willingness to help from the other."

Sue Cobey's days are full right now, winding down from this summer's work and already running some lab experiments.

"It was a tough choice to give up what we had in California," said Sue, "but from what I've seen here so far, I think it was a good move." □

The Stewarton Hive

HAROLD LIBERMAN



In the early 1800's, Scottish beekeepers made important contributions to apiary science that are sometimes overlooked. Most of these advances were the result of a cabinetmaker-beekeeper named Robert Kerr who was from the Ayrshire village of Stewarton. Apparently, up until 1819 his beekeeping experience was limited to using straw skeps, but he then used his woodworking skills to design and fabricate a hive that was named after his home village, the Stewarton hive.

Mr. Tompkins, Apiarist of the Rothamsted experimental station showing the glass peep holes on the Stewarton hive.

This hive, octagonal in shape, utilized two brood boxes and small supers that could be added as necessary. Wooden bars were fitted across the top of each box to facilitate the building of comb and the supers were built with a glass peep hole so the beekeeper could tell at a glance the progress of the bees in filling each super.

Kerr preferred using the octagonal-shape hives because the bees seemed to fill the supers better than a square box. He utilized clever management techniques and many of the Stewarton hives were in use for years.

A neighbor of Kerr's was William Walker, a quarryman from the village of Kilmaurs. Since Walker was a more experienced beekeeper than Kerr, he was able to improve on Kerr's design. Walker began to experiment using frames instead of top bars. The proper spacing of the frames seemed to be a problem for Walker, but around 1830 he found the proper bee space that is in common use today. In 1849 his son John Walker further improved the design of this hive by using a type of queen excluder. *Three years later* the Rev. L. L. Langstroff patented a hive in which bee space was thought to be an original feature. Since then many have claimed that Langstroff was "the originator of the bee space" although William Walker made this discovery at least a dozen years before Langstroff patented his hive.

Many Stewarton hives were in use well into the 1900's. In fact the Walker family apiary in Kilmaurs was thought to be one of the largest in Britain before the onset of the "Isle of Wight" disease into Scotland at the end of World War I. Nearly all the Stewarton hives were burned in an effort to combat the disease whose cause was unknown at that time.

A recent beekeeping tour of England took me to the Rothamsted Experimental Station in Harpenden where Mr. P. W. Tomkins showed me a reconstructed Stewarton hive now in use. There is no reason why such hives, with moveable frames, could not be constructed for use as a curio or as a museum piece. These hives are a real wonder, beautiful to look at and reportedly enable the bees to gather a bumper crop. Cabinet making anyone? □

ANISE HYSSOP

B. A. STRINGER

A new "Wonder Honey Plant", described in the *Beekeepers Journal* of March, 1872, caught the attention of many beekeepers. Mr. H. A. Terry wrote, "It commences to bloom in May or early June and blooms incessantly until late in autumn. I firmly believe that an acre of this plant well established would be ample pasturage for 100 colonies of bees.

The observations of Mr. Terry were taken seriously, as he was a distinguished horticulturist and noted pioneer in plant breeding. He originated many new peony varieties and bred plums which are still planted today. He kept bees in Pottawattamie County, Iowa, where he harvested "fine crops of honey"

Anise Hyssop, "Wonder Honey Plant"

The "Wonder Honey Plant" was known as Anise Hyssop, sometimes called Fragrant Giant Hyssop or Licorice Mint, *Agastache anaethiodora*, which grew wild in masses along the margins of the prairies of Manitoba and Alberta, southward to Illinois, Nebraska and Colorado. The plant's aromatic leaves were used by the Indians to brew a licorice-tasting tea, and also as a seasoning in much the same way as sage is used today. In addition, a remedy for colds was extracted from the plant.

Mr. Terry noted that Anise Hyssop "produces honey in the greatest abundance, which possesses in a slight degree the same fragrance of the plant, which renders it extremely pleasant to the taste I find my bees work stronger on this plant than on any wild plant in this part of the country."

After reading Mr. Terry's article, Mr. Frank Pellet tried to locate some Anise Hyssop to plant in the Honey Plants Test Gardens in 1940. He remembered seeing wild stands of the herb north and west of Winnipeg in 1925, where 1/3 to 1/2 of the honey crop was considered to have come from the plants. However, by 1940 it seemed that the plants had vanished from the region, along with the Indians and the buffalo. Mr. Pellet noted that livestock could have grazed it out, but it was strange such abundance should have disappeared so completely.

After a long search, some seeds were found and sent from South Edmonton and from north of Winnipeg. About a dozen of the plants were dug up and sent to Mr. Pellett, but they arrived in poor shape, having undergone inspections in Canada and the United States. With intensive care, enough plants survived to flower and set seed.

Initial attempts to grow the seed were not very successful. Although the seed bed had been finely worked, periodic drying of the soil during the early growth of the seedlings killed many of the plants. A second attempt, mulching the bed with a fine layer of straw fared better: "Thousands of young plants soon appeared and continued to grow until we had a wonderful stand."

The plant, as described by Mr. Terry, "somewhat resembles catnip in manner of growth. The flowers are purple and it is well worthy of a place in the flower garden."

From his trials in the Test Garden, Mr. Pellett was very impressed with the

Continued on Next Page

plant. "Bees began working on the flowers in June and there was still a scattering of flowers which the bees visited freely in early November, a period of about five months of continuous activity. The bees do work it so vigorously that one cannot doubt they are getting a substantial harvest." In the *American Bee Journal* of December 1943, he reported "no other plants among hundreds tried in the Test Garden have attracted the bees so consistently or for so long a time."

Anise Hyssop is still grown as an ornamental, and one innovative beekeeper-farmer grows it as bee pasturage in central Washington. Mr. John Eckstrom, who is developing land-based beekeeping, farms Anise Hyssop for honey production. Researchers found that one acre of mature plants could yield a surplus of 100-125 lbs. of honey per colony, compared with the Washington average of only 35-45 lbs. (*ABJ*, July 1982, D. F. Mayer, C. A. Johansen and J. C. Bach.) □

BEESWAX & HONEY IN COSMETICS

GEARY WONG

You can make elegant cosmetics from the products of your hives, a few simple ingredients, and a bit of spare time.

The word cosmetic is derived from the Greek word *kosmos*, meaning order. All substances, preparations, treatments, and appliances intended to improve the appearance of a person can be termed cosmetics.

The use of cosmetics dates back to antiquity. The early Egyptians used fragrant oils, creams and ointments to anoint their bodies in preparation for their religious rituals. The legendary Cleopatra was reputed to be an expert in the preparation and use of cosmetics. In more recent times, especially following the Second World War, we have seen a dramatic increase in the use of cosmetics. People, especially Americans, spend more money on cosmetics than ever before. Many factors have contributed to this growth, among them the tremendous increase in population — the "baby boom", the increasing number of women in the work force — women concerned with their appearance in the workplace, and the timeless human obsession with youth.

Beekeepers are the recipients of two important ingredients used in cosmetics: beeswax and honey. Commercially, beeswax is important in such products as creams, lipsticks,

Formulas for Beeswax Borax Creams

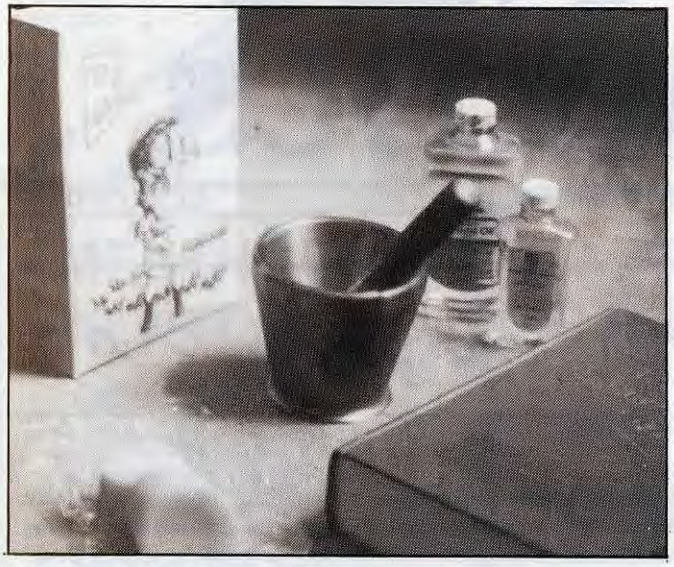
Ingredients	Proportions											
Oil Phase												
Beeswax	8.0	10.0	8.0	10.2	4.0	12.0	16.67	5.0	16.0	14.0	16.0	12.0
Mineral Oil	49.0	57.0	56.0	54.0	39.8	50.25	50.0	54.0	48.0	52.0	50.0	56.0
Paraffin	7.0		10.0		12.0		-	10.0	5.0			-
Cetyl Alcohol	1.0	-	-			-					-	-
Cet. Esters Wax			-				-	-				12.5
Spermaceti	-	2.0		-	-	5.0					-	
Ozokerite				10.0		5.0			-	-		
Petrolatum				-	12.0	-		10.0	-			
Lanolin	-	-		-		2.0			-	-		
Water Phase												
Glycerin	-			-			-	2.0	-			
Borax	0.4	0.7	0.6	0.8	0.2	0.75	0.83	1.0	1.0	1.0	1.0	0.5
Distilled Water	34.6	30.3	25.4	25.0	32.0	25.0	32.5	18.0	30.0	33.0	33.0	19.0

BEESWAX. Cont. from page 593

and epilators (hair removal products). Beeswax is used as a stiffening agent or firming agent (base) in lotions and creams, and as a mold releaser in lipsticks. Beeswax is compatible with most other animal and mineral waxes, such as cetyl esters wax and spermaceti.

