JAN 92

GLEANINGS IN BEE CULTURE

ALAN IRVING ROOT

1905 – 1991

ALAN I. ROOT
1905 – 1991

Alan I. Root, 86, of Medina, died Monday, Nov. 25, 1991, at Medina General Hospital.

The son of Ernest Rob and Elizabeth Humphrey Root, he was born Feb. 5, 1905, in Medina and was a lifetime Medina County resident.

He graduated from University School with a high school diploma and went on to earn his bachelor's degree in business administration from Ohio State University in 1927.

Following his graduation he joined the A.I. Root Co., where he served as plant manager for many years. He was named general manager in 1941, later, vice president, and then President until 1984. Most recently he served as chairman emeritus of the A.I. Root Co. Board of Directors.

In the area of business organizations he was president of the American Honey Industry Council, past president of the Bee Industries Association, a member of the board of directors of the Savings Deposit Bank and a member of the advisory board of the National Federation of Independent Business Inc.

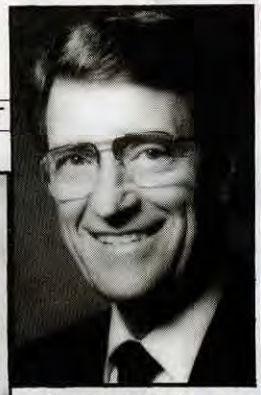
Over the years he served on a number of community and industry organizations. In dina he served as boy scout commissioner for the Chippewa district, was on the Medina amber of Commerce Board of Directors, a board member of the Church of Christ Congregational, Ohio Heart Association Board of Directors, he was a member of the 648 Board of Mental Health and Retardation, past president of the Medina Lions Club and of the Medina Community Chest.

Mr. Root is survived by his daughter, Elizabeth "Mickey" Judkins of Silver Bay, Minn.; sons John A. and Stuart W., both of Medina, eight grandchildren; and 10 great-grandchildren.

He was preceded in death by his wife, Emilie.

ROOT PUBLISHING

JOHN ROOT



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Columns

Departments

COVER. . . A worker in the beekeeping industry, Alan Irving Root.

The Land, Pg. 30

JAN '92 CONTENTS

(ISSN 0017-114X) Vol. 120, No. 1

119 Years Continuous Publication by the Same Organization

Features

Q.

Need A Stock Center? Pg. 15

Meet The Staff, Pg. 41

Gotta Get A Gimmick, Pg. 47

INNER·COVER

Alan Root was only a little older than my dad would have been, and I always thought of him in a more paternal role than as the retired President of the Company I work for.

But there's good reason for that. Because he was retired, (even though he worked half days almost every day) he wasn't concerned with the routine. This let him take a broader, more open-minded perspective of the world. The wisdom and experience of age are worth waiting for, he often said.

Alan was immersed in the business of bees from the time he could walk. His grandfather was A.I. Root, his father Ernest and his uncle Huber Root. He grew up listening to discussions between his father and the pioneers of American beekeeping, which took place on his front porch or in the bee yard nearby the house.

During high school he worked with the Root Company's queen breeder, Mel Pritchard, raising queens and preparing both queens and packages for mailing. He knew that end of the business from the experience of stung fingers and sore muscles. He also helped harvest and pack honey from the company's 1,000 or so colonies.

After college he worked in the factory, making wood and foundation. After a few years he moved to Assistant, and then Factory Manager. He was 26 at the time, and 13 years later succeeded his uncle Huber as President of the Company.

It wasn't until then be became deeply involved in this industry's business and politics.

During WWII, the Honey Industry Council, working in Washington with James Hambleton, Harold Clay and others petitioned the federal government for exemption from rationing supplies needed by beekeepers – like wood, sugar and metal. Alan was part of that group, and continued working to that end throughout the war.

After that, the Council fought to keep the price support program Eisenhower wanted rid of, and Alan and many others worked to keep the program, and stability in the industry. He was Chairman during the early 50's and worked hard and long in Washington defending the program and the industry.

The result of keeping government support, however was the promise of a self support program. The "Check Off Plan" started well, but since it was voluntary it didn't last long.

Alan and I disagreed, with good humor, on that very issue this past summer regarding the National Honey Board's referendum.

"I was there the first time", he said, "and I hope you youngsters learn from our past mistakes." Perhaps we did.

Although Alan Root spent much of his professional life bringing his company to the top of the Church Candle industry, his feet were solidly planted in a bee yard. He was always a friend to this industry, and I'd like to believe he was a friend of mine. As such, I offer the following

The Beemaster's Prayer

Will there be Bees in heavenly places
Will there be Bees?

Winging their way through the golden spaces
To fruitify the eternal trees
That yield their sweet life-giving store
Month by month for evermore.

Will soft Bee music haunt the stream
Whose waters shine with crystal glow
And will they come where lilies gleam
To sip the eternal nectar flow?

Lord thou didst love our earthly places
Birds and flowers and shady trees –
Let there be Bees in heavenly places
Let there be Bees.

ANON

I'll miss Alan. And in lots of subtle and silent ways, so will the business, and the soul of beekeeping.

More, on pa

A Friend Is Gone . . .

Reader Assistance

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192

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NEXT MONTH

The series on equipment we've been running the last couple of months – *Every Extractor* in November, and *Every Uncapper* in December, continues next month with *All That Wonderful Wood*, by our weekender Jeff Ott.

Jeff hasn't looked at absolutely every wood manufacurer in the U.S., but he's looked at all the major players, those that produce the majority of the wooden products sold.

If you buy wood – supers, covers, bottoms, frames – you'll learn something new when you read this article, no matter how long you've been at the business of bees.. We cover everything – prices, quality, wood type, instructions and lots and lots of photos. *All That Wonderful Wood* – next time.

In the next few months The Weekender will be picking the perfect apiary site, certainly a decision that needs careful consideration, one that can make or break your future as a successful beekeeper. And later this summer – *Wax, From Frame to Finish*. Handling wax – cappings, melting, straining, molds – all the equipment you could ever imagine, and lots you probably haven't. How to handle wax – later this summer.

But there's more next month of course. More on selling honey, labels, marketing and making money selling honey. Can you afford **not** to check out how other beekeepers are successful in what they do? Find out how – starting next month. And still more. More *Up close and (very) Personal*. More *Home Harmony* (take a taste test in February with Ann). More *Research Review*. More *Bee Talk* – More, More, More.

Gleanings In Bee Culture offers more every month. Checks us out. Next Month!

MAILBOX

■ Loves Advice

Bee Culture has become 'absolute' reading for me.

I started beekeeping at age 14. I wound up with 21 hives of native Oklahoma bees. The magazine has taught me about food crops, disease, mites, when to feed, what to look for in problarms.

ove getting the advice of the compies that handle food, medicine and equipment.

Thanks for a very much needed publication.

Dutch Holland
Chelsea, OK

■ Dear O.B. Wiser . . .

Oh! Bee wiser, This in jest I write,
When words jump at me at night.
Refrain! advised my better half,
But my worse retained the last laugh.
To understand why my face is aglow,
Read below for what it might show.

From a cow's milk we make butter,
And in dismay she might *utter*.
However, a kick in the head
Is what you should dread,
When you pinch her down under
On what we call her udder.

Best wishes,

I.B. Too

ndy, anyone?

ave been looking in all the book stores in this area trying to find a recipe to make honey candy. There seems to be none available. Candy stores: none, at least they won't tell me.

Do you have in your library, a recipe for Honey candy?

Also one other person in our beekeeper's association is looking for some kind of honey candy recipe.

If you could send me a bibliography of where to look I would appreciate it. Thank you so very much.

Charles M. Bailey
1813 Trigg Rd.
Ferndale, Wash. 98248

■ No Gamble

After reading reports that five mentholated cough drops might control tracheal mites (e.g., Dr. Taylor's "Questions & Answers", Nov. '91), I decided to save a little money by buying one package of cough drops to treat my six colonies this fall rather than purchasing six 50 gm packets of menthol. The maximum dosage I encountered in our local market was 12 mg of menthol per drop. It turned out that I would have had to cram 4,167 of the 12 mg drops in *each* hive to reach the recommended dosage of 50 gm. I didn't think I could afford that many drops, even if I could have found a way to fit all of them in my hives. I toyed with the idea of simply putting the much-discussed five drops in each hive and be done with it – until I realized that five 12 mg drops supplies 69 mg of menthol or a minuscule 0.12% of the recommended dosage. Now I know nothing of the origin, science or politics of the 50 gm recommended dosage, but I decided to spend the extra cash on 50 gm packets of menthol – and plan (rather than hope) on seeing each colony happy and productive next spring.

Mike Amspoker
Fulton, MO

■ School Time

I have donated some of my *Bee Culture* magzines to a local high school teacher who will be using them in her science class, "Biology of Man"

This occurred after her request for a paper hornet's nest still intact, minus the live hornets of course.

She happened to be touching the subject of "Mans Relationship to Bees" She found this very useful material along with some dead wasps, hornets, and bees that I put in separate (clean) baby food jars.

She told me this past week the paper hornet's nest is attracting a lot of attention and a combination of that nest and *Bee Culture* has been quite a conversational piece, along with her conversations with me concerning Honey Bees.

We touched on the article published last year of "Pesticides, people, and Honey Bees"

I have a been a beekeeper the past six years and she learned of me through the Bee and Wasp Removal service I have been doing this past summer.

George J. Masciarelli, Sr.
Nashua, NH

■ A Better Box

The question to Dr. Richard Taylor in the November issue of *Bee Culture* about a warming box for honey prompted me to write and tell you about the one I built and use.

Having grown tired of the slow and messy method of liquifying crystallized honey in pans of water on the kitchen stove stimulated me to find a better solution.

