

GLEANNINGS IN  JAN '91

BEE CULTURE





John



ROOT PUBLISHING



Kim



Cyndi

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A Honey of a Plant.

COVER... This startling, and ingenious photo was taken by Chas. Hofmann, who has contributed to our cover before. A couple of years in the making, this pollen laden worker is approaching a one inch auger hole. "National Geographic has had similar photos," he says, "but they used robbers. This is authentic - this bee is homeward bound."



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Eighty-six years ago this month A.I. Root published his experience with the Wright Brothers in this magazine, and history was made. But there's more to this story, and we finally have uncovered the missing parts – Enjoy!

INNER · COVER

One of the things I like about beekeepers is that, as a group, they have far broader interests than most folks I know.

To be interested in bees, and beekeeping involves more than just having a job. No beekeeper has ever led a life of quite desperation. If the business doesn't fit, you don't last. If it does, you're in for life.

The largest commercial beekeeper I know still likes opening a hive to see how the bees are. But he's equally at ease speaking in front of 250 people, talking with members of congress, negotiating with a packer about delivery times and honey prices, trying to figure out the brake system on a 16 wheeler and helping a new employee keep his smoker lit.

A sideline I know, who runs about 75 colonies shares his vocation (construction) and avocation (beekeeping) to the benefit of both. He has two joys in life, wood and bees – what better marriage of skills?

Most backyard beekeepers I know have the same passion for bees, but, because of fewer demands from the business of bees, tend to favor the fun side of beekeeping.

What beekeeper you know doesn't have at least a passing interest in honey plants, and probably honey types, too.

Both sideliners and hobbyists tend to look at the many facets of beekeeping individually – many are specialists of sorts.

Richard Taylor is a comb honey producer – certainly a specialty. Some beekeepers have a knack at finding unique locations, and produce crops of a pure and perfect honey. Some make their own equipment; others have found that queen rearing is particularly easy; still others can sell honey no matter where or when or to whom.

Specialists in beekeeping come in all sizes, and both sexes, and know no bounds when it comes to locating their particular niche. Pollen collectors, propolis distillers, candle makers, equipment dealers, package producers, importers, exporters, truck drivers, mechanics ...

The list, I think, is endless. As is my continued amazement at the ingenuity and versatility of this special breed.

But, even considering how specialized we are, there is a common bond that transcends even the honey bee itself. It is the realization that to make all the other things we do work, honey bees must have their world to live in. Threaten that world, and you threaten a beekeeper.

And there are threats to honey bees in their world. A few we have little control over – natural enemies like lizards and skunks. Some we can control fairly easily – foulbrood and nosema and bears. And some we can only try to control – mites and pesticides and drought.

But there are other threats that may not seem as such at first glance. Situations that can make beekeeping less enjoyable, less profitable, or maybe not even possible.

One of these we're taking a long and hard look at this month – soil erosion. Certainly not a glamorous subject, it is, nevertheless, a critical and ongoing problem, perhaps even in your backyard, pasture or neighborhood.

I doubt Willie Nelson will ever hold an Erosion-Need concert, nor will there be a Presidential Press Conference on the subject. But the Federal Government has done some things to help. The Soil Conservation Service is ready to help anybody who wants or needs it. And they can make it fairly

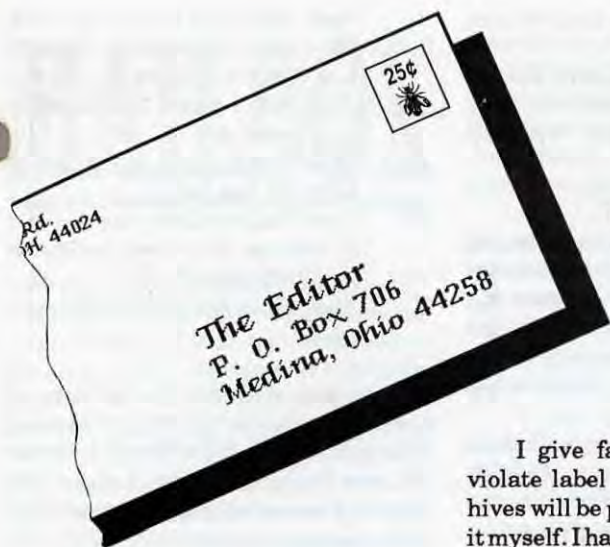
lucrative if you comply, and are successful.

Other farm groups are also concerned, because loss of soil is critical and immediate to their business. Beekeepers don't usually see this as a terrible threat because there always

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In General...

MAILBOX



■ How Dare You!

I was recently at a beekeeper's meeting (it doesn't make any difference which or where, they're all the same), where I overheard the following conversation between two commercial-sized beekeepers:

"Just like that USDA guy said, I soak a paper towel in (a pesticide) and lay it on the top bars. He said it works, and he's the expert."

The second beekeeper added, "And it's a hell of a lot cheaper than menthol."

That's the exact quote, profanity and all, and there are now two (at least) beekeepers soaking paper towels (shop towels are more absorbent, according to the "USDA guy") in a pesticide and applying them to beehives.

This is a violation of that pesticide's label as stupid, as absolutely imbecilic as spraying PennCap-M on blooming sweet corn, parathion on blooming sunflowers, or malathion on blooming alfalfa.

Those beekeepers, using information freely given (though not recommended) are playing with the future of our industry, and my business. HOW DARE THEY?!

And if you are, HOW DARE YOU?!

Didn't anybody learn anything this past summer about the image of honey, and the perils of violating pesticide label laws?

Apple growers lost \$100 million because they chose to ignore four (4) previous warnings about ALAR.

That may be pocket change to some beekeepers, or to some USDA researchers, but I don't have that kind of money to lose.

I give fair warning: People who violate label laws of pesticide in beehives will be prosecuted – if I have to do it myself. I have taken corn growers and apple growers to task – and to court – for exactly the same offense.

Beekeepers ARE NOT ABOVE THE LAW. Your behavior affects my business.

HOW DARE YOU!

Name withheld by request

Editor's Note: I WILL make a recommendation. Read this letter, and read the label.

■ The French Connection

Your article on queen introduction was O.K. but you left out something. After you cut down queen cells and introduce a queen in a cage the bees frequently will build more cells and the introduced queen will not necessarily find them all and will be killed by the virgin. Also the shipping queen cage is a very poor introduction cage, use the cage top of page 286. Also, suggest that when beekeepers remove workers as you suggest they do it inside the car, truck or house so that if the queen gets out she can be caught and does not fly away.

Steve Taber

Villebrumier, France

■ Honey Board Support

I have just read your editorial "Keep or Kill" in the September issue of *Gleanings*. There are several points and especially your conclusion that I disagree with. In particular, I view your statement that there is a "better than even chance the National Honey Board (NHB) will be voted out of existence next June because of the refund issue" as incorrect.

There was considerable effort

spent in determining which would be the best way to present the issues for this June referendum. Should the ballot contain one question concerning the elimination of the refund provision and one question on the continuation of the NHB or should both these questions be contained in one? The two-question ballot was deemed the best because it allowed people to vote on each issue separately.

I would be remiss if I didn't mention the one big point in which we both agree (and almost all beekeepers I have talked with do also) and that is the NHB has done a good job and provides a quality and necessary service to the honey industry. Also, we need to remember that the NHB's duties do not just involve promoting honey, e.g. their efforts in the recent fluvalinate flap, the round table meetings for the industry groups, work which has been done with pollination research, and the infant botulism problem. The NHB has provided a central point which we can all look to whenever we have questions or problems concerning honey.

One point pro refunders are quick to use when saying we need to keep the refund is that a refund is our only voice and control over the board. This is not right because we will have our referendum vote every five years – this is our control. In fact you stated it best when you said "If the people paying the bills liked what they bought ... they would vote to continue it."

Also, no one is trying to change the rules in the middle of the game. When the guidelines for the NHB were initially being drawn up, there were no options, the refund provision was required by the USDA. Now, as you stated, the opposite is true for new marketing orders, refunds are not allowed. The egg board recently voted on refunds in their marketing order and voted refunds discontinued by a 93% majority.

Another point which you men-

Continued on Next Page

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tioned was that a person who advertises their own product would not be required to spend additional money to advertise other peoples honey. As you know the NHB generically promotes honey, this should enhance or create new avenues for all honey sales and it should also create a market which has less honey available for sale at the producer level. Both of these should assist anyone who is advertising their own honey label through less honey to compete with and a greater public awareness towards honey.

Unfortunately, some beekeepers may have needed their one cent assessment to operate. But if honey promotion works then honey prices should go up, (and they have) so that beekeepers operating on a tight budget should get more for the honey they produce, therefore producing a greater cash return.

Fairness seems to be an issue on both sides of the fence. Is it unfair to not allow me to refund my money or is it unfair that I should leave my money in while John Doe takes his out? Presently, 20% of the refunders receive 70% of the refund dollars. If assessments become mandatory, it would then become a fixed cost of operation which all beekeepers would pay equally. This seems to me to be the most equitable approach to this problem.

And finally I can't agree with your argument that the Secretary of Agriculture would appoint board members which would work to put small producers out of business. It is true he can reject nominees but he still has to work from a list supplied by the nominating committee and, if this problem ever arises, we have the referendum every five years.

By now you can undoubtedly see that I believe we need the NHB and that refunds should not be allowed. In my view, since most honey people support the board, and as we have discussed, refunds express ones objection to the board, then the only way to support the NHB is to vote yes to continue the NHB and yes to discontinue refunds. I wouldn't want to see this board follow the path of the previous honey check off

plan (in the 1950's) which died because of non-support.

Larry Krause
Wind River Honey Co.
Riverton, Wyoming

■ Out of Context?

I am writing to you about a recent article in your magazine. In the November 1990 issue of *Gleanings* there appeared an article titled *Sunset*. In the article I was quoted a couple of times, and, in at least one case, badly out of context.

On page 648 the author said that: "Ferguson suggested closing California's borders to bees and within two years there would be enough bees for pollination without bringing in migrants." During a discussion with the author I said "if California had been *really* serious about keeping varroa mites out of the state they *should have* closed the border to all bees. Of course that would create a shortage of bees for almond pollination, but within two years there would be enough bees within the state."

I never, suggested that that is what the State of California should do now. The time for that action was when the Varroa mite was first found in the U.S.

I would also like to point out that the action taken by the Senate Committee on Agriculture and Water Resources *did not* rescind any bee law or regulation, it only allowed a section of the Agriculture Code that required that beekeepers match the Department's funding, to expire, or *Sunset*.

Thank you for your attention.

Brian E. Ferguson, President
Huston - Ferguson Apiaries

■ Ten Commandments for Keeping Africanized Bees

- I. Thou shalt give thy bees sufficient space in the hive or else thy bees wilt swarm or abscond.
- II. Thou shalt feed thy bees during dearth periods or else thy bees wilt abscond.
- III. Buy thee a smoker. Africanized bees are unworkable without smoke.
- IV. Thou shalt work with a partner. Thou needest someone to hold thy smoker and aid thee.
- V. Dress thyself in white coveralls or double layers of light-colored clothing with veil and gloves.
- VI. Thou shalt place thy hives at

least 600 feet from any road, thine own house, thy neighbors house or any pasture or animals.

- VII. Thou shalt place thy hives on single stands.
- VIII. Thou shalt place thy hives at least six feet apart.
- IX. Thou shalt requeen yearly either by raising thine own queens or by purchasing them.
- X. Thou shalt not become discouraged.

Properly managed, the Africanized bee can increase honey production. That's what the public relations posters all over Belize proclaim. I stress the 'properly managed' part to anyone that asks because management really is the key to handling Africanized bees. These rules were written mostly for fun but perhaps they can help to relieve a bit of the anxiety that beekeepers in North America are feeling. Take comfort in the fact that these rules are the result of 30 years of experience with Africanized bees in 17 countries from Argentina to Mexico. They work for Latin American beekeepers and they will work for beekeepers in the United States.

North American beekeepers should experience fewer problems because some level of management is so widely used but don't be complacent. Africanized bees are not as forgiving as European bees. If you stay a step or two ahead of them, they will be very productive and hard-working. Be aware and stay informed.

Tom Hyden, Peace Corps
Belize, Central America

■ Unfair!

I was very concerned by Terence Ingram's comments in "Successful and Enjoyable Beekeeping", October 1990 *American Bee Journal* regarding the inefficiency of Better Way Wax Melters. Mr. Ingram stated that there was a definite need for a good wax melter for the small beekeeper. Mr. Ingram bases this on the fact that his Better Way Wax Melter darkens the honey. Mr. Ingram uses a chain uncapper and a cappings spinner. These semi-dry cappings are then placed into a Better Way Wax Melter. In this procedure of handling cappings the honey is difficult to extract from the semi-dry cappings. Two ways can be incorporated, one would be to press the cappings to squeeze the honey out or melt the cappings at 145°F (the melting point of beeswax) to re-

MAILBOX

lease the honey from the sponge like cappings. The latter will darken the honey. There should not have been a problem for Mr. Ingram to set the temperature at 125°F. Better Way Wax Melters have temperature settings of 100°F to 350°F. Better Way Wax Melters are multi-functional machines, they retrieve all the wax from dark comb frames, kill foul brood spores on equipment, liquify honey in five gallon plastic pails or jars, separate honey from cappings, cappings melter, clean up queen excluders and are economical to operate.

Whatever the motive of this article was to accomplish, Mr. Ingram gave less than an admirable showing of fairness. In order to set the record straight, I have had a very positive feedback from the many satisfied buyers of Better Way Wax Melters. We do not need a better melter, only people to be fair.

Maurice Arndt, President
Better Way Wax Melter,
Honey Processors Ltd.

■ Good Advice!

I read the article on fireweed and liked it. However, it does not mention that fireweed is more or less doomed in the Gifford Pinchot National Forest of Washington State. Twenty years ago it was plentiful but since Mt. St. Helens blew up and the environmentalists stopped the clean harvest of timber cuts, none of the slash is burned; just left to rot on the ground, leaving a nice bed of kindling for a forest fire. Thus the plant has rapidly declined.

I have harvested (or tried to harvest) honey there since 1970. It is not a sure crop as it often gets frozen before you can collect any surplus, or deer and elk will crop off all the tender tips that do the flowering. Occasionally, some shepherd will harvest it after you have bought a permit, or a friendly beekeeper will conceal about twice as many bees in the underbrush to help you "out" If you get a surplus once in three years without all of this happening and no bears have raided you, your yield can run from about August until frost. You may make a crop from sixty

pounds up.

Richard Taylor's advice was good on foulbrood but he didn't mention to turn the hives and super shells upside down before firing. This cleans and sterilizes the rabbets.

Also you can boil out equipment in a barrel with lye water, using one can of lye to ten gallons of water and having the water in a rolling boil. When you begin to get a heavy soap scum on the water, skim it off and add another can of lye to the water.

If you boil, you must wash the shells in vinegar water and weather them for awhile before painting again. Never boil frames with wax and honey and dead brood - burn them. You can, however, melt the wax out of the dry combs in boiling water before cleaning the frames in lye water. You must wear rubber gloves and an apron of rubber will further protect you. When you have boiled the frames, stack them up on a level surface and put a cover over them, and use a weight on top. Leave them until they're dry, then they will not warp and are as good as new frames.

I see that California is not enforcing inspections of bees at the request of many of their beekeepers. This recalls to my mind when I was inspecting in Illinois and the inspector I had replaced would meet the ferries from Missouri where there was no inspection and bees being imported from there were illegal. He'd collect a ten or twenty dollar bill and they came in to pollinate Illinois apples.

After the inspector had been doing this awhile, most of the bees in that area became infected with AFB. It took extra appropriation and much elbow grease to correct the situation. Many of the local beekeepers didn't believe in AFB and others resented the loss of diseased equipment. The bee population in the border counties almost disappeared. I think, with the barrier down and knowing human nature, history is repeating itself - just intensifying the problem with large capacity trucks, open borders and more pests and diseases to contend with.

Another thing, I see that someone is interested in using 6-1/4 frames for a brood nest.

Wes Osborn (of Illinois) and I used this system in the forties and fifties. It works well if you use three supers. Swarm control is easy then. Instead of shuffling frames to look for queen cells

Continued on Page 11

AHPA

AMERICAN HONEY PRODUCERS ASSOCIATION

The Beekeeper's Organization

• SINCE 1969, The AHPA has represented YOU in Washington.

• YOUR rights are being protected in the 1990 Farm Bill by AHPA representatives, legal council and advisors.

• YOUR bees can be treated with menthol for tracheal mite control because of AHPA work.

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___ 11	25 Colonies	\$30.00
___ 26	125 Colonies	\$50.00
___ 126	500 Colonies	\$75.00
___ 501+	Colonies	\$100.00
___	Lobby Fund	5¢ / colony

ASSOCIATE MEMBERS:

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___	Inspectors, Others	\$15.00

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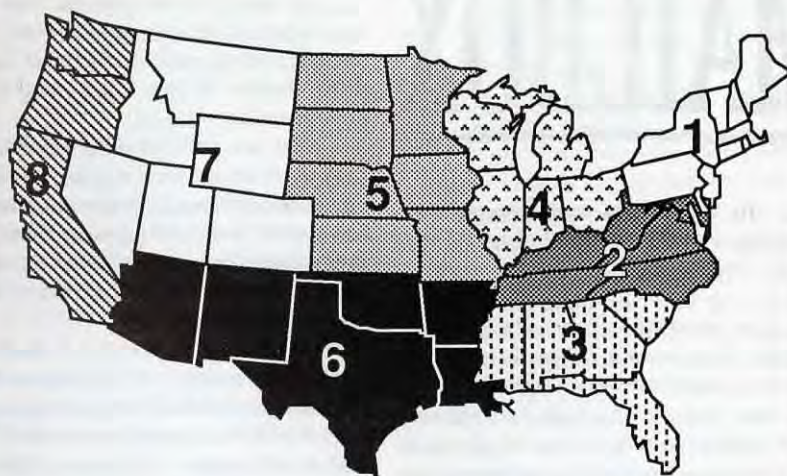


American Honey
Producers Association
Box 815, Dayton, TX 77535

JANUARY Honey Report

January 1, 1991

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 or Processors												
Wholesale Extracted												
60 # Wh.	40.67	41.63	38.50	31.95	40.25	41.50	42.00	45.00	26.00-52.00	38.22	40.98	38.76
60 # Am.	39.73	35.50	38.00	29.40	39.50	40.00	40.00	36.00	25.20-52.00	36.78	38.86	35.05
55 gal. Wh.	.50	.47	.52	.50	.52	.50	.55	.54	.42-.63	.51	.50	.49
55 gal. Am.	.48	.45	.42	.50	.50	.49	.52	.47	.40-.63	.48	.47	.46
Case lots — Wholesale												
1 # 24's	29.30	24.15	26.00	26.04	22.44	24.10	28.75	30.50	21.36-34.25	27.89	28.32	27.23
2 # 12's	26.88	27.93	26.00	26.30	21.06	23.60	27.75	27.79	22.14-37.20	26.26	26.85	26.02
5 # 6's	32.32	26.00	24.00	26.99	22.20	26.00	28.75	27.60	21.90-38.50	27.17	25.99	27.27
Retail Honey Prices												
1/2 #	.99	1.17	1.05	.92	.83	.99	1.04	1.07	.83-1.25	1.01	1.10	.93
12 oz. Plas.	1.48	1.60	1.50	1.36	1.32	1.10	1.45	1.43	1.10-1.98	1.43	1.39	1.43
1 #	1.53	1.91	1.57	1.49	1.52	1.50	1.79	1.66	1.15-2.08	1.63	1.66	1.58
2 #	2.77	3.28	2.77	2.86	2.66	3.00	3.25	2.86	2.05-3.85	2.94	2.97	2.76
2-1/2 #	2.90	3.74	3.38	3.40	3.13	3.50	3.49	3.19	2.19-4.50	3.41	3.46	3.62
3 #	4.40	3.87	4.00	3.62	3.25	4.11	4.22	3.85	3.25-4.50	3.88	4.11	3.82
4 #	5.62	5.10	5.03	5.10	4.69	4.75	4.99	5.00	4.55-5.75	5.06	4.81	4.20
5 #	6.68	6.10	6.50	5.87	5.72	5.00	6.19	6.25	5.00-7.75	6.13	5.95	6.11
1 # Cr.	2.25	1.25	1.89	1.64	1.55	1.99	1.95	3.00	1.25-4.50	2.00	1.83	1.66
1 # Cb.	2.65	2.17	2.13	3.50	2.98	2.00	2.75	3.90	1.25-5.50	2.77	2.24	2.08
Round Plas.	2.50	1.75	2.10	2.25	3.75	2.15	2.50	1.85	1.75-5.00	2.47	2.04	2.05
Wax (Light)	1.67	1.13	1.23	1.15	1.50	1.05	1.10	1.67	1.00-1.50	1.34	1.14	1.08
Wax (Dark)	1.50	1.03	1.05	1.00	1.10	1.00	1.05	1.25	1.00-1.50	1.16	1.00	.96
Poll./Col.	33.33	27.00	26.00	30.00	30.00	25.00	28.75	30.00	22.00-35.00	30.25	-	25.40

Region 5

Weather and moisture conditions are primary concern in this region. Prices and sales expected to be normal, to even above normal, but if colonies don't survive winter, it won't make much difference.

Region 6

Sales steady to a bit down for this time of year, but local areas experiencing just the opposite — primarily due to local advertising and cultural demands. Many producers concerned about ASCS program, and are careful about predicting the future.

Region 7

Sales and prices a mixed bag here. Tourist sales up, or down, depending on where you are, and how much show is on the ground. That, and local promotions have increased sales, but lowered prices.

Region 8

Moisture is the topic out west now. The north has had too much, with flooding, lost colonies and poor foraging. In the south, a little rain, so far, has brightened the outlook of at least some drought stricken areas.

MARKET SHARE

The New Year is off to a flying start, and here's some of the latest news: Packers already worried about supplies this spring, shortages will occur; Buy back will cause prices to rise, at least at retail level; wax shortage, and price increase very possible; rain in west should help bees, and beekeepers; pollination prices will rise this year because of colony shortages and rising costs. Happy New Year!

Region 1

Sales steady to increasing, mostly due to seasonal demand. Prices rising and promise to get higher because honey supply is short, and supplies will be gone by spring.

Region 2

Supplies are only normal this year, and below in many places. Sales still only steady, but cooler weather will help. Prices steady to rising, and will undoubtedly get higher as supplies dwindle by spring.

Region 3

Sales increasing due to holiday demands, and are expected to get brisker. Prices already higher in most areas, and demand for dark honey increasing. Colonies in good shape.

Region 4

Sales, and prices are steady, and expected to increase moderately as winter deepens. The economy is having an effect here, and even with supplies short, sales and prices this spring will not rise dramatically.

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you split the supers and the cells are right there on the bottom bars of the two top supers. They are ideal for making divisions, too. One of these supers with eight frames of brood and two of honey makes an ideal split. They are equivalent to a five frame division.

If you are making a lot of divisions, make your splits without looking for the queen. Two or three days later put queens in the parts that have cells started.

Wes and I worked up to 1200 colonies on weekends with this system and kept our regular jobs.

John N. Bruce
Goldendale, WA

Editor's Note: Mr. Bruce is an occasional contributor to *Bee Culture*. His advice is sage, and always welcome.

■ Varroa Resistance

I just read a translation from an article in *Vestnik* 15:7 (1989). The method is probably known, but I thought it too important to risk it to remain unknown.

A beekeeper separated the least varroa effected colonies from those with more of the varroa problems.

He raised queens from the healthier colonies. He did this each year.

In 1986 he found a queen different from the others (fewer mites I assume). In 1987 he used a queen from that colony and found comparable results (again I assume fewer mites).

By accident he found that the queens with fewer mites in the colony had taken less than the normal 16 days to come from the queen cell, namely 14 days.