Honey has long been prized for its value in cosmetic applications. It acts as a scenting agent in shampoos, soaps, creams, and lotions. Honey also acts as a humectant (agent which provides moisture) and as an emollient.

It is possible for beekeepers to produce cosmetically elegant products with a little patience and experimentation. I offer a few formulas for beeswax-borax creams, lip balm, yellow ointment, and a honey facial scrub.



Simple ingredients, easy recipes.

Technique . . .

Melt the hard waxes (beeswax, paraffin, spermaceti, cetyl esters wax, cetyl alcohol, ozokerite) before adding the other components of the oil phase. Bring the mixture to 158°F (70°C). Dissolve the borax in distilled water and then add the glycerin. Bring the temperature of the borax and glycerin solution to 158°F (70°C). Gradually add the water phase solution to the oil phase mixture, stirring rapidly. Perfume may be added at a temperature of 122°F (50°C). Continue to stir slowly (to keep excess amounts of air from becoming trapped in the mixture) until it has congealed. Jars may be filled with the resulting mixture when its temperature has decreased to at least 108°F (42°C).

Official Formula for Yellow Ointment

Prepare Yellow Ointment from:

Yellow Beeswax	50g
Petrolatum	950g
To Make	**1000g**

Melt the yellow wax in a suitable dish on a steam bath, add the petrolatum, warm until liquified, then discontinue the heating, and stir the mixture until it begins to congeal.

Lip Balm

Prepare Lip Balm from:

Beeswax	4 parts
Castor Oil	4 parts
Sesame Oil	3 parts
Anhydrous Lanolin	2 parts

Melt the beeswax, then add the rest of the ingredients. Pour into small jars to cool.

Honey Face and Body Scrub

To prepare a Scrub finely crust one or more of the

Sources of Ingredients

Ingredients	Sources				
	Beekeeper	Pharmacy	Chemical Supply House	Supermarket	Health Food Store
Aloe Vera		✓			✓
Anhydrous Lanolin		✓	✓		
Beeswax	✓		✓		✓
Borax			✓	✓	
Castor Oil		✓	✓	✓	
Cetyl Alcohol			✓		
Cetyl Esters Wax			✓		
Distilled Water		✓		✓	
Glycerin		✓	✓	✓	✓
Honey	✓			✓	✓
Lanolin		✓	✓	✓	✓
Mineral Oil		✓	✓	✓	
Ozokerite			✓		
Paraffin			✓		
Petrolatum		✓	✓	✓	
Sesame Oil			✓		✓
Spermaceti			✓		
Vitamin E Oil		✓			✓

following:

Peach Kernels
Apricot Kernels (seeds)
Walnut Shells

Mix the finely crushed powder with enough honey to form a thick slurry. After light scrubbing, rinse with water and pat dry with a towel.

Honey acts as a humectant. It helps to soothe and keep the skin moist after scrubbing. The peach and apricot kernels and the walnut shells provide friction against the skin, thus providing the "scrubbing effect" The synthetic version makes use of minute polyethylene beads as the scrubbing agent.

One may also experiment with the addition to the slurry of small amounts of Vitamin E Oil and/or Aloe Vera.

During the next decade there will be a growing consumer trend emphasizing a return to simplicity, a return to the use of products with basic, natural ingredients. The proliferation of such "natural" products will result from the growing distrust and dissatisfaction by the public with chemical intrusion into everyday life. The recent pesticide scare, involving the detection of dangerous synthetic pesticides in fruits and vegetables led consumers to seek so-called organically grown produce, supposedly free of synthetic fertilizers and pesticides. Beekeepers are in a unique position. They can provide the raw materials (beeswax, honey, etc.) as well as the finished products (creams, lotions, etc.). The natural products, untainted by any artificial compounds, will be especially attractive to the discriminating consumer, and thus financially rewarding for the beekeeper. All will benefit.

Careful experimentation will yield a wonderful variety of useful, profitable products. Be careful when experimenting with lotions and creams because some of the ingredients may cause irritation or even allergic reactions. Most people will have no problems with these products, though, and you should enjoy and benefit from all of them. □

MAKING CRAFTWAX and FOUNDATION CANDLES

DIANA SAMMATARO

Many people like to give handmade candles as Christmas or Hanukkah presents but they don't want to be bothered with the mess and fuss of melting wax and getting molds ready. A simple solution to this is to make rolled craftwax or foundation candles. These require far less time, are fun to make and best of all they look very elegant.

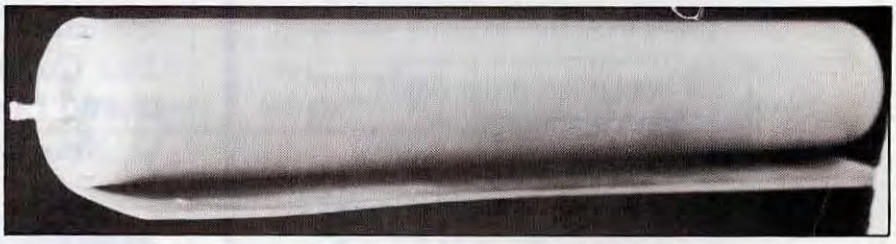
Of course, not everyone wants to make this type of candle, and for others it is not practical. It is for these reasons that many businesses have sprouted, making rolled craftwax and foundation candles for gifts and home furnishings.

A recent *New York Times* article describes a business where a couple makes a good living selling 100% pure beeswax candles rolled from foundation. They roll thin or thick foundation, into cylinders, skep shapes and squares of different heights and widths. Some of their candles burn 70 hours or more, depending on the width and tightness of the roll. They sell them individually or as groups. The prices they ask are quite high, but the product they make is superb.

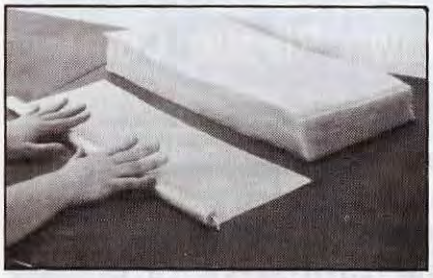
There is another family who makes a living selling *craftwax* candles, too, (craftwax is a paraffin based wax blend made into foundation sheets). Begun as a family enterprise, all the kids are involved and have saved enough to go to school (see Candle Business).

Rolled Candles

There are few good books on the subject. In fact, all those I found were quite old. Old fashioned 'rolled candles' used plain wax sheets that were not embossed. The sheets were thicker than the embossed sheets, and the candles were rolled somewhat loosely so they would not bend in hot weather.

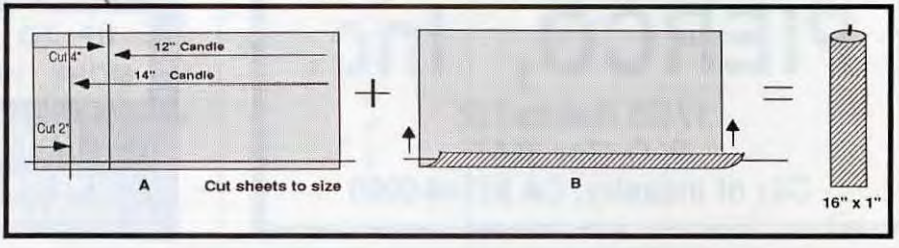


The layers of wax are separated by thin layers of air. This construction prevents bending in warm churches.



Roll embossed or plain sheets of wax by keeping the roll tight and snug and working on a smooth surface.

Diagram 1a.



The basics of rolling candles are actually quite simple. To make a plain cylinder, simply roll up a sheet of foundation or craftwax starting from either edge. If you start from the short edge you get a short candle, and if you start from the long end your candle will be much taller (diagram 1a, 1b).

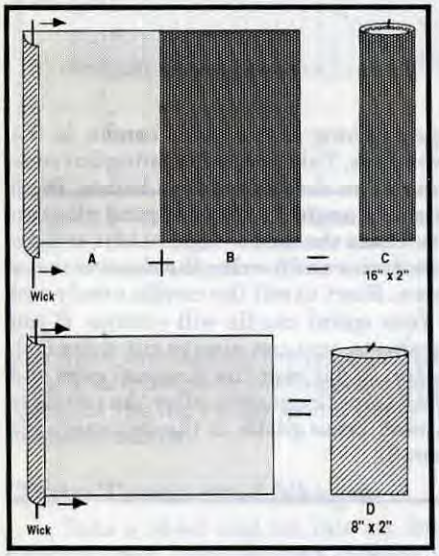


Diagram 1b

Rolling Instructions

1. Lay an embossed wax sheet flat on a surface, making sure the wax is at room temperature (75 to 80°C). If it is too cold the sheet will split. Carefully bend down one edge about 3/8" wide; it is easier to bend it over the edge of a table (diagram 2).