I feel that Dr. Taylor's answer did not give enough importance to an old refrigerator as the perfect solution. A discarded refrigerator is a perfect box that is insulated, has a door that seals tightly, contains slatted shelves and is free for the hauling. My needs dictated a smaller refrigerator which I found after some "shopping around" This is an apartment size refrigerator of about 12 cubic feet which holds nicely a 60 pound pail plus gallon jars or even a super. I removed all unnecessary items

Continued on Next Page

MAILBOX

from the refrigerator to lighten it and increase capacity. Replacing the molded storage area from the interior of the door with a flat piece of plastic allows a super to just fit in my refrigerator, should the need arise to store or warm one.

Two thermostatically controlled 60

watt electric light bulbs at the bottom provide heat. A waterbed thermostat was purchased inexpensively from a Salvation Army store and recalibrated to reach a temperature of about 120°F. In the construction keep the light bulbs away from the plastic lining to prevent it from melting and place a metal shield over the bulbs so any honey that drips does not hit the bulbs.

The described system has worked so well that I cannot believe I went so long without it and feel other readers may be interested in a system that is quick and cheap.

Ernest W. Pollman
Holley, NY

■ Comb Honey How-To

I just finished reading the letter in the October issue from Wayne Karthnen of Farmington, Utah concerning what you do with comb honey. When I was growing up in the forties comb honey was on our table practically every day. The honey was purchased in 4" wooden frames. My mother would lay the frame down on its side on a salad plate, cut around the inside edge with a table knife, and let the whole com gently onto the plate. To eat it we take a knife, cut a thin slice and sp it like butter on our toast. I always thought that the ultimate treat was a Ritz cracker with some peanut butter on it and topped with a thin slice of comb honey.

I keep bees as a hobby simply so that I can have enough comb honey to satisfy my soul – and every section that comes out of the hive comes out in a 4" wooden frame. It's a little more work but to me it's worth it.

Dave Cox
Auburn, MA

MAIL ORDER ADVICE

1 ***Never send cash.*** Always use a check, money order or credit card.

2 ***Keep a copy of all transactions,*** especially cancelled checks, money order receipts and correspondence. For phone orders make a note of the order including merchandise ordered, price, seller's name, address and telephone number, salesperson's name, order date and expected delivery date.

3 ***Understand the seller's return and refund policy,*** including the allowable return period and who pays the postage for returned merchandise.

4 ***If you should have a problem with your order or merchandise, write a letter to the seller.*** Include all of the pertinent information. Telephone complaints should be followed up with a letter of confirmation. Keep copies of all correspondence.

5 ***If you have thoroughly followed up in writing*** with the seller on your problem and still are not satisfied, contact the consumer protection agency in the seller's state or your local U.S. Postal Service.

■ Needs Honey

I am presently selling honey in my country from sources that are available locally. As my demand is increasing, I would like to import some to supplement my supply.

I am interested only in 100% pure honey which will be packed and labelled locally under my own brand.

Please reply to:

Mohamed Rosli b Abdul
No: 2554, Jalan Perm
Taman Permata, Ulu
53300 Kuala Lumpur, Malaysia
Fax No: 03-2983100

■ Successful Quarantine

I'd like to let all of our friends in the beekeeping world in on the current best kept secret – OUR ISLAND OF VIEQUES IN PUERTO RICO HAS BEEN *SUCCESSFULLY QUARANTINED* TO PROTECT OUR HONEY BEES.

The Secretary of Agriculture of Puerto Rico in a timely and far-sighted attempt "to prevent the introduction into the Island of Vieques of diseases and dangerous pests of honey bees (*apis mellifera*)"; signed into law the Domestic Quarantine #5 on February, 1988.

Hurricane HUGO hit our Island with ravaging winds on September 18, 1989 and many colonies were lost; however, due to very hard work, their numbers have increased. Healthy queen bees, devoid of any chemical treatment, will be available in the market very soon.

Due to our climate, our bee year-round; therefore, while you rest during the winter season, the Viequense bees continue hard at work. Why don't you rest for a while? Come

MAILBOX

and visit the most beautiful Island in the Caribbean! See for yourselves our mite and disease-free bees!

If you require additional information, do not hesitate to call and/or write my office.

Manuela Santiago Collazo, Mayor
Vieques, Puerto Rico

■ Barbed Wire Boo-Boo

In one of your latest issues you had an interesting story about beekeeping in bear country. I noticed the part about a bear becoming entangled in electrified barbed wire. Please print this to tell people to not electrify barbed wire. As a dealer in fence supplies, I can tell you that this is a dangerous thing to do. The energizers sold today are basically of New Zealand design and employ a very high voltage to provide animal control over long stretches of wire. This ...e is sufficient to freeze one's ... control. Therefore, by law, they ... the pulsing type. This break in the current allows one to let go. By using barbed wire, you could ruin this opportunity to escape this current. Electrified barbed is illegal in a few areas and unwise in all.

I would suggest that beekeepers or anyone that uses electric fence to use smooth wire, either permanent or temporary. Either will carry a jolt sufficient to deter predators without creating a safety hazard.

Charles "Bud" Kemp, Jr.
Macedon, NY

■ Mesh Size Info

Several times in recent issues there has been mention of the size of hardware cloth. Beekeepers still continue to look for 3/8" mesh. To my knowledge there is no such standard wire available. Three-mesh in the inch wire is a standard weave. There would be only .042 of an inch difference between the two meshes previously mentioned. For further information on these materials write to the address below.

Porter Caldwell
P.O. Box 25133
Richmond, VA 23260
In VA 1-800-552-2743
Out-of-State 1-800-368-2082

■ Correction

A significant error occured in the story entitled *Honey Sips* that appeared in the November issue of this magazine. In the article, Brooke Freeman was said to " market over a million (Honey Sips) a month."

In actuality Mr. Freeman's business is not nearly that large. However, his original statement was that, because of his recently received grant and several new promotional ideas he plans to implement, " he intends to *reach the point of* marketing over a million Honey Sips a month."

I apologize for any confusion this caused.

Dewey Caron

NEW FOR YOU IN 1992

There is an alternative to foundation – and that is *no foundation at all!* Simon's Unfoundation™ Frame System, the Superframe™ is now available.

It is a brood or honey comb frame with an innovatively designed top and bottom bar. No foundation is used, ever. No wires. No plastic. No pins. No clips. It is less complicated in construction and easier to use than standard frames.

When misshapen combs occur, with standard frames you have lost your investment in both foundation and labor, and must absorb the losses and start over. No so with Superframes™. A few quick passes with the knife, and you are set to go again. Culls can be used for cut-comb or bee feed. The wax can be processed. You have lost nothing.

Standard frames have grooves and crevices – the space behind and under the pressure-bar, the slot in the bottom bar, and the slot in the top bar in certain plastic foundation frames. These spaces provide space and shelter, inaccessible to the bees, for noxious wax moth larva and eggs, disease spores and more. The Unfoundation™ System has none. The solid, uncomplicated construction provides the bee better control over its environment.

Superframes® are sold in lots of ten, knocked down or pre-assembled, including instructions and tips in the production of perfect combs. For custom applications or wholesale arrangements, all inquiries are welcome. Include SASE.

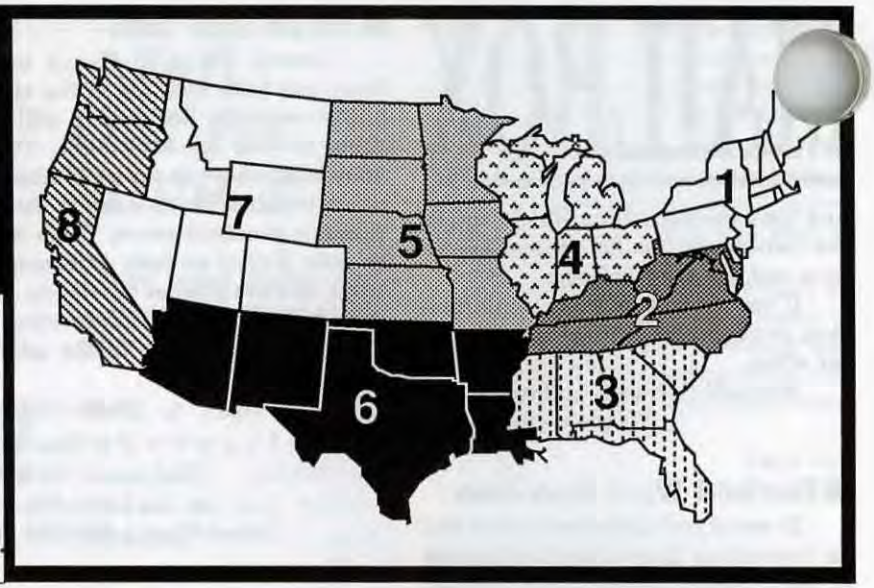
10 Frames cost $20.00 plus $1.65 CA sales tax, plus $4.50 P&H. Pre-assembled Frames are $30.00 plus $2.48 plus $4.50 P&H. Send to Simon, 504 Maple St., #2, Santa Cruz, CA 95060, (408) 423-1864.

JANUARY
Honey Report

January 1, 1992

REPORT FEATURES

Prices shown are averages from many reporters living in a region, and reflect a region's general price structure. The Range Column lists highest and lowest prices received across all regions, from all reporters.