The experience repeated a number of times with the same result. He compared larvae from a "14 day" queen with larvae of a 16-day queen and found that larvae from a "14 day" queen again resulted in a "14 day" queen.

He remembered research on the genetics of honey bees, saying that the cape bees have two days less closed brood, and those bees are not bothered by mites.

He concluded that there must have been a mutation in 1986.

End translation from "bijenteelt" the Dutch Bee Magazine. It was September 1990 issue on page 253 "waarom mijn bijen niet bang zijn voor mijten" (Why my bees are not afraid of mites). It seems that a Dr. K. van der Horst translated the article into Dutch (and I into poor English).

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In the September issue of *Bee Culture* you included an editorial on the National Honey Board and the approaching referendum entitled "Keep, or Kill." I appreciate your ongoing support of the Honey Board. I believe, however, that you misrepresented several issues and facts in your article.

With relatively small budgets, generic promotion programs are allowing commodities to compete effectively for consumer dollars. According to Dan Haley of the USDA's Agricultural Marketing Service: "Those who have spent money have seen their sales increase and the public's overall perception of their commodity improve."

Recently, in a *Washington Post* article on commodity research and promotion programs, Representative Arlan Strangeland (R-Minn) said, "It is a fact of life that the American consumer wants to be sold. They want to be told and sold and if other competing products are in the market selling, then (other products) need to be selling too."

Representative Charles W. Stenholm (D-Tex), chairman of the House agriculture subcommittee on livestock, dairy and poultry concurs. In the same *Washington Post* article, Rep. Stenholm said, "I think on the whole self-help programs are indispensable for the '90's. Seed money put up by individual producers for the betterment of their own industry is vital."

It hasn't been quite five years since Congress voted for the order which established the National Honey Board. In fact, the Honey Board programs have been in effect for only three and a half years. During that time the Honey Board has successfully promoted honey. The National Honey Board has:

- generated millions of dollars worth of publicity for honey and the beekeeping industry.
- promoted the use of honey in food products which has led to increased honey product introductions (between January and June 1990, 120 new products with honey as an ingredient were introduced),

Guest Editorial

THE HONEY BOARD

- encouraged food manufacturers to use appreciable amounts of real honey in their products instead of token amounts or artificial honey,
- promoted honey sales in restaurants, schools and other institutions (packers report honey sales have increased 20 - 30 percent to food service institutions),
- helped turn around declining retail sales of honey.

I was surprised you don't agree that "everyone benefits, everyone should pay" You state "there's a move afoot to change that (refund provision), which, in my opinion, spells doom for the honey board" I certainly believe the proposed change, instead of "spelling doom" can only strengthen and enhance the promotional efforts of the National Honey Board. When the honey market is improved, the entire industry benefits: packers, producer/packers and producers of all sizes. It's "trickle-down" economics.

In the past year, some beekeepers have suggested to me that assessment levels be increased in order to provide more promotion programs. In my view, instead of raising assessment levels to increase funds, a more equitable solution is to eliminate refunds. Let's play fair by leveling the playing field for all producers and increasing national promotions dollars!

In addition, a mandatory contribution would become a production cost which every producer would share. The national promotions program should be viewed as a cost of doing business and everyone should contribute. Refunds cost the Honey Board not only in lost contributions but also in administrative expenses. It's evident that contributors are being penalized by refunders. Money is being diverted from promotions efforts to monitor and distribute refunds.

The American Egg Board

just completed their referendum which established mandatory assessments of five cents per case. Before the referendum, refunds paid to egg producers were up to 40%. The Egg Board describes this as an "avalanche" effect. The attitude was "If my neighbor doesn't pay, then I'm not willing to, either."

This situation prompted egg producers to pass the mandatory assessment referendum by a whopping 93%. There's a message for the honey industry.

The greatest potential fluctuation in Honey Board promotion dollars comes from refunds and not bad crop years or other causes (mites, drought, etc.) as you propose. When domestic production goes down, imports go up, which stabilizes funding.

You're not correct when you declare that honey producers have "no control over spending." Producers comprise the majority of the Honey Board, and *DO* direct the spending.

"The national promotions program should be viewed as a cost of doing business and everyone should contribute."

Producers across the country direct spending by electing their peers to the Board. Plus, a referendum may be called at any time by a mere 10% of producers if they don't like what the Honey Board is doing. Also, there is a regular referendum every five years which allows for every producer to assess the work of the Honey Board.

Last, you state that the

National Honey Board members are appointed. In fact, candidates for the board are elected by a nominations committee with producer representation from every state. While the final appointment is handled by the U.S. Secretary of Agriculture, there is no reason to believe the wishes of the industry would not prevail. The Secretary is given a first and second choice for each position by the nominations committee. The Secretary has always made an appointment from the choices submitted by the industry.

In your editorial you stated, "why should we spare the Board the opportunity to operate in the real world?" The *real world* is that the producers who pay assessments are contributing to the success of the entire honey industry, with the refunders riding on their sticky coattails. Why should we let the refunders limit our potential achievement?

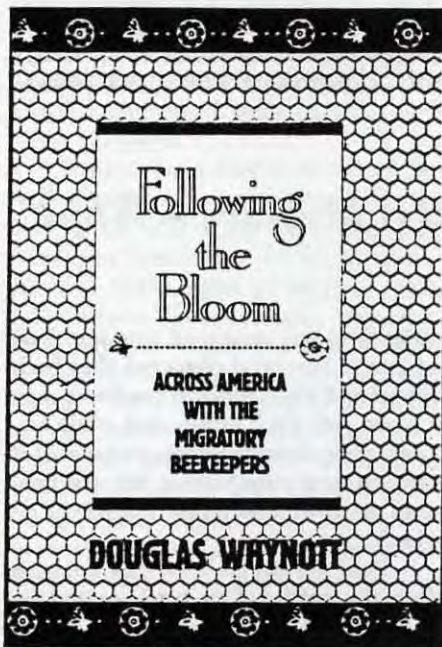
Most important, though, the industry must understand the upcoming referendum involves two separate and distinct issues and each is a matter of personal choice. The first is to decide whether the National

Honey Board should continue. The second is to decide if refunds should be eliminated.

Bruce Beekman
Beekeeper

Bruce Beekman is a director on the National Honey Board.

NEW BOOK REVIEWS



Following The Bloom - Across America with the Migratory Beekeepers

Douglas Whynott
Stackpole Books
Cameron and Kelker Streets
P.O. Box 1831
Harrisburg, PA 17105
ISBN 0-8117-1944-8
1-800 READ NOW

Douglas Whynott took about a year and followed some of the most well-known migratory beekeepers in the U.S. - and this book is their story.

Although the documentation of this 'cowboy' industry is detailed and spiced with some of the best kept secrets of this business, the tone, and direction of this book is not for beekeepers, but for those not yet introduced to the art and science of apiculture.

The strength of this book, and the reason I spent a Thanksgiving holiday reading it is how well written this story is. Mr. Whynott is a writer's writer, and he tells his story in a compelling and fascinating way.

The chapters on bee biology only reinforce his understanding of honey bees, and his keen observations on

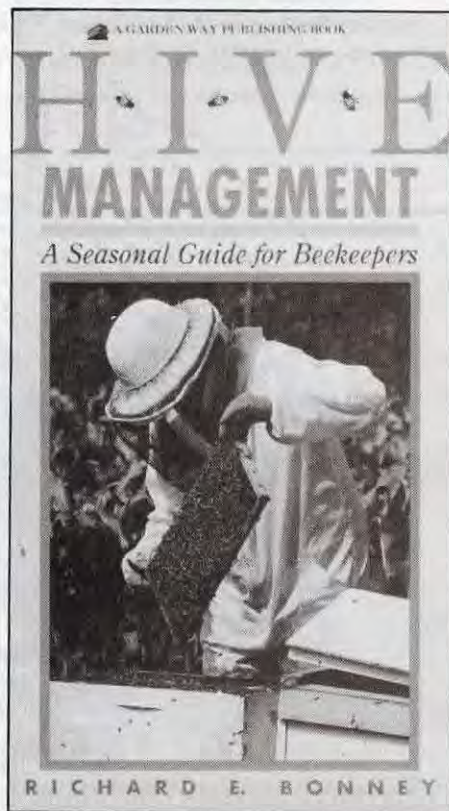
human behavior (actually, beekeeper behavior) keep any reader turning pages to find out what could possibly happen next.

This is the story of the "last real cowboy, the last people moving livestock across the United States", and it is the best book on the business and behind-the-scenes look of beekeeping I have read.

If you buy only one book this year, *Following the Bloom* is the book to purchase. If you love bees, or beekeepers, or great and wonderful stories - *Follow the Bloom*.

Hive Management - A Seasonal Guide For Beekeepers

Richard E. Bonney
Garden Way Publishing,
Schoolhouse Rd;
Pownal, VT 05261
ISBN 0-88266-637-1



Garden Way Publishing has finally upgraded their introductory beekeeping guide, replacing their first book with a new work by Richard E. Bonney, a beekeeper, and the Apicultural Extension Agent for Massachusetts.

Hive Management, A Seasonal Guide For Beekeepers follows a typical beekeeping year - from early spring until late fall.

Early spring management looks at reversing, swarming, and their relative behaviors. The chapter on queens covers everything from finding them to clipping them, but tends to be a bit stiff.

The chapter on nucs is substantial, and for the beekeeper who has never dealt with this aspect it is very informative. As is the chapter on supering, which covers timing, placement, strategies and sizes.

Inspecting hives, a very real necessity for every beekeeper is probably the best chapter in the book - and maybe the most important. Bonney looks at every aspect of hive inspection, and I was pleased to see he started with the outside of the hive, looking at hive weights, traffic volume and type, aggressiveness when inspecting, orientation flights and even loafing.

Internal inspection covers opening, frames, queenlessness, honey and even laying workers.

A chapter on comb honey explores the basics, and late season management covers honey harvesting, fall feeding and other situations often encountered. Bonney even covers some of the problems encountered - diseases and mites - and offers up-to-date information on how to deal with them.

When talking to the author, Mr. Bonney said his first thoughts were to offer advice to not only beginners, but anyone who needs advice on how to get through more than that first season.

This is not a book for raw beginners, but for those who have already got their feet wet. But it fills this niche perfectly. *Hive Management* is great for the second season beekeeper, and I recommend it for anyone who has already opened a colony.



RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

"Death by Mites – Still a Mystery – Why?"

It is not clear how tracheal mites kill bees. The whole life cycle of the mites, from egg laying to mating, is carried on in one or both of the large tracheae in the thorax of the bee. These are the tracheae that feed oxygen to the flight muscles. Gary and Page (1989) found there was no significant difference in the number of foraging trips, frequency of the trips, round trip time, or the time between foraging trips, in infested and non-infested bees. They also found that there was no difference in the size of the nectar loads carried by these same bees. This suggests that the physical presence of the mites in the tracheae does no harm. It also suggests that the flow of oxygen through the tracheae and to the cells in the bee's body is not inhibited by the physical presence of the mites. Still, when one looks at an infested trachea under a microscope it doesn't seem logical that the mites are not causing problems in this regard.

Bailey (1961) showed that bees infested with tracheal mites die sooner than uninfested bees. The greatest difference in England, where Bailey made his observations, occurs in March and the rest of the early spring. This certainly fits with the observations made by beekeepers across the northern states who report that their greatest losses have occurred in the spring.

During the warmer parts of the year, tracheal mites appear to have little effect on individual bees or their colonies. Those who have written about the disease state that mites are difficult to find in the summer and that one does not see sick bees crawling in an apiary at that time of year. Several explanations have been offered for this. We know that foraging bees have a short

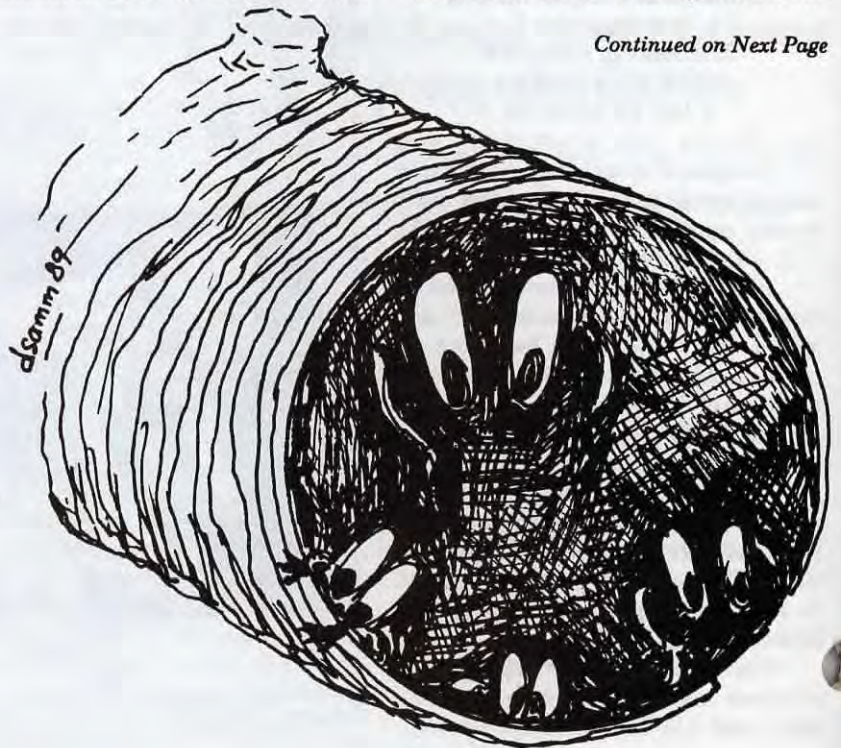
life, only five or six weeks during the active season. It is possible that the high turnover of bees means that the older, infested bees die rapidly and are not available to reinfest others. It has also been suggested to me by several people that the high temperature in the thorax of flying bees might kill the mites in the tracheae. When bees fly, the temperature of the wing muscles in their thorax is well above that of the surrounding air and even higher than that found in the brood nest. This is probably true because of the hard work involved in flight.

Tracheal mites obtain nourishment by feeding on the bee's blood. This was shown in 1934 by Orosi-Pal, who

injected a dye, congo red, into the blood of honey bees and observed that both larval and adult mites in dyed bees soon turned red. Both larval and adult tracheal mites have mouthparts capable of cutting and penetrating the tracheal wall so that the mites may feed on blood.

Fekl (1956) isolated the bacteria from the insides of the tracheae and the blood of several insects, including honey bees. It was found that infested honey bees had more bacteria in the blood. In general, those bacteria found in the tracheae were those found in the blood. The bacteria in the blood were different from those found in the gut and elsewhere on the honey bee. All this

Continued on Next Page



suggests that the bacteria enter the blood by way of the puncture holes in the tracheae. It is important to emphasize that not all of the bees infested with mites had bacterial infections in their blood. The author used a number of standard media in an attempt to identify these bacteria. The technique involves smearing a drop of bee blood across an agar plate and incubating for a given period of time. It is, of course, possible that trials with more media would reveal even more bacteria and other microbes.

So far as I can determine, the paper by Fekl is the only one of its kind. No one else, to the best of my knowledge, has examined honey bees for any blood infections that might accompany mite infestations. Interestingly, however, the Fekl paper is cited repeatedly in the books and papers that discuss tracheal mites. I have not been able to find a single paper in which anyone has examined honey bee's blood for viruses that might accompany a tracheal mite infestation. Scott-Dupree and Otis (1990) reviewed the literature and concluded from it and their own studies that "Nosema is not consistently associated with tracheal mites, if at all." However, nosema is an organism that invades cells in the gut and is very different from microbes that might invade the bee's blood.

I conclude from all of this that while we all agree that honey bees infested with mites die earlier in the spring and that colonies may perish from the disease the mites cause, we have no notion how mites cause the death of honey bees. □

References:

- Bailey, L. *The natural incidence of Acarapis woodi and the winter mortality of honey bee colonies.* Bee World 42: 96-100. 1961.
- Fekl, W. *The bacterial flora of the tracheae and blood of some insects (translated title).* Zietschrift fur Morphologie und Oekologie der Tiere 44: 442-458. 1956.
- Gary, N.E. and R.E. Page Jr. *Tracheal mite infestation effects on foraging and survivorship of honey bees.* Journal of Economic Entomology 82: 734-739. 1989.
- Orosi-Pal, Z. *Experiments on the feeding habits of the Acarapis mites.* Bee World 15: 93-94. 1934.
- Scott-Dupree, C. and G. Otis *The impact of Acarapis woodi, the honey bee tracheal mite, on honey bees in New York state.* Proceedings, Recent Research on Bee Pathology. Gent, Belgium. September 5-7, 1990. In Press.

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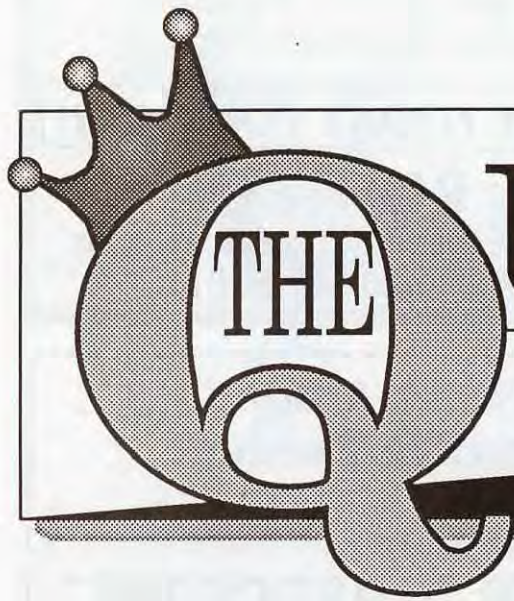
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QUEEN AND YOU

Tim Lawrence

Susan Cobey

"The Queen and You' is a column devoted to the Queen, the most interesting, vitally essential and enjoyable aspect of beekeeping. It is a very broad topic that touches all aspects of beekeeping and permits discussion of a diversity of related topics. These articles will be designed to interest and benefit both the backyard hobbyist and the large scale producer. The authors, Susan Cobey and Timothy Lawrence have experience in virtually every aspect of beekeeping. They operated **Vaca Valley Apiaries** in California, a business devoted to the genetic improvement of the honey bee.

Currently located in Ohio, they are recognized for their New World Carniolan line of bees and their work in bee breeding and instrumental insemination. Susan is now working with Dr. Brian Smith at the Rothenbuhler Honey Bee Lab at Ohio State University. The New World Carniolan Closed Population Breeding Program has been established at OSU. They intend to develop a honey bee stock center and provide selected breeder stock to researchers and the beekeeping industry. Susan and Timothy also operate Honey Bee Instrumental Insemination Service now in Ohio.

There is little doubt that the queen bee is the single most important individual within a colony of honey bees. The queen is an efficient and prolific egg producer, the mother of all bees in the colony and responsible for constantly replenishing the hive population. She is the guardian of the genetic traits that will determine the characteristics of the colony. Her presence, detected by chemical substances called pheromones, greatly influences the behavior and "morale" of the hive. It surprises us how many beekeepers seem to ignore her importance. Considering cost instead of quality, many beekeepers rely on the bees to rear their own queens or purchase queens based on the lowest cost rather than quality. Too often anything with six legs (and this is not always essential) will do.

There is no doubt that a young, properly reared queen from a proven genetic line of bees will be more efficient and out-produce, on average, "naturally" reared queens. Those who

don't routinely buy or properly rear new queens have a whole slough of reasons why. Everything from 'the bees know best how to produce their own queens' or 'I'm too darn busy to bother looking for queens only to have the bees kill the newly introduced queens and rear their own' or 'the heck with it since bees are

poor colonies resulting in poor honey crops, ineffective pollinating units and more aggressive bees that are often more susceptible to diseases.

A friend of ours operated 1500 colonies for honey production and pollination in California. He requeened, using the tradition of his father, by splitting

"Young, healthy queens are essential to good beekeeping."

coming in and out of the hive, who cares!"

What these beekeepers don't realize is that down the road, colonies headed by so called "natural queens" end up costing them more in time, money and pleasure. Poor queens head

colonies and giving each two frames of honey, two frames of sealed brood and one frame of eggs and larvae. These nucs produced their own queens. Returning four to six weeks later, colonies were checked for new queens and those without queens were combined with

queenright units. Without much effort or cost our friend was able to increase and sustain the size of his operation. Sounds simple and it does work, but you will, eventually, have aggressive, unproductive colonies.

One summer morning while moving bees into melon fields for pollination with this friend, the difference became obvious. Tim rarely wears a veil (though one is usually close by) while moving unscreened colonies at night. Given a little smoke and gentle movement, a sting is rare and the bees are quiet and calm. Having finished his load first, Tim went to help our friend with the larger truckload. Half unloaded, it was obvious that things were not going well. Our friend dressed in full regalia of veil, gloves, overalls taped at the ankles and bees everywhere. The sun was just coming up, the temperature was in the mid 60's, bees were flying and crawling all over the colonies. Grabbing a smoker and veil, Tim smoked the colonies. After numerous stings he stopped to put on his coveralls. Returning to help smoke, he retreated again for a pair of gloves and some duct tape to cover his ankles. Later at breakfast our friend laughed at Tim's reaction to what he considered a routine move and suggested Tim dress for the occasion next time. He explained that more aggressive bees help keep thieves away, which was no doubt. But Tim argued it also takes much out of the enjoyment, creates more work with less production compared to colonies headed by young, vigorous, well reared queens of proven stock. The fellow who eventually took over this operation has aggressively requeened with both commercially produced queens and by rearing his own. The colonies now have a better temperament, less disease and increased honey yields.

What's Wrong?

First, by allowing the bees to rear their own queens no selection for desirable traits is taking place. Even when you split only the best producing colonies, you have no idea with whom the queen mated or how her progeny will perform. Because queens multiple mate, the eggs and larvae taken from your best colonies will not guarantee these traits will be passed on to daughter queens. In just one generation your best colonies can become your worst by forcing the bees to rear their own

queens. This system also promotes inbreeding and aggression. Inbreeding quickly becomes a major problem in isolated areas or when using a small number of closely related colonies. Inbreeding is minimized when a large number of neighboring colonies provide a diversity of drones. The unknown drone sources mating with your queens will dilute your selected traits.

Another problem with allowing bees to rear their own queens is risking the nutritional quality of developing larvae. This may result in small, unproductive queens. A fertilized egg has the potential to become either a queen or worker. The diet of the larvae during the first 72 hours determines caste differentiation. Royal jelly fed to developing queen larvae is far more nutritious and plentiful than the worker jelly fed to developing worker larvae. This caste differentiation occurs when the larvae begins to feed. If the diet of the worker larvae changes to queen royal jelly

smaller and less productive.

When a frame of eggs and larvae are given to a queenless colony the bees will select several larvae to be reared as queens. The bees enlarge and reshape the cells and feed copious amounts of nutritious royal jelly. The larva the bees select may be very young, or may be up to three days old and already well on its way to becoming a worker. The older larva chosen will develop faster and emerge before the younger, larger, healthier queens. The first queen to emerge will destroy her competition. Consequently the result is an inferior queen in your colony.

Purchasing queens from reliable sources or learning to rear your own queens will greatly increase the enjoyment, productivity and profitability of your beekeeping operation, despite your size or interest. Young, healthy and productive queens are *essential* to good beekeeping.

It is clear to us that the long term solution to the current problems facing the beekeeping industry is the ability to produce or obtain a reliable supply of productive, genetically desirable queens. This is essential to manage parasitic mites, the African bee and increasing costs. The circumstances we face today will separate the beekeepers from the bee-havers by demanding better beekeeping management techniques and use of genetically improved stock.

The goal of this column is to offer some insight in this direction. We will cover topics from how to find queens, how to rear your own queens, what makes a good queen and how to select a good queen. Throughout the series we will also discuss breeding and selection methods. □

(We encourage your questions, comments, and suggestions for topics and look forward to hearing from you. Please write to us directly at: 7417 Hayden Run Rd., Amlin, OH 43002.)