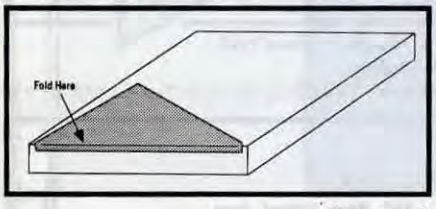


Diagram 2

2. Now insert a length of wick one inch longer than the sheet into the groove you have made and close the wax over it with enough pressure to hold it in place.
3. Gently press the wax over the wick and start rolling the sheet up, keeping it even and snug as you roll.
4. Use as many sheets as you need; it takes about 6 sheets to make a three inch wide candle. Once finished, shape the bottom to make sure the wax sheets stay together.

That's all there is to it. There are many variations on this basic form. You can make a square candle by starting to make edges with the second sheet you roll. When you reach the last sheet, pinch the edge to make the finished product crisp (diagram 3).

A very fancy candle I've seen is a basic white cylinder three inches in diameter that has 12, one-sheet cylinder candles of green and red bent around it, giving a dramatic swirl effect. (diagram 4).

The Elements Pottery
A Family Candle Business

What happens to your business when your workers graduate from college and leave home? Most family businesses run into this problem occasionally, but for **The Elements Pottery** operation, the workers *were* the business.

In 1980, the five Brousseau children started making candles as a sideline to the parents Pottery business.

'We needed some specific colors of candles to go with our stoneware candle holders," said Linda Brousseau, mother and founder of **The Elements Pottery.** "We were not planning on being candle makers, but since the two oldest children had worked in the pottery business since they were both six, this was a natural progression for them."

However, André and Louis have both graduated from college, André in 1988 and Louis in 1990. That leaves the three youngest children, Dominique, Mignon and Jacques, to fill the orders which total about 40,000 to 50,000 candles per year.

At one time all five children worked at specific jobs in the operations. Dominique, the youngest, separated the sheets of wax. Then Jacques cut them into specific sizes. Louis and André rolled the wax around a pre-cut length of wick, and Mignon finished by wrapping each candle in tissue paper and packing them in boxes.

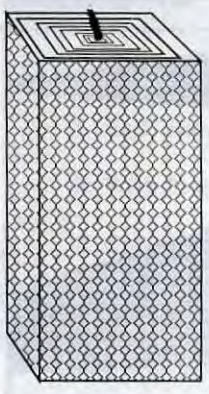
Now that André and Louis have moved on, Jacques has moved up to rolling candles, Mignon now cuts the wax and rolls and wraps candles while Dominique separates, wraps and rolls some of the smaller candles.

When the older children left, the younger ones have not only had to pick up the work load, but have also had to hire their friends to work. This past summer, five different friends have worked part time for a few days to several weeks to build up the inventory needed.

The candle operation has occasionally put a strain on family labor relations. In the beginning, the kids never saw their money. They would endorse their paychecks, which then went directly into savings. As a result, they became upset about how their money was handled, so Louis, at age 13, took his siblings out on strike. It was really tense for about two weeks, with the kids and parents not talking to each other.

Finally, the problem was solved by going to a written contract. Thus each year between Christmas and New Year's, duties, wages and benefits are negotiated. In addition, each child is allowed to retain a portion of their wages in a checking account.

Making rolled candles, as a business, has been a tremendous learning experience for the children. They have not only learned the value of money and how to handle an income, but they have also learned the value of work and what it can do for you. They have even learned how to get along with their co-workers, who, in most cases, happen to be their siblings. □



Hazel Pearson Photo

Diagram 3 - A square foundation candle.
Diagram 4 - Swirl candle with Poinsettia.

You can also add sparkles to your candles, or cut-out flowers, bees and the like. Make these with other colors of wax/craftwax, or make or buy paper decals. The only limit is your imagination.

For elegance though, nothing beats tapered candles.

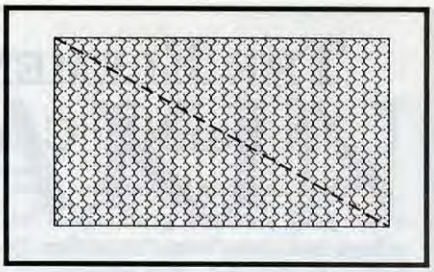


Diagram 5

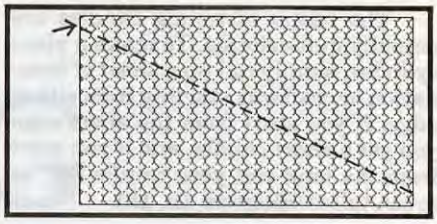
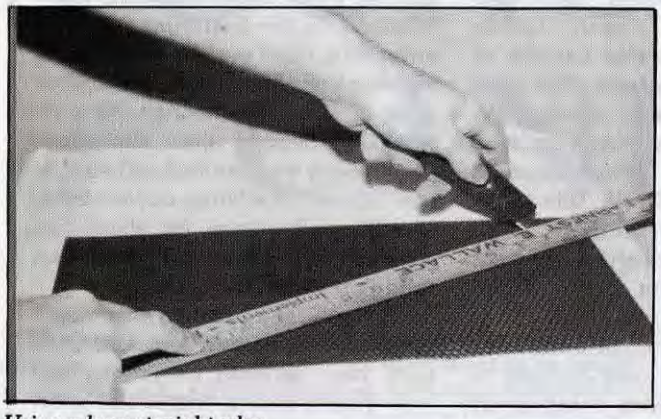


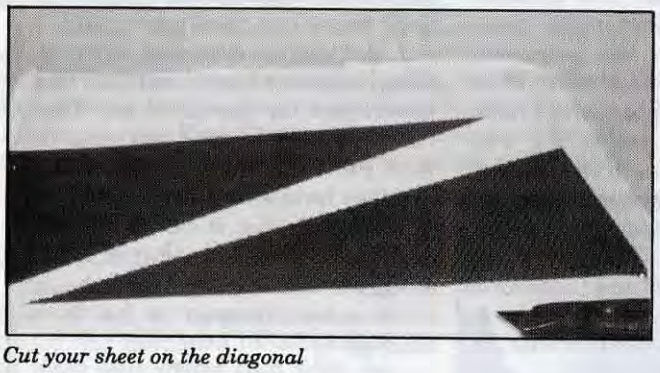
Diagram 6

Tapered Candles

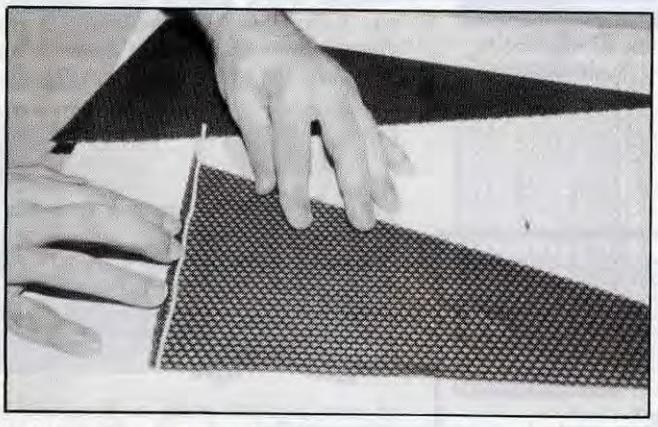
To make a classic tapered candle with this type of wax, take a sheet of wax and place a ruler or yardstick from corner to corner (diagram 5). You can offset the points by 1/2" to make a place for the wick to set, or not (diagram 6). With a sharp knife cut the wax on the diagonal, set the wick and roll as above (photos below).



Using a long straight edge .



Cut your sheet on the diagonal



Fold over about 1/4", and roll.

An especially eye-catching and stylish candle is the spiral taper, using two colors. Take two contrasting but complimentary colors and cut on the diagonal as before. Bend down the long side of one triangle for the wick, and place an 18" wick in the groove. Press the wax over to hold it snugly.

Now take the second color and overlap the sheet with the wick, bottom edges even. Start to roll the candle evenly and tightly (diagram 7). Your spiral candle will emerge. If you don't want to use two sheets, you can always cut a one inch strip of contrasting color, fold it over the diagonal edge and roll. (Or you can merely spiral a cut strip after the candle is rolled.) For more contrast, press glitter in the diagonal edge before rolling (diagram 8).

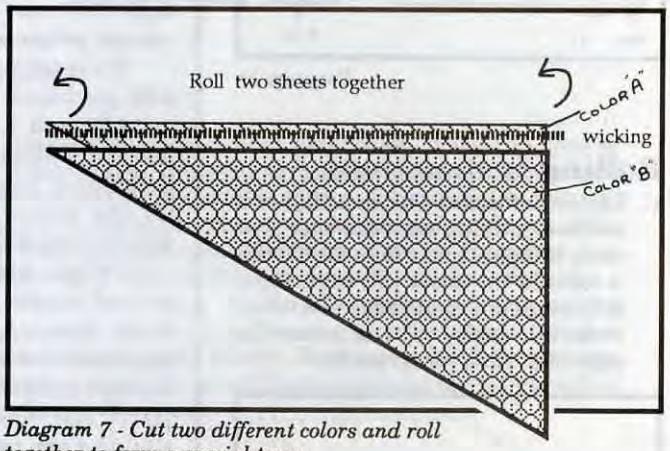


Diagram 7 - Cut two different colors and roll together to form a special taper.