	Reporting Regions								Summary		History	
	1	2	3	4	5	6	7	8			Last	Last
Extracted honey sold bulk to Packers or Processors									Range	Avg.	Month	Yr.
Wholesale Extracted												
60 #Wh.	43.12	41.63	57.50	34.80	36.11	41.00	40.10	45.10	36.00-60.00	42.05	41.87	38.22
60 # Am.	40.76	38.80	53.00	33.60	35.15	40.15	41.50	41.00	33.60-54.00	40.89	39.48	36.78
55 gal. Wh.	.69	.50	.68	.56	.53	.51	.56	.56	.50-.75	.596	.568	.51
55 gal. Am.	.61	.48	.63	.56	.50	.50	.53	.49	.48-.65	.552	.526	.48
Case lots — Wholesale												
1/2 # 24's	19.18	22.40	19.70	22.95	30.00	21.50	22.50	19.10	16.60-30.00	21.55	21.50	-
1 # 24's	28.52	29.58	31.17	27.17	25.27	28.75	29.75	28.45	24.00-42.00	29.15	28.96	27.89
2 # 12's	26.17	27.22	33.87	25.12	22.09	26.21	28.88	27.50	21.80-39.00	27.43	27.44	26.26
12 oz. Bears 24's	26.79	23.94	24.06	23.60	21.75	25.27	27.38	18.75	13.50-34.25	24.26	26.68	-
5 # 6's	29.74	25.62	32.55	28.98	26.33	35.19	27.75	25.23	22.80-38.50	28.68	29.77	27.17
Retail Honey Prices												
1/2 #	1.08	1.27	1.18	1.19	1.19	.99	1.10	1.17	.83-1.75	1.23	1.16	1.01
12 oz. Plas.	1.45	1.54	1.68	1.47	1.25	1.49	1.51	1.85	1.15-1.85	1.53	1.52	1.43
1 #	1.55	1.80	1.84	1.73	1.45	1.70	1.85	1.63	1.29-2.19	1.71	1.76	1.63
2 #	2.79	2.94	3.32	3.01	2.45	2.95	2.95	2.79	2.29-4.29	2.96	2.96	2.94
3 #	4.12	4.09	4.83	4.85	4.49	4.10	4.35	4.06	3.93-5.99	4.35	4.00	3.88
4 #	5.39	5.18	5.00	5.49	4.89	4.59	4.87	6.25	4.85-6.25	5.23	5.19	5.06
5 #	6.83	6.35	6.25	6.16	5.19	6.08	5.68	6.75	5.19-8.75	6.35	6.51	6.13
1 # Cr.	2.06	2.83	2.29	1.89	2.39	2.25	1.95	2.69	1.39-4.00	2.32	2.25	2.00
1 # Cb.	2.79	3.03	2.50	2.65	1.89	2.39	2.79	2.71	1.89-3.70	2.70	2.85	2.77
Round Plas.	1.98	2.20	2.50	2.49	2.65	2.25	2.52	3.03	1.95-3.00	2.40	2.38	2.47
Wax (Light)	1.00	1.16	1.35	2.00	1.10	1.15	1.15	1.00	1.00-2.00	1.22	1.18	1.34
Wax (Dark)	1.00	1.10	1.17	1.00	1.00	1.10	1.05	.92	.95-1.25	1.06	1.10	1.16
Poll./Col.	30.67	22.50	28.33	30.00				29.00	20.00-35.00	28.10	28.79	30.25

MARKET SHARE

Although the new label laws will affect some beekeepers, most of us aren't going to have to worry a whit about what the government wants on the bottle we sell. Unless you sell litterally tons of honey a year ($50,000 worth) your label won't have to change a bit in '93. But maybe it should anyway. Stay tuned to Market Share, and *GBC* to see why – read "The Law, Labels and Liability", coming soon.

Region 1

Sales steady, but increasing as cold weather sets in. Seasonal sales only average, but prices increasing. Supplies low, and sellers looking for more honey already. Prices will increase this winter.

Region 2

Sales steady to increasing as holiday and cool weather demand increases. Prices remain steady to rising, and shortages promise even higher prices later this year.

Region 3

Sales solid, steady and increasing. Prices steady, but slowly rising, too. Moderate crop means shortages later. Colonies generally in good condition, but short fall crops in some areas may mean feeding. Mites still taking their toll, but most beekeepers who don't treat, aren't keeping bees.

Region 4

Sales increasing generally, but slowly. Prices steady and little increase seen. Colonies in mixed condition throughout the region. Some strong and ready, others will need feeding by spring. Mite problems in check, it seems.

Region 5

Sales surprisingly strong[illegible] prices good. Early snow a mixed blessing, because it brought an early end to fall preparations (too early for many), but increased sales earlier than usual. Good crop will help supplies.

Region 6

Sales slow, prices only steady. Increases seem unlikely, at least for awhile. Colony conditions generally good, but some areas were too wet for fall stores, and feeding will be needed.

Region 7

Sales good, with promise of even better as winter hardens. Prices, as usual in this region, strong and no sign of let up is sight. Fall moisture more than adequate, promising build up of ground water, and good '92 season.

Region 8

Sales all over the map as winter weather is mixed, and mixed[illegible] Sales and prices generally especially in the north. ern areas hoping for mois[illegible] early December. Bees moving in for pollination preparation. $30-33 fee seems set.

RESEARCH REVIEW

DR. ROGER A. MORSE

Cornell University • Ithaca, NY 14853

"Honey bees have solved the problem of finding, and exploiting the best food sources available. Exciting news for beekeepers, business schools and psychologists!"

A little over 45 years ago, Karl von Frisch discovered the dance language of the honey bee. He described how scout bees give information to recruits about the direction, distance, and type of food they have discovered. However, it has not been until now that we have come to understand how bees manage to exploit the very best food sources and make their foraging most profitable. The answer lies in a remarkable paper cited below that outlines how this "ability emerges from the behavior of individual bees."

There are several ways in which a society may be organized and decisions made. One is to build a pyramid-like structure with one boss at the top who assesses situations and makes decisions as to what the rest should do. A second system is to use committees and/or overseers who collectively make decisions and direct the actions of the rest. Yet another system is to let every individual make his or her own decisions. The first system requires a skilled senior manager who makes no errors. The second system requires teamwork, an elaborate communications system, and is slow and bulky to manage. The last system requires entrepreneurship.

There is now proof, in the paper cited below, that honey bees in a colony use this last system when foraging. They are a group of independent operators. Each foraging bee makes her own decisions as to what flower patch to work. The data show that this is the most profitable course of action for honey bees. While it is possible that some individuals may make errors in judgement, on average, the decisions will be properly made and the whole colony will profit.

First, some background on what a colony of honey bees must do to survive in a northern, temperate climate. The average colony of bees lives in a hollow tree and occupies about a 10-gallon space. (Our man-made hives are much larger so that we might exploit the bees and force them to produce more honey.) During the course of a year, a typical colony will collect and consume about 45 pounds of pollen and about 135 pounds of honey. Half of this honey is normally collected over a period of three weeks and rest over the frost free period of 20 to 25 weeks. The most important point is that the bees must take advantage of every opportunity to collect the maximum amount of food to carry them through the winter.

The heart of the study cited below is to determine how individual honey bees can choose the best from among the available nectar sources. Three possibilities exist. One is that each bee makes this assessment by visiting many food sources and comparing them. This obviously takes time, which is expensive, and even then a bee might not find the best source. The second poss is that food-storing bees, the hou that take the food from the fora make the decision as to what is best. The problem here is that food-storers can assess the amount of sugar only and have no notion of how much time or effort went into its collection. The third hypothesis is that each forager "independently assesses the profitability of its nectar source and does so without

This is actually a group of independant operators, who end up doing what's best for the colony when all is said and done.

reference to other nectar sources." This [illegible]ds that each forager is "cali- [illegible] so that it knows whether a level [illegible]fitability is low, high, or some point in between. This last appears to be exactly what happens.

It is next necessary to review some aspects of what we know of the honey bee dance language as researched by von Frisch (1967) and that earned him the Nobel prize in 1973. A bee dances if she has found suitable food (nectar and/or pollen), or a source of propolis or water if they are needed, or a suitable home site if it is the swarming season and that is the object of her search.

von Frisch found that a human observer, using an observation hive, may assess the liveliness of a dance. Liveliness is that quality whereby a bee that has found an outstanding food source, at least in her estimation, dances sooner and longer. For example, a forager may decide to dance after one visit to the field but often she will make several visits to a food patch before making a decision. She may dance for [illegible]inutes, or if the food source is [illegible] to be mediocre or poor, for a [illegible]r period of time, or not at all. In the case of a very poor food source, the bee stops foraging, and returns to the area of the hive where other bees are dancing, and follows a dancer. Any dancer will do. This new recruit, though in fact an experienced forager, is little different from a bee with no field experience. All recruits take information from the first dancing bee they follow. Of course, under the circumstances described, a recruit is most likely to encounter a bee from the best of the food sources available.

What is now understood that this is sufficient to direct the actions of the whole colony. A bee being recruited follows one dancer and takes the advice of this bee and forages accordingly. She then makes her own decision as to the profitability of the food source and may dance herself, or not, and continue to forage at the site, or not, depending upon what she thinks. The bees that dance longer are more likely to be encountered and to recruit more bees. In [illegible]way the greatest number of bees [illegible] best advice and forage at the [illegible]ce.

The following experiment was conducted to show how this remarkably simple system works. A colony in which all of the approximately 4,000 workers were marked was established in a remote location in the Adirondack mountains where there were no other honey bees.

Two feeders were placed about 400 yards in opposite directions from the hive. Equal numbers of bees were trained to each site at which time the experiments started. At the start, the sugar syrup concentration was adjusted so that it was three times richer at one site than the other. This was done early in the morning. At the poorer site, "there was no recruitment to or abandonment of", the feeder. At the richer site, there was strong recruitment and the number of foragers there rose dramatically. At noon, the sugar concentrations at the two feeders was reversed. Foragers slowly abandoned the source that had once been so rich and the number increased at the opposite feeder.