Reliable queens will increase the enjoyment, productivity and profitability of your beekeeping

within the first 24 to 36 hours after egg hatching, the larvae will develop into an *acceptable* queen. If an older larvae is chosen to be the queen, one and a half to three days after egg hatch, the queen will develop into an *intercaste* (a queen with worker characteristics). Comparatively these queens will have fewer ovarioles, probably produce less queen substance (pheromones), and be

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OCTOBER 15

THE DAY THE BEE ARRIVED

EVAN A. SUGDEN
AND
KRISTINA R. WILLIAMS

Facts and people often get lost in the storm. Here is what actually happened on that long-awaited day.

Monday, October 15, 7:00 a.m. The clouds on the eastern horizon began to scatter like so many shorebirds. A gentle breeze stirred, calming and cool, not the portent of the midday blasts typical of July and August in the Lower Rio Grande Valley. A transition in the weather, and work would be easier outdoors.

Two white-clad figures sat in the crew cab of a Dodge pickup headed east on the Military Highway, paralleling the River. One held a cup of coffee and both blinked consciously behind dark glasses, trying to chip away the shock of another week of work so rapidly at hand. The truck had already been loaded with gear, its leaking tire blown up, the reluctant engine goaded into life, data forms and maps assembled, suits pulled on to save later trouble. The inactivity of the forty minute ride to the first bait hive site had become part of a routine over the past year for Art Cavazos, field technician for the USDA-ARS Honey Bee Lab in Weslaco, and more recently for his helper Robert Mumford. A few words were exchanged, "What a buck I saw yesterday at the deer lease!" "Yeah, like the bucks I lost Saturday night." The jokes casually rolled around to the focus of the job "Well, you think we'll find it today? Kristina asked us to bring her one." "Quien sabe, man" he said, shrugging his shoulders, "it's getting to be boring. The truck is driving itself."

"What about that bad one from last week?"

"No, cell size too large, they haven't analyzed it yet."

The first bait hive was lowered slowly to the ground with the aid of a fiberglass painter's pole fitted with a modified fish gaff and bumped the grass with a happy little thud. "Empty ... no, wait a minute, *Polistes!*", gestured Art with annoyance and pulled on his veil while jumping back.

Both stood by to let thirty or so paper wasps emanate in panic from between the lids of the back-to-back double pulp pot honey bee swarm trap, also a favorite wasp nesting spot. "I hate those things!" The hazard of a sting quickly subsided. An inspection of both trap buckets revealed no further contents and that the polyethylene tubes containing the artificial Nasanov pheromone were intact and properly affixed on both sides. That unit, and another checked similarly swung gently behind them as they tossed the yellow pole into the truck bed and moved on to the next site. Another morning on

the trap line was well under way.

Fifteen sites were thus checked, 60 bait hives of the 340 they would check by the end of the month. Two contained swarms which had already settled into behavior which qualified them as established colonies. These were dispatched quickly, yielding a collection of data and samples of various sorts – comb, brood, adult bees, the queen – which would be used to characterize the colony later.

The 16th stop was made at a somewhat dismal spot, punctuated only by two trees on the south side of the road and an irrigation canal bending to the north. Recently disked cotton fields and mature sugar cane dominated the horizon except for a distant band of dark green foliage marking the twisted course of the Rio Grande. One bait hive unit hung in a small mesquite, the other in a gangly huisache, or acacia.

Both sides of the first trap were empty. Proceeding to the next, two swarms were found, "... un doble!" Preparations were quickly made to repeat the sampling maneuvers. One side of the trap, "C", was jammed into a tangle of branches, and so the sampling was begun on trap "D". A one minute count of bee activity was made, the in and out flights of foragers at the inch and a half entrance hole. Then a defensiveness test was begun. Isoamyl acetate, artificial alarm pheromone, was sprayed into the entrance. The banana-like smell wafted into the air as an angry roaring grew within the trap. One minute later the unit was thumped sharply with the yellow pole three times, followed 30 seconds later by presentation of two two-inch square black suede patches mounted on the end of the pole and waved in front of the entrance. Art and Robert, fully suited, watched the two patches attract enraged guard bees like so many iron filings impacting a powerful magnet. Some also pelted their mesh bee veils with bullet-like determination. "Now! ... Now!" repeated Robert as Art jotted down the response times between alternating glances at a stop watch.

"Good reaction, man, they're mad." At two minutes, the patches were lowered to count stings. "Look at this ... ninety-eight, ninety-nine, one hundred ... one hundred one in just one patch!"

"Yeah, but remember that one from last month, almost

that much ... European."

"Yeah, it's pretty hot and it's probably a big one". There was no way to tell how many "soldier" bees from trap C had contributed to the stinging.

Spurred on by the excitement of a zesty response by D, they quickly dispatched both colonies by plugging the entrances and squirting a few ounces of ethyl acetate into the closed containers. The behavior test was forgone on colony C because of its inaccessibility in the tree, and in the case of a double catch, the first test biases any further data.

The following five minutes were used to prepare sample bags, vials and assorted tools. Then, Art put his ear to the first bait hive, D, which appeared to contain the larger of the two colonies. The roar heard during the defensiveness test had faded to a faint and stuttering hum. "They're down." In moments, the lid was pried off, a series of glistening new combs were laid out in a pan and about a gallon of dead bees poured into a neat pile. Art brushed casually through the pile while Robert tallied comb contents. "Aqui esta la reina," the queen, still with some life, was put in a small plastic vial marked with the number 5207 which was then placed in a lunch cooler containing dry ice. She was promptly joined by four more vials, each full of worker bees destined for discriminate analysis with DNA and isozyme techniques. Art measured the diameters of ten contiguous cells from the center of three brood combs while Robert scribed. "Five point one, five point four, five point three," the measurements were typical of European honey bees.

All samples stashed and the data recording complete, the second bait hive was opened and its nearly lifeless contents arrayed similarly. His eyes well tuned to the minutest details, Art sensed something different as he brushed aside the few bees remaining in the bottom of the bait hive and plucked the dark lively queen from a comb remnant. Robert made good time counting the square inches of pollen stores, honey, and brood as the colony was small, probably only two to three weeks old. The pile of worker bees was about two cups in volume. Finally, the tape was laid on the brood comb and the measurements taken. But these were not read out in the same voice, "Four point ... wait a minute, let me try that again ... four point eight ... four point ... eight, FOUR point EIGHT?! "Robert, why don't you try this." Robert crouched down and repeated the exercise, double checking his work "Art, you were right! Four point eight, four point eight, four point eight ... look at this comb, it's really small!" "Yeah, check out the bees, they're tiny, too."

Warning lights began to glow in the minds of the two bee busters, cautiously, due to many false alarms during the past year: fly-sized but European bees and occasionally comb of average cell size near five point zero. But tiny bees *and* tiny comb ... "Robert, let's get this back to the lab right away. ¡Vamonos!" It was noon.

Thirty minutes later Art discussed the sample with Dr. Evan Sugden, trap line manager. Dr. Sugden had been jaded lately by a number of false alarms. The whole lab had been edgy during the past months. It was beginning to seem that Africanized bees, their arrival long expected if not overdue,

were up to something odd. Could this be another case of mini-European honey bees? Would six hours of laboratory preparation and analysis prove suspicions wrong again? Still, a neglected positive AHB find could have dire consequences later. Dr. Sugden consented that "We'd better get it to William right away" Kristina Williams, in charge of the morphometrics lab, had just finished doing battle with the copy machine and overheard the exclamations. "Did you bring me something interesting?"

"Guera, take a look at the data sheet," said Art, referring to her blond hair and gesturing at the cell size measurements. "Wow! Art, you shouldn't have! Where are the samples? William will be here any minute. I'll have him get right on it."

The truck lumbered up to the "back lab", a converted building which served as temporary library, shop, laboratory space, and offices, and seemed to sigh as the engine was put to rest. Moments later, Kristina joined the two as they unloaded and asked "Have you got a comb sample?" "Of course," and shouting toward the truck, "Hey Robert, bring over the comb and alcohol sample!" Art drew her aside and asked her to confirm the measurements he had made earlier. The brood-filled comb was a familiar sight on the Mexican trapline where she had been collecting swarms for the past year, but this was Texas. "How about the bees?" and, peering into a plastic vial containing about 250, plucked out three worker bees which clung together in a morbid chain "!Chiquititas tambien!" (Little ones, too!).

William Keale, student laboratory aide, had just arrived to begin his day in the lab. Recent budget cuts, government "shut downs" and the usual autumn loss of summer student workers had left the operations quiet and running at a frustratingly slow pace. William was the sole remaining helper and was rapidly becoming a virtuoso bee identifier out of necessity. He could process and determine one sample in about five hours. As a screening process, the lab had been doing a quick measurement of the forewing length of ten bees. It was a kind of fast FABIS (Fast Africanized Bee Identification System). Kristina presented William with his task in an air of thinly veiled excitement, which he found curious in light of the tedium of what he had to do.

Results were ready within an hour: the forewings had come out suspiciously short, averaging 8.7 mm. 9.0 to 9.1 is about the cut-off below which Africans fall (European bees generally have longer wings) although wild bees from northeastern Mexico and south Texas sometimes also fall within this range. Kristina gave the go ahead for full "Daly" morphometrics. Within another hour, William had torn apart 12 worker bees from 520 and was mounting the relevant body parts on as many microscope slides: from each bee the third sternite (wax mirror), stained red, left fore and hind wing, right rear tibia with femur attached, and pollen basket. Although it was tedious work, requiring the patience of a stone and the dexterity of a neurosurgeon, he was buoyed up by his feeling that this might be a particularly important sample, but he maintained

Continued on Next Page



Members of the USDA-ARS Africanized Honey Bee Program in Weslaco. Top left to right: Dr. William L. Rubink, Kristina R. Williams, William Keale, Dr. Evan A. Sugden, Dr. Anita M. Collins, Dr. William T. Wilson. Bottom left to right: Arturo Cavazos, Robert Mumford

an air of solemnity and feigned indifference at the constant demands for progress reports and "eyeball analysis"

By 5:00 p.m. the delicate parts had been dissected out, cleaned and stained, but they still needed to be mounted. Could it wait until tomorrow? Kristina asked William's well seasoned advice on how long it would take to finish the analysis. It would take till 6:30 or so, including the actual digitizing of the sample. At this juncture, Evan entered, having closed up his office for the day but somewhat anxious about the latest suspicious sample. Most of the other employees had already gone home. Would William be willing to stay late to finish? Would any of the three? William wavered. They were all tired and hungry, but knew they wouldn't sleep anyway, not knowing the ANSWER. Kristina promised pizza; William was willing to stay. Silence. Indecision. They looked at each other. "Hey, this is what we've been waiting for, let's go for it! ¡Vamos!" Kristina called out for pizza, and Evan went to pick it up while William continued working.

William finished mounting the sample and, like a ring bearer at a fancy wedding, carried the slides upstairs to "the cave" a little darkened room where the digitizing would be done. From the next room Kristina could hear the high pitched beep-beep of the electronic mouse, making 39 measurements on the first bee, and then the tune that signaled, "This bee is probably Africanized." It was followed by an alarmed yelp.

"William?" Kristina rushed into make sure that William was OK. He was just so surprised that it was really happening this ~~time~~. The tune would sound 11 more times.

Halfway through the digitizing, Evan arrived with the pizza. William popped out of solitary long enough to grab a few pieces. "This just smelled too good," he explained. Finally, the sound of the analysis being printed out could be heard through the wall. This brought Kristina away from her data entry and set Evan on the edge of his chair, waiting for William to emerge. The Daly and Balling program (modified by Rubink) was comparing measurements of specimens from 5208 to a large data base of African and European morphom-

etrics and coming up with a probability that each bee, and the overall sample, was representative of one race or the other. William tried to suppress a pleased grin as he handed over the analysis printout with a flourish, "Este grupo de abejas probablemente es Africanizado segun Daly y Balling," probability 1.0, 100%. We tingled with the realization that we were the first seeds of a secret society, as it was strict policy not to discuss the results with anyone, almost. One seed was added to the pod; we called Research Leader Anita Collins. She advised us to go ahead with the standard procedure. This would mean sending the samples the next day to the Honey Bee Lab in Beltsville for confirmation so they would arrive on Wednesday. However, these weren't *standard* bees and two days might be long enough for the secret to leak prematurely to the press.

We decided to try to expedite the process. Federal Express would be open until 9:00 p.m. and they could have the sample in Beltsville by 10:30 the next morning, saving a whole day. Perfect. Kristina carefully packed two vials of 30 bees each in dry ice and included a copy of the data sheet and drove the precious package to Harlingen. It was 8:20 p.m. when the last of half a dozen labels had been stuck on the package and we turned to leave the depot. "¡Que le vaya

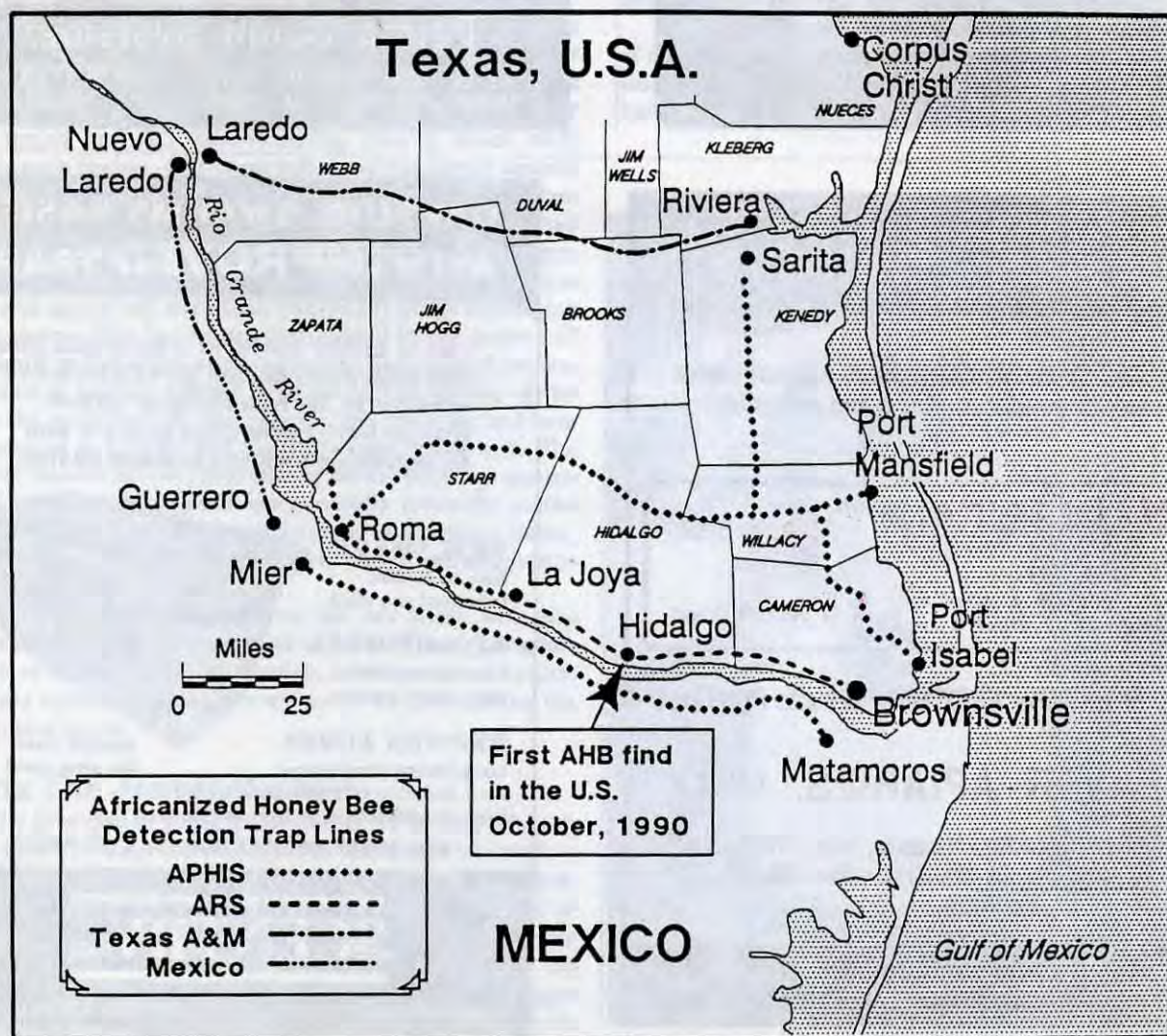
bonito!" as Art would have said. Bon voyage!

Twelve hours later, in Beltsville, 5208 would be confirmed "Africanized", setting into motion an agency protocol which had been waiting for over a year to kick into action.

Confirmation was relayed by phone to Dr. Collins and Africanized honey bee researcher Dr. William Rubink 27 hours after the sample was collected. Another 24 hours passed before word of the detection of natural movement of Africanized honey bees into the U.S. was given to the media by the USDA Animal and Plant Health Inspection Service (APHIS) Office of Press and Media Relations. The rest is history.

The authors and players in this real life drama would like to thank Dr. Bill Wilson, Dr. Bill Rubink, Dale Maki, Raul Rivera, Juan Aranda, James Baxter, Noe Buenrostro, Roy Medrano and Dr. Anita Collins, all who have aided and assisted us in this program. □

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JENTER QUEEN REARING

JOHN CALDEIRA

Raising quality queens from one's own honey bee colonies can be an exciting and cost saving part of beekeeping. It may also be frustrating for beekeepers inexperienced in grafting honey bee larvae. A new method developed within the past decade allows beekeepers to raise quality queens without grafting: The Jenter Queen Rearing Method.

The Jenter Queen rearing kit was developed in Germany and sold in many areas of the world since the early 1980's. It was awarded the Apimondia gold medal in 1987. The Jenter kit allows novice beekeepers to raise quality queens from their best colonies without grafting larvae, thus reducing the chance of damaging larvae since they are never touched directly. It is an ideal method when quality, rather than quantity, is desired.

We used the Jenter method as Peace Crops volunteers in the Fiji Islands, where a visiting New Zealand beekeeper kindly explained its use and gave us a kit. After two years of successful use in Fiji, we used the Jenter method in Texas for both spring and fall queen-rearing, raising about sixty queens each season. Our observations of the Jenter system are described here, so others may learn from our experiences.

The Jenter kit consists of a plastic box of simulated honeycomb in which a queen may be confined to lay eggs, ninety cell "plugs" that form the "false bottom" of worker cells, and queen cell cups that receive the plugs containing young larvae. The larvae are transferred to the queen cell cups *while on the plugs*, eliminating the need to graft larvae.

Raising quality queens depends on the quality of the genes she receives from her parents, the nutrition and care she receives as a larva, and the drones she mates with. The first two factors can be controlled by beekeepers, but queens raised by non-professionals are generally naturally mated with locally available drones which may be a positive factor, as they may come from colonies particularly well adapted to local conditions.

The best queen mothers to use are those with the characteristics wanted most in all colonies. These characteristics may be high honey production, gentleness, and health. Accurate apiary records are very useful in determining the best queen to use.

Using The Jenter Method

The first step in using the Jenter kit is to insert the cell plugs into the comb box and then fasten the comb box in a frame that has had a section of comb cut away to fit the box. The frame is then placed in a hive for the worker bees to propolize and give it a "bee smell" We are not sure if its really the smell, but letting the bees become accustomed to the comb box seems to make the queen less hesitant to lay eggs and workers less likely to remove eggs that have been laid. The newest cell plugs require the bees to seal the cell plug

bottoms with wax before the queen lays. The best location for the Jenter frame is near the brood nest where there are numerous young bees that typically clean cells. Kit instructions suggest smearing the kit with honey to attract bees that will clean it off. The queen excluder cover should not be on the kit during this stage.

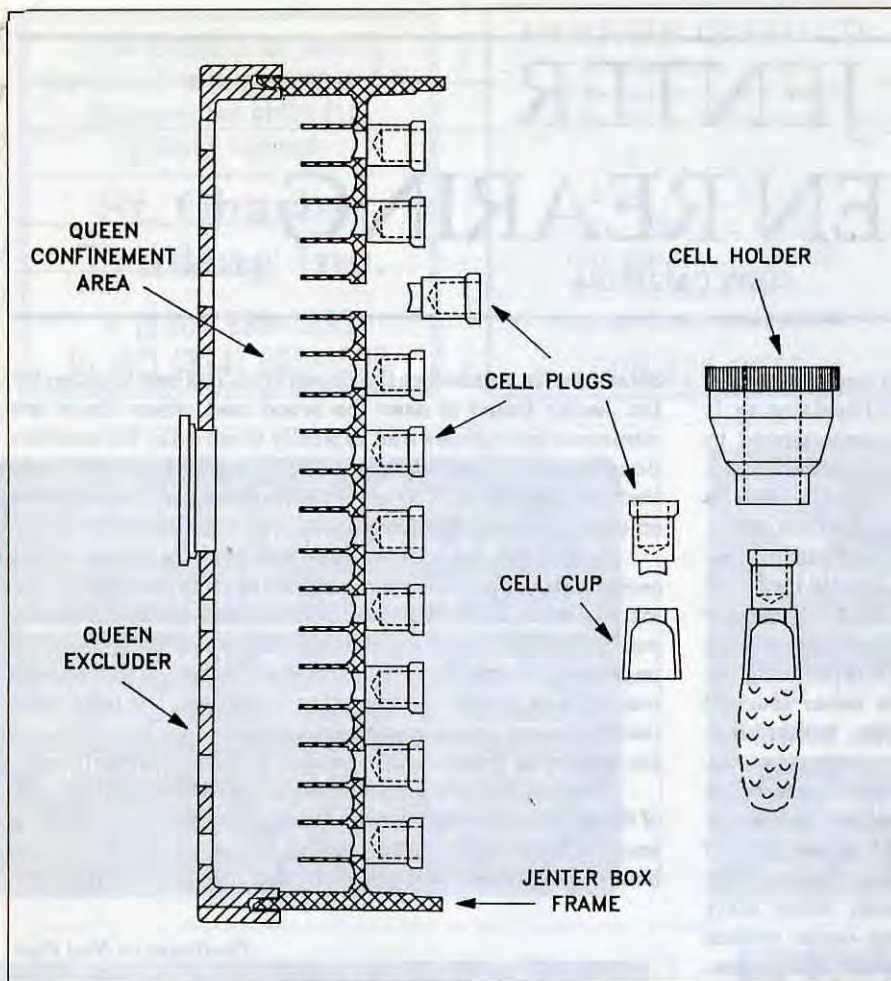
After a few days in the hive the queen is placed in the comb box to lay eggs and the excluder cover is installed. If the kit has been in storage and not cleaned by worker bees, warming it in the sun for a few minutes before use may improve performance. The frame with the queen in the comb box is placed near the center of the brood nest. It is important that sufficient space exists between the excluder cover and the adjoining frame so that worker bees may enter freely.

The average queen can be expected to have laid in most of the cells within eight or ten hours, though a queen from a small colony with a lower laying rate may require a few hours longer. We found a calendar helpful in calculating the

Continued on Next Page



A typical queen cell formed in a Jenter Unit.



Cross-section of the Jenter box. The queen mother is confined within the box to lay eggs on cell plugs that form the "false bottom" of alternate cells. This allows easy transfer of larvae to queen cell cups.

JENTER ... Cont. from Page 23

important dates that follow, such as the egg hatching date, the pupal hatching date, and the date the new queens should be laying.

After the queen has laid her eggs, the excluder cover is removed and the frame containing the comb box is returned to the hive.

The queen will walk out on her own, and the absence of the queen excluder front provides easier access to attendant worker bees. Avoid holding the box up to direct sunlight when observing the eggs; use a flashlight if necessary so the eggs will not be damaged by the sun. Bees have a tendency to remove eggs from their cells if they are defective, which might occur if they were exposed to harsh environmental conditions or if the Jenter Kit still has too much of a "foreign" smell.