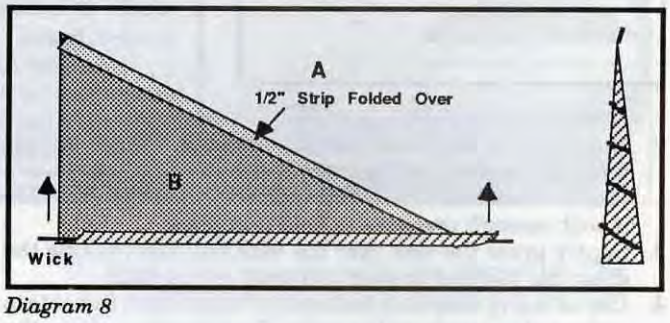


Diagram 8

Once the spiral is done, you can accentuate it by pinching the edge of the diagonal to flare it out.

You can also make a two way flare for a large candle. Roll a cylinder candle to the desired width. Now take a sheet of the same or contrasting color and cut diagonally, as if to make a taper (see diagram 9). Place the long, straight edges together (not diagonals) as shown, and overlap. Press together to hold. You will end up with one large sheet of an isosceles triangle.

Place the large cylinder candle in the center of the triangle, with point to the back. Bring around both sides to

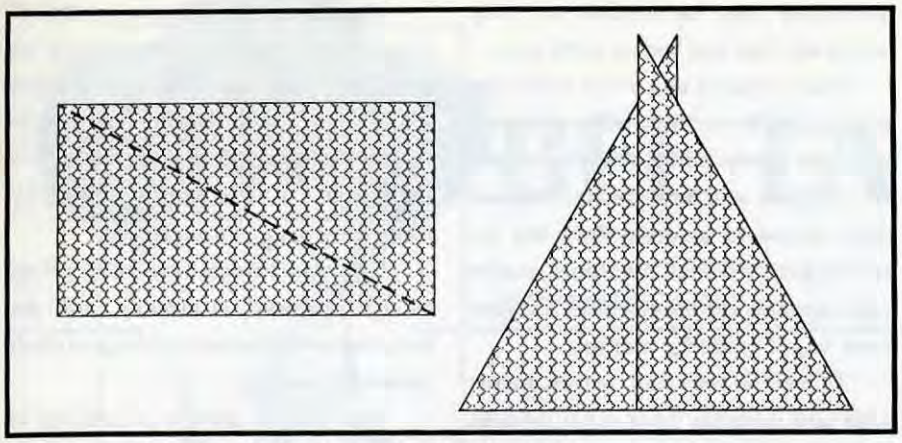


Diagram 9 To make a double flare, cut a sheet diagonally. Now, lay the triangles to form an isosceles triangle. Cut excess and pinch together. Fold one central candle as shown.

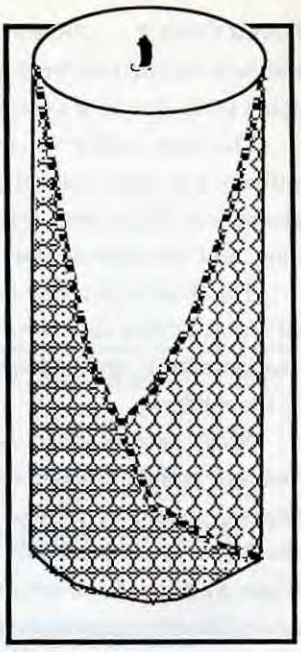


Diagram 10

the front, overlapping the points at the bottom (see diagram 10). Press to hold. Use thumb and forefingers to gently shape edges into a flare. You can decorate the flare edge with a paper lace trim, if you are doing a special occasion candle.

Tiny Trees and Skeps

Take a sheet and cut into six triangles as shown in diagram 11. If making trees, use green wax, if skeps, use beeswax. To make a fatter skep, take three or four sheets of wax and lay them end to end. Take a yardstick or other long cutting edge and cut from corner to corner; you can also vary the color a little (diagram 12). Now set the wick and start rolling.

Candles from craftwax are an easy way to make lovely gifts to sell or give for the holidays. Make some extra money with your foundation. With a little imagination you could open up a whole new world of gift ideas. □

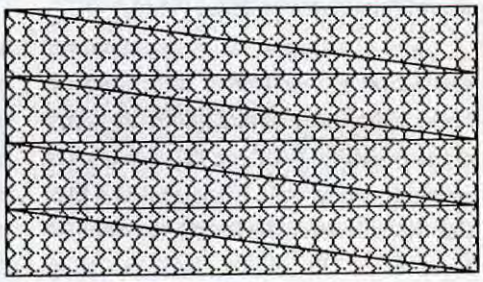


Diagram 11

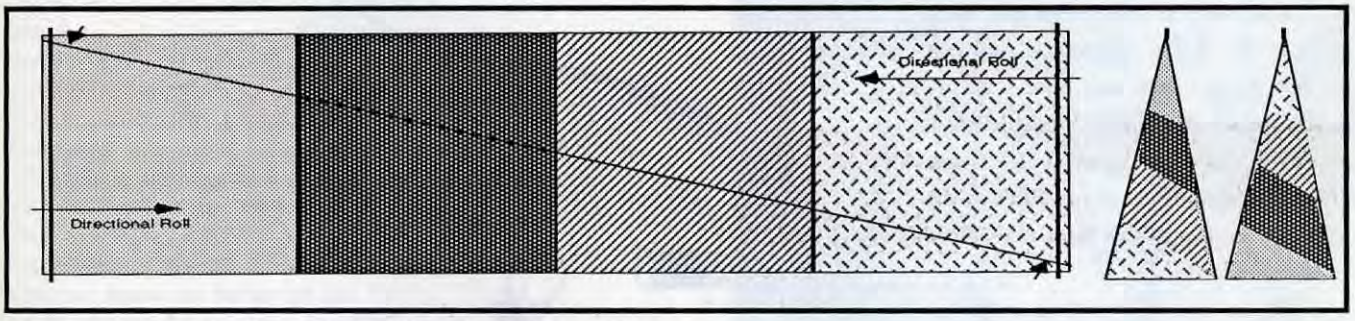


Diagram 12 To make a fatter skep, cut four sheets of natural beeswax like this. You can also use shallow foundation for a smaller skep.

The Ear of Corn

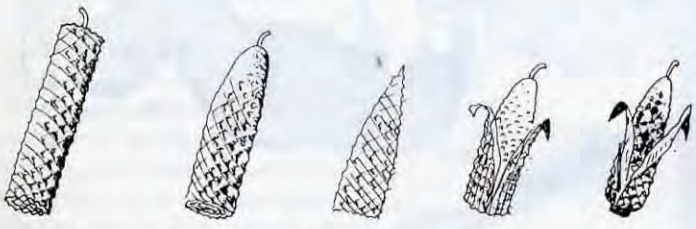


Fig. 1 *Fig. 2* *Fig. 3* *Fig. 4* *Fig. 5*

1. Roll "standard" candle in yellow, 6" long.
2. With fingers, knead end as shown.
3. Cut 3 husks in green.
4. Wrap them around ear.
5. Pinch and knead bottom of the ear to shape.

INNER COVER ***From Page 564***

watched the mayhem from inside. They didn't settle down for a couple of hours.

The next night we tried again, without the light, but they still exploded out of the nest. But fewer this time, and not quite as fast.

The third night they were outside all night. I think they were waiting for another attack, and had armed guards at the ready.

Now, according to my well-rehearsed spiel, the third night (if needed) should be the last and there shouldn't have been any problems. When we opened the window to spray again, the vibrations alone set them off — sticking an arm out that window would have been suicide.

The next night we were prepared. Bee suits, gloves and a long stick to break open the nest and get to the heart of the problem. Between the two of us it worked pretty well. That and the fact that it was cooler the fourth night must have been the charm because they weren't out waiting and there seemed to be fewer flying, even after the spray.

I suppose the experience has been worthwhile, if not profitable, and my respect for hornets has been significantly reinforced. But what's been improved the most is my spiel when somebody calls. I certainly have more empathy and can give first rate, first hand information.

Oh, the boss of the siding crew was impressed too, I guess. He said he was surprised. "Most people don't have a clue as to how to handle these," he said, "and I usually get to charge 'em fifty bucks to do it myself."

Maybe it was profitable.

•

In spite of increasing honey prices, and even a few pollination fees high enough to make mortgage payments, only someone who's been standing downwind from his smoker too long would say this has been a good year.

Even if you're one of the lucky few who needed a semi to truck away your crop, you'll soon notice that the suppliers of glass and barrels have raised their prices to accommodate the increasing costs of fuel, insurance, wages and supplies. So it's going to cost you more to get ready for market.

Of course, *your* fuel, wages, insurance and supplies have gone up also, and the market is even harder to get to.

Then there's the people you'll buy next year's stuff from. They also face increasing pressure to raise their prices to meet bottom line requirements. And then their suppliers .

The recent stupidity in the mideast has raised our financial attention on fuel costs — but there has been a whole list of materials, services and widgets with rising costs for over a year. The northeast hasn't been the driving force it once was, and the rest of us aren't doing much better either. The handwriting's on the wall.

My dad lived through several of these 'down turns in the economy' as they call them now. He called them 'tight times' (referring to how people held their money) and what was called for was just 'a little belt tightening' by everybody to get through.

The way things have been going, though, some of us already need the belt, just so we have *something* to cinch up a notch or two.