These experiments do not answer the question of how a bee makes a judgement. It is clear that ""he details remain obscure about the information processing inside a bee as it assesses the profitability of a nectar source." However, it is clear that "order emerges from the actions of many independent actors."

I think it is understood that not all bees are perfect and no doubt some make errors by over assessing, or under assessing, a food source's quality. However, by having many bees participate in the system, the authors of this research conclude that these variations are equalized.

There are many sociological implications in this study. Can human and insect societies be compared? Maybe. Business schools continually debate how a company is best organized. Should there be a strong central management or decentralized control? In any event, honey bees have solved the problem neatly and with the least amount of wasted energy find and exploit the best food sources available.

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DO WE NEED A STOCK CENTER?

TIMOTHY LAWRENCE
SUSAN COBEY

A continuous supply of healthy, productive, and manageable honey bee stock is essential to the U.S. beekeeping industry. U.S. Agribusiness depends on pollination, a service without which the food economy of the U.S. and the world would be seriously compromised. Honey bee pollination in just the U.S. directly and indirectly supports $19.9 billion dollars worth of food and food product ...ction.

...he beekeeping industry also bears ...esponsibility of assuring the public that honey is a healthy, uncontaminated food.

Genetic selection of desirable stock, and controlled maintenance of that stock is generally recognized as the best potential long term solution to the problems of assured pollination and uncontaminated honey. Queen breeders and package producers must be able to provide beekeepers with high quality queens selected for these important traits. The need to develop, maintain and distribute selected honey bee stocks appears obvious. But who will pay for this is the $64,000 question.

Fortunately, honey bee genetics is gaining increased attention in the research community. Several university labs are trying to develop tracheal mite resistant stock. And imported Carniolan stock from Yugoslavia and Buckfast stock from England are being tested for mite resistance in cooperation with the USDA.

But stocks selected for desirable ...cteristics by the research commu... ...vill be lost unless they can be ...tained at the industry level. The USDA has made it clear that it can neither maintain stock, nor serve as a stock holding center because of limited resources. They plan to offer their research-improved stocks as a one time release to the industry. These lines will be lost unless stock maintenance programs are established.

Q.

Do You . . .

- ☐ Produce Your Own Queens?
- ☐ Purchase Queens?
- ☐ Sell Queens?

However, maintenance programs are expensive to operate. They are labor intensive and require expertise in specialized areas. Our experience at the commercial level, in developing a closed population breeding program (to maintain the New World Carniolan at Vaca Valley Apiaries) proved biologically successful. But, for a small beekeeping operation this was not profitable. The present economic situation of the beekeeping industry questions the commercial success of this type of venture. Cooperative efforts designed to spread the expense and labor of such programs appear to be the most feasible. Several small, well distributed efforts would be the most effective. The combined resources and expertise of the industry and research community have the potential to make this a reality.

The concept of a honey bee stock center was proposed by Timothy Lawrence, Susan Cobey and Dr. Brian H. Smith at The Ohio State University in early 1990. This was endorsed by the American Farm Bureau Board of Directors in June of 1990 and the American Beekeeping Federation in January of 1991.

To support this endorsement, we conducted a survey to determine beekeeper's attitudes about breeding and selection, and to determine the feasibility of establishing a stock center. Beekeepers attending the 1991 conventions of the American Beekeeping Federation and the American Honey Producers Association were the participants in the survey. *Continued on Next Page*

Q.

How much would you pay for a . . .

- ☐ Breeder Queen?
- ☐ Production Queen?

Q.

What characteristics are important in a Queen?

- ☐ Production
- ☐ Mite Resistance
- ☐ Gentleness
- ☐ Overwintering Ability
- ☐ Disease Resistance

STOCK CENTER ... Cont. From Pg. 15

We Wanted To Know . . .

The survey was designed so we could better understand current queen rearing and bee breeding practices, and find out what characteristics beekeepers felt should be the focus of a stock center. We also wanted to find out if there was a perceived need for a stock center, and the industry's willingness to provide financial support for such a venture.

The results reflect the opinions of those who completed the questionnaire and not necessarily the industry as a whole. However, beekeepers that attend national beekeeping conventions generally represent the leadership of the industry.

What We Found Out . . .

The survey was completed by 70 attendees at the Federation and Honey Producers meetings in January of 1991. Of those responding – 71% produced their own queens, 82% purchased queens and 26% sold production queens.

Of those rearing their own queens; 63% selected their own breeder stock and 34% purchased breeder stock. At least some instrumentally inseminated breeder queens were used by 20% of the queen producers responding.

Of beekeepers who purchased production queens – 34% knew their queen producer selected their own breeder stock and 31% had no idea of how breeder stock was obtained. Only 9% of those beekeepers purchasing queens [illegible] aware that their producer used i[illegible] mentally inseminated breeder qu[illegible]

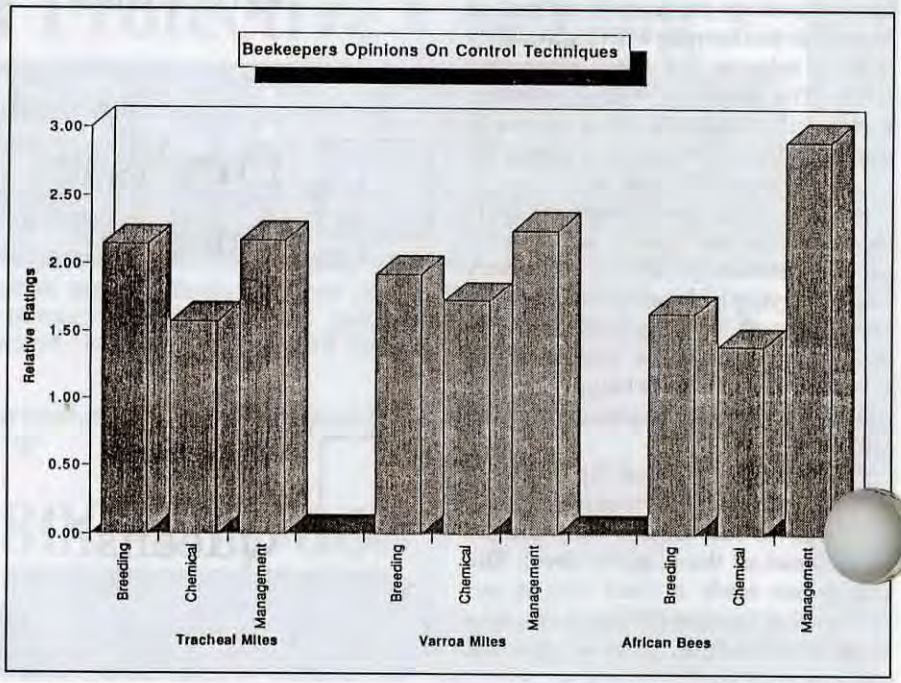
Stock Center Favored . . .

Fully 92% of the respondents favored the concept of developing a stock center. Many encouraging comments were received stating the idea is very good and long over due.

Of those few who did not see the need for a stock center, the predominate reason given was the expense. The failure of previous attempts, and the opinion that there were already too many queen breeders was also mentioned.

The average price beekeepers are willing to pay for a sele*cted breeder queen* varied widely. The average price was $137.00, with a range from $9.95 to $500 per breeder queen. Those purchasing *production queens* reared from selected breeders indicated they were willing to pay an average of $1.07 extra per production queen. Several beekeepers indicated these queens must increase production to justify the extra expense.

Asked if they would be inte[illegible] in participating in classes on i[illegible] mental insemination, 43% expressed interest. Assuming these beekeepers became proficient in this technique, 36% stated they would be interested in purchasing semen from selected stock to inseminate virgins from their selected stock.



W t's Important . . .

keepers rated, in order of im- e, a list of characteristics they valued in a breeding program. Increased honey production topped the list as the most important trait. Tracheal mite resistance was second, followed by gentle temperament. Varroa mite resistance and overwintering ability tied for third. Then, in descending order was brood viability, American foulbrood resistance, pollen collecting ability and chalkbrood resistance. African-free stock was clearly the *least* concern among beekeepers.

Given a choice of 1) bee breeding, 2) chemical control or 3) management for the control of tracheal mites, Varroa mites and "Africanized" bees, beekeepers choose *management* as the most effective control method for all three pests. *Bee breeding* was viewed as the second most effective and *chemicals* as the least effective control method. Breeding resistance for the control of tracheal mites was rated more highly than for Varroa mites.

S .

e results show most beekeepers ng the national conventions in January of 1991 are willing to pay more for proven stock. They also feel the availability of selected stock is important and a stock center would benefit the industry. Despite parasitic mites and "Africanized" bees, honey production is still valued as the most important trait a queen should have.

Interest in establishing stock maintenance programs is high among beekeepers, though cost is a major concern. Industry resources are limited and competition is keen among private funding and granting agencies for projects of this nature. ■

Appreciation goes to Dr. Brian H. Smith for encouragement, support and helpful suggestions.

This survey was conducted by Honey Bee Insemination Service, 7417 Hayden Run Rd., Amlin, OH 43002.

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Q.

Would you support a Honey Bee Stock Center?