This is a good time to prepare frames that will hold the queen cup holders and to begin feeding the cell raising colonies to stimulate queen

rearing. Holes may be drilled in strips of wood to hold the queen cup holders, or the queen cups may be secured to the bars by melted wax.

The eggs will have hatched on the fourth day after placing the queen in the comb box. The larvae will be floating in a small amount of liquid in the cell plugs that form the bottoms of the cells. The cell raising colonies will raise a larger number of cells if they are made queenless a few hours or a day before the larvae are transferred to them. An easy way to make them queenless is to confine the queen to one brood box or super using a split board, (a split board is a piece of paneling with a rim attached) leaving a small entrance for the upper "split". A day after the transferring process, the split board may be replaced by a queen excluder to give all bees (except the queen) access to the entire hive, thus keeping colony disruption to a minimum.

The period of transferring the lar-

vae to the cell raising colonies is most critical to success. The frame containing the comb box is removed from the hive and the adhering bees are brushed off (smoking the frame may adversely affect the larvae). The cell plugs, containing the larvae floating in their royal jelly, are removed from the comb box and are inserted into the queen cell cups. The cell cups are then inserted into larger cell holders and placed into frames that were prepared earlier. These frames of queen cell cups are placed in one or more cell raising colonies for the worker bees to help develop the queen larvae. This work is done as quickly as possible to minimize the time the larvae are out of a beehive. Larvae survive best in warm humid environments, so working in a heated building or vehicle is strongly recommended if conditions are cool or dry. Though we are not bee scientists, we think our success rate depends heavily on keeping the larvae warm during the transfer process.

The cell raising colonies should be well fed and crowded with young adults that perform most larval care. Colonies can be strengthened with young bees by adding a frame or two of sealed brood one or two weeks before the queen cells are installed. The cell raising colonies must either be queenless or have the queen separated from the queen cells by a queen excluder or split board. The frame of queen cell cups should be placed near the center of the brood nest, preferably adjacent to a frame of open brood that will attract young workers. Queen quality may be improved by having no more than 20 queen cells being fed in each cell raising colony.

Adequate pollen and stimulation of the cell raising colony by either a natural nectar flow or feeding is very important and cannot be over emphasized. Queen larvae require good nutrition to develop into top quality queens and that means an adequate supply of pollen and honey. If pollen and nectar is not available, the cell building colony must be fed. Pollen is the protein source for the growing larvae. A protein deficiency during development will result in inferior queens. If a natural source of pollen is not available, feeding pollen trapped earlier and frozen will probably be more nutritious than a pollen substitute.

Worker bees must also be in the "mood" to raise queen cells. Bees seem to raise more queen cells when there is a nectar flow or when they are being fed

from a slow continuous source such as an inverted pail. As may be true for humans, feeding bees honey is probably more nutritious than sugar. A larger number of cells might be drawn out if the cell raising colonies are stimulated by feeding a few days or a week before the cell bars are introduced.

Four to six days after the queen cells are installed into cell raising colonies, the number of good queen cells that are "drawn out" can be counted so the number of queen mating nuclei can be estimated. Although there is some debate whether larger queen cells produce better queens, it may be best to raise queens only from large, well shaped cells.

When our cell raising colonies did not raise many cells, we suspected several possible reasons: (1) The larvae may not have survived the transferring process. They require warmth and high humidity to survive. (2) Insufficient stimulation of the cell raising colony by natural or artificial means. A steady supply of nectar or feed increases the number of queen cells a colony will raise. (3) Failure to give the bees a sense of queenlessness for at least a few hours

prior to transferring the larvae.

On the tenth day after placing the cell bars into the cell rearing colonies (14th day after the eggs were laid), the larvae are ready to be transferred to mating nuclei. These may consist of separate hive bodies with three or more frames or colonies fitted with split boards. The mating nuclei is prepared with enough bees to form a "mini-colony" until the emerging queen begins laying. The ideal mating nuclei would consist of a small amount of brood of varying ages, sufficient bees to cover the brood during cold spells, and adequate honey and pollen stores.

The queens hatch from their cells on the 16th day after the eggs were laid. They often look only slightly larger than worker bees and may be difficult to find in a large number of bees without some experience. Weather permitting, she will usually take mating flights about a week after hatching and should begin laying a few days later. Two weeks after hatching, eggs should be visible in the nuclei and the queen is ready to be transferred to her permanent colony.

Queen Introduction to an estab-

lished colony that needs requeening is easiest when the old queen has been removed for an hour or more and when there is some nectar flow. Queen acceptance in established colonies may be accomplished successfully without caging the queen by removing a few frames from the colony and installing the entire nuclei on the side of a brood box, spraying both the nuclei and the surrounding frames with a honey-water mixture.

The Jenter kit can be cleaned by running water over the comb box or spraying it with sugar syrup and returning it to a beehive for the bees to clean. The cell cups can be cleaned by scraping wax off with a dull knife. The plastic comb box, cell cups or plugs should not be placed into a solar wax melter or hot water as the heat may cause them to warp or crack. □

The Jenter kit is available from Brushy Mountain Bee Farm, Inc. Route 1, Box 135, Moravian Falls, NC 28645.



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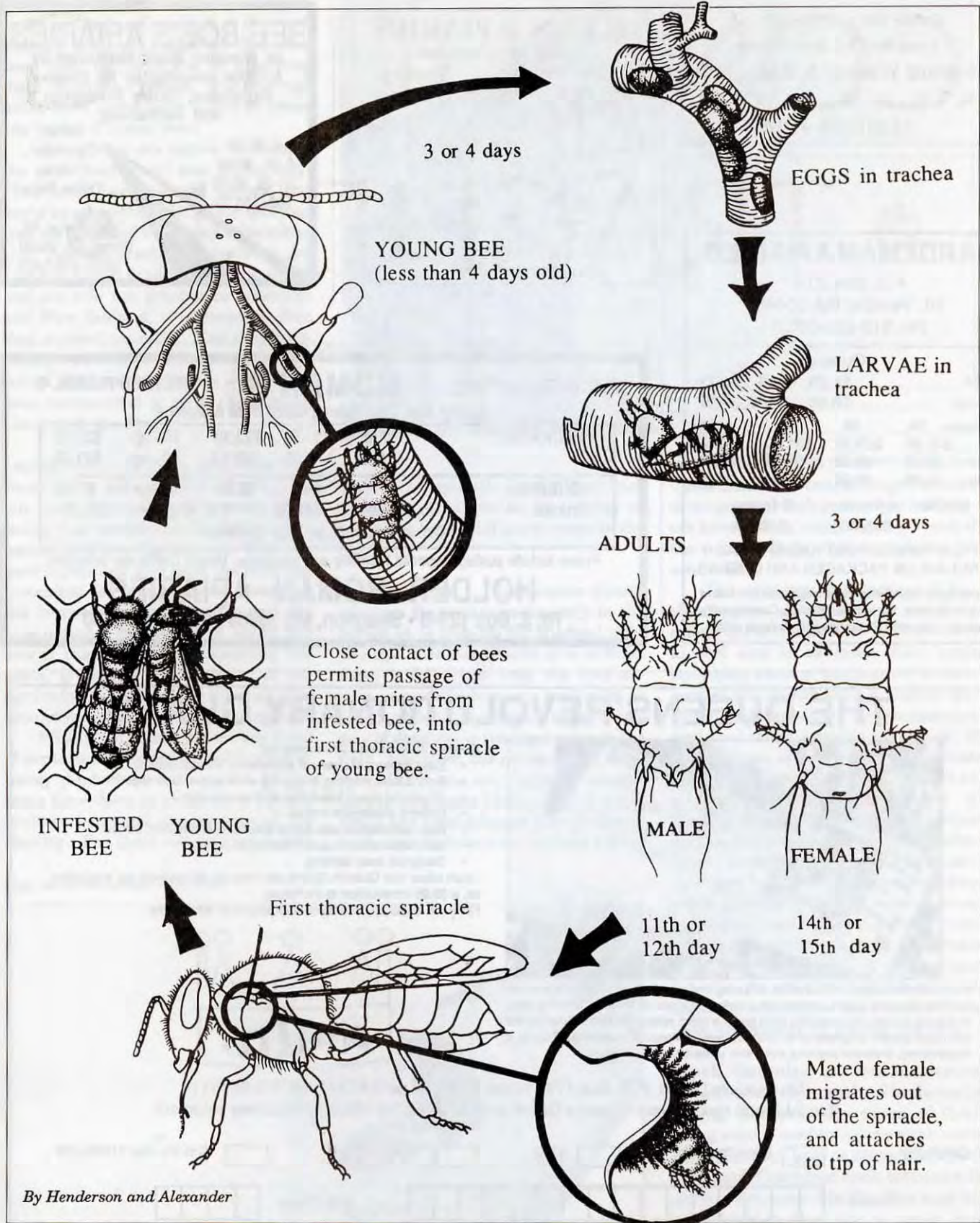
CONQUERING • TRACHEAL • • MITES •

ROGER MORSE

We can expect that again this spring tracheal mites will be responsible for the deaths of a large number of honey bee colonies across the U.S. Losses will be greater in the northern states than in the south and California. We are making progress in our fight against this mite, which was first found in this country in July of 1984. However, that progress has been slower than we had hoped. The mite was accidentally introduced from Europe.

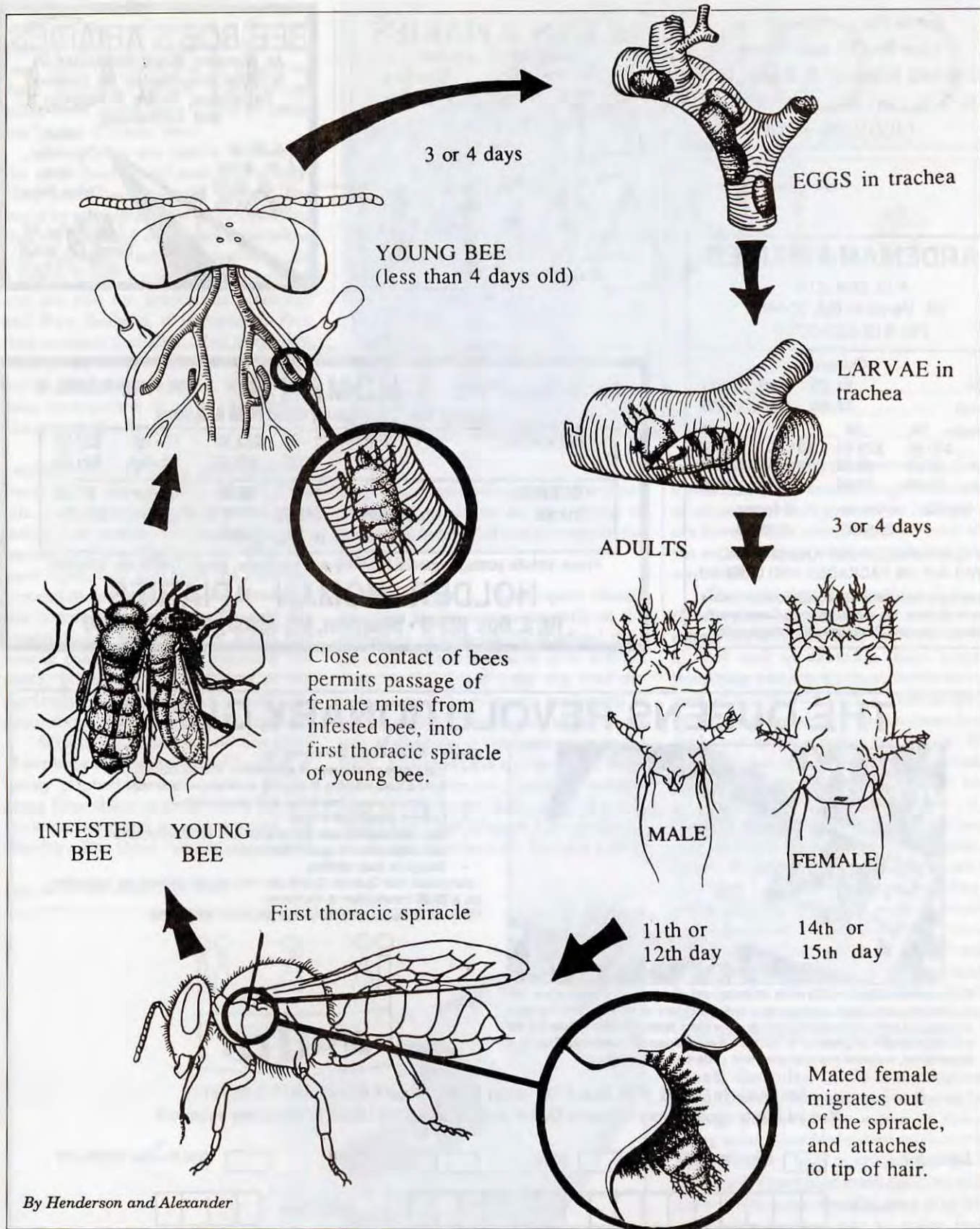
Origin ... Tracheal mites were first discovered in 1919 in Great Britain. Between 1900 and 1920 about 90 percent of the colonies of honey bees in that country died of an unknown cause. When the tracheal mites were discovered they were blamed for the problem. Apparently, bees in Great Britain soon gained resistance to tracheal mites for the mites are not considered a serious problem in that country today. It is estimated that they cause no more than two percent of colony deaths in Great Britain; for the most part these losses take place in the spring. The mites spread across Europe but never caused the severe problems they did when they were first found. However, in talking with beekeepers and researchers in Europe it is apparent that they sometimes cause losses in central Europe. Tracheal mites have never been found in northern Germany, Denmark, Norway, Sweden or Finland, a fact that we do not understand.

There are two species of closely related mites that live externally on honey bees. One lives in the neck region and the other is found around the base of the wings. So far as we are aware, both species feed exclusively on honey bee blood. It is not too difficult to find these external mites but they



LIFE CYCLE OF THE TRACHEAL MITE

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LIFE CYCLE OF THE TRACHEAL MITE

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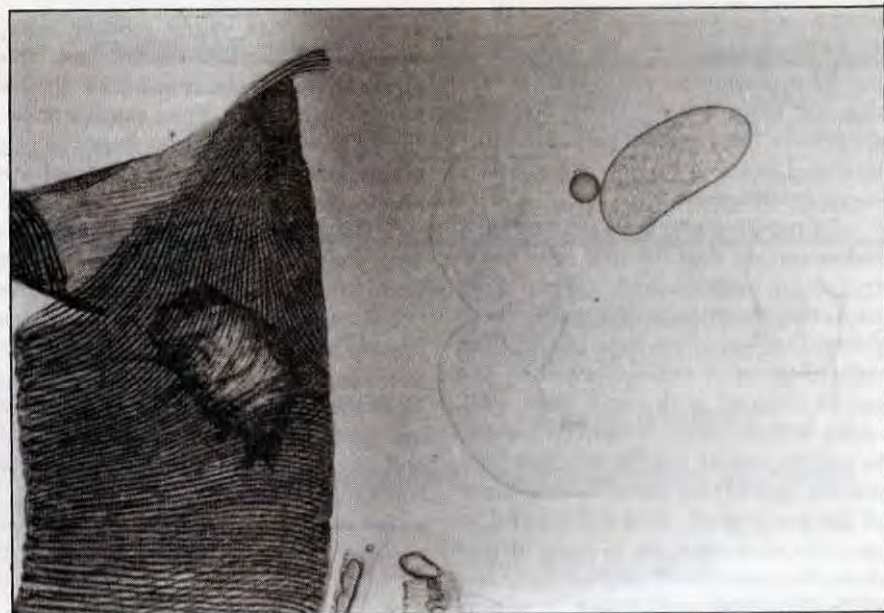
MITES ... Cont. from page 27

never become as abundant as tracheal mites; it has been suggested that bees keep their numbers low by grooming them off of their bodies. The external mites have never been found to cause any losses of honey bees.

Honey bees are native to Europe, the near East (Iran) and Africa only. They have been carried around the world by colonists and it was in this way that we obtained our honey bees in the U.S. Because tracheal mites were not found in North America until recently, and are still not present in Australia and New Zealand, it is assumed that they evolved recently. Had they been present in Great Britain or Europe before 1900, we believe they would have been transported to all of these areas along with the first bees.

Legislation ... In 1922, soon after tracheal mites were found in Great Britain, the U.S. and Canada enacted legislation that prohibited the further importation of bees from abroad. This was good legislation and gave the industry protection for many years. However, the increasing world traffic and the international movement of goods has meant that we are transporting the pests, predators and diseases of our agricultural plants and animals around earth at an ever increasing rate.

Within our country, over one third of our bees are moved for pollination or honey production each year. At the same time there is great movement of package bees and queens around the country. For these reasons we cannot



Adult mite, egg on outside. USDA Photo

expect that legislation and quarantines will be of much value in slowing or halting the spread of bee diseases in the future.

Finding Mites ... Beekeepers should examine their colonies as early in the spring as is possible for tracheal mite damage. The best time to do so is when there is full flight from the hive entrances and the bees are beginning to collect pollen. There is no satisfactory way of diagnosing tracheal mites in the field. However, the mites are so widespread that one may logically assume they are the most likely cause of weak, dying and dead colonies that are found in the spring this year. Normal winter

losses from other causes range from two to ten percent each year; some beekeepers have lost as many as 80 percent of the colonies from tracheal mites in recent years.

The only way to determine if tracheal mites are present or not is to collect old and sick bees in 70 percent alcohol and to examine their large breathing tubes or tracheae in the forepart of the thorax with a microscope. One may determine if the tracheae are darkened using a strong hand lens. If the tracheae are darkened we assume mites are present, but again this can be confirmed only with a microscope. A positive identification of tracheal mites may be made in a state or federal laboratory though many of these laboratories have had more samples than they could process in recent years. Some individuals, and a few bee clubs, have purchased a microscope to undertake their own diagnoses. A few private laboratories will also diagnose tracheal mites for a fee; these laboratories have been advertising in the bee journals.

Egg, larva and adult USDA Photo



Weak Colonies ... Weak colonies should always be combined in the early spring whatever the cause of their being weak. Combining two weak units provides more bees to protect and feed the brood. Combined weak colonies will grow much more rapidly; they may be split later in the year to make two producing units. It is understood that when two colonies of bees are combined that the queen in one of them will be killed by the other queen or the bees.

Continued on Next Page

MITES... Cont. From page 29

When we combine colonies we usually pay no attention to which queen survives but assume it will be the stronger of the two. If the unit is split at a later date it is necessary to grow or buy a new queen for the new half.

To combine two colonies one first makes certain that the new hive has a dry, clean bottomboard. When first inspecting colonies in the spring, it is always advisable to have clean, dry bottomboards to replace any that are wet or clogged with dead bees. All colony bottomboards should be resting on pallets, cinder blocks, railroad ties, or other type of hive stand to keep them off the wet ground. It is also helpful to have the entrances six to eight inches above the ground so that growing grass will not interfere with flight. It is usually advisable to reduce the size of the entrance of the new colony with an entrance cleat until mid or late May. This prevents drafts and helps the bees keep the broodnest warm.

The next step in combining colonies is to place one of the supers with brood onto the bottomboard. A piece of newspaper with three or four six-to eight-inch-long slits is placed on the top bars of this super. The super with brood from the second colony is placed on top of the newspaper. The cover and inner cover should then be put into place. If either of these is wet on the inside they should be replaced with dry ones. All other supers should be put into storage. If a colony has brood in two supers it is not weak and should not be combined with another unit.

Weak colonies should be examined for signs of other diseases. If there are signs of nosema or European foulbrood, then drugs that will help cope with these diseases should be fed. At the time the first pollen and nectar become available in the early spring, a colony should have a minimum of 15 to 20 pounds of reserve honey to carry it through periods of inclement weather. Feeding sugar syrup to a colony usually stimulates its growth in the spring.

Life History ... The whole life cycle of tracheal mites takes place in the tracheae. The infestation starts when a young, mated female mite moves out of the trachea where she was grown and attaches herself to a young, passing bee. On this bee the mite moves inside a trachea, punctures the walls of the breathing tube with her mouthparts and feeds on the bee's blood. Eggs

develop in this young mother mite, which she deposits in the trachea. The egg is so large that it occupies almost the whole interior of the mother mite. The nymph that emerges from the egg also punctures the wall of the tracheae and feeds on blood.

The mother mite continues to produce young but there are more female than male mites that develop. The mites mate in the tracheae. The males remain there and eventually die while the females move on to other bees. More than one young, mated mite may move into a single trachea. Sometimes only one of the two large tracheae in the thorax is infested.

"

Many beekeepers are looking for resistant bees in their own stock

"

Menthol ... All combined and weak colonies should be treated with menthol in the spring. In the U.S. today we are trying to eliminate the routine use of chemical treatments for pests, predators and diseases of plants and animals as much as possible. Plants and animals should be treated only when they are really sick. However, in the case of tracheal mites our methods of diagnosis are poor and slow. And, because tracheal mites are so widespread we may assume they are at least partially the reason that colonies are weak in the spring. We hope that in a few years we will have better methods of diagnosis and treatment but for now this is the best recommendation we can make.

Menthol is a safe chemical by most standards. It has been used in chewing gum, cough drops, and is the chief ingredient in many ointments and creams that are applied externally to relieve minor aches and pains in our own bodies. Menthol kills tracheal mites, but has little or no effect on honey bees.

Menthol is effective only when the colony or outside temperatures are

high enough to cause it to evaporate in the hive. We have been disappointed with attempts to use menthol in the north in the fall because hive temperatures are so cool. August treatments are satisfactory but cannot be used if honey is to be harvested from the colonies after the treatment. The menthol that is sold by the bee supply dealers is carefully labelled and the labels have been approved by the Environmental Protection Agency. Label directions should be followed closely.

Vegetable Oil ... There are preliminary data to indicate that vegetable oil, either applied directly, or in the form of patties, may have an effect on the mites and may be used for mite control. Several researchers have tests under way this winter. At this stage it is too early to make any recommendations concerning vegetable oil use.

Resistant Bees ... We believe that tracheal mites are less of a problem in Europe because honey bees there are resistant to or tolerant of the mites. Since our honey bees are of European origin we believe that our bees have some of the same traits that led to bees' gaining resistance in Europe.

Researchers in this country are exploring several approaches in hopes of finding resistant bees. In the spring of 1989 26 queen honey bees from six beekeepers in England, Scotland and Wales were brought into the U.S. for the express purpose of finding lines that showed some degree of resistance. The U.S. Department of Agriculture has also imported bees from England for the same purpose. Weaver Apiaries of Navasota, Texas have had Buckfast queens from southern England in this country for a number of years. Many beekeepers are searching among our own stock for resistant bees. We believe that these efforts will, in a matter of a few years, result in one or more lines of mite-resistant bees that will be suitable for honey production and pollination.

Stock Selection ... Beekeepers with any number of colonies can undertake a stock selection program for their own benefit. If a beekeeper grows queens, uses swarm cells for increase, or splits strong colonies to make more colonies, it is important to use only colonies that are strong and prosperous in the spring. The queens in weak colonies, even weak colonies that are combined,

Continued on Next Page

TRACHEAL ... Cont. from Page 30

should be replaced as soon as is practical. The queens in early spring swarms are probably worth capturing and using for breeding stock too. This is true because only strong, and probably tracheal mite-resistant colonies will cast swarms.

Summary ... Tracheal mites have been a serious economic problem in the U.S. since they were first found here in 1984. We have one drug, menthol, that is effective in controlling these mites if it is used at the right time of the year. Tracheal mites are now present in almost all beekeeping areas in the country. It may be assumed that they are the chief cause of colony deaths and weak colonies, especially in the spring, today. However, it is important to emphasize that they are not the only honey bee disease problem in the country. Recognizing and understanding how to control bee diseases is increasingly becoming an important part of mastering the art of beekeeping.