But there's always something to 'tighten up' in a business — some good, some not and some not even possible.

Over the next few months, we're going to examine as many of these as we can. For some there are no alternatives, and cutting back just doesn't work. For others, there may be approaches you haven't considered or needed to consider to get the job done. And, some you can do without, if you stop to think about it. So, starting next month we'll start a short series on raising your bottom line, without too much pain. Stay tuned.

Kim Flottum

BEE TALK

RICHARD TAYLOR

Box 352, Interlaken, NY 14847

"Grading, freezing, cleaning and labeling — all that's needed to finish this harvest."

Last time I described how I harvest my honey crops, using escape screens and two-way bee escapes. That's what works best for me. I used to have a gasoline-powered bee blower, but I didn't really like it. Too much noise.

This time I'll conclude the story by describing how I deal with the honey after I get it into the honey house. I produce only comb honey, so I have nothing to say here about extracting, straining, bottling and so on.

The full supers are stacked, eight or ten high, on little pallets with castors, so I can move them around. I stack them crosswise to each other, so that any bees left in them can fly out to the screened door, then be released. Supers should not be left that way indefinitely because a few always have some eggs of the lesser wax moth. This tiny moth is only about the size of a clothes moth, and the larvae are very tiny. If they hatch out they make tiny pin holes in the cappings. A week is about as long as you can leave the honey in the supers without risk of wax worm damage.

Keeping supers from different apiaries separated is useful in determining what kind of honey is in them. Unfinished sections can be sampled, or sometimes the drizzles from burr comb. Usually a super will contain honey from only one source. I like to be able to tell my customers what kind of honey they are getting, although with comb honey it is sometimes hard to be sure.

The round sections are removed, four at a time, and lined up on the long table I use. Additional layers are made by laying down two-by-fours and sticks and laying sheets of masonite or plywood on these. Comb honey is very fragile, even in round sections, and you cannot pile sections directly on top of each other. They must be separated by the masonite sheets, with some space between.

The sections are graded as I trim off the protruding foundation and put the lids on. Unfinished ones are kept to one side to return to the bees. Each section is held to the light to make sure there is no pollen in it. Sections which are not of very high quality are kept to one side as "seconds" These are the ones that have some travel stain, or that are not filled around the edges too near to finished to return to the bees, but not quite finished enough for selling at regular price. These seconds I leave unlabeled and sell directly to customers at half price. Usually there are not many seconds.

Nor are they many sections to return to the bees for finishing. But there will be some, and it is important how you replace them in a super. Those most nearly finished must go into the outside

Continued on Page 603

Honey is bagged and then placed in a freezer.

BEETALK . . . Cont. from page 601

frames, and usually, upside down. That way the super, when harvested, will be quite uniformly finished, and travel stain minimized.

The next step is crucial. The comb honey must all be put into a good freezer for two or three days to eliminate any possibility of wax worms. Wax worm damage, sometimes extensive, is a virtual certainty without this precaution, at least in my area.

For this step I place the sections in plastic bags. This is so that when they are removed from the freezer, chilled to about 0°F, moisture from the air will collect on the *outside of the bags* rather than on the sections themselves.

I put twelve sections in each bag, using the plastic bags that are now so extensively used to carry groceries from super markets. These are strong and cost nothing; I merely save them from our own family grocery shopping. My freezer is very small, but it nevertheless holds twelve such bags, or, 144 sections. Since they need to be in the freezer for only a couple of days, this small freezer is quite adequate. It would be adequate for a harvest of two or three thousand sections, and even a much larger production could be handled by a freezer of standard size, since the sections are not kept in it very long and, having once gone through it, they need not be returned to it, at least so far as wax worm prevention is concerned.

Freezer temperature is important. The temperature should be allowed to fall to near 0°F, which is adequate to kill even the invisibly tiny wax worm eggs. And the fuller you pack the freezer with honey, the faster it will go down to that low temperature. I drop a thermometer in with the honey, so I can know how soon I can take it all out and refill the freezer with the next load. And, incidentally, this cold treatment does *not* hasten granulation. On the contrary, extreme cold retards granulation, and is even sometimes used for that purpose.

The inside of a freezer is, of course, dry, in spite of the frost that appears around the edges, so there is no problem of humidity here. Humidity can, however, be a problem in the honey house itself. If there is comb honey in the honey house, whether still in the supers or not, and you get a day or two of humid weather, with or without rain, then there is great danger that the honey will absorb this moisture and perhaps be totally ruined by becoming thin and vulnerable to fermentation. The fact that the honey may be well capped over is no safeguard. And even the slightest fermentation is a total disaster.

Empty supers stacked outside for the bees to lick dry.

The solution to this problem is simple and obvious — use a dehumidifier. A small dehumidifier, which can be easily carried about, does not cost much and solves the problem completely. I turn mine on, and leave it on all night, whenever I think there is the slightest danger of humidity. It can remove a gallon of water from the air overnight.

The final step of harvesting is to get the empty supers cleaned up. A few need no attention, but most will have some stickiness in them. I just stack them out in the yard, crosswise to each other, and the bees in my home apiary have a feeding frenzy. Within a half hour the air is filled with bees and then, by supper time, not a molecule of stickiness remains, and the supers are ready for another season.

It then remains only to label the sections and market them. Marketing becomes easier every year, as demand increasingly outpaces production. Once you get into comb honey, and get some sort of market started, selling pretty much takes care of itself. My own sales greatly increased when I began sticking a little label onto the back of each section, in addition to the wrap-around label, explaining just what comb honey is. Many people just don't know, and the extra label tells it all. This is not much extra work, because a single drop of paste on the bottom holds the extra label there. That label is my little unpaid salesman. And I'll be glad to send a specimen of it to anyone who sends me a stamped and addressed envelope. □

Questions and comments are welcomed. Use Interlaken address, above, and enclose a stamped envelope for a prompt response.

QUESTIONS? ANSWERS!

Richard Taylor

Hot Wasps

Q. How can I get rid of the wasps that are everywhere in the fall, when I am extracting honey, stinging my hands when I take hold of the extractor handle, and where do they come from?

Arthur Young
Norwalk, WI

A. Those are probably yellow jackets, which make large paper nests in trees, cavities and underground. The nests become very populous in the fall and the insects become desperate for food. To get rid of them in your honey house put a quarter inch of kerosene in a tray or large can, hang this directly under a light bulb and leave the bulb on day and night. In the morning dump hundreds of the insects out into your driveway and ignite with a match.

Feed Now, Pay Later

Q. Some beekeepers advise feeding sugar syrup besides antibiotics to colonies in the fall and spring as a preventative to disease. What is the theory behind this?

R. Baker
San Francisco, CA

A. I know of no therapeutic value of sugar syrup by itself. In my opinion, properly managed bees never need feeding at all.

Ed. Note: A well fed colony will undergo far less stress from other factors (disease, cold, damp, etc.) thus reducing a multitude of 'possible' problems. Sugar does not cure any disease but will help hungry bees cope with the day-to-day stuff better.

Free Fire Starters

Q. What can you do with slumgum?

Trudy Florence
Leakey, TX

A. If it still has viable yellow wax in it but is not sticky you can get a decent price for it from a bee supply company. Otherwise, you can use lumps of it to help get a fire started in a fireplace or wood stove or, even better, in a coal stove. You can also compost it and, after a year, add it to your garden as organic matter.

Propolis Pick-Up

Q. How do bees collect and carry propolis?

Edward J. Reder
Bay City, MI

A. They collect it with their jaws, scraping it from the surfaces of various trees and plants, and from leaves, and they carry it in their pollen baskets, on their hind legs.

Not Enough Bees?

Q. Two of my four colonies seem very weak, even though they have plenty of honey. How can I straighten them to ensure their winter survival? Would pollen supplement be a good idea?

Nathan Miller
Farmington, MO

A. It may be those two colonies are dwindling from tracheal mites, since they have ample stores. Feeding pollen supplement would probably accomplish nothing. In case they do not survive, then I suggest, come spring, you swap three or four combs of brood and bees from each of your two strong colonies for empty combs from the centers of the dead ones and requeen the two new colonies thus established. All four will then rebuild quickly and give you a good honey crop.

Questions are welcomed. Address: Dr. Richard Taylor, Box 352, Interlaken, NY 14847, enclosing stamped envelope for prompt response.

GLEANINGS GLOBE

OCTOBER, 1990 ALL THE NEWS THAT FITS

Honey Board Update

REFERENDUM CHANGES

Producers and importers will have the opportunity to determine the fate of the National Honey Board assessment refunds next year.

Both the House and the Senate have included identical language in their farm bills to amend the Honey Research, Promotion, and Consumer Information Act. The most sweeping change of the amendments will mandate a vote on the assessment refunds as part of the continuation referendum expected to be held in 1991. A variety of other changes will make what have been called "housekeeping" changes in the law.

The Honey Board amendment legislation was initially passed in the Senate during the 1989 term of Congress. When the House took up the legislation earlier this year, more changes were added, including the provision for the referendum. The House language was included in the House's version of the Farm Bill just before the House Agriculture Committee sent it to the floor.