☐ YES!

by
Lynn Royce
and
B.A. Stringer

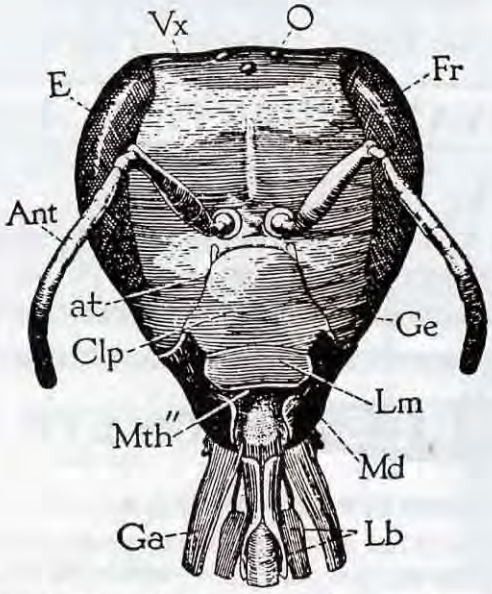
Up Close And (very) Personal

THE EYES HAVE IT

Honey bees have two sets of eyes for light and visual perception; three small ocelli or simple eyes and two large compound eyes.

The ocelli, each one a simple dense lens, are arranged in a triangular pattern at the top of a honey bee's head. Beneath each lens is a sensory retinal cell. The ocelli do not form images but are capable of differentiating various light intensities, possibly to regulate diurnal activity.

Compound eyes are labeled such because they are made up of many hexagonally shaped facets (about 6900 in honey bees). Each facet responds independently to light stimuli. It is thought that honey bee eyes are organized as sets of different visual subsystems, each with a separate neural pathway for relaying information to the brain. Polarized light is apparently perceived in the dorsal (upper) half of the honey bee eye, shape recognitions in the middle lower frontal part of the eye and optomotor responses in the rear lateral part of the eye. This type of subdivision of compound eyes has also been found in other insects.



Line drawing showing the location of ocelli (O) and compound eyes (E) on honey bee head. Also shown are the antennae (Ant), mandibles (Md), and mouthparts comprising the proboscis (Prb). (From Snodgrasss, 1956. Copyright 1956 by Cornell University. Used by permission of Cornell University Press.)

Serial electron micrograph of a honey bee's ocelli. Three pollen grains can be seen on the ocellus surface. Intricately branched hairs, characteristic of the genus Apis, *surround the ocelli. (Royce / Stringer photo)*

Not only are different types of information gathered in each part of the eye, but also the shape and size of individual lenses differ with their location within the compound eye. Drone eyes have large facets in the upper front regions which are receptive to light in the blue range. They are probably used to help the drone locate and home in on a queen during mating flights. Drones have between 7000 and

The surface of a compound eye, showing the hairs between the eye facets. (Burgett photo)

8600 facets in their eyes, almost twice as many as queens have.

Bees have furry eyes; hairs grow between the facts of the compound eyes. These hairs assist perception of air flow so that workers can maintain direction and distance on windy days. They probably also have the function of protection of the lens surface, in much the same way as our eyelashes do. □

This is the first in a series of Up Close articles looking at the honey bee. Lynn Royce a[illegible] Stringer are associatied with the [illegible]tate University, studying honey [illegible]ite relationships.

INFANT BOTULISM

DR. JILL SNOWDON

Not even recognized as a disease until 1975, there are only 100 or so cases of Infant Botulism reported in the U.S. every year.

Botulism is a paralytic disease caused by the microorganism *Clostridium botulinum,* a sporeforming bacterium that grows only in the absence of oxygen. Sporeforming bacterium have distinct life phases, one of which is a spore, an encased dormant stage much like the seeds of a plant. Sporulation – the transition to the growth phase – results in an actively metabolizing bacterium capable of growth and reproduction. During its growth, the organism manufactures and releases a potent toxin which blocks the transmission of impulses through the nervous system by binding to nerve endings. Without messages from the nervous system muscles cannot function and paralysis results. The effects are reversed when new nerve endings grow, but prompt medical support is necessary.

Botulinal spores are distributed throughout the environment. They are commonly found in soil and are likely to be found in all raw agricultural and finished food products which are not sterilized. Spores have also been found in the household in air, carpets, houseplants and vacuum cleaners. Spores are distributed unevenly in the environment and one type may dominate in a given geographic location. Spores are extremely resistant to heat, drying and chemicals, and since exposure to spores is impossible to avoid, disease-prevention is based on avoiding conditions that encourage growth.

There are three forms of botulism. The food poisoning form occurs when the microorganism grows in a food and produces its toxin. When the toxin-laden food is consumed, the toxin is absorbed into the blood stream and carried to nerve endings. This type of botulism poisoning is prevented by using appropriate food processing and handling techniques. Rigorous control of processing conditions in the food industry now makes this type of botulism a very rare disease, with less than 50 cases of food poisoning botulism recorded per year by the U.S. Center for Disease Control. Wound botulism is the second form and is often associated with gunshot injury and puncture wounds. It occurs when spores enter a break in the skin, grow and produce toxin. Prevention requires proper medical procedures.

Infant botulism is the third type and is different from the other two forms. It starts when botulinal spores are swallowed, sporulate and colonize the bowel. After sporulation the microorganisms grow and generate a toxic by-product. The toxin is absorbed, carried throughout the body and has the usual results – muscular impairment.

Older children and adults are not normally susceptible to this form of botulism because of the greater numbers and types of bacteria present in their digestive tracts. Newborn babies are vulnerable, however, because they lack a developed intestinal microflora, which develops during the first few months of life and subsequently provides protection. Adult cases of infant botulism are very rare, because normal, healthy children and adults can ingest the spores without harm.

The most common first symptoms of infant botulism include weakened feeding activity, less than one bowel movement in three days and an altered cry. The disease is obscure because these symptoms are common to many maladies in infants, but the disease progresses in a pattern of paralysis typified by constipation, lethargy, weak suck, and a weak cry. Prompt medical treatment is essential and may include mechanical support for breathing. Effective treatment consists of meticulous supportive care with a focus on the child's nutritional and respiratory needs. While antitoxin or antibiotics are of uncertain effectiveness, other drugs to counteract the disease in infants are being developed.

"Botulinal spores are distributed throughout the environment . . . in the soil, raw agricultural products and finished food products not sterilized."

Infant botulism cases range from those with mild to severe paralysis. A few infants may temporarily carry botulinal spores without any overt symp-

toms, and those with mild paralysis undiagnosed. Infants with mod- severe paralysis require hospi- ion but are usually relieved by appropriate medical care, but those with sudden onset of severe symptoms may die without warning and with no opportunity for hospitalization.

Since the prognosis is excellent if appropriate supportive care is given, medical attention should be sought when symptoms are first noticed. The Centers for Disease Control recommend all afebrile (without fever) infants who develop decreased ability to feed and in whom no other infectious cause is identified should have stool specimens submitted for examination, particularly if there has been a pattern of less frequent bowel movements.

Infant botulism was not recognized as a disease until 1975, and about 100 cases are reported in the United States each year. By 1989, the number of reported cases had decreased to 60. Distribution among the states is uneven with California, Utah, and Pennsylva- utinely reporting a higher num- cases than other states. The pancies may lie in inconsistencies in reporting practices between states or in other regional factors. Cases from many nations have been reported but with less frequency – the United Kingdom, for instance, only recorded two cases in 1989. It is believed the reported incidence is less than the actual incidence due to the lack of physician awareness and limited laboratory facilities. A conservative estimate of actual incidence in the United States is closer to 250 cases per year.

It is not known why some babies get infant botulism and others do not. Infants are most frequently affected between two weeks and six months of age. Half of the reported cases are less than two months old. By age one protection against infant botulism is in place.

Because of the ever-present nature of botulinal spores, anyone may swallow them at any time.

A certain number of spores may be to induce disease. Some babies sick from ingesting just a few s , while others may ingest many more and not become ill. It may take only 10 - 100 spores to cause problems. Research indicates infants exposed to dirt and dust may be more likely to develop infant botulism.

There are geographic differences in disease incidence, too. Cases are sometimes reported in clusters in a rural area or in a ring around a city which may reflect the uneven distribution of botulinal spores in the environment.

"The role of honey in this disease is ambiguous because most infants who develop Infant Botulism have not been exposed to honey."

The disease occurs if enough spores are swallowed, germinate and produce toxin. If spores are swallowed but don't germinate and produce toxin, no disease results, hence the factors that determine sporulation, colonization and toxin production determine chances of getting sick.

Host susceptibility is determined by a variety of factors. Breast milk, infant food, honey and corn syrup have all been studied. Other bacteria in the gastrointestinal tract may deter the bacteria from lodging, growing and generating toxin, but babies do not have the protective bacteria. Decreased bowel movements and weaning onto solid foods may provide a chance for botolinum toxin to develop. Breast-feeding, too may influence the development and severity of the disease, but the mechanism is unclear.

Breast milk provides both protective factors and risk factors. Some scientists believe that intestinal flora and frequency of bowel movements may be the most important risk factors for development of disease and note that clearly defined food exposures account for a minority of infant botulism case.

Botulinal spores can be present in honey, but surveys show this varies in frequency. There have been at least six surveys since 1978 to determine the level of botulinal spores in honey in the United States and from a total of 885 samples only 51 (5.76%) contained detectable spores. Various techniques were used to determine if spores were present, and detection is dependent on the analytical technique employed. The wide range in results (some studies detected no spores, most detected spores in less than 10% of their samples and one detected spores in 62.5% of their samples) suggests that detection technology still needs refinement.

"Spores are inactivated when honey is used as an ingredient in manufactured food products such as cereals or nuts submitted to a roasting heat treatment."

Historical data on the incidence of honey and infant botulism is available only from California. The number of cases of infant botulism in California which involved honey has steadily declined going from 34% to as low as 4.4% in 1988-89.