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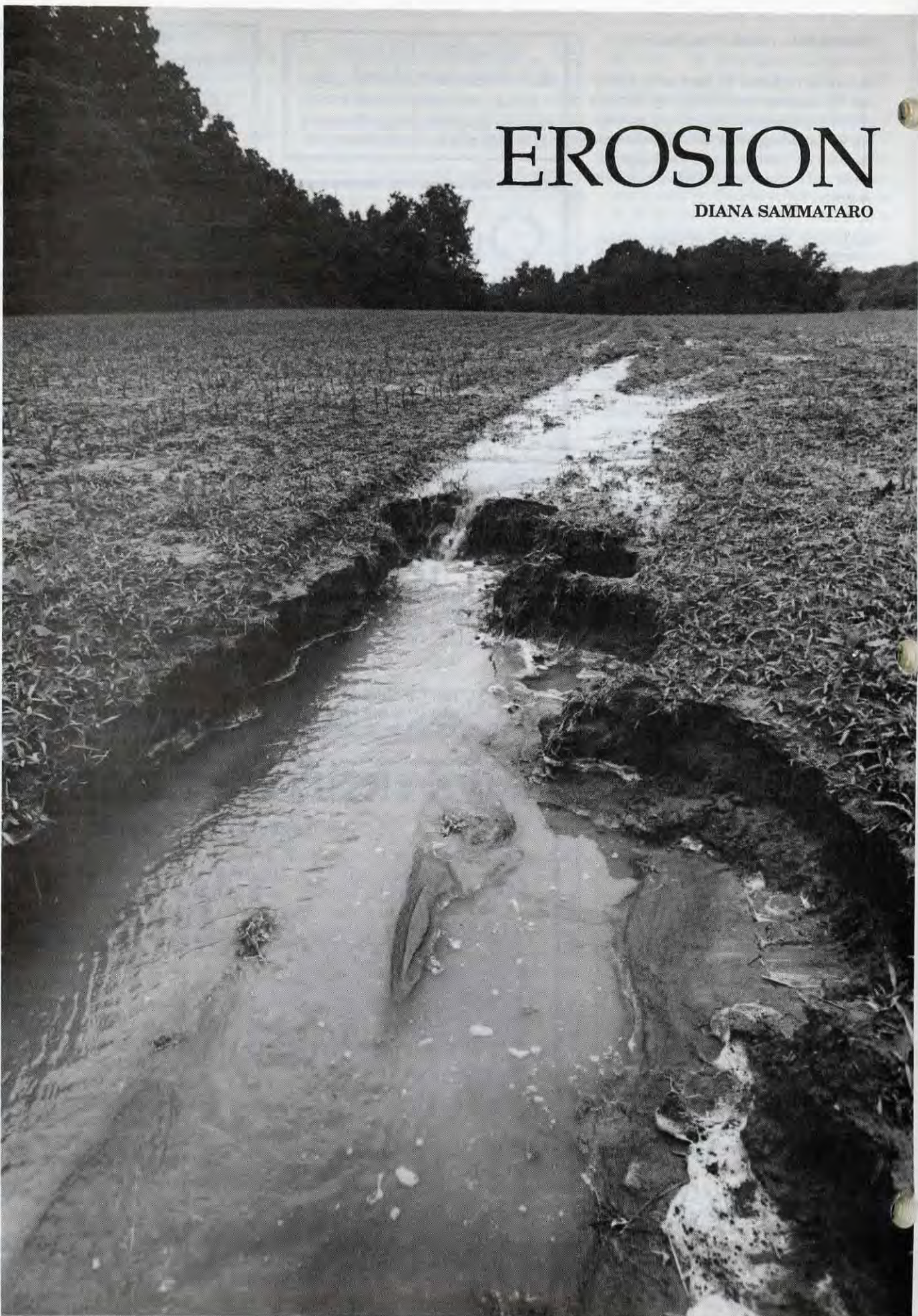
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EROSION

DIANA SAMMATARO



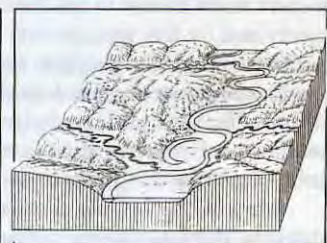
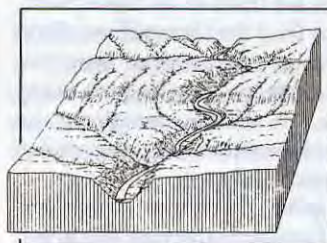
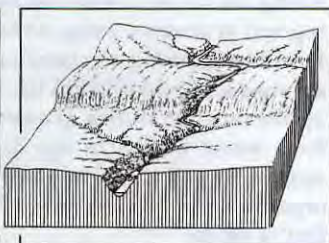
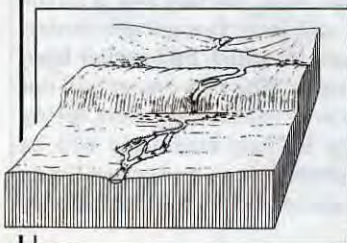
A MEADOW TRAGEDY

Millions of years ago the meadow was an ice field, cold, harsh and hostile with no living thing growing on the impenetrable surface. Over time the glaciers melted and the land uplifted, leaving a bedrock shelf of high ground. The glacier's melting water formed a channel, and where the ground level changed there was a waterfall. Loose material left in the glacial ice as gravel and sand now lay on the surface of the bedrock. Freezing and thawing moisture, as well as strong winds pulverized, crushed and pounded the bedrock into more sand and gravel. Wind and water picked up this newly made dust and washed or blew it into the cracks and depressions, filling in places and becoming immature, young soil. Bacteria, primitive fungi and algae found a foothold in these protected cracks and began to grow on this early earth, adding nutrients as they lived and died, lived and died.

and butterflies and when finished, seeds to birds and rodents for winter forage. The grasses, too, provide food and lodging to diverse animals, like mice, birds and deer. The forest on the meadow's fringe is home to other animals who live and play in both the meadow and the forest. The tall trees moderate the extreme temperatures in the harsh winter months, slowing the blowing wind through the trees and over the exposed meadow, keeping the creatures safe and warm through winter and summer.

The nearby stream, once a river, is home to ducks, geese, insects and other life needed to keep the balance between pests and predators. Fish and other aquatic life flourish and the scene is quiet and serene.

Underneath, the earth is alive with a different sort of life. The simple bacteria and algae of long ago have given way to more evolved types of life. One teaspoon of soil



Based on drawings by E. Raisz. From A.N. Strahler (1960), *Physical Geography*, New York, John Wiley & Sons.

Eons passed, and the channel eroded the shelf so the waterfall became a river rapids and the division between high and low ground became less distinct. Now the dust and sand became sediment, carried down by hillside streams which emptied into the river, to accumulate in deep layers. Year after year aquatic life filled the river bed creating a large flood plain with small streams taking off the excess water. Plants and animals lived and died and became a part of the soil and after a millennia, the river became choked with sediment, filled in and became a swamp.

More time passed, the land cooled and dried. The now deep layer of organic earth was rich in minerals and litter from aquatic flora and fauna. This fertile land was soon covered with vegetation whose seeds were blown or carried in by animals and birds. After more time passed, this topsoil layer grew deeper as dead vegetative litter covered the soil mix beneath. Thousands of years, and even more plant species later, the dark, fecund topsoil was five feet deep.

Underneath this topsoil horizon lay the subsoil. It was lighter in color, and full of soluble minerals and dissolved nutrients leached from the upper horizon. Beneath that a transition layer between the soil and the parent matter or bedrock was evident. Here was found the disintegrated parent rock and mineral particles which rested on top of the bedrock.

The once-swamp-now-meadow is alive with small things that twitter, squeak and rustle in the tall grasses and forbs. Wildflowers blooming offer food to the earliest bees

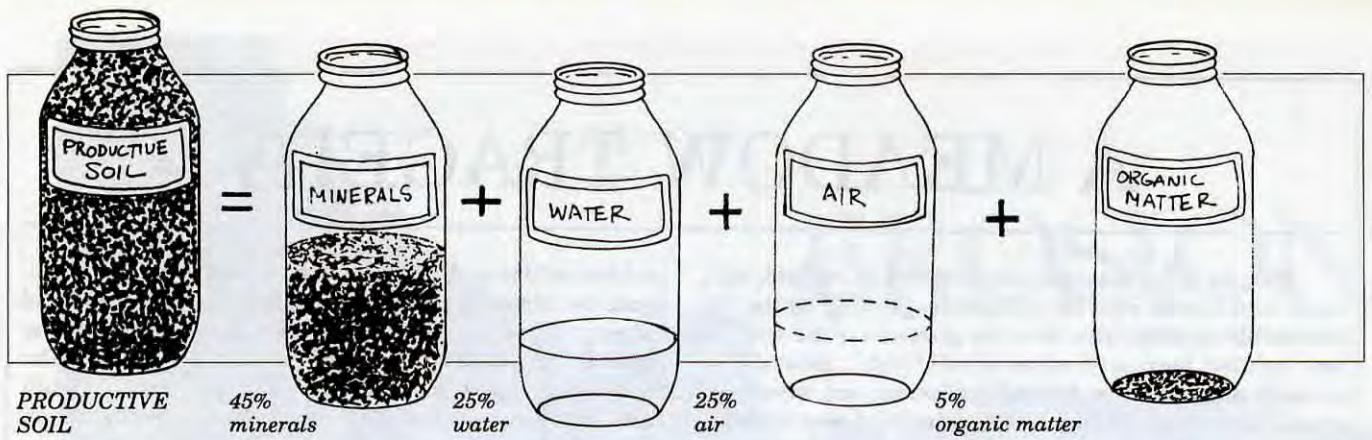
contains billions of earth organisms—bacteria, fungi, earthworms and insects. Earthworms eat organic matter in the dirt, and leave richer soil behind. Without these *intestines of the earth*, nutrients would not be recycled and made available again to plants nor would their tunnels help create air and water pores.

Ants, termites, moles, and mice each contribute to mixing the soil layers and distributing various minerals and nutrients. These creatures burrow and tunnel in the soil, stirring the different horizons and allowing air and water to percolate and be absorbed.

Then one day, not so long ago, a group of native people discovered the meadow. Here were animals and birds to hunt, wild grains and tubers to harvest, streams for fish, clams and other food as well as clean water for bathing or drinking. These people lived comfortably in the meadow for many generations until finally the animals and water life were scared away or diminished by continual hunting. The tribe moved on and the land rested.

The summer rains came and went and washed over the meadow. Even though the rainfall was heavy at times, the impact of the raindrops on the earth was softened by the grasses and reeds that grew streamside. This green buffer filtered sediment from the runoff so the water was cleansed as it flowed back into the stream. Fish and all other aquatic

Continued on Next Page



EROSION ... Continued from page 33

creatures once again flourished in this habitat. Since the delicate structure of the soil was not much disturbed, only a few inches of topsoil were lost to wind and water erosion around the camp site of this first tribe.

A few centuries later another group of people arrived, with their own animals, and tools to cut deep into the earth. Their animals were confined to small pastures and soon ate the available vegetation and left the ground bare. Their keepers were forced to cut forage for them or let them roam, supervised by the youngsters, to fend for themselves. Soon the herds had to wander further and further from the meadow because the herders did not see they had too many animals for the land. In only a few short generations, the meadow and much of the surrounding land was stripped of plants, leaving the delicate soil exposed.

Meanwhile, these people also mined the stream for minerals, digging deep into the banks, destroying the green filter that cleaned water runoff from the land, allowing the meadow soil to wash downstream unchecked by the verdant buffer. To feed the fires that melted the ore into metal, the tribe also cut down the trees on the fringe.

Soon the farmers took their animals and plowed the meadow to plant their own grains and tubers. They didn't understand the soil beneath and the heavy draft animals compacted it, squeezing closed the soil pores. Compacted soil will not absorb as much water as loose soil. Also, since it was easier to plow in straight lines, the furrows ran up and down the hillsides instead of around the land's contours.

When the summer rains came that year, the farmers' newly planted fields were washed away because the earth was unable to absorb and retain the water. Big gullies formed along the straight furrows, which soon became permanent ditches. What little vegetation was left on the fringes of the field was soon buried by mud.

This surrounding land, overgrazed and bare, could not hold the torrent and muddy water ran down the hillsides, to join with the gullies in the meadow. So much soil washed down that the stream was soon filled up and the village was flooded. Many animals, homes and some people perished in the flood.

The stream, muddy with floating soil, choked the water life so the fish and clams died for lack of oxygen. Soon the tribe, discouraged (and muddy), moved away. But this time, three feet of topsoil was lost and the once clean river was little more than a dirty mud hole. The meadow was a swamp with a meandering stream slowly winding its way through the thick sediment.

Over time, however, new vegetation finds a foothold on

the now eroded hillsides, and, once established, the stream again flows clean. Life returns to the meadow. Grasses and forbs and trees once again feed the birds, the bees and the animals that find a place to live there.

Then, not very long ago at all, the meadow was bought by a developer who saw only parking lots, cars and buildings instead of the once-again serene meadow. Soon, heavy machines are crushing the plants and packing the soil tight, filling the air and water pockets. Next, the last foot of fertile top-soil is scraped away, to be sold later to a garden center. It will be covering someone's new lot which had earlier been scraped and sold to build the house. The new owner will not appreciate the native grasses and wildflowers that spring from seeds buried in the dirt. Rather, chemicals will be applied to kill all unwanted green things and other living organisms so only a sterile urban carpet will clothe the once fertile earth.

Now the developer scrapes away more dirt and pushes it against the trees and into the stream. Very slowly, the leafy giants are strangled as nutrients are cut off from the deep root hairs, now suffocating in the compact soil.

Next come the buildings, and once completed, the parking lot is covered with asphalt. The land not covered by pavement is sterile subsoil, full of sand and gravel and very little nutrients. Hardy weeds which can tolerate this poor soil find a small foothold and sparsely cover the raped earth. The little stream is now a low, swampy bog, polluted by oil runoff from the parked cars.

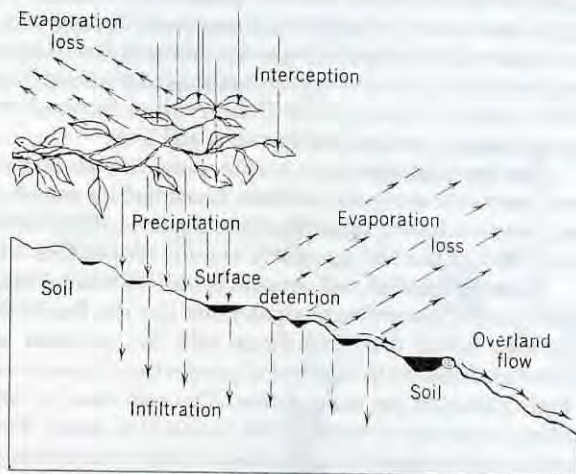
Because the weeds surrounding the buildings are unattractive and offensive to the owner, they are sprayed with chemicals which, too, end up in the small stream. Animals and birds which find surrounding areas similarly crowded with cars try to make a home in the small oasis of swamp. But their babies are born deformed and die because the swamp, once the filter and cleaner of water, is now a sump hole of chemicals and oil.

This could be a typical scenario of many back yards or parking lots across the U.S. and abroad. Some of the systems mentioned, like the root/nutrient exchange or the forms of erosion are covered in more detail within this article. Specific information can be obtained from your local Soil Conservation Office found in the state Agriculture office.

But what does this mean to you, the beekeeper with ten hives? Not much unless you care for the land you live on or rent land that may have some of these problems. If so, do you know how to stop a gully in your backyard or field? Here are a few solutions that might work in your area.

GONE WITH THE WIND AND WATER

A recent meeting at the National Academy of Sciences proclaimed the world's worst environmental problem was Soil Erosion. If it was controlled, said the scientists, other problems ranging from silting of lakes and rivers, forest destruction, and land degradation, would be solved. The USDA states that "soil is too important to call dirt",¹ and went on to state why.



Evaporation, interception, & surface detention detract from precipitation before it can enter the ground or produce overland flow. (A.N. Strahler (1960), Phys.Geography, NY John Wiley & Sons.)

- More than half of U.S. land is used to produce crops and livestock; the rest is forest, urban and other uses.
- Agriculture is the nation's largest employer, creating jobs from growing food and fiber to selling it at the supermarket.
- One farm grows enough food to feed 78 people.
- It takes 100 gallons of water to produce a pat of butter.
- One rain drop falls at 15 mph. The impact of raindrops hitting soil particles equals 10,000 tons of TNT exploding over a square mile.
- Sediment is the greatest water pollutant by volume.
- It costs the farmer more to produce good crops on poor soil and this cost is passed on to the consumer.¹
- It takes 500 years to make one inch of topsoil.

Soil loss continues worldwide due to poor farming practices, overpopulation, deforestation, farming on erodible lands and weather conditions (drought or excessive rain). On a national scale the average soil loss by wind and water is **four tons per acre per year**. A 1987 USDA survey found total cropland erosion to be 3.1 billion tons per year.² To get some perspective on this number, 2.3 million tons is about 255,000 dump truck loads. So the total soil loss in 1987 was 7.905×10^{14} dump trucks!



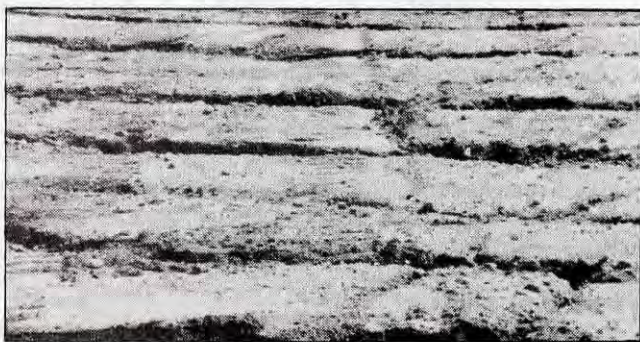
Sheet erosion, notice the exposed stones on the soil's surface

Water Erosion

Earth left bare with no cover is highly susceptible to the action of raindrops. Soil loss by water accounts for two-thirds of the erosion in our agricultural land.³ Soil loss by water can be broken down into several categories.

Splash erosion occurs when raindrops break the bonds between soil particles and splash them a short distance.

When rain falls faster, and the water holding capacity of the soil is reached, water starts to run over the surface. *Sheet erosion* starts when surface water picks up soil particles that were already loosened by raindrops. Land that has been subjected to sheet erosion has exposed stones and



Rill erosion can be aggravated by tread marks left by construction equipment.

other debris standing higher than the ground surface.

Rill Erosion begins when pathways or small channels show up on the land over which water has flowed, carrying soil particles. When water flows down-slope its velocity increases, making it even more erosive, and enlarging and joining other rills.

If left unchecked these rills will deepen into *gullies*. When that happens, deep cuts in the soil are made quickly, scouring out the gully's bottom and side walls. The headcut or uphill end of the gully is nearly vertical, causing the flowing water to increase its velocity and thus become more

Continued on Next Page



A gully left unchecked can erode large quantities of soil and permanently change the Landscape

An example of Slumping



erosive; the gully headcut then advances upslope.

Two other types of erosion should also be mentioned. *Concentrated-flow* erosion occurs when water collects at a certain spot, say in a field. Fed by numerous rills, a channel forms to empty this collected water. If left unchecked, it could become a gully.

Another type is *slumping or mass erosion* when hillsides, saturated with water, slide or creep downhill. Mudslides result which can damage roads, houses and fields.

In all these cases, erosion takes place in a three-part process: Erosive raindrops or flowing water break soil bonds, surface water carries soil particles downslope, and as water energy is spent (bottom of hill), soil is deposited as sediment.

Wind Erosion

Wind causes serious soil loss where vegetative cover is sparse or seasonal. Most of the soil particles carried by the air are the most valuable parts of topsoil, organic matter and clay. However, most of the soil movement is within a foot of the ground when wind velocity reaches 13 mph.⁴

Soil particles move three different ways by wind. The first type, *saltation*, moves the fine and medium sand-sized particles. They are lifted into the air then fall back to the ground. The energy of the impact dislodges more soil grains. This leaping and bouncing of many particles can break down large clods into smaller ones that can then be carried by wind. Saltation destroys stable surface crusts, creating more erodible conditions and accounts for 50-80% of the total soil movement. The width of the field is also important, as the amount of soil particles moved increases downwind.

Suspension is the process by which very fine soil is

carried high into the air. The soil is first dislodged by saltation. This dust can be blown hundreds of miles and while only a small part of soil loss, these particles are the most fertile part of eroded soil. The most dramatic dust suspension was seen during the hot dry days of the 1930's Dust Bowl. By 1935 a national agency (Soil Conservation Service) or SCS was created to deal with this major soil loss.

The last type of erosion, *surface creep*, moves large sand-sized particles along the surface. Loosened by saltation impact, they are too big to be lifted into the air, so they roll along. About 25% of the soil moved by wind is moved this way.

As stated earlier, soil erosion is still a problem today. In 1985 the U.S. government signed into law the Food Security Act, also called the 1985 Farm bill. It's purpose was to encourage farmers to take out of production those acres with a high potential for soil erosion. The estimate is that 120 million acres are at erosion risk in the U.S. alone. Furthermore, it encouraged the retention of wetlands that may otherwise be filled in or plowed under. To do this, the bill created several provisions, such as the Conservation Reserve, compliance, sodbuster and swampbuster⁵ aspects.

Under the Conservation Reserve, it encourages the "retirement" of highly erodible cropland, by renting it as long as it is planted in permanent grasses, legumes, trees, windbreaks or wildlife plantings as specified by the Agricultural Stabilization and Conservation Service (ASCS). By 1990, anyone who farms highly erodible cropland must be applying a conservation plan worked out with the SCS to be eligible for USDA benefits, (from price support to disaster payments). To date, over thirty four million acres are enrolled in this program.⁶

The best way for farmers to control erosion on cropland is called the **no-till** method (or farm ugly, as some farmers call it). Instead of tilling up the soil every time a crop is harvested or planted, the cut corn or wheat stalks are left on top of the field to keep the soil from blowing or washing away. Compared with conventional plowing methods, no-till is the least expensive in gallons of fuel and hours of labor per acre.

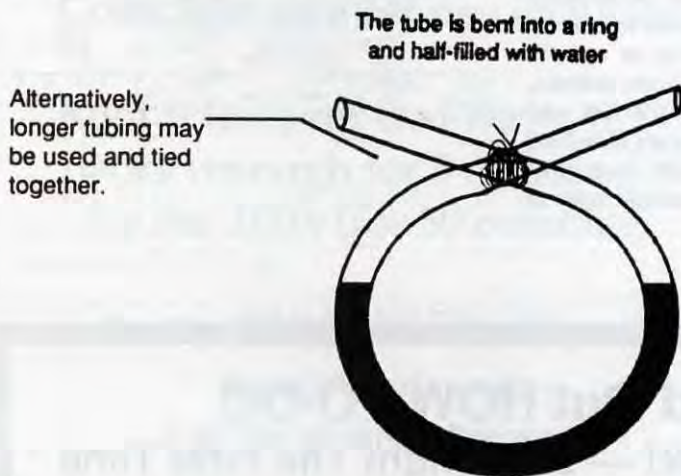
1. *Amazing Soil Stories*. Ca Assoc. of Resource Conservation Districts, Sacramento, CA 95816. 1988.
2. *Personal communication* from P.K. Weber, research Assistant to Worldwatch institute, Washington DC.1990.
3. *Soil Erosion by Water*. USDA SCS Info Bulletin 513. 1987.
4. *Soil Erosion by Wind*. USDA SCS Info Bulletin 555. 1989.
5. *What the Conservation Provisions of the Farm Bill Mean to You*. U.S.D.A. fact sheets, Washington, DC.
6. *Agricultural Outlook*, August, 1990.