As the Senate took up debate on its Farm Bill, the Senators sponsoring a variety of "check-off" bills, as the commodity promotion programs are called, decided to include them in the Senate's Farm Bill. Working with Sen. Wyche Fowler (D-GA), the American Beekeeping Federation was able to have the House language on the Honey Board changes included in the Senate Bill, avoiding the need for a conference on those provisions.

In addition to the call for a vote on whether the refunds should continue, the amendments:

- Set the maximum assessment at the current level of 1-cent per pound.
- Provide for new definitions for importer and exporter.
- Allow one of the two importer seats on the Board to be filled by an exporter.
- Provide for more orderly transition if the producer districts are reapportioned due to production changes.
- Prevent a producer-packer who is more of packer than producer from filling a producer seat on the Board.
- Give the Board control and benefit from patents, etc., developed with Board funds.
- Allow faster, less complicated payment of refunds — until and unless ended by the referendum.
- Tighten up refunding procedures to importers.
- Limit the assessment exemption available to producers of less than 6,000 lbs. to honey which is consumed at home, donated, or sold directly through local retail outlets.
- Require persons obtaining exemptions to maintain records to substantiate the exemption and pay assessments if the 6,000 lb. limit is exceeded.
- Clarify the voting procedures.

For approval, both the continuation of the program and the ending of refunds will have to receive a majority of the votes cast and that majority will have to account for 50% of the honey produced and imported.

Beekeepers Too!

AG WORKERS CHANGING

Are young farm operators becoming an endangered species? In 1987 the average age of the farm operator was 52 years. Fifty years ago, at the start of the lifetime of this farm operator, the average age was only 48.7 years.

Since 1940, the number of farm operators under age 35 has declined an astonishing 77% and they represent just over 13% of Americas farm operators in 1987. However farm operators over 55 years of age accounted for about 35% of all farm operators 50 years ago, while they account for 45% in 1987.

Dr. Charles Pautler, Chief of the Census Bureau's Agriculture Division, says the rising age of the American farm operator might reflect the difficulties facing young people who want to get started in farming. According to Dr. Ronald Wimberly, Sociologist at North Carolina State University, "Getting into farming is not like getting into other jobs. Viable farmers require formal education, capital resources, and general farm experience passed on from one generation to another." Dr. Wimberly believes these factors have and will limit the number of young people who enter agriculture.

Pautler says that when some older farm operators retire or cut back on their farming activities, part of their land is absorbed by other farms still active. This means that some farms shrink or disappear, while other increase in size. Since 1940 the average size farm has grown from 175 acres to 462 acres in 1987. Pautler also points out that the number of farms have declined by almost 66% and the land in farms by just over 9.4% in the same time.

Calvin Beale, Chief Demographer at U.S. Department of Agriculture has said that the "stabilization of the age structure (of farm operators) has yet to occur and the number of middle age farmers is expected to decrease until the turn of the century"

All in all, the picture for American agriculture is very healthy, according to Pautler. Over the last fifty years, the Nation's farm operators have gotten older, yet American agriculture has experienced tremendous productivity gains. The increasing age of farm operators is no danger to our abundant food and fiber supply.

MAD COW DISEASE, AND KILLER BEES?

"Stop calling BSE — bovine spongiform encephalopathy — "Mad Cow" disease," says Jamie Kaestner, National Cattleman's Ass'n., Englewood, CO. "Mad Cow" is a lightning rod for media attention, ill-founded public outrage and fright. Sort of like "Killer Bee"?

Check out these items in this month's GLOBE

- Canadian News
- Il syringes now available
- Summer weather summary
- FYI — News to use

CANADA NEWS

ONTARIO FUND

The Ontario beekeeping industry has received C$750,000 from the provincial government and is seeking as much as C$175,000 in matching funds from the federal government.

Agriculture and Food Minister David Ramsay said the money will be used to create the Ontario Beekeeping Industry Assistance Fund. "This program acknowledges the importance of this activity in Ontario and provides beekeepers with tools to strengthen and improve their industry," Ramsay said.

The industry plays an essential role in pollinating at least C$65 million worth of crops and producing 3,500 tons of honey in the province annually.

The fund will be used by the Ontario Beekeepers' Association to expand and continue development of services to the province's 5,000 beekeepers and their 115,000 hives and to take part in national programs aimed at improving the industry.

Honey producers and the OBA will receive financial assistance for capital improvements, research, marketing and promotion of Ontario honey. Some C$60,000 has been included to cover the costs of operating the OBA.

The fund also includes C$100,000 in financial assistance for producers whose hives are destroyed by apiary inspectors as a result of tracheal mite infection.

The fund is being administered by a committee consisting of provincial apiarist Doug McRory, OBA president Paul Montoux and business administrator Patricia Westlake.

Beekeepers with 50 or more registered hives are eligible for a grant for capital items and/or debt reduction under the program. The committee will approve applications and calculate how much each applicant is eligible for under a formula that divides the number of qualified hives into the money set side and multiplying this amount by the number of eligible hives that the beekeeper has registered.

Some C$37,000 of the grant has been allocated to the Ontario Bee Breeders Association and a matching grant may be available from the federal government. The money will be used to help fund work on the evaluation and development of mite-resistant bees; development of a queen banking and instrumental insemination facility; education programs to improve breeding and production; and compilation of a manual on beekeeping in the province.

SEND YOUR NEWS TO THE GLOBE!

NOVA SCOTIA BANS BEES

The Nova Scotia Beekeepers Association says provincial legislation banning the importation of bees from mite-infested areas and creation of a fund to import bees from mite-free counties is not enough.

Provincial Agriculture Minister George Archibald created the emergency fund so Nova Scotia beekeepers can import bees from a mite-free country at the same time as he introduced legislation closing the border to most bee imports.

But Tom Cosnan, a past-president of the association, says the moves will only buy Nova Scotia's honey industry another five to 10 years — after that, infestation by bees infested with varroa and tracheal mites is almost inevitable.

To slow the arrival of that day, the 100 member association is tightening the blockade by offering a C$500 reward for information leading to the arrest and conviction of anyone importing bees.

The association is also examining a plan to designate a mandatory inspection zone at the Nova Scotia-New Brunswick border.

The Nova Scotian beekeepers are particularly concerned about bees entering from New Brunswick. The first varroa mites in Canada were found last November in that province near the U.S. border with Maine, which each year imports some 30,000 bee colonies from Florida — a state which has been implicated as the point of entry for varroa mites into North America.

DISCOVER GOLD?

Tiny doormats installed at the entrances to beehives could give big leads to mining companies in their search for mineral deposits.

That's the view of Harry Warren, a noted Canadian geological researcher and professor emeritus at the University of British Columbia.

Dr. Warren has spent his career trying to find if minute concentrations of mineral trace elements can give clues to the location of big mineral deposits.

One effort was with trout livers. He arranged with the provincial fish and wildlife department to collect trout livers from all over B.C. He then analyzed the livers for trace elements absorbed by the fish from streams passing through mineral deposits.

"We were able to make significant connections with known major ore bodies," he said. "I put the idea of tracing metals this way to the mining companies and they thought I was slightly mad," he said.

Now he says the mining companies should be looking at bees.

Dr. Warren said pollen has been shown to contain varying

Continued on Next Page

War Plays No Favorites

BEES ARE VICTIMS, TOO!

BEIRUT, LEBANON — The war in Lebanon has touched everything living in this ancient land.

Bees received their part of the war in full because colonies can't be hidden. They are left in the fields without any defense.

Several reports have been received. The worst from the Metn area, especially Beit Mery, Jisr El Bacha, Baabdat and Jdeidet.

Edward Raad said that a phosphor bomb fell near his apiary. He went the next morning as soon as the shelling stopped and found that the first row didn't have bees foraging while some were going in and out from the back row. When he opened his hives, he found all the bees dead on the bottom board. The next day, when he went back to check what was left, he found that the back rows were completely dead, too. So his neighbor convinced him to burn all the frames with their contents, fearing they would be contaminated and could cause the death of the colonies if he restored them. He lost all the bees, the honey and even the frames.

In Baabdat, Dr. Ephrem Baalbaki reported that a bomb fell in the middle of his apiary, and when he checked next day, after the shelling had stopped, he found that all the hives were displaced, some on their tops, others on the sides completely destroyed. The hive that was hit directly was destroyed and only a small piece of the top was found near the gate. Who knows what happened to the bees Were they torn and scattered on the field of the crime after the explosion? What was the feeling of the bees when they came back from the field and couldn't find their hives — only a big hole . . . and hatred? Dr. Baalbaki gathered his hives and put them back in their places after he changed the broken ones with new ones.

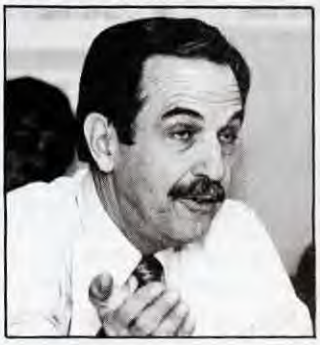
The biggest catastrophe was waiting for Baxter Yazbek in Jdeidet where in incendiary bomb fell on his apiary, burning the hives, along with the wax and honey. All that was left was a row on the east side near his house. The curious thing being that the bees, in spite of the hive being on fire, never tried to escape. And in the morning we found the remaining bees moving their dead to the outside, dropping them in a collective cemetery consisting of a used wheel that was used as a base to lift the hives from the ground. We don't know how and why all the bees chose this place to bury their dead ones. Putting one, going back, transporting one again until the hole was full of hundreds of bees that died in the hives because of the heat.