Honey can contain botulinal spores. Honey has been identified as a dietary risk factor for infant botulism. But the role of honey in this disease is ambiguous because most infants who develop infant botulism have not been exposed

Continued on Next Page

BOTULISM ... Cont. From Pg. 21

to honey. Therefore the development of this disease must involve risk factors in addition to eating honey. Even so, honey should not be fed to infants less than a year old.

Because botulinal spores are extremely resistant to heat, even in water, and are even more resistant in concentrated sugar solutions, honey cannot be sterilized to destroy the spores. Any heat treatment sufficient to kill these spores will caramelize the sugar, which produces undesirable flavor changes. Efforts to filter spores out of honey have also been unsuccessful. With its high viscosity, honey does not pass through filters fine enough to remove bacterial spores.

Spores are inactivated when honey is used as an ingredient in manufactured food products such as cereals or nuts submitted to a roasting heat treatment. But, food products in general not submitted to a heat treatment lethal to *C. botulinum*, can be expected to be an occasional source of spores.

The National Honey Board, the Centers for Disease Control, the American Academy of Pediatricians, the California Department of Public Health, other public health associations and *Gleanings In Bee Culture* recommend that honey not be fed to infants under one year of age.

As infant botulism can strike even in the absence of honey, any infant showing symptoms of the disease – poor feeding, altered cry, constipation, lethargy – should receive immediate medical attention.

Healthy children and adults with normal intestinal microflora are resistant to infant botulism and are able to ingest botulinal spores without harm. The Centers for Disease Control state "the safety of honey as a food for older children and adults remains unquestioned" □

The Centers for Disease Control state "the safety of honey for children (older than one year) and adults remains unquestioned."

This article is based on a document initially prepared for the National Honey Board by Dr. Jill Snowdon. We have edited the original for brevity and readability. For the original, and the references cited, please contact the National Honey Board, 421 21st Ave. #203, Longmont, Colorado 80501. This article is published for general information only, and it not meant to replace the well researched original document.

BEE TREE

Taking care of Bee Trees is a skill that is learned. Be Careful, and Plan, Plan, Plan.

by BILL SAMES

It wasn't so long ago that finding a bee tree was an exciting event. Honey was one of the only sweeteners available and beeswax was a precious commodity for making candles and other products. In some cases, a log gum hive would be created, and robbed at a later time.

Today, we are swamped with a variety of sweeteners such as sugar, corn syrup, and Nutrasweet®. And there is a proliferation of cheaply made petroleum waxes and lubricants that have replaced beeswax for many uses. We have also developed efficient techniques for raising bees and removing honey so the importance of bee trees has dwindled considerably.

However, now that Africanized bees are becoming established in Texas and perhaps elsewhere in the near future, getting rid of bee trees in populated areas will probably become more common.

I've spent most of my 17 years of beekeeping in Southwest Texas where the trees rarely get big enough to house a colony of bees, let alone climb, so I never had the opportunity to cut down a bee tree. I've had plenty of chances to remove bees from house walls, trailer [illegible] floors, barrels and other objects – but never a real [illegible]

I had seen them in the Texas hill country [illegible] read about them in books, seen them on TV, and I'd heard stories about them from old time beekeepers.

But it wasn't until March of last [illegible]hat I finally got my chance to work [illegible] bee tree, when I received a call [illegible] local resident who had bees in a tree near his house. My first response was to tell him to leave the bees alone or call an exterminator to kill them and fill the cavity with cement. I also told him transferring bees from trees was expensive and any potential honey or wax was of little value compared to the time it would take to transfer the bees from the tree to a profitable colony.

We kept talking, and oh! did you say that the tree was dead, and I can cut it down? Are you in a big hurry to get this tree removed? Where is this tree located? Would you mind if I drove over there and took a look-see? I'll call you back after I've looked at it, but I won't be able to get to it until school is out and – whoa! How did that happen? I sure got hooked, and explaining this to my wife was going to be an adventure, too.

Well, to ease into this I took her out to eat, went for a drive in the country, and then just happened to stop near the tree and pretended I had planned this for a long time, but I must have forgot[illegible]to tell her. She saw through the [illegible] an instant, but being the sweet [illegible]standing woman she is, let me a[illegible]mpt the transfer.

Two months later, after school ended, and many hours planning the transfer, it was time to proceed. I decided to cut the tree down, cut out the section where the bees were located, and stand it up-right like a log gum hive. If needed, I planned to drill holes into the top so I could "drum" the bees

Once the branch was removed by pulling it off with a rope, the tree itself was dropped. The fall was controlled with ropes so it went the right way, missing wires, people and houses.

Once down, the section of the trunk containing the cavity with the colony is removed using a chain saw, and some smoke.

The section is returned to the stump area, and a special bottom board, with a six inch hole is attached to the top with nails. The bees remained calm the whole time.

Continued on Next Page

When the bottom board is securely fastened, a hive body, complete with frames and foundation is added. The bees are still in the tree.

To help 'steer' the bees in the direction we want, all existing entrances to the tree section are closed with burlap. The only way out is up – into the new super.

BEE TREE ... Cont. From Page 25

into the hive box on top of the section. The bottom board was made of plywood and had a six-inch diameter hole in it.

In order to publicize as well as document this, I invited the Agricultural Communications office at Texas A&M University and the local TV station to come out and film the event. The group from Texas A&M had already contacted me about filming a beekeeper working with swarms and feral colonies, and this was the perfect opportunity. Leon Praetorius would take the still pictures and Wayne Arrington agreed to help with the transfer. May 15th was the planned date for removal.

There seems to be a catch to everything in life and this tree was no exception. It was located in a powerline right-of-way and even though dead, one of the branches was higher than the lowest wire, and worse, the whole tree was leaning the wrong way.

We ended up roping the tallest branch (a necessary skill for cowboys and beekeepers) and pulled it down with a pickup truck. We were afraid that the trunk of the tree might split as we pulled down the branch, but luck was with us and it broke off right above the entrance to the colony. We then cut down the tree with a chainsaw.

If the desired section had cracked open we planned to open it further, remove the comb and bees and place them into an empty hive box with a regular bottom board. On top of this we would have placed a hive body full of frames with comb. The bees are better at sorting out the mess than we are, and they would have eventually moved into the upper hive box. Then with a queen excluder we could have trapped the queen in the upper hive box and after waiting 21 days for the brood in the lower hive box to develop and emerge, we would have removed the lower box. Of course we would have to cut out the comb, shake the bees off, and destroy the damaged comb.

But when the tree fell, it remained intact. A few bees got upset, but within a few minutes and several puffs of smoke, they calmed down for the rest of the day. In fact, Jerrold Summerlin, the camera man from Texas A&M took off his veil within five minutes so he could take better pictures. No one was stung throughout this whole operation.

The entrance to the colony was at the top of the main trunk about a foot below three large branches. We made two cuts in the tree, one above so all three branches were removed and one below where we believed the colony was located. As expected, most of the colony was located in this section, but they also had some dry, empty comb in a large hollow side branch. When we cut the top branches off the tree, a s[mall] hole exposing a part of the combs was made in the to[p] section, so we didn't have to drill through the top. The c[omb] seemed to be in good shape after the fall, but they did not appear to have a lot of honey.

Once we had the section cut out we moved it close to the

After most of the bees are moved up, a plastic queen excluder is nailed in place over the hole in the bottom board. This prevents the queen from returning to the brood below, but lets workers care for them.

Smoke is applied and drumming starts. After a bit of this the super is checked to see how fast the bees are moving up. Drumming works, and you can apply this technique to any tree.

original stump and set it upright. We removed the comb from the side branch and stuffed a burlap sack into the original entrance as well as the exposed side branch. A part of the section was rotting and to prevent this from becoming a new entrance we wrapped burlap around the trunk and nailed it in place.

We then placed our special bottom board on top of the section and nailed it in place. We put a deep box with 10 frames of foundation and a top board above the bottomboard and were ready to start drumming.

This was my first drumming experience and I was a bit skeptical about whether it would work or not. We used two 3' long 2x2's for drumming the section. We smoked the hive and started beating on the outside. After about five minutes we lifted the box to see how many bees were moving into it. There were enough to encourage more drumming. After 20 minutes we decided there were enough bees inside the box to warrant looking for the queen, but we couldn't find her because there were so many bees clustered in the hive box. So we nailed a piece of plastic queen excluder over the six inch hole in the bottom board so if she was in our box, she couldn't return to the section.

Later that day I returned to the site with a frame of brood and an entrance feeder for the new colony. I lifted the hive box, and there on the bottom board with a cluster of attendants was the queen. We had her trapped above the excluder and in our box. I placed the frame of brood into the center of the box and put the filled feeder at the entrance, and I left them alone. I checked the bees and refilled their feeder about every five days.

The bees eventually found or made new entrances into the tree section so I had to block these with more burlap and a sheet of plastic. But by the end of the second week the bees were using the hive box entrance, and must have moved from the section. They were already drawing out the foundation on two of the other frames in the box.

On June 5, Wayne and Jerrold returned to the site to help complete the final step. We had waited 21 days so that any brood in the tree section would have had time to develop and emerge. The bees were already well established in the hive box, and it was evident they were losing interest in the section.

We drove the remaining bees out of the section by drumming on it for about 10 minutes, then lifted the box off the special bottom board and placed it on a regular bottom. We placed the colony on the stump of the old tree and moved the section about 50 feet away from its location. The colony had already drawn 3.5 frames of foundation, and there was brood in almost every cell as well as in the comb I had placed there earlier. The colony was ready for relocation to one of my regular beeyards where it would be fed until they had drawn the rest of the foundation.