ONLY YOU CAN SAVE A GULLY

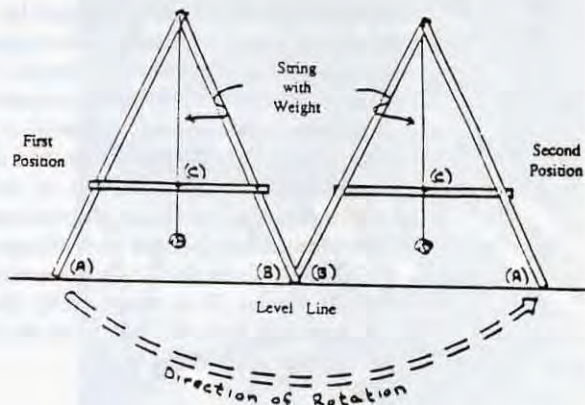
Controlling Erosion

The danger signs of erosion: sheet, rill and gully erosion by water or dust blown by wind, can be controlled.

If sheet erosion is the problem, an easy solution could be to build small dams along contour lines of the slope. To find these invisible lines you can make or buy a level which tells you the lay of the land. A simple level is made of three pieces of wood to build an A-frame with a weighted string in the center¹. A carpenter's level can be used in the center, or you can make one by tying clear vinyl tubing in a circle and filling it with colored oil or water². Or you can purchase a contour gauge to mount on tractors³.



can have topsoil lost as dust. To trap this soil, and also water, in the form of snow, windbreaks can be built or planted. Where lumber, or even brush is plentiful, windbreak fencing can be constructed to slow the velocity of the wind, allowing the dust or snow to accumulate on the downwind side⁴. Such windbreaks help livestock stay warmer in the winter, reducing wind chill and stress. It also will do the same for plants



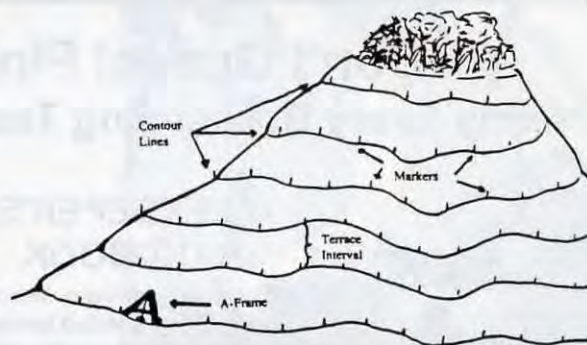
To use the A-frame, rotate it along the side of a hill so the contour of the slope can be found and marked. Once this is finished, a rock dam or planting of grass, (such as the new Asian Vetiver grass, used in tropical countries), can be installed. This will slow any water runoff and catch silt and water behind the barrier which can then be planted with permanent cover crops, such as clovers or other legumes, vegetables or even fruit or timber trees.

If rills and gullies have already started, they should be plugged at regular intervals and seeded with grasses or other cover plants, mulched and let alone until established.

On steeper slopes, where small stones and grasses might not hold, a more permanent solution may be needed. Boulders, tires, brush or timber dams or terraces can be used to hold back slopes which can be later planted with crops or trees.

Dams trap not only intermittent rainfall, allowing it to percolate into the soil, instead of running off, but also catch the precious top soil sediment that might otherwise be lost. This nutrient rich soil can later be augmented by adding farm waste or mulch.

Wind erosion can be treated in a similar way as water erosion. Exposed cropland, in flat areas or deserts regions



in the summer, if vegetative windbreaks are spaced across the field. By slowing the velocity of drying winds, the plants can grow better and in some cases dramatic increases in crop yields are experienced. For a more permanent solution, as with water control, plantings of annual or perennial grasses forbs, or trees can be used.

If such a long-term plan will not work, and you need a solution right now, ridge tillage can be tried⁵. This technique requires that five to eight inch high ridges be created to catch and hold flying snow or dust. Combined with a no-till system, ridge tillage may be the right answer in some areas.

Beekeepers become involved when plants beneficial to bees as well as the beekeeper, farmer or wildlife are selected

Continued on Next Page

and planted in these erosion control systems. There exists many lists of such plants⁶, but if you are familiar with what honey plants grow in your area, select a few that will flourish in adverse conditions.

You can also join re-forestry programs, such as The National Arbor Day Foundation, 100 Arbor Ave, Nebraska City, NE 68410 or Farm Re-Leaf, Successful Farming, 1716 Locust St., Des Moines, IA 50336. If erosion is a problem in your area, get involved in its solution. Not only will you help

yourself, but you may even be helping your bees.

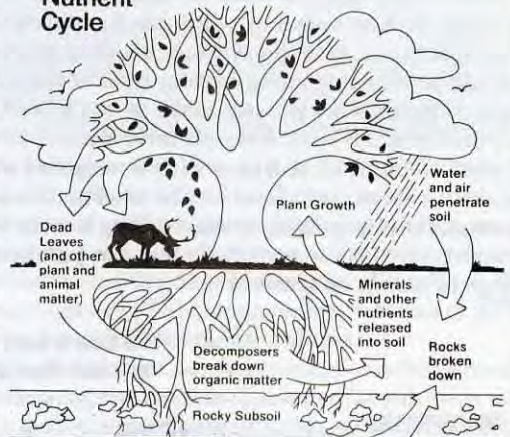
1. VITA NEWS. April 1990. Arlington, VA 22209-2079.
2. *Vetiver Newsletter*. World Bank, No. 3, March 1990, Washington DC 20433
3. Agri Drain Corp, RR2, PO Box 458, Adair, IA 50002.
4. *Wind and Snow Control around the Farm*. North Central Regional Extension Pub. No. 191. NCR, B-10 Curtiss Hall, Iowa State Un. Ames IA 50011.
5. *Ridge Tillage: An alternative system*. Reeder, R. et al. Ag. Engineering Dept., OSU Columbus, OH 43210.
6. *Friends of the Trees*. 1988. International Green Front Report. PO Box 1466, Chelan, WA 98816.



Roots of the plants tunnel deep in the earth. Imagine you are a grain of sand and you are touching one tiny rootlet from a nearby oak tree. At that scale here is what you could observe. First, the tip of the root, or **root cap** pushes past you, driven from above by expanding cells which are dividing and elongating. These cells are powered by the sun hitting the green leaves above and changing plant starches to sugar by photosynthesis. As the root grows, it consumes the oxygen from air pockets in the soil. Exhaling carbon dioxide, this gas reacts with soil water to form a weak acid, essential for plant growth.

Tiny hairs on the root develop above the growing cells, which can absorb water and dissolved nutrients. On the surface of each grain of sand, clay or organic humus are minerals like magnesium, calcium, sodium, potassium, phosphorous and nitrogen. As the root acid washes over these particles, these minerals are dissolved into the liquid. Once absorbed by the rootlet, each mineral molecule finds its way from the deepest soil layer to the highest leaf on the tree.

Nutrient Cycle



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Do you think it's only the big boys that are affected by the government support program, and what happens to them doesn't have any bearing on you and your local business?

If you have given these ideas some thought, have you figured since large producers and packers are in the same business what happens to them happens to you – that economic trends apply to hobbyists, sideliners and commercial beekeepers alike?

The trickle down effect of economics doesn't usually work in a straight line, it zigs and zags and makes economists put away their crystal balls. It also can play havoc with your plans for increasing or decreasing production.

The most recent change in the Honey Support Program has put most producers, packers and industry folks in a state of confusion, with predictions running from "it could mean the end of the industry" to "it's just one more thing we have to go through"

The Honey Support Program was put into practice in 1950, after it was included in the Agricultural Act of 1949. The reasoning behind the enactment stemmed from falling honey prices following World War II, and accumulated inventories of honey in the hands of beekeepers and packers.

The focus of the legislation was not to keep honey prices high, or even stable, but to "induce beekeepers to remain in business so that necessary pollination of certain agricultural crops is maintained" It's important to note the purpose and realize that the government was not concerned about honey production – they simply wanted bees to be kept in good supply for crops.

However, according to *Honey, Background for 1990 Farm Legislation* by Frederic L. Hoff and Jane K. Phillips, "The honey price support program has benefited beekeepers by smoothing out price fluctuations and providing a market for honey at an assured price"

The government isn't the only one who thought the support program would be beneficial. Ernie Groeb, Jr., of Groeb Farms, Inc., a moderate size honey packing business, said, "The system was a big boon to beekeepers" Most folks agree they have benefited from the system, but when the buy back price was recently raised 6¢ overnight, (in November) everyone from packers to producers had second thoughts about what the government thought best for the industry.

Most packers and large producers are familiar with the buy back provision of the farm bill, but many smaller producers aren't on speaking terms with it. But many who are can't understand why you would sell honey to the government when you do a good job marketing it from your home or other outlets. Honey producers use the loan – one where you can set some of the rules – to help in buying equipment, restocking bees, or even for personal uses.

The program works this way: The government, through its Agricultural Stabilization and Conservation Service (ASCS – that's the agency that tries to keep prices for agricultural goods at a steady level and supply) offers to buy your honey at a certain rate. That rate, the loan rate, is guaranteed and has gradually increased through the years. The current price the government pays for honey is 53.77 cents a pound.

The government promises not to sell or give your honey away, but will have it available should you want to buy it back at a lower price than they paid you for it initially. The amount of

money the government was asking for the honey you sold it was 38 cents a pound. This was considered a good buy back price, especially if you were able to later negotiate 42.50 – 44 cents a pound with a packer for your honey that was temporarily the government's.

*Old Price

Sold to Gov't	53.77¢
Bought back	38.00¢
Net gain	45.77¢
Sold to packer	44.50¢
Net Net gain	60.27¢

•New Price

Sold to Gov't	53.77¢
Bought back	44.00¢
Net Gain	9.77¢
Sold to packer	44.50¢
Net Net gain	54.27¢

But then the ASCS decided to raise the price you had to pay to buy your honey back. The price jumped from 38 to 44 cents a pound. This makes the 42.50 cents a pound you negotiated with a packer look pretty bad. It also means you will be paying six cents more a pound to get it back. If you're a long range planner and that wasn't in the books – it could mean devastation for someone who had planned on that 38 cent price with 20,000 pounds in the program – a 'loss' of \$1200.00 minimum – or \$40.00 per barrel!

In addition to the basic prices paid for loans and buy backs, the government also included a discount and premium scale. Although all honey coming into the program, no matter what color, would give you the 53.77 cents. When it came time to take it out, though, discounts and premiums were applied

Continued on Next Page

Table Grade

White	1.57 premium
Extra light amber ..	1.43 discount
Light amber	2.43 discount
Amber	3.43 discount
Nontable	5.43 discount

(These figures are from the ASCS Commodity Fact Sheet, May 1990.)

So, if you had counted on the 44 cents a pound to buy your honey back, you still have to deal with the discounts and premiums. With this system in place some honey producers already knew they would receive less than 44 cents, but now it will be a lot less.

When honey is put into the program, it isn't always delivered to a government warehouse for storage. If your ASCS agent knows your operation, chances are you can leave it stored right on your property. One ASCS representative explained that inspections are not always made of honey stored on the beekeeper's property. Should there be any suspicion of fraud though, you can bet someone will be out to look things over.

Some honey producers use the program differently. They simply take the difference between the loan and the buy back price immediately. In other words, they go into the ASCS office, tell the agent how much honey they want to work with, and take the money without ever moving honey. Small producers can make this work well for them. Terry Leas, a four thousand pound honey producer in Brunswick, Ohio, explained that he used the program this way last year and was quite pleased with it. He knew exactly how much the loan price was and knew the buy back price, so he didn't have to contend with changing figures.

A problem may occur for small producers when the ASCS wants to store the honey in their facilities. Buzz Riopelle of Valley City, Ohio, has used the loan program in the same way Leas did, but explains that if the honey had to be moved it would be too much trouble for the small producer. "We don't have fork lifts and front end loaders, and to do it all manually, it wouldn't be worth it to the small guy," he said.

Big producers, and some packers who have been hit by the recent program change have a hard time understanding why it was done. Ernie Groeb said, "It wouldn't have been so bad if it was cut by two cents now, then maybe

two cents later, but there's no reason the government should be getting the six cents." He explained that the government spoke with some packers, but "not the top four", before reaching their decision. He feels that the government guessed at the honey crop, rather than knowing what it was. "It's all simple economics," he added.

Groeb supports the program though. He admits that, "It's been one of the biggest boons to beekeepers," but he doesn't like the big jump in buy back rates. He speculated about beekeepers forfeiting their honey sold to the government. "I don't think they will forfeit, they have heard from the government, 'you'll take what we give you'," he said. But if there are forfeitures, which means the producer *doesn't* 'buy back' his honey, and it doesn't eventually go to a packer, or get sold other ways, it may cause packers to look to other sources, which can be filled by the foreign market, he speculated.

He guessed because beekeepers operate on such a small margin, the price will be passed to packers, who will then pass it on to consumers. And, rather than using honey in products, manufacturers may choose alternate sweeteners because of cost. Even the amount of honey contained in some products may be reduced.

Also expressing concern over the quick change is Gary Evans, President of Sioux Honey Association. He said he accompanied other packers to Washington to explain the beekeepers plight. "We received no satisfaction, but everyone listened politely," he said. He also said raising the amount in two cent increments would have been more reasonable.

Foreign markets was another concern for Evans. He speculated that more amber honey from China may be purchased. Although he reports they hadn't been selling a lot to the U.S., they will make it available now. "They probably guessed what was coming," he added.

He also said that the current high price for honey is the only thing that will save the industry, and adds, "But that's the same reason that it (the buy back price) was raised at this time."

Agreeing with the motivation for raising the buy back price is Jane Phillips, Agriculture Economist, U.S.D.A. Phillips was the one who had to break the bad news to beekeepers. She echoed Evan's sentiments about raising the

buy back price because of honey's high market price.

She reminded beekeepers that her department's job is to run the program at the lowest cost to the government while still achieving the program's goals. "We feel we're at six cents below market now. We can save the government \$1.5 million in the honey program," she said. Another point Phillips makes is that we are all the government. Honey producers are also tax payers.

Contrary to what most producers said, Phillips felt that producers knew the redemption rate was going to go up. She also mentioned that only the loan rate was guaranteed in the program, not the buy back rate.

One person who didn't know it was coming was Fred Hoff, Economic Research Service, U.S.D.A. He said it was news to him when it happened. "Beekeepers knew it had been at this rate for quite a while and didn't think it would change," he said. But added the government had information beekeepers were doing well, and it would be a good time to have a raise. His agency doesn't deal with what motivates the government, he said but just reports the statistics.

Phillips is optimistic about the program, despite the din created by producers. "I don't see that there will be much forfeiture. It is still a good idea to buy the honey back and resell it. The U.S.D.A. did not set the level of redemption to encourage forfeiture. Beekeepers should look at what they're getting and realize they're better off to sell. It's to their advantage to keep the program working," she said.

Looking to the long term, Phillips said, "This will be seen as a good move. Not at first, perhaps, because it reduces the immediate profit margin. It may increase the price of honey, and should encourage beekeepers to be more aggressive, she added."

One smaller producer suggested the government take a good look at what is being subsidized in the program. And Ernie Groeb said, "The program isn't for helping the beekeeper. It's only for the produce market which represents \$12 billion a year."

Riopelle suggested perhaps the government should subsidize pollination procedures, rather than honey production. He came to this conclusion by considering that if government program shifts can be devastating enough to put the large pollinators out of busi-

Continued on Next Page

ness - who will do the pollination?

Small producers are not equipped to move bees around. "There's equipment, insurance and labor to consider. The big producers have all this in place and the smaller producer couldn't afford to do it," said Riopelle.

When put to Phillips though, the idea lost some of its merit. "Subsidizing pollination was considered in the early 40's, but it wasn't deemed practical because you can't see pollination. You can see honey. You can sell it and loan on it," she said.

The buy back increase may also affect marketing strategies. Don't forget the honey check off program, where beekeepers give one cent a pound to the Honey Board for promotions and research. Beekeepers who have lost money may be asking for their check off funds back. This affects those beekeepers who produce more than 6,000 pounds a year.

Mary Humann, Marketing Director for the Honey Board, said it is still too early to determine if beekeepers will ask for their check off money returned. "We're keeping an eye on it. The board has only been in existence for four years and we haven't faced anything like this before. We hope we will not see refund applications," she said.

Several larger producers expressed the opinion that what they are experiencing with the price cut won't have a lot of affect on the small producer. However, should packers increase the shelf price of honey, consumers will notice. If you are still selling honey at pre-increased buy back prices, it will certainly move quickly. You already know how much it costs to produce a pound of honey, what your jars cost, what losses you have to make up for, and the price of gasoline to get it to market, and you may be happy with the price you got for a pound of honey. But they add this may be the perfect time to raise the price to 'keep pace' with the market. In this respect, what happens to the big guys has a direct effect on your income, a good effect.

Increased forfeitures posed another question, asked by a large producer - if the government is stuck with a surplus of honey, they will disperse some of it into government give-away programs. Won't that put free honey on the market? This may make sense at first glance, but a closer look into the give-away programs is needed. When

commodities are dispersed this way documentation is required from the people receiving the funds or goods. They must prove they are meeting the poverty requirements set by the Department of Human Services. If they are, chances are they are not purchasing honey anyway.

Another consideration is foreign honey showing up on grocery shelves. If they can purchase it for less than domestic honey packagers pass that savings to the consumer, and prices will be lowered. If your customers check the shelf price against yours - you may have to drop prices.

Supply and demand. But somehow the small producer has never fit neatly into this type of economic system. Most small producers have built up a mini-economic system in their own region or even neighborhood.

Glenn Gibson, past President of the American Honey Producers, said, "The small producer will not be affected by the six cents because he charges what his neighborhood will bear. He is the backbone of our industry by telling people about honey and promoting it locally. He does a nice job."

It appears that the answer to our

Small Producers are in a pretty good position right now because prices will rise, and their overhead is far less than commercial operations.

original question - 'Does what happens to the big boys affect my business?' is answered by both yes and no. That's little help in marketing and planning, but as a small producer, if you know what's happening in *your* marketing area, whether its your neighborhood or region, you can overlay your knowledge on what's happening nationally.

Many big producers recognize the small producer as being in a favorable position at this time. It's too early to put definite limits on how good (or how bad) this will be though. But the one advantage is that your market, and your marketing ability, *will* influence the zigs and zags in the economy that don't seem to follow that straight line of supply and demand. □

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THE APIARIST AND THE AVIATOR

NICK D'ALTO

HERE IS A GLIMPSE OF A TIME WHEN THE MOST IMPORTANT EVENT OF THE AGE WAS SHARED WITH A BEEKEEPER!

You have just shaken the snow from your high-laced shoes, propped your bowler hat on its peg, and settled into your reading chair. It is New Years Day, and the year is 1905. As you open the latest issue of *Gleanings in Bee Culture*, your Victorian world is about to be change forever.

"Dear friends", begins Editor Amos I. Root, "I have a wonderful story to tell you – one that out-rivals the Arabian nights. I am going to tell you something of two Bishop's boys, who love machinery and the progress of science. Their names are Orville and Wilbur Wright, of Dayton Ohio."

In 1905, bees flew, but people didn't. Amos I. Root was the very first person to visit the Wright Bros., watch them fly, and publish an eyewitness account of what he saw.

Here is a glimpse of a time when the most important event of the age could be shared between two self-trained bicycle makers, and a beekeeper with flair for science. Today, Mr. Root's article is a valuable record of an historic event. If a beekeeper's journal seems a curious place for the story, it is more puzzling since the Wright brothers had refused to show their plane to influential newspapermen, and giants of industry.

How did this intrepid Apiarist scoop every reporter in the country, the U.S. War Dept., and special agents from several nations? That, dear friends, is the wonderful story which I have to tell you.

It wasn't a case of 'right place, right time' Amos Root traveled 175 miles to visit the Wright's test field. His trip from Medina to Huffman's Prairie, Ohio, by 'horseless carriage', was an adventure in itself for 1904. By the time he arrived that September, Wilbur Wright, aged 36, and his brother Orville, 33, of Dayton, Ohio, had flown, or tried to fly, dozens of times. Yet no one had really 'gotten the story'

Initial newspaper reports were grossly exaggerated. "*Flying Machine Travels 8 Miles in Teeth of Gale!*", was their version of Wilbur's first short flight. Facing such nonsense, Wilbur declined interviews, and prepared a statement on the Kitty Hawk flights for the Associated Press.

Wilbur's short, unglamorous account didn't make the front page in any city. But it did catch the eye of one beleaguered Sunday-School teacher, whose incorrigible pupils were almost making him 'dread the Sabbath'.

Preserved in one of Amos Root's editorials for his magazine, is the Sunday School session of Feb. 14, 1904. Mr. Root's 10 pupils, "the ones whom every other teacher had given up on", seemed bent on reaching new heights of knavery. Desperate to win their confidence, Root had taken to enticing the class with glimpses of his scientific curiosities. Some weeks before, a lump of newly-discovered radium ore had entranced the unruly boys, as it sparkled within the darkened classroom. But perhaps February 14 – Valentine's day – was the ultimate test for holding the attention of 10 adolescent boys.

Frazzled by their constant tampering with an expensive new steam radiator, Root blurted out, "Do you know ... that two young men ... have outstripped the world in demonstrating that a flying machine can be constructed without the use of a balloon?" During the past few months, these boys have constructed a machine which actually flew through the air for over half a mile, carrying one of the boys with it." Suddenly, Amos Root had his class under control. "Where do the boys live?" said a chorus of voices. "What are their names?" Their names are Orville and Wilbur Wright, of Dayton Ohio, came his reply. "Their experiments were made just before winter set in, on the Atlantic coast, at Kitty Hawk, North Carolina"

On finishing the description of this giant 'box kite', and the far-away place where the brothers had traveled each year to perform their experiments, Mr. Root made a resolution to his class, "When they make their next trial, I am going to try to be on hand"

The expected response was not entirely achieved. "If they do take you up, I hope that they drop you", retorted one of the boys as he left the classroom. Root was stung by the remark. Yet characteristically, he blamed himself for failing to inspire his students. Though that boy later apologized, perhaps we must thank him for everything that followed.

Amos I. Root was a man of faith. He believed that patience, and a few sparkling minerals, could bring God's words to 10 incorrigible boys. He believed in

the progress of science. Years before, he had invested a month's wages in a new-fangled marvel, the 'bicycle' Wobbly at first, Root had taught himself to ride it, despite his neighbors jeers. With equal faith, Amos Root would meet these Wright Bros.

On Sept. 18, 1904, he arrived at his relative's home in Zenia, Ohio. He had traveled 164 miles without mishap; remarkable for a 1904 automobile, and for its 61 year old driver. His destination lay 11 miles farther. Huffman's Prairie was 87 acres of brush and hummocks, shrouded along the north and west by tall trees. It was visible, for an instant, from along the right-of-way of the inter-urban trolley, which wound its way to and from Dayton. The Wright Bros. were there.

Orville had remembered the prairie from childhood nature-hunts. It offered relative secrecy, if they timed their take-offs and landings to prevent being spotted from a passing trolley. They could even 'commute' to the field each day from their home in Dayton, a far easier schedule than four-month treks to far-off Kitty Hawk. Though Torrence Huffman didn't want any rent for using his place, his one stipulation suggested a sober forecast for altitude 'don't run over my cows'

On Sept. 19, Amos Root obtained lodging from Dave Beard, the grizzled sharecropper who farmed the lot beside Huffman's. If the Beard's offered Root any advice about these Wright brothers, it couldn't have been encouraging. Yes, Mr. Huffman had warned the Beards about the 'fools' using his field. Mrs. Beard had taken to watching them from her kitchen window. She had seen

the 'thing' leave the ground for a few seconds, with one of the brothers 'riding it'. She had also run across the field, to administer first aid, when it came down. The Beards were more impressed by Mr. Root's long autojourney.