Villa Yazbek

OBITUARY

BILL HELMS

William Foy Helms, 56, a deputy administrator in the Department of Agriculture's Animal and Plant Health Inspection Service, died of cancer Aug. 21 at Johns Hopkins Hospital in Baltimore.



He lived in Crofton, was a native of Alabama and a graduate of Auburn Univ. He joined the Dept. of Ag. in the '50s, served in the Army from 1957 to 1960, and returned to the department. He was an inspector for the Animal Plant Health Inspection Service in AL, MS and TX before transferring to Washington in 1976.

In 1988, he received the Meritorious Executive award from the Sr. Executive Service. Recently, he was very involved in the Varroa mite rule making negotiations, and was well known by many bee industry leaders.

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concentrations of copper, molybdenum, zinc, lead, iron, cadmium, gold and platinum, depending on where the bees are working.

"Bees collect pollen from flowers on their feet and other parts of their bodies," he said. "By putting a pollen trap at the hive entrance the bee is forced to wipe her feet before entering the hive and the pollen falls off."

Following up on this idea, Dr. Warren analyzed the mineral content of pollen taken from 25 acres of the province. Pollen from the Kamloops, BC area — site of the Afton copper mine — yielded a copper content of 54 parts per million, compared with 15 parts per million for pollen from the Trail, BC area where lead and zinc are smelted. On the other hand, the pollen from the Trail area contained significantly higher concentrations of lead and zinc than elsewhere.

"The richest pollen came from the area of the Ashloo Mine," he said. "When checked, we found the pollen was from flowers growing among the old tailings."

Dr. Warren said because bees usually forage a half mile to a mile from their hives, high concentrations of a mineral could lead geologists to the site of a previously undiscovered ore body.

He said such a method of prospecting would be "quite unique as far as I know"

A British colleague carried out similar studies in Devon, an area with large lead deposits, and found pollen there have five to 10 times more lead than pollen from other parts of England.

Mining industry officials do not rush to dismiss Dr. Warren's idea, citing his impressive record of innovative geological discoveries.

"Warren's work on soil sampling has led to finding mines in Eastern Canada," said one. "He's a brilliant man."

Robyn DeBoard, 1990 Kansas Honey Queen, has been very busy since her crowning in October of 1989. Highlights include appearances at more than 10 county fairs, the Kansas State Fair, speaking before the Kansas Senate and House of Representatives, as well as numerous other appearances at festivals and parades. She is the daughter of James and Patricia Bell of Kansas City, KS and has recently graduated from the University of Kansas.

At their annual banquet in 1990, **Sharon Gibbons** was awarded "Beekeeper of the Year" for 1989 by the members of Eastern Missouri Beekeepers Association.

Sharon is Editor of the Missouri State Beekeepers Newsletter, the delegate from Missouri to the National Honey Board Nominations Committee, and very active representing beekeeping in her local area.

Honey Acres and the Honey of a Museum in Ashippun, WI, has added a new entry to their business. This wall, constructed of recycled brick originally from an 1850 building, has a built in bee bole, complete with authentic skep. The boles were patterned after photos appearing in Dr. Eva Cranes book, *The Archaeology of Beekeeping*. The Honey of a Museum is located on Highway 67, Ashippun, WI or you can call for information at (414) 474-4411.

TEMPERATURE

PRECIPITATION

If you had a better than average, or worse than average spring this year, maybe the weather had something to do with it. The temperature map shows that some areas were 'colder' than usual, 'warmer' than usual, but most of the U.S. was right on target.

However, the precipitation map shows that the Mississippi valley and most of the northeast was wet this spring, along with parts of Northern California, the Pacific Northwest and even the southwest. When you put the two together, you can see why there are either empty, or full supers out there!

New Study

MALATHION STUDY SAFE?

Citing 'questionable' findings in previous studies, the U.S. Environmental Protection Agency has ordered more long-term investigations on the potential hazards of malathion. Some of these studies could take as long as four years.

Joanne Edwards, an EPA entomologist based in Virginia, said "the agency ordered additional studies last February because some previous reviews were flawed and one pointed to the possibility of increased liver cancer in a strain of male mice fed high doses of the chemical" The agency also ordered the manufacturer to further study the pesticide's potential association with birth defects. The EPA which polices chemicals released into the environment, has found no cause to suspend malathion usage at this time.

Wildlife impact studies show that malathion was more toxic to beneficial insects, like stingless mini-wasps that kill aphids, than to harmful insects like aphids, white flies and scales. The harmful insects tend to be spared because they are less mobile than the beneficial insects. This has caused temporary outbreaks of harmful insects.

The second weekend of August is the time for the best fair of the Summer season — the Sebastopol Gravenstein Apple Fair. As the name implies, it is in Sonoma County, CA, adjacent to the town of Sebastopol, about fifty-five miles north of San Francisco. Years ago this county was mainly a fruit-producing area, however, times and tastes have changed, and now wine vineyards are the dominant feature. During the heydey of the fruit orchards, Sebastopol was the center of the Gravenstein Apple operations, and to this day this splendid fruit is still a big favorite. The fair is put on annually by Farm Trails, an organization dedicated to bringing the agricultural produce of the county to the attention of the general public.

The Sonoma County Bee Club has been a part of this effort for the past ten years, and we can modestly say that we are one of the biggest draws. The Fair brings in around fifteen to twenty thousand people over the two day weekend, with the crowd coming from all over the Bay area, one of its charms being that it is truly a family affair.

The Bee Club has a substantial presence, with several units to catch the varied interests of the fair goers. There is a selling table, accommodating those members wishing to sell honey, candles, etc. Sales are generally substantial and a small percentage of the sum collected goes to the Fair. Normally two observation hives are on site, with member volunteers to explain and answer questions. The main question? Where is the queen! Another area is devoted to a display of bee equipment and printed giveaways furnished by the Honey Advisory Boards, with recipes being a big favorite.

The super Club attraction is "The Bee Cage", a portable structure built in a hexagonal shape, twelve feet interior from side to side, and consisting mainly of wooden frame supporting the screen allowing the public to gather around for a good view of the proceedings inside. The Club gives two, one-half hour programs each day. The shows are manned (or girled) by the local 4-H Bee Group, which is loosely attached to our Club. These youngsters, all very knowledgeable, are particularly well-received by the crowd. The equipment, consisting of two hives, each having a brood box and a honey super with queen excluders, etc. is furnished by Club members. The public address system is furnished by the Fair with one of our members giving the spiel, and answering questions. The Cage was built in 1984 and has been the star attraction at many fairs and exhibitions in this area through the years. Many people come year after year to the Fair and with many, the first query is — "Where's the Cage"?

The Bee Club, with eighty-five members, has an around-the-year program. In addition to the Club's ordinary functions — monthly meetings, newsletters, yearly pot-luck dinner, video night, etc., other public spirited activities are carried out — including giving educational talks at schools throughout the county and the "Swarm Hot Line"

Good Advice to Clip and Save

DEALING WITH STINGING PESTS

August to October is the peak period for yellow jackets. Some simple measures keep this annual nuisance from turning nasty.

"Yellow jackets need little reason to sting this time of year," says Julie Steele of the Plant and Pest Diagnostic Clinic at Ohio State University. "Unlike a honey bee, which stings only once, a yellow jacket can sting repeatedly. The sting is painful. Sometimes, swarms of yellow jackets will sting if they perceive a threat."

For the first half of summer, yellow jackets are beneficial, eating large numbers of harmful flies and caterpillars, Steele says.

However, yellow jacket populations reach their highest levels now and actively scavenge for human food to feed themselves and others in their nests. Such food is available at picnics, outdoor restaurants and sporting events. The pests also frequent garbage cans and trash bins.

"Food at picnics, especially fruit and soft drinks, should be covered until eaten," Steele says. "Never drink out of a beverage can because yellow jackets often crawl into them. Pour the drink into a cup so you can see if the pests are there. Keep trash in sealed bags or containers."

In their search for food, yellow jackets are attracted to cosmetic odors such as those from perfume and hairspray, Steele says. The pests are also drawn to bright objects, such as jewelry and belt buckles, and to brightly colored clothing.

Overripe and rotting fruit attracts yellow jackets. Steele says people with fruit trees should pick fruit when it ripens and collect all fallen ones.

"Avoid sudden movements, such as swinging at the pests," she says. "Such actions provoke yellow jackets to sting. It's best to keep calm and still. Cover your face if you have to, and back away slowly. Don't run, either, because that could incite the pests to sting."

"Yellow jacket venom contains a chemical that, when released, will signal others to come and sting," she says. "Crushing the insect could cause a frenzied yellow jacket attack."

Remain calm if a yellow jacket gets into a moving car. Yellow jackets almost never sting when in a car or house, Steele says. Instead, they fly against windows.

"To let the yellow jacket out of a car, safely and slowly pull off the road, open the windows and allow the insect to escape," Steele says.

Yellow jacket nests should not be disturbed unless they present a hazard to you or other people. The nests are paper-like and about the size and shape of a football. They are built underground, in the outer walls of buildings or on the outside of structures.

"Unless the nests pose a threat, wait until fall when freezing temperatures will kill them," Steele says. "Only yellow jacket queens survive the winter, while all the stinging workers die off. Nests are not reused the following year."