Transferring bees from this tree to a hive box was both fun and educational for everyone involved. Something that

Continued on Next Page

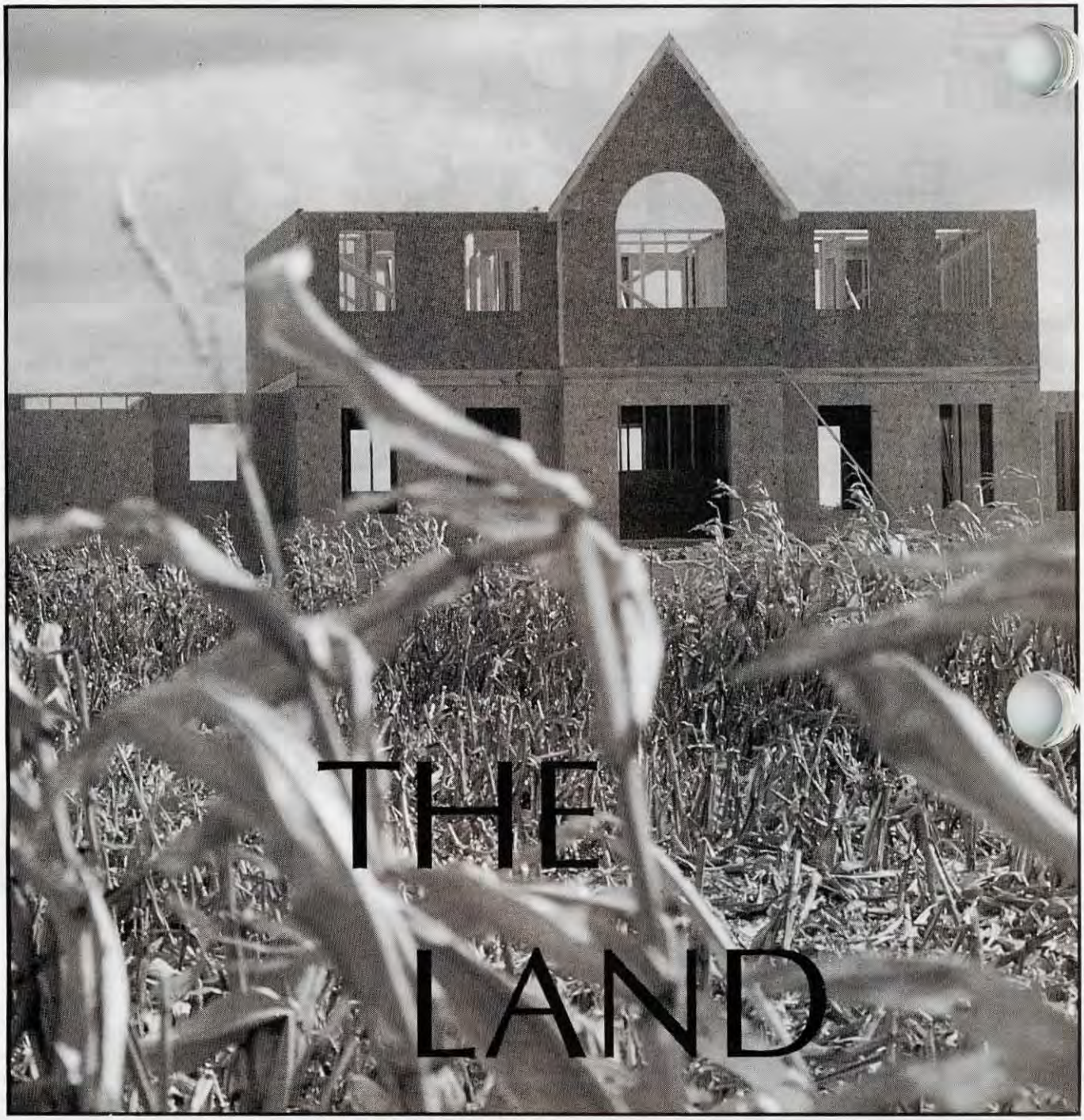
When all is said and done, another layer of burlap is added to prevent bees from entering the old section. It is important to keep a single entrance when establishing a new colony.

BEE TREE ... Cont. From Pg. 27

was not mentioned, but certainly important, was safety. No one was stung, no one was injured, no equipment was damaged and the transfer was successful. This was due in part to our concern about safety, the extensive prior planning before the event, the experience level of all participants, and how each of us would react if something went wrong at any stage of the job.

If you want to try something like this, I recommend you be safety conscious, plan the event well in advance, find someone to help and share the experience, and take a lot of pictures so you'll know what to do better next time. □

After 21 days the colony is well established in the new box. It will be removed from the section and, as a new and thriving colony, will be placed in a new bee yard.



THE LAND

One thing's for certain – there's only so much land to go around. Even considering a few filled-in wet-lands, they're not making any land, any more.

So when a friend pointed out, while at a shopping center parking lot, that over there, right by the dumpsters was where he had put his first two hives twenty some years ago, when all around was corn field and pasture, I began to wonder.

How much have things changed, really? If the parking lot that surrounded this new mall was once a bee yard, where did the bee yard go?

For that matter, every time a farm disappears and a housing development moves in, or a strip mall springs up, a shopping center arises or even an Edge City appears – what becomes of the food that grew there, the animals that lived there, or the bees that flew over the land?

This became personal when a large farm not far from home was sold. The owner was past the age of farming, and the family's children wanted no part of that lifestyle.

Over several months I watched this once beaut profitable farm turn into something else. So I began closely at how the face of my neighborhood, and my country is changing.

One of the first things I discovered was that the area ...ied by shopping malls in the U.S. has increased by a ...of 12 in the last 30 years. Nearly 37,000 shopping ... now cover 4.5 billion square feet of retail space, and ...ve 175 million shoppers per month (That's 80% of the U.S. population visiting 103,305 acres of store space). When you add in the parking lots (and dumpsters) you have an area half the size of Rhode Island. Just for shopping malls. My friend's bee yard never had a chance.

But there's so much more to where the land has gone, and what it is now. Shopping centers, though certainly visible, are only one of many, many uses of the places we once put bees.

How land is used is defined, in general terms by the USDA, as cropland, pasture, forests, special uses and the ever present 'other'

Between 1930 and 1987 there was a loss of 51 million acres of cropland (that's more land than North Dakota), and a 159 million acre increase in special use land (almost as big as Texas). That means more space used for cities, roads, wildlife and recreation areas, and less for growing crops, and making food.

MAJOR LAND USES 1930-1987

(Million acres)

...or land uses	1930	1950	1969	1987
...and used for crops[1]	382	377	333	331
...ne Cropland	31	32	51	68
Cropland used only for pasture	67	69	88	65
Grassland pasture[2]	652	631	604	591
Forest land	601	601	723	648
Special uses[3]	-	-	141	279
Other land	171	194	324	283
TOTAL	**1,904**	**1,904**	**2,264**	**2,265**

[1]Cropland harvested, crop failure, and cultivated summer fallow. [2]Grassland and other nonforest pasture and range. [3]Includes urban and transportation areas. Federal and State areas used primarily for recreation and wildlife purposes, military areas, farmsteads and farm roads and lanes.

FARMS, LAND AND AVERAGE FARM SIZE

Year	Farms (x 1000)	Land in Farms acres)	Farme Size
1977	2,455,830	1,047,785	427
1981	2,439,920	1,034,190	424
1985	2,292,530	1,012,073	441
1989	2,170,520	991,153	457
1990	2,143,150	987,721	461

Cropland consists of land with harvested crops, crops that have failed, fallow land and areas idled by government programs (erosion control, pasture and cover-crop land).

Harvested cropland has decreased steadily since 1930, while idled land has increased. So, although the total amount of land defined as cropland has changed little, how America's farmers are using it has.

The local farmer kept some of his land, along with the house and a couple of outbuildings. But almost all the rest of the 600-plus acre farm was bought by two development companies, with some going to a neighboring farmer.

But there really are fewer farms out there, along with less land being farmed. However, the average size of the remaining farms is increasing. Like beekeeping, actually. When one farmer (or beekeeper) goes out of business, some of the land goes to 'Special' uses, while some goes to other, remaining farms and farmers. So, like beekeepers who buy another operation to increase their holdings, so, too, do farmers increase their land. The remaining American farms are getting larger. One 80 acre tract from my local farm went to a wheat, corn and bean grower, who uses it to its fullest.

The bottom line is that even between 1977 and 1990 the number of farms decreased by 13%, the amount of land used for farming decreased by 6.0%, and the average size of the farm increased by only 8.0%. Although remaining farms have absorbed some of the land up for grabs, not all of it has gone into the hands of food producers.

The most recent information shows the changes between 1989 and 1990. In that single year the number of farms dropped 1.3%, and the amount of farmland lost was just under 1.0% of the total available. However, that seemingly insignificant 1.0% drop amounts to 3,432,000 acres of lost crop land. Put another way, that's a piece of real estate the size of Connecticut.

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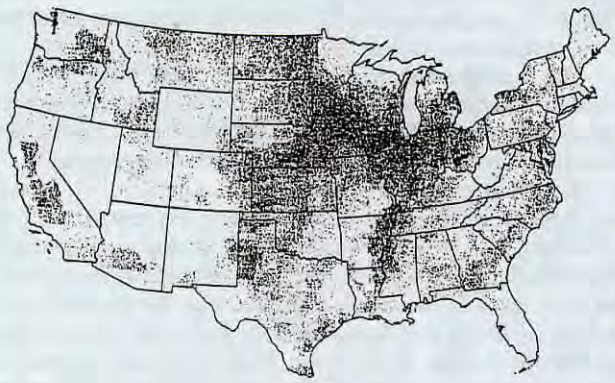
Farming-Dependent Counties, 1950 (USDA)

Farming-Dependent Counties, 1981-1986 (Avg.) (USDA)

THE LAND ... Cont. From Pg. 31

Ultimately, the impact farms are having on the economy of the communities and counties they reside in is the best measure of this agricultural trend in the U.S. The 1950 country-dependant map, when compared to the 1981-86 picture makes it quite clear what's happening – farming has taken a backseat to manufacturing and service industries in this country in terms of the economy and general importance. That isn't to say farming isn't important, financially, to much of the U.S. One benchmark often used is where government payments are made, and looking at the 1987 payment map, it's easy to see where food, fiber and other commodities are grown and paid for.