Orville and Wilbur were not the 'inspired tinkers' their neighbors mistook them for. Today, it is even harder to understand such contradictory men. They ran a bicycle shop, and neither finished high school. Yet they corresponded with the world's leading scientists, published in scholarly journals, and addressed scientific councils. Wilbur saw no apparent contradiction in preparing technical treatises on stationary marked "Wright Cycle Co, est. 1892"

Their 1904 'Flying Machine' was just an unlikely. The 'tail' was in front, the propellers faced the back. The 'pilot', lying face down, steered with his hips. Having no wheels (too heavy), the plane took off from bicycle hubs, rolling along a 'runway' made of wooden planks, layed end-to-end across the grass.

W

ithout the steady winds of Kitty Hawk, this 'runway' had to be moved each time the breeze shifted. Everyday, Orville and Wilbur pushed and dragged their 700 lb. airplane in and out of the fickle wind. They rarely flew for more than 10 seconds over the field they had sweated to cut and clear. When the usually shy brothers did invite reporters, the plane wouldn't leave the ground. After months of trying, nearly every part of the plane

had been broken at least once. They needed help.

Help arrived, in the form of 600 lbs. of dead weight. Wilbur devised a 'catapult', which used falling weights to boost their airplane to flying speed. For nearly a year, Orville and Wilbur had only been able to fly when and where the wind blew. Now, they were going to make the decisions themselves.

When Amos I. Root strode across the tall grass, on the cloudy morning of Sept. 20, 1904, he was about to see the Wright brothers really fly for the first time. Wilbur described his course beforehand. He would fly in a circle.

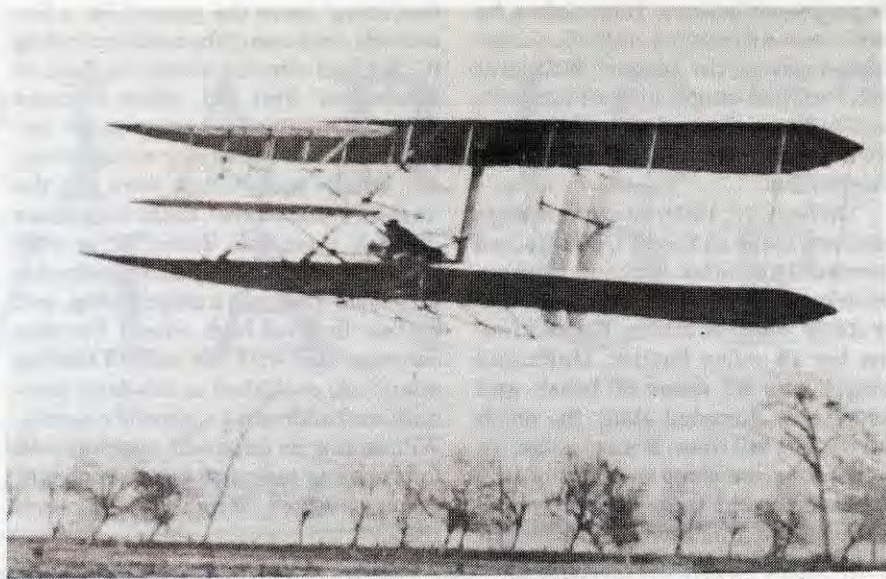
I cannot describe what followed any better than Amos Root wrote it; "The operator takes his position, lying flat on his face. This position offers the least resistance to the wind. The machine is held in a sort of trap, to be sprung when all is ready; then with a tremendous flapping and snapping of the four cylinder engine, the huge machine springs aloft." When it first turned that circle", wrote the beekeeper, "I was standing right in front of it. It was the grandest sight of my life. The younger brother bade me to move over, for fear that the plane might come down suddenly. I tell you friends, the sensation that one feels in such a crisis, is something hard to describe" Drawing upon the wonders of his age, Amos Root tries to describe the newest experience in the world; "Imagine a locomotive, that has left its track, and is climbing into the air right toward you - a locomotive made of aluminum." Not bad, for a man old enough to vividly remember the Civil War.

Root was filled with insightful

Continued on Next Page

Orville (left) & Wilbur at Huffman's Prairie, May, 1904. The 'Flying Machine' slides into the little 'hangar' sideways. Part of the launching track is visible beneath the plane.





Wright airplane in full flight during mid-November, 1904.

AVIATOR ... Cont. From Page 45

questions for these 'aviators'. "Boys, would the engine and propellers lift the machine from the ground, if placed horizontally above it?" "It would not lift even a quarter of the machine's weight", was Wilbur's reply to this notion of 'helicopter' flight. "How then", countered Root, "does the motor sustain you in the air?" Again Root records the reply for his readers, with an accuracy suggesting that he may have done some aeronautical reading himself.

Of course, Amos Root could not have fully surmised what had just happened in the sky above him. Turning an airplane was nothing like not simply turning the wheel of a car or ship. As the plane raced across the sky, Wilbur had subtly adjusted his controls to accommodate dozens of different combinations of wind, thrust, and drag. By doing everything right, Wilbur had chosen *his* direction of take-off, gone where *he* wanted to go in the sky, and landed where *he* said he would. Though it lasted only 98 seconds, it was a real airplane flight. We still do it the same way today.

Like a prophet of old, Amos Root leaves his readers with a forecast of the coming Air Age; "The time may be near at hand, when we have no need to fuss with good roads, nor railway tracks, nor Bridges. God's free air, which extends all over the earth, and perhaps miles above it, will be our training grounds." When Columbus discovered America", he writes, "he did not know what the outcome would be." As for Root, his

imagination reaches to the top of the world. "Possibly, we may fly *over* the North Pole."

On returning to Medina, Amos Root published his remarkable account. To prevent it from appearing completely out of place in his journal, Root added some remarks on how inventing related to designing beehives.

Now the big question; Why Amos Root: No previous contact between he and the Wrights has ever been found. Any top newsman would have paid handsomely to see far less. The Wrights had refused them all.

Orville's diary indicates that Root remained on hand, witnessing another flight two months later. In the interim, a British military attache visited the brothers. Orville and Wilbur were cordial, but did not permit them to see a

personal inquiry from Root, providing details about their flights, and perhaps extending an invitation to visit?

Unfortunately, there is no kind way to disguise the fact that Orville and Wilbur had a history of being uncommunicative towards even well-meaning strangers. Those with less pure motives fared even worse. Not a week before Root's visit, Wilbur had been ranting about the house, planning to sue an Indianapolis journalist who had cleverly rewritten some of the Wrights' technical articles, into a bogus 'interview' between himself and Wilbur. At one point, Wilbur became convinced that aeronautical rivals were spying on him from behind the trees at Huffman's prairie. Finally, he had parts of the airplane covered with shiny aluminum paint, so that 'prying' reporters or

*By doing everything right, he had
chosen where he wanted to go, and
where he would land.*

flight. Their most trusted friend, scientist Octave Chanute, did not see them fly until three weeks after Amos Root's arrival.

It may be true that all the information in Root's original Sunday School 'oratory', could have been found in the local press. Yet his seemingly unhearseds summary 'deletes' all the inaccuracies also circulating. Did the Wright brothers possibly answer a

cameramen wouldn't be able to take pictures. For a time, he even suspected his friend Chanute.

Yet Amos Root was given the run of the field. He travelled nearly 200 miles, appeared just days after the critical 'starting' problem was solved, and remained on hand until the Wright Bros were staying aloft for five minutes at a time. While relatives and friends who witnessed later flights were sworn

to secrecy, Wilbur let Amos Root publish what he had seen, even refusing the \$100 Root offered the brothers for 'rights' to the story.

Strange as it sounds, neither Orville nor Wilbur desired to be public figures of any kind. They had planned to perfect their 'flying machine' in secret, sell the rights to friendly governments, and return to their quiet lives of calculation and experiment, without ever flying for a crowd or camera. When they finally did fly in public, they had no idea they would become international celebrities.

It has even been suggested that the Wrights' earlier failure to fly for reporters had been a deliberate ploy, to cause the press to lose interest in them. If it was, a similar performance would have dispatched Amos Root just as quickly. Instead, the Wrights gave Root permission to offer his story to the same publications which had either ignored or distorted their achievements. There were no takers.

Could the connection with Root have been mere expedience? Did the Wright brothers suddenly need a written account of their work, anywhere, as insurance in the event of serious or fatal injury to one or both them?

A glance back at Valentines Day, 1904, suggests something different. A gentle Sunday School teacher of scientific bent, who found more fault in himself than in his unruly pupils, may have struck a chord with two Bishop's sons, who shared that faith in the spiritual and the scientific. The Wright Brothers, after all, had braved the treacherous winds of Dec. 17, 1903, because the last good weather at Kitty



The airplane stands on its head after a crash landing in Aug., 1904. Orville was pulled from the wreck, and Mrs. Beard helped to administer first aid.

Hawk had occurred on a Sunday (when they would not fly) and Christmas, eight days later, simply had to be spent back at home. Deluged by reporters and lucrative offers after the flight, Wilbur chose instead to travel to Indiana, where his father's congregation was in desperate trouble, and needed his help. On other occasions, the brothers sacrificed notoriety and wealth, rather than compromise what they thought was right. These were special qualities, which helped, and hurt, both brothers more than even they knew.

In the years that followed, the Wrights had many visitors. Newsmen, politicians and businessmen all had something to offer, if the Wright Bros. would prove that they could fly. All were sent away. Amos I. Root, with nothing to offer, came to Huffman's Prairie already believing them. Per-

haps that was the difference. □

References:

Crouch, Tom. *A Dream of Wings; Americans and the Airplane, 1875-1905*. New York: W.W. Norton & Co., 1981. *The Bishop's Boys; a Biography of the Wright Brothers*. New York: W.W. Norton & Co., 1981.

Hallion, Richard P., Ed., *The Wright Brothers; Heirs of Prometheus*. Washington D.C.: Smithsonian Press, 1978.

Howard, Frederick. *Orville and Wilbur; a Biography of the Wright Brothers*. New York: Alfred A. Knopf, 1978.

Walsh, John Evangelist. *One Day at Kitty Hawk; the Untold Story of the Wright Brothers*. New York: Thomas Y. Crowell Co., 1975.

Wescott, Lynanne. *Wind and Sand, the Story of the Wright Brothers at Kitty Hawk*. New York: Harry N. Abrams, Inc. 1983.

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seems to be something around, or they can move to a more productive location.

I urge you to investigate your yard, your neighborhood, and any sphere of influence you may have for problems – and for cures. Soil erosion is a serious and on-going situation that *will* affect your business or hobby. If not today, it will tomorrow – count on it.

This is the month of the two big meetings. The Federation and Honey Producers once again head somewhere warm to do business, listen to experts and play in the sun. And yes, I'll be at both, but I usually don't get much chance to play.

And, again, I must state my opposition to having two National meetings, with the same speakers, same exhibitors, same ... Well, they're not exactly the same. And there are reasons (even if I don't agree with them) for this double deal.

But I still think if these two groups had the best interests of this industry in mind, they would at least *try* to make this work. Think of the savings in money and time if we all got together for a wild and crazy week, in, say, Des Moines, or Syracuse. That would cut down the sun and fun time, and we'd sure get a lot done, right?

We were fortunate enough, recently, to be able to talk to those who were on the front line when the first African swarm was captured. Even better, we convinced them to tell us about it, for you now, and for posterity forever. That's quite a coup.

The newspapers recorded the event, the reactions of those involved and what may or may not happen, and, as far as history is concerned, that's it. Until next time.

But we've captured the moment, and the gut feelings of everyone in-

volved – the two who found the swarm, the person who actually identified it, the supervisors – and the results of their work.

Twenty years from now this little swarm, captured in a rural Texas tree will be an important, if tiny piece of history.

Be a part of that history this month and read what the Bee Busters have to say, and how it came to be – finally.

I had an experience awhile back that bears repeating, because it has to do with 'smart' business.

I was in a new auto supply store because I needed some wiper blades for my car. I went to the counter and waited, and waited, and waited. Finally, a kid comes over and asks if I've been helped.

"No, not yet."

"Well," he says, "I'll be right back," and disappears.

People were lining up behind me – two, three, four. Big guys, with grease on their hands and clothes, wearing caps with patches that said things like ED'S GARAGE, and BEER DRINKERS CLUB OF AMERICA, and GUNS 'R' US. None of them appeared the patient type.

The kid finally came back and apologized for taking so long.

"Sorry," he said, "two people didn't come in today, and I'm here alone. Now, what can I get you?"

I told him the make and model, what I needed and he went to the racks. He came back in a bit, with the wrong parts, and had to make a second trip. Then, he charged me \$627.00 instead of \$6.27, and couldn't figure out how to fix the computer type register.

Now there were six or seven guys behind me, and the remarks from the bunch were bordering on doing bodily harm to the hapless youth.

He finally got it together, and as he was giving me change I asked him who owned the store.

"The manager?", he said, "He's in

the back office, calling his wife."

"Mind if I talk with him a minute?" I asked.

He was too busy to mind, and waved me back.

The manager was sitting in a well appointed office (a lot nicer than mine), talking on the phone. He hung up when I came in. On his desk was a pile of computer printouts – profit and loss statements, sales analysis sheets and the like – all pertaining to the store out front.

I mentioned the wide choice of stock he had, the low prices, then lied about the service. He thanked me, and turned back to his print outs, but I asked a few more questions, in a flattering sort of way.

It turns out the store was owned by a conglomerate in a distant city, who had purchased hundreds of these stores throughout the area. Then they hired college graduates with degrees in business administration to run them. The theory was – Low prices, exceptional inventory and good management will equal High Profits.

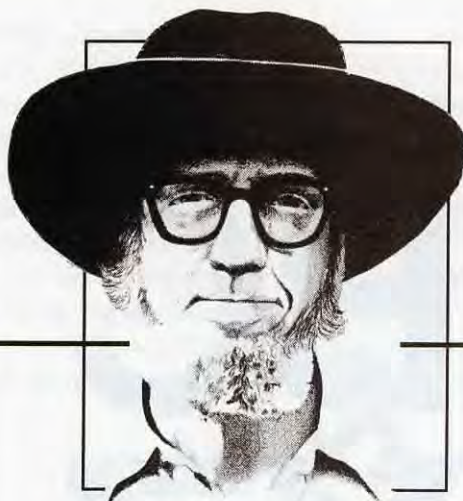
The missing part of the formula, of course, was service! I won't return to that store, and I've already told a couple friends about my trials, and they won't even go there a first time. That's three customers they've lost, all because of a lack of service.

If your business has the same theory – good products, low prices and good management, but lacks the service to back it up, it may be time to rethink your theory.

It's a buyers market for honey now-a-days. There's 20 people who can sell your accounts the same product, at the same price (or lower), and give better service to boot.

If you want the right side of that equation – Profits – you'd better have service, because price, management and product just won't do it anymore.

Kim Flottum



BEE TALK

RICHARD TAYLOR

Box 352, Interlaken, NY 14847

"Is less better than more?"

I think it's time to talk about mites. I've talked here about tracheal mites, but I have had little to say about varroa because I have had no first-hand experience with it. I shall in time, no doubt. Meanwhile, I have been gleaning all the information I can concerning both pests, trying especially to find out what experienced beekeepers have been doing. Mites are a big problem. The brighter side, however, is that both kinds seem manageable. In fact there seems to be little doubt that in time we shall have resistant strains.

When Americans encounter some pest their first inclination is to eradicate it. This, more often than not, is simply futile. Dr. Robert Metcalf, whom some think of as the dean of entomologists, has noted that of the approximately 6,000 harmful insects that have been identified, only 15 have even come close to being eradicated. Many insects respond to pesticides simply by developing resistant strains, making the effort to eradicate not only futile but very expensive.* When tracheal mites were first found on this continent several years ago there was a near hysterical rush to "eradicate" them. Thousands of colonies were "depopulated," at enormous expense, and all to no purpose. The mite just kept on spreading, until now it is just about everywhere. Efforts to "quarantine" certain areas, and to pronounce others "mite-free," proved to be no less silly. Insects and mites are formidable foes. Their populations can sometimes be controlled but seldom, if ever, destroyed.

My way of dealing with tracheal mites is simple and, thus far, quite adequate. I just revive those colonies that have succumbed to the mite by

taking combs of brood and bees from the strongest surviving colonies, and giving them a new queen. This is quicker and easier than buying packages, and certainly a lot cheaper. The colonies all build back up fast, a lot of them get requeened in the process, and, since I do this in the spring, it goes a long way towards reducing swarming. No chemicals are used. A possible improvement on this system would be to let the restored colonies raise their own queens from queen cells found in the best of the surviving hives. This would promote the emergence of resistant strains, and probably good queens, in a very simple, straightforward way.

The current method of dealing with varroa is by using Apistan strips. These are plastic strips impregnated with a synthetic pyrethrin called fluvalinate. The strips are inserted between the combs of the brood chambers, two strips for each brood chamber, and left there, I believe, for four weeks. Tiny amounts of the pyrethrin rub off on the bees, destroying most of the mites but not harming the bees. The pyrethrin is released from the plastic strips very slowly and in minute amounts. Indeed, I am told that the strips last almost indefinitely if kept wrapped in foil. The pyrethrin itself, unlike so many pesticides, is apparently quite harmless to people, the more so since it is released in such minute quantities. And since this treatment is performed after all honey supers have been removed, then there is no danger of contaminating the honey crop anyway. The biggest drawback to the use of these strips seems to be that bees in some parts of the world are already developing resistance. This, therefore, cannot be considered a

permanent solution to the problem.

Variations on this method have been tried in Europe. For example, some beekeepers there recommend placing perforated Apistan strips at the entrances to the hives. The bees thus come in contact with them in entering and leaving the hives. This prevents possible contamination of the beeswax in the brood combs, which is a danger, though not a very serious one, with the other method. Dr. Morse described this in some detail in the November, 1990, *Bee Culture*.

It must be noted, however, that by law, any pesticide whatsoever must be used in exact accordance with the instructions on the label. It is an obvious violation to use a pesticide in excess of what is prescribed on the label, but it is, technically, also a violation to use less, or even to use it in a manner that is obviously safer than the method prescribed such as using the Apistan strips at the entrances to the hives rather than inside them.

What is needed here, obviously, is some commonsense and good judgement. When it comes to a pesticide, even one that poses as little threat to human health as this pyrethrin, *less* is certainly better than *more*, except where there is a danger of encouraging a resistant strain. And since no one claims that varroa is going to be *eradicated* by the use of fluvalinate, that consideration is not very relevant here.

I was recently talking with one of the finest beekeepers in the country, a man whose family has made their livelihood from beekeeping for generations, one whose knowledge of beekeeping is probably not exceeded by anyone else in the world, and he told me how he deals

with varroa. He waits until there is no brood at all in the hives, that is, late fall, and then inserts *one* Apistan strip in each brood chamber, and leaves it there *five* days, not four weeks. His tests have shown that this is sufficient to reduce the varroa mites to near zero, and, with this method, he does not consider varroa to be a very serious problem. One strip, he said, does the work of 16, greatly reducing cost and labor, and the strips themselves are stored in air-tight containers, to be used again next year.

What shall we say about that? Well, first, that strictly speaking, it is illegal, since that is not the method prescribed by the label, and by law, you are supposed to do it just the way the label says. But having said that, let us add that this beekeeper's method is certainly in keeping with the spirit and purpose of the law, since he is getting good results using less rather than more. It would seem that what needs changing is the label, not this gentleman's judgement. It should be clearly understood, therefore, that I am not recommending his interesting procedure. I am only describing it, for the sake of information. Being above all things a law-abiding person, my recommendation is that everyone do what the label says.

As a postscript to this, however, let me say that I have, for many years, used terramycin, in minute quantities, and in the safest imaginable way, to control American foulbrood. And it works. The package always says to use it in strict accordance with the directions. I buy it from established bee supply companies, but there are *no* directions for its use with bees. Nowhere on the package does it say, nor are there any instructions inside, so far as bees are concerned. Swine and poultry, yes, but nothing is said about how to use it with bees. It is pretty hard to comply with the manufacturer's directions when the manufacturer doesn't bother to give you any. □

*This was gleaned from Mr. M. Sanford's Florida newsletter *Apis*, Vol 6, NO. 8, August, 1988.

Questions and comments are welcomed. Use address above and include stamped envelope for a prompt response.

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3047

QUESTIONS?

Making Mead

Q. Where can one get supplies for making mead?

R.R.
Middlesboro, KY

A. This question appeared in the November *Bee Culture*, where it received the not-very-helpful answer to check the yellow pages. Persons interested in getting mead-making equipment should get in touch with Mr. Steve Forrest, Rt. 1, Box 135, Moravian Falls, NC 28654.

Exodus

Q. My five-hive apiary is located on a ledge about sixty feet above a highway. In the fall of 1989 I observed a continuous daily exodus of hundreds of bees, with their heads pointed away from their well-populated hive and few, if any, returning. They seemed to want to get away from their hive. In the spring there were only a few dead bees in the hive, but there was about 80 pounds of clean honey, which I divided between two swarms that I hived. What is the explanation?

A. Tracheal mites.

Clipped Queen

Q. Is there proof that marked and clipped queens are superseded more often than unmarked and unclipped ones?

R. Caruso
Caldwell, NJ

A. There is anecdotal evidence that clipped queens are likely to get superseded, but I have never heard this said about marked ones. There is, however, very little reason for ever clipping a queen. It is true that a swarm will not take off without her, but the end result is the same, for the swarm takes off with the first virgin queen to fly out, and you have accomplished nothing.

Dilution Solution

Q. During the first week of December I noticed my bees carrying water on warm days. Surely they are not raising brood. Why are they carrying water?

Loren Davis
Decatur, AR

A. They may be using it to dissolve granulated honey, or perhaps granulated sugar, if there is any of this in the hive.

Why Not?

Q. Why do bees not forage on lilies? They obviously contain nectar. And are water lilies bee plants? Or the various strains of iris?

Sarah Dilworth
East Boothbay, ME

A. Few cultivated garden flowers are of interest to bees. Many are of such shape and depth that the bees cannot reach the nectar with their tongues, but apart from this, bees tend to visit plants that are blooming in great profusion, such as dandelions or alfalfa. This is why a super of honey is usually found, when harvested, to contain honey of but one kind. A single bloom, or even several, here and there are of little interest to bees.

Bait Hive Basics

Q. Do you recommend wood pulp boxes containing a pheromone for trapping swarms? Would not an ordinary nuc box containing pheromone capsules and a couple frames of sealed brood work just as well? And is it necessary to set these boxes near wild swarms, or can they just be placed in the dense woods? Finally, are the pheromone capsules available commercially?

Robert Lacy
Shade Gap, PA

A. The advantage of the wood pulp boxes that are offered for sale in the bee journals is that they do contain a synthetic pheromone which, so far as I know, is not available otherwise. But ordinary boxes, containing old combs or scraps of comb, do work. A nuc box would be too small. The box should be as large as a regular hive, or larger. But no, do not put sealed brood, or honey, in such a bait box. The brood would only die and decay, and any honey would attract robber bees. Dense woods is not the place for such bait hives. Place them in or near open spaces, where bees normally fly.

(Address questions to Dr. Richard Taylor, Box 352, Interlaken, NY 14847, enclosing stamped envelope for response.)

ANSWERS!

Richard Taylor

GLEANNINGS GLOBE

JANUARY, 1991

ALL THE NEWS THAT FITS

HONEY PRODUCERS MEET IN BATON ROUGE

The 22nd annual convention of the American Honey Producers Association will be held in Baton Rouge, LA, January 8-13, 1991, at the Holiday Inn Holidome South.