If a yellow jacket nest poses a threat, it should be controlled in the evening when the pests are inside and less aggressive, Steele says.

"The best control for in-ground nests is to pour an insecticide dust containing the chemical Sevin directly into and around the nest hole," Steele says. "Then use a shovel to cover the hole with a small mound of moist dirt."

Above ground nests also must be controlled at night. Nests in walls should receive a dose of Sevin dust as well as up to 30 seconds of a wasp and hornet spray directed through the nest hole, Steele says. Plug the hole immediately with steel wool and dust the wool with Sevin.

"Never plug the hole without injecting pesticide," Steele says. "Otherwise, the yellow jackets may chew through the drywall and enter inside."

For outdoor nests, use an insecticide in a container that sprays a stream 15 to 20 feet, Steele says. Spray directly into the hole for several seconds. Usually after one or two days the nest can be removed.

"Always wear protective clothing when trying to control a nest," Steele says. "That includes long sleeves and pants, a hat and scarf. Yellow jackets will attack at night, so be quiet around the nest. And carry a can of aerosol wasp and hornet spray to handle yellow jackets around the front of the nest."

It's Not Fair!

EPA CITES SAFER

Safer Chemical Co. wants th Environmental Protectio Agency to change advertisin regulations for pesticides. I August, the organic pesticid marketer agreed to pay a $10,00 fine for ads calling Safer's prod ucts less toxic than those of its competitors. EPA regulations prohibit such comparisons. But to add insult to (financial) injury, the EPA didn't dispute the claim's validity. In a page ad in *The Wall Street Journal*, Safer called the EPA regulations outdated and counterproductive. The ad said, "If distilled water was to be sold as 'Bug Drowner', it would have to carry the same warning label as malathion."

MACK/DOWE EQUIPMENT AVAILABLE

The U. S. beekeeping industry is entering a new era because of the challenges created by the biological and political problems of parasitic mites and the threat of African bees. Careful and selective breeding is recognized as the best long term solution to answer these challenges.

The major obstacle to this end has been our inability to control mating. The fact that queens multiple-mate in flight has made this difficult. However, instrumental insemination is the tool to accomplish this.

Aware of increasing interest among beekeepers, Dr. Otto Mackensen has come out of retirement and is once again producing his Mackensen insemination device. The original Mackensen instrument has not been available for several years because of Dr. Mackensen's attempted retirement.

Serving as the prototype for instruments designed throughout the world, the Mackensen device retains its popularity as sturdy, simple and precise.

Classes on instrumental insemination are being planned at Ohio State University in the near future. OSU will also arrange group classes at various locations around the country if there is interest among beekeepers to learn this technique. For information on classes contact Susan Cobey at the Ohio State University, Dept. of Entomology, 1735 Neil Ave., Columbus, OH 43212.

Mackensen instruments are available in limited quantity from Honey Bee Insemination Service, a division of Vaca Valley Apiaries of Vacaville, CA. Susan Cobey and Timothy Lawrence offer a complete line of instrumental insemination equipment, including Schley, the original Mackensen, Mack/Dowe, the Harbo large capacity syringe, microscopes and accessories.

Classes in instrumental insemination will be held at the Ohio State University, and various places around the country as interest demands. For more information write to Honey Bee Insemination Service, P. O. Box 12205, Columbus, OH 43212.

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I dropped the box and made a fire-house-pole descent to the ground. I ran to my car, got inside, and began smashing bees. After about 15 minutes I was alone at last, but suffering from multiple stings and in a VERY bad temper.

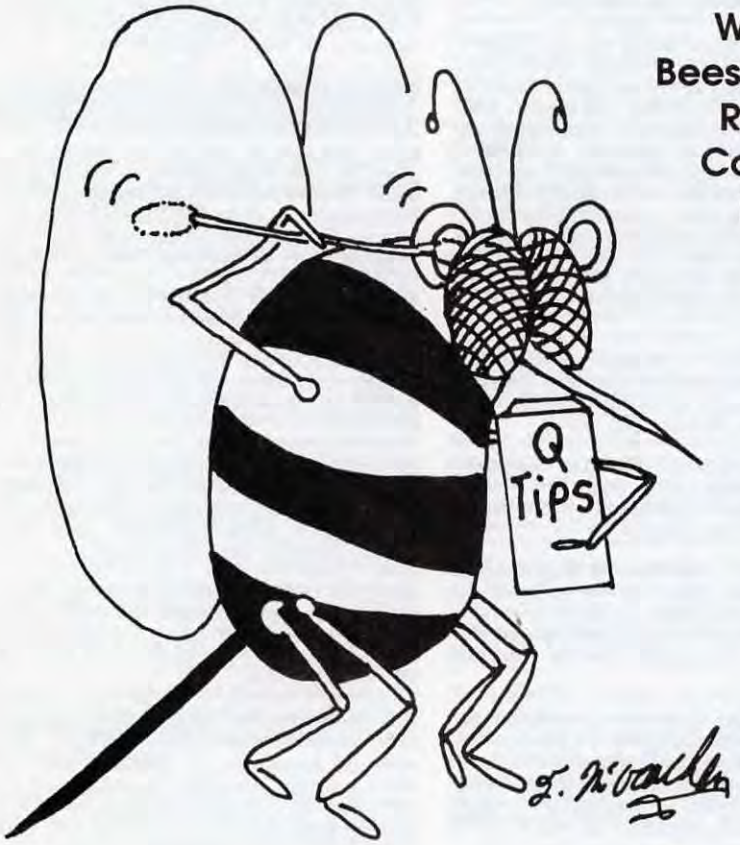
I sat there for another 15 minutes trying to decide what to do. Being of an obstinate nature, I decided to go back to the scene and at least recover my ladder and veil.

When I got back, there were still a lot of bees flying around, but they had started to cluster where they had been before. From my experience with swarms deliberately shaken from a tree, for instance, they would usually fly to another branch, not always lower, but at times, yes.

So, while figuratively scratching my head about the peculiar antics of bees in general, and these in particular, I looked up again at the swarm, and saw a small hole in the woodwork next to the chimney where they were congregating.

It didn't take long for me to construct the scenario. The bees had probably been in the house all summer. When the people moved in they had started a fire in a stove or fireplace and the heat had obviously forced the bees outside, where they were now. I guess the "book" which says that bees don't swarm in October in Connecticut is right.

I got another, longer ladder, opened up the siding, removed the remaining bees and comb, destroyed as many of the flying bees as possible, boarded up the hole and left a note telling the family that the few remaining bees would fly away shortly and left — sadder, but considerably wiser. □



Where Bees Wax Really Comes From

Display Index

An October Gathering

Austin Knox

A year ago this month I received a phone call on a Sunday morning. A frantic householder was saying that his wife wouldn't let the kids outside because of a swarm of bees.

I asked him the usual questions — were they big and yellow; how many; if they were in a football shape with a few flying around outside; etc. From his answers I assumed that he must have spotted a wasp nest which had been there all summer but hadn't noticed before now.

I wasn't too crazy about traveling to his place but he was so upset I decided to destroy the nest for him. I figured all I would need would be an insecticide jet spray and a pole to knock down the nest.

When I arrived and looked where he pointed, I was amazed to see a swarm of bees hanging on the side of the house, about 20 feet up.

I thought, "Well, what do I know. Evidently there must be some bees that do swarm in winter"

I couldn't believe they would stay there over night as it got pretty cold and I assumed they would take off for some shelter. So I told the man that if they were still there in the morning I would come back. Figuring that that would save me the aggravation of having to go back and get the equipment necessary to collect the swarm.

After a short conversation I learned they had just rented the house, both he and his wife were working and this was the first day they all had been together since moving in.

After a bit I went back home, thinking that I would have to contact one of those editors who wrote about swarming and advise them bees DO swarm when it is cold in the daytime, and freezes at night.

I was more than a little surprised the next morning when the man called and said that the bees were still there. So I loaded up a 20 foot ladder, a box to hold the bees, and the rest of my equipment and returned to the scene.

After putting up the ladder I could see that it would be short, but, I thought, by getting very close to the top and reaching up I could get the swarm into the box by using it as a scoop. Since the swarm had presumably been there for some time, I thought some of them might be a little unfriendly so I put on my veil and climbed up to the top of the ladder.

If I stood 4 or 5 rungs from the top, I could loop one leg so that I could use two hands to hold the box and shove it under the swarm. But then I couldn't reach the swarm. However, if I climbed higher I had to use one hand to steady myself, leaving one hand to push the box up under the swarm.

Rather than waste a lot of time getting a longer ladder I decided to try to handle the box with one hand. And as it turned out, that was all I needed. I got one leg positioned so that I was reasonably stable on the top of the ladder, and positioned the box so it could be slid up without too much trouble. The only problem then was that when I looked up, the veil obstructed my view, so I just slipped it off and dropped it to the ground. I was ready.

I pushed the box up under the swarm with a sharp jerk, expecting the bees to drop, docilely, into the box. Then I could lower it down carefully until I could get two hands on it and gracefully descend. To my great surprise and considerable consternation, one millisecond after the top of the box hit the underside of the swarm, 30,000 bees began flying everywhere. They flew around me and up over the top of the house.

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BOTTOM·BOARD