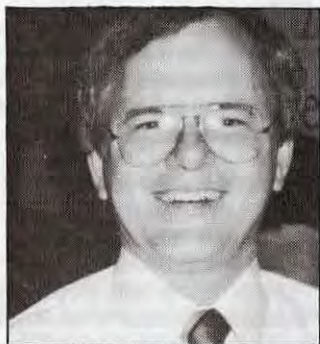
A tour of the Baton Rouge Bee Lab, and the Atchafalaya Basin Tour & Boat Ride, topped off with the best of Louisiana Style Cajun food served at Pat's Fisherman's Wharf is also planned.

For the chance to hear the latest in beekeeping related news, see old friends and make new ones, see the latest in beekeeping equipment and interesting items, and have a great time plan to be at the Holiday Inn South in Baton Rouge, January 8-13.



Fred Hoff

Hoff, Survey; Jane Phillips, Honey Loan; Dr. H. Shimanuki, AHB; KEY-NOTE SPEECH-Gene Baily, GATT and Honey; Dr. Tom Rinderer, Baton Rouge Lab; Dr. Rich Hellmuth, managing AHB; Dr. John Harbo, varroa mites; Dr. Bob Danka, AHB & Pollination; John Williams, AHB; Dr. Allen Sylvester, molecular biology; Dr. Ben Oldroyd, Bee Breeding; Jose Villa, overwinter AHB.



James E. Tew

Schedule

Tues. 1/8/91

Board of Directors Meeting
Reception
"Self-Defense for Men & Women"

Wed. 1/9/91

President's Address, Richard Adee; Dr. James E. Tew, Industry Perspective; Dr. Fred



Dr. Anita Collins

Thurs. 1/10/91

Short Course-Pesticides & Federal Govt.

National Honey Board Session
Bob Smith, New Director; Dwight Stoller, Protecting honey's image; Sherry Jennings, Promotion; Dr. Roger Hoopingarner, Economics; Dr. Lois Willet, Industry Survey; Kim Flottum, Ecology & beekeeping;

Visit to Baton Rouge Lab



Sherry Jennings

two each day! Call or write the Holiday Inn to make your reservations before Dec. 15, 1990. After that these rates will apply only on a space available basis. Complimentary transportation to and from the airport will be provided on a pre-request basis. To make room reservations, call the Holiday Inn at 504-924-7021.

American Airlines is the official carrier for the Convention in Baton Rouge. For an additional 5% off the lowest airfares, call 1-800-433-1790, and ask for:

STAR File #S-0111P1 (#S-zero, one, one, one, P, 1)

For information concerning exhibit booth spaces or any additional meeting information, contact AHPA Secretary-Treasurer Ray Chancey at 409-258-3034, or write: AHPA Convention, P.O. Box 815, Dayton, TX.



Dr. Harbo

Fri. 1/11/91

Viewpoints & Perspectives

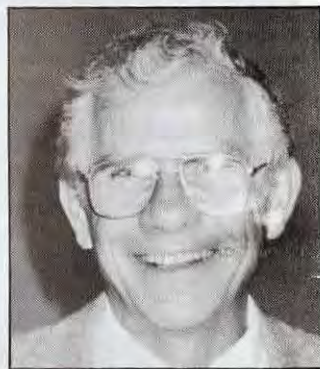
Packers-E. Groeb; Inspectors-Box Cox; Suppliers-Tim Dandant; Industry Press-Kim Flottum; Researchers-Anita Collins; Beekeepers-Richard Blake; Media Relations, Sherry Jennings; Crisis Management, Dwight Stoller; Texas Plain, Dr. John Thomas; LA Plan, Jim Dunkley; Farm Bill, Mike McCann; controlling mites, Dr. Bill Wilson.

Sat. 1/12/91

Insurance, Roger Starks; Honey Bee Nutrition, Dr. Christine Peng; Working with AHB, Dr. Oscar Barraza.

Honey Board Referendum Panel Business Meeting

Room rates at the Holiday Inn Holidome will be \$48.00 plus tax, with a buffet breakfast for



Dr. Hoopingarner

FEDERATION MEETS IN MOBILE

The keynote speech at the American Beekeeping Federation's 1991 convention in Mobile, AL, will be presented by Jo Ann D. Smith, Assistant Secretary of Agriculture for Marketing and Inspection Services.

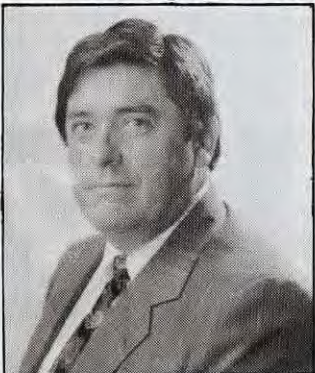
Following the keynote address, Mrs. Smith and the National Honey Board will be honored at a reception hosted by the Federation and the National Honey Packers and Dealers Association. The Honey Board operates under the authority and



Jo Ann Smith

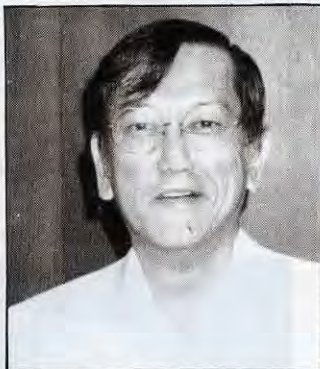
oversight of the Agricultural Marketing Service (AMS), one of the areas of Smith's responsibility. She is responsible for the Animal and Plant Health Inspection Service (APHIS), which deals with beekeepers relative to Africanized bees and mites.

A Florida native with a background in farming and ranching Mrs. Smith was named Assistant Secretary of Agriculture in 1989. She has been chairman of the Cattlemen's Beef Promotion and Research Board, president of the



Bob Smith

National Cattlemen's Association, chairman of the board of the Federal Reserve Bank in Jacksonville, FL, a member of the Board of Governors of the Chicago Mercantile Exchange, and served on President Reagan's U.S. Advisory Committee for Trade Negotiations. In 1988 she was named Woman of the Year in American Agriculture by *Progressive Farmer* magazine.



Dr. Shimanuki

"We are especially pleased to have Secretary Smith address our convention," said Troy Fore, ABF secretary. "She has already proven to be a friend of beekeeping, and we are sure she will continue to be. As we celebrate the success of the Honey Board, it is fitting that she be involved."

Other presentations on the Federation program relative to Honey Board include a series of



Dr. Dietz

reports presented by Dwight Stoller, NHB chairperson; Bob Smith, the new NHB executive director; and Sherry Jennings, NHB director of industry relations. A debate on the Honey Board refund issue is planned.

Panel presentations have proven popular with ABF members and three are scheduled in Mobile with mixtures of scientists and beekeepers discussions:

- "Is There a Future to Migratory Beekeeping" - Dr. Al Dietz, USDA-APHIS, moderator.

- "What's New with Varroa and Tracheal Mites" - Dr.



Dwight Stoller

Hachiro Shimanuki, USDA-ARS, moderator.

- "The Africanized Bees Have Arrived. Now What?" - Dr. Anita Collins, USDA-ARS, moderator.



Troy Fore

The ABF convention will open at noon, Wednesday, Jan. 23, at the Stouffer Riverview Plaza Hotel in Mobile. It will conclude with a banquet and coronation of the 1991 American Honey Queen and Princess on Saturday evening, Jan. 26.

Air travel arrangements for the convention are being handled by Caravelle Travel Management; call toll-free 800-222-6664. Fares 5% lower than published fares are available on the three convention airlines: Delta, American and Northwest.

Hotel reservations may be made at Stouffer Riverview Plaza, 64 Water St., Mobile, AL 36602, 205-438-4000, ext. 265.

For information on the convention in general, contact the American Beekeeping Federation, P.O. Box 1038, Jesup, GA 31545, ph. 912-427-8447.

1991 EAS HAMBLETON AWARD NOMINATIONS DUE

The James I. Hambleton memorial award was established by the Eastern Apicultural Society of North America to recognize research excellence in apiculture. The E.A.S. Student Apiculture award was established to recognize students studying apiculture at the undergraduate or graduate level in a recognized college or university in the United States or Canada. The awards for 1991 will be presented at the annual meeting of the society.

Nominations are now being accepted for both awards. This is an excellent opportunity for the beekeeping industry to recognize the research excellence of its members. Undoubtedly, many deserving researchers are bypassed for this recognition for lack of a sponsor.

Each award nomination must include a biographical sketch of the nominee, a list of his/her publications, specific identification of the research work on which the nomination is based and an evaluation and appraisal of the accomplishments of the nominee, especially of work in the last five-year period for Hambleton award nominees (or a shorter period for Student nominees).

Judgment of nominees will be made on the basis of demonstrated excellence in Apiculture (teaching, research, extension and beekeeping), letters of recommendation (at least 2 required) and other supporting information supplied by the nominee and the person who submitted the nomination.

Nominations and supporting information should be submitted to the Hambleton Awards Committee, c/o Eric H. Erickson, Carl Hayden Bee Research Center, 2000 E. Allen Road, Tucson, Arizona 85719. The deadline for submissions is February 1, 1991.

CANADA'S NEWS

Since the discovery of tracheal mites in the Canadian province of Manitoba the policy has been to destroy infested hives in an effort to slow the spread of the mites.

But now the board of directors of the Manitoba Beekeepers' Association is questioning this five-year-old policy.

It has approved a motion suggesting that due to the substantial increase in the number of beekeepers and colonies with tracheal mites ... "it is no longer appropriate to impose depopulation as a viable means of controlling tracheal mites in Manitoba."

The board said the provincial Department of Agriculture should be requested to continue to provide an objective tracheal mite analysis service for bees that are being offered for sale.

But it said in future the emphasis should be on addressing the mite problem through research, workshops and extension.

The motion came after the board was told that the number of Manitoba beekeepers with tracheal mites had reached 19 and that these beekeepers operated a total of about 19,000 hives.

With these numbers in mind, the board said it concluded that control of tracheal mites through depopulation is no longer an acceptable option.

The Manitoba Department of Agriculture sampled bees from 80 beekeepers operating some 57,130 hives. The department tested 1,486 100-bee samples and found 19 beekeepers had the mite. The 19,000 infected colonies represented about 33% of the colonies in the survey.

The department found no varroa mites when it also conducted a random sampling of 200 colonies owned by 11 beekeepers.

The Ontario Beekeepers Association has arranged several excellent speakers for a master beekeepers' course limited to 60 participants from Feb. 20-24, 1991. Contact: Pat Westlake at (519) 565-2622.

A big city survey of Canadian consumers' attitudes towards honey indicates that without a national marketing campaign there will be lower usage, lower purchase frequency and a continuing erosion of consumption.

This despite the fact consumers in Montreal, Toronto and Vancouver see honey as pure, natural and wholesome and improving food flavor. They agree honey is a distinctive product that cannot be easily replaced by another food in the kitchen.

If the status quo is maintained, the survey by the the Toronto-based management consultancy firm Coopers & Lybrand said, the sale of honey will decline. "This precise sequence of events is now taking place in the maple syrup industry," it said.

"The Canadian industry will have to compete more and more abroad. Price competition will erode returns to producers even further. Even though world prices are currently rising, experience dictates that this is cyclical and they will eventually return to lower levels.

But the survey indicated there is a healthy, potentially growing, market waiting to be fully tapped.

Of the 300 household surveyed in each city, 67% had purchased honey at least once in the 12 months before the survey.

Still, the survey found Canadian consumption - one of the highest in the world - continues to stagnate. As a result, Cooper & Lybrand said the industry is not profitable enough to sustain many producers.

At the same time, the survey found the Canadian industry very vulnerable to external market forces, among them its reliance on the United States market for exports.

"Besides the fact that the Canadian industry relies heavily on export markets, it also relies heavily on very few packers to purchase honey," the survey noted.

The survey also found significant regional differences among consumers in their use of honey. More people in Montreal eat honey for breakfast than in Toronto and Vancouver while more people in the latter two cities than in Montreal use the product as a sweetener in their beverages.

There's a growing optimism about the future of the beekeeping industry in British Columbia following an excellent summer.

The Canadian province's 4,000 beekeepers, who operate 50,000 colonies, found quality and prices improved this past season.

"Industry prospects are getting better," said Paul van Westendorp, B.C. apiculture program manager. "There has been a fairly good resurgence in honey on wholesale markets, with both quality and prices up."

Van Westendorp told the annual convention of the B.C. Bee Breeders Association and the B.C. Honey Producers Association that average yields rose to 100 pounds from 75.5 pounds a hive in 1989. Total production at 5.94 million pounds was up from about 3.75 million pounds in 1989.

The higher production came with an increase in bulk honey prices - to a high of 66 cents a pound in 1990 from a low of 46 cents a pound in 1989.

"Improvements result partly from two successive years of poor North American crops," van Westendorp said.

A research program aimed at making the Canadian beekeeping industry more self-sufficient has been so successful the country has developed a growing export market.

Traditionally Canadian apiarists have annually imported their bees, mainly from the southern United States, because it was considered more economical to harvest the honey, kill the bees each fall and then start up again each spring with new bees.

With the threat of Africanized bees arriving in the U.S. coupled with the 1987 closure of the U.S. border because of the increased incidence of varroa and tracheal mites, the Canadian Association of Professional Apiculturalists decided on a program to make the country's beekeeping industry more self-sufficient.

It was a decision essential for the survival of an agricultural industry that is the fifth largest in the world with a crop of about 75 million pounds a year. It is also an industry responsible for the pollination of more than C\$1 billion worth of cash crops such as canola, alfalfa, fruit and berries.

The research has been so successful Canada - too cold in the winter for the survival of feral africanized bees - may eventually become the source in the U.S. for queens uncontaminated by the africanized strain.

To reach their target for self-sufficiency, researchers learned how to successfully winter colonies in climate-controlled facilities and outdoors using insulated wraps. Then they developed an experimental home-grown queen-rearing industry that has now been developed into a full-fledged operation.

The result has been an assured supply of pure, gentle stock and the protection of the Canadian industry.

Five years ago, virtually no bee colonies were produced in Canada. Today, about C\$1 million worth of queens and bees are produced - mainly in British Columbia - to supply Canadian beekeepers and a growing export market.

**SEND YOUR NEWS
TO THE GLOBE**

**623 W. Liberty St.
Medina, OH 44256
216-725-6677**

Mid - U.S. Honey producers Call it A ...

HONEY HOTLINE

This past August at the annual meeting of The Mid-U.S. Honey Producers Marketing Association in Pierre SD, it was voted to start a "Honey Hotline" for our eight state beekeeping area. This hotline has been installed and the answering mechanism has a recorded message of the most recent sales that have been called.

If there has been some activity the message is updated each week.

Phone number is (913) 243-6061. Callers should leave their name, phone number and any sales transaction.

Membership dues are \$50.00

for those in the eight state, white honey producing area, in the north central part of the U.S. and you have to operate a minimum of 500 colonies.

The hotline will actually expand the area to all of the U.S. The association will accept donations for covering the expenses of the hotline.

We have allowed the buy-back price to become the market price, although this increased last year due to the honey shortage in the U.S. When contacting a buyer or vice-versa just mention the price of your honey F.O.B. producers dock, barrel returned.

ONTARIO FIGURES

Final figures are expected to show that Ontario had a normal or better honey crop - about 80 pounds a hive - this year. Apiarists report the bees were behind in the spring and not all winter losses were made up. It's estimated the Canadian province's 5,000 beekeepers operated about 105,000 hives this year.

But Nobody Mentions Codex!

U.S. FARM POLICY

"World political and economic realignment has greater long-run significance for U.S. agriculture than either the new farm bill or the GATT negotiations." This is the conclusion of three Ohio State University agricultural economists - Luther Tweeten, Carl Zulauf and Norman Rask.

"The vast changes in Central and Eastern European politics and economics occurring today are part of a larger, worldwide realignment that will benefit U.S. agriculture," they write in the 3rd Quarter, 1990 issue of *Choices, The Magazine of Food, Farm, and Resource Issues*.

The authors expect the world economy to revolve around three major currencies: the U.S. dollar, the German mark and the Japanese yen, reflective of the three emerging economic superpowers. These three large, well managed currency systems will create a more secure world macro economy, which will benefit U.S. agriculture.

Tweeten and his colleagues also argue that, "A world driven more by economic competition and less by central planning will be better for U.S. agriculture, as well as for consumers and producers worldwide."

The authors cite more than a dozen implications of the emerging economic order for U.S. agriculture. They give particular attention to U.S. farm exports and farm policy.

Exports. In the short run Central and Eastern Europe will need food aid to help with the structural adjustments needed for adoption of a market oriented economy. Food aid is a signifi-

cant contribution the United States can make to political stability during the difficult transition period. In addition, there will be a significant potential for U.S. exports of modern food processing technology and farm inputs, such as pesticides, to these countries. However, in the long run, Central Europe likely will be a surplus producer of grains and export in competition with United States.

The Ohio State University authors also emphasize America's stake in economic growth in four "economic underachieving" countries: the Soviet Union, China, India and Brazil. New U.S. farm export markets would be "massive", particularly to China and India, if these countries could solve critical internal structural problems, they say.

U.S. farm exports to third-world countries may suffer in the short run but have a bright long-term outlook. The economists predict that non-ag-related capital and technology will move toward these countries due to their low labor costs. Increased exports by these countries will mean more foreign exchange for their use to buy U.S. farm commodities.

U.S. agricultural policy. The pressures to increase U.S. farm exports and to contribute to fiscal responsibility will force changes in U.S. farm policies. The authors expect reductions in the cost of a farm program, foresee an emphasis on reducing farm production costs and argue that mandatory supply control programs seem unacceptable given an increased emphasis on foreign trade.



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HONEY BOARD HIGHLIGHTS

Kunzler & Company, Lancaster, PA, launched a new look on its Honey Lite Ham labels. Kunzler is using the honey bear logo on four different meat products. According to Kunzler & Company "honey is an ideal blend in lean hams."

"We applied for the honey bear logo because of the amount of support offered by the National Honey Board," said Kunzler's Sales & Production Coordinator Joan Donnelley. Kunzler & Company wanted to assure consumers that their products contain pure, natural honey.



To qualify for the honey bear logo, Kunzler had to meet or exceed the minimum recommended honey content level for manufactured foods. The "Bear Facts" logo makes it easy for consumers to recognize products with real honey.

Kunzler is very pleased with the success of their Honey Lite products. "It's been gratifying to receive phone calls from consumers complimenting the products. Consumers are also interested in the National Honey Board and the honey bear logo," Donnelley said.

The National Honey Board and manufacturers such as Kunzler are teaming up to let consumers know that products with the honey bear logo contain natural, delicious honey.

HONEY BOARD HIRES NEW EXPORT DIRECTOR

Diego Garcia joined the National Honey Board in December to serve as Export Director. Garcia will develop, implement and oversee all of the Board's foreign market development programs. Garcia will work closely with the USDA's Foreign Agricultural Service (FAS) to direct funds for promotions of U.S. honey in international markets.

Prior to his position with the National Honey Board, Garcia was marketing specialist for the FAS.

Garcia earned a Bachelor of Science degree in economics from the University of Colorado, Boulder. Garcia also holds a Master of Science degree in agricultural economics from Texas A&M Univ.

USDA scientists have genetically engineered cotton so it wards off caterpillars as well as cotton sprayed with insecticides. USDA did the first outdoor tests of transgenic cotton this summer in Mississippi, Texas, Arizona and California. After eating the transgenic cotton, the caterpillars came down with a fatal case of indigestion. "Nearly all the caterpillars died within four days," says USDA Plant Geneticist Johnie Jenkins. The new technology might save cotton growers \$50 to \$75 per acre on insecticide used against tobacco budworms and related caterpillars, Jenkins says.

GOOD ADVICE FROM AN EXPERT

RUN A BEEKEEPING SCHOOL

Cooperation and communication are the keys to a successful beekeepers school. Beekeepers, through local associations or as individuals can work with Extension agents to provide educational opportunities producers need.

Regional schools need to be conducted to bring beekeepers to a central location from several surrounding counties. Local beekeepers from the general area can then be used to help resource the meeting. If a school can draw from a large number of potential audiences, rather than a smaller number from one or two counties, obviously the attendance has a better chance of being large.

If you have a large crowd you can keep the registration fee relatively low and still bring in outside resources that may cost you.

The location is as important as any factor. It must be easily accessible. It must provide for a comfortable learning environment. It should have a cafeteria or other area to serve food. It must be large enough to accommodate a large crowd. There is a subconscious message that is sent to the participants if the parking is inadequate or the meeting rooms are small.

The local beekeepers and the Extension agents work together to plan the program. The beekeepers know what topics are

current. They have also heard many good resource people and know who does a good job in presenting the information.

Beekeepers can be notified through local newsletters, newspapers, and the local bee associations.

The program needs to be geared for the beginner and for the experienced beekeepers. The way to do this is to offer several topics simultaneously in a small group. This allows for interaction between the presenter and the audience. It also gives the participants a chance to select presentations that are at their level of expertise.

The evaluation of the meeting can be used to decide if a meeting will be held in the future. It shows which topics were well received. It shows the weak areas that need improvement and it gives useful tips on improving the school another year.

The icing on the cake is door prizes presented at the end of the program. Participants will stay through the very end to see if they won. These need to be donated and should probably be beekeeping equipment, books etc.

If the lines of communication are kept working and the cooperation apparent, a successful beekeepers school can be in your future.

Steve Bartels

*Our Sincerest Thanks
for your kind thoughts, for your friendly support
for the many courtesies and hearty cooperation
which you have given us during the past year
we thank you sincerely.*

*Best wishes for a New Year
full of happiness and prosperity.*



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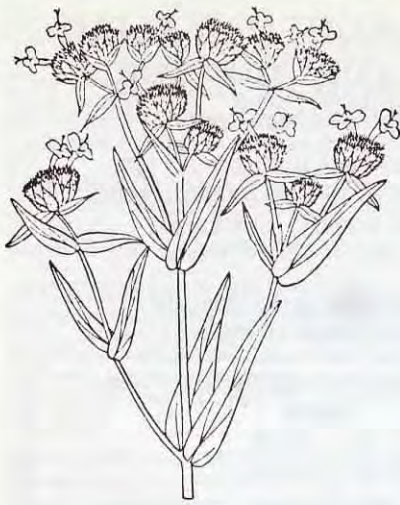
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Native to North America, Mountain Mint is an aromatic, nectar and pollen producing plant. It grows wild from New England to North Dakota and southward in a variety of habitats. Also, one of the twenty species of the genus is found in California. Commonly called "basil", it is a completely different plant from the culinary herb Basil.

Mountain Mint is a hardy perennial, particularly notable for its long and late bloom, from mid-summer until frost. Whorls of tiny white flowers, bunched along the 3-4' upright stems, attract honey bees to their abundant nectar and some pollen. Because available bee forage often decreases as summer progresses, Mountain Mint may be a valuable floral source for bees in places where it is plentiful.

Mr. Frank Pellett, author of "American Honey Plants", had numerous reports from beekeepers that "bees work upon Mountain Mint very eagerly from morning until night" He added that "it is probably nowhere of much importance, though it would be if sufficiently common"

The plants are easily grown from seed or divisions. Seeds are tiny and should be sown in finely worked soil, and kept moist until they are big enough to transplant. Once established, they require no special care, thriving in ordinary soil in sun or light shade.

Plants will increase and may be divided by first cutting up the lifted crown, then resetting the division. This is best done in early spring, before new growth from the crown becomes too tall. Flower stems may be top-heavy when they bloom, when they may benefit from tying or staking. The foliage gives off a pungent, mint-like aroma when crushed, and will brew into a very palatable tea.

The botanical name for Mountain Mint is a real tongue-twister; *Pycnanthemum virginianum* (say Pick-NAN-the-mum). The name is derived from the Greek 'pyknos' (dense) and 'anthemon' (blossom), combined with a reference to its native habitat, Virginia. The plant belongs in the Labiatae Family and is related to many mints and other excellent bee plants. While it is very attractive to bees, it is probably not sufficiently abundant to influence honey yields.

Try some Mountain Mint in your garden patch, to provide variety and late bloom for your bees. □

Mountain Mint

B.A. StRINGER

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