FEDERAL FARM PROGRAM PAYMENTS, 1987 (USDA) – Each dot = $100,000



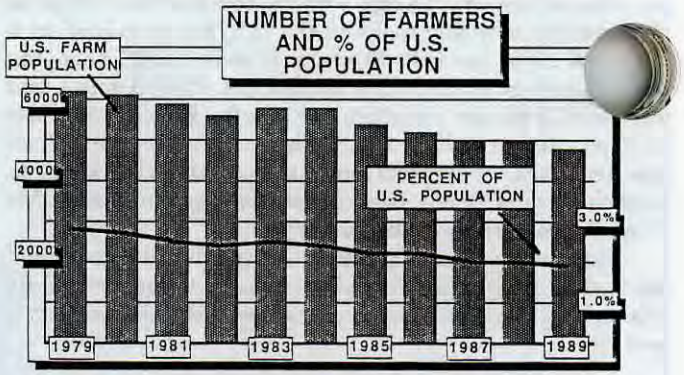
And yes, there are fewer people farming, too. Between 1979 and 1989 the U.S. population increased 9.8%, while the number of farm folks dropped fully 23%. Farmers now constitute less than 2% of the U.S. population. And you wondered why getting favorable legislation was so difficult?

The impact from my neighborhood's farm loss was felt, though minimally, in the community. There are few suppliers of farm goods in the area since most are already gone. The most productive part of the farm, that 80 acre tract, is still making beans and wheat and corn. But there's no surplus hay for sale this year, commonly bought by several horse farms in the area, and the farmer isn't buying tractor parts, gasoline, fertilizer, seed or other regular farm stuff.

Another gradual, but steady change has been how farmers are spending their time. This is one aspect of agriculture that beekeepers are very familiar with. Most farm households depend, to some degree, on sources of off-farm income. Farmers are spending increasing amounts of time at other jobs. In 1929, only 6% of farm operators spent 200 or more days (that comes to approximately three out of every four weeks) per year working off their farms, but by 1987 fully 35% worked off-site this amount. Farming and farmers are changing.

So now there are fewer farms, less available farmland and fewer farmers who are spending less time tending to what's left. What's the story on production? Are we making less, or more, or what?

The Production and Crop Land Index graph shows dramatically what's happening in this area. Between 1975 and 1989, available cropland declined in a fairly predictable pattern. Meanwhile, crop production on the remaining area



increased at an astounding rate. American farmers are producing more food on less land, and their efficiency seems to have no end point. An index, by the way, is the government's way of measuring things. For instance, in this graph, any mark above the "0" line is an increase above the benchmark year of 1977, and any mark below it is a decrease from that benchmark.

So, even though there are fewer farms, less land, fewer farmers working less on those farms, the amount of food produced *per acre* has actually increased. In fact, between 1975 and 1989, the amount of land required to feed one person in the U.S. went from 1.09 acres (a football field, minus end zones), down to 0.87 acres, or about the same size as a large city lot (a quick survey of a dozen people in our office who live in town shows a range in lot sizes of 0.1 acres to 2.0 acres, with an average size of 0.73 acres). That represents a 20% drop in the land required to feed one person.

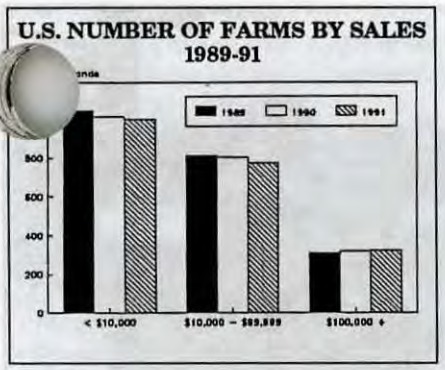
What's being grown down on the farm these days how is that affecting where you can put bees, and what's there for forage?

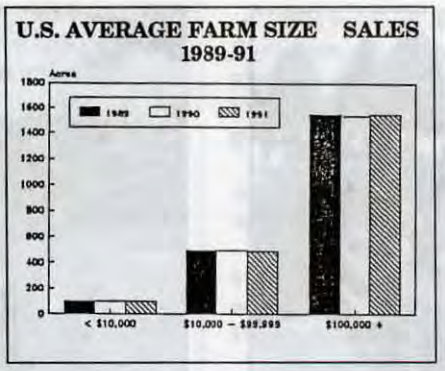
In 1989 about a third of all farmland was used to grow animal feed (no forage here!) with the remaining used for people. Of this, just under 2.0% was planted to commercial fruits, nuts and vegetables. The potential growth of the pollination business seems destined to peak some time yet in the future, but farmers aren't utilizing pollination to their best advantage, so don't expect business to slow for awhile. Farming's intensity will continue to increase, and the required production per acre must increase. Therefore, farmers will use more pollination in the future, at least until their point of diminishing returns is reached, or just slightly passed.

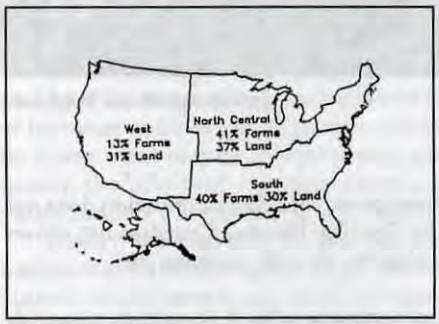
Both domestic production and imports reflect the change in the American diet, especially in the last 10 years, definitely to the benefit of bees and their keepers. Citrus, apples and fresh vegetables are being consumed in far greater quantities, while red meats and eggs are down. Although sweetener consumption (not counting honey) is up, cane and beet sugar consumption is down. Not surprisingly honey sales show little gain, but these numbers do not reflect the National Honey Board's efforts over the last two years. Soft drinks are interesting to note, too, since Americans drink more of them than tap water, every single day (see chart, page 36).

But what of the land not growing food? Those areas, often noted. This is where most my local farm has And it has gone in many directions.

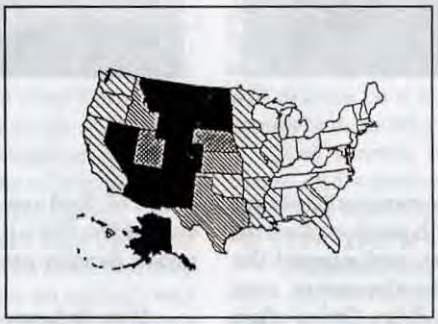
'Special Use' land is what's left after you've accounted for cropland. This includes but is not limited to highways,







Not only has the number of farms and farmers changed, the make-up of farms – both is size and sales – has changed, too.



Most farm units make less than $10,000 per year in gross sales, and obviously large farms make far more money, and grow more crops. Moreover, these larger farms are in locations less populated than most smaller farms.

railroads, airports, parks, wildlife areas, industrial and military zones, farm roads and lanes – and urban areas (see chart on page 38).

And yes, these areas are changing, too. Between 1978 and 1987, farm and regular roads, railroads and industrial areas all decreased by small amounts (about 6 million acres total, an area the size of Vermont). But parks, wilderness and wildlife areas increased 123 million acres (an area the size of Iowa, Wisconsin and North Dakota combined, though much of this is in Alaska). If you can get colonies on one of these locations you'll be set – for life. But getting permission, and then getting there on a routine basis is usually a problem. Parks tend be people-crowded, but geographically isolated – a good and bad point. Wildlife areas may be open to hunting (and you have those tempting white targets out there), while wilderness areas may require four-wheel drive vehicles for transportation.

But to get back to where all this d, sort of, lets look at urban ex-, and how it is changing the nd land use.

Between 1960 and 1987, urban areas in the U.S. grew from 25,208,000 acres to 55,908,000 acres. That's an increase of 30,700,000 acres (a 222% gain), or an area the size of the entire state of Louisiana.

In 1987 Vermont had only 93,000 acres of urban area, the smallest in the country. California, on the other hand, had 5,224,000 acres – almost exactly the size of the state of Massachusetts. There's lots of land in California, but over five million acres of urban land is more than most can comprehend.

But urban growth certainly isn't limited to California. And even if a particular city isn't increasing rapidly, it's a safe bet areas surrounding it are. Center cities are declining in businesses, population and economic stability – that's a reality nearly everywhere. But at the same time different kinds of businesses are growing on the city's edge. And the people who work at the shopping malls, business offices and factories live near their work places – not downtown.

Originally, central cities existed and grew because high-labor-use factories and business offices needed a high density population close to work. But as travel became easier and housing less affordable people moved further from work. Gradually the nature of work changed, too. Heavy industry declined, port cities needed less labor and downtown land became more expensive to purchase and difficult to adapt to changing needs.

My local farm is an example of this type of expansion. Even though Cleveland and Akron are not growing by leaps and bounds, the areas peripheral to them are. Housing land is expanding particularly, as more people work in the city edge area, but live further and further from work. Much of the land in the farm was divided into five acre plots for single family homes – large enough to be rural, but small enough to not be considered agricultural.

We have listed the biggest cities (from the 1990 census on page 36), to give a feel for just how large many of these urban areas are. The One Million Club had seven new members join since the 1980 census. Remember, these are just the cities themselves. These num-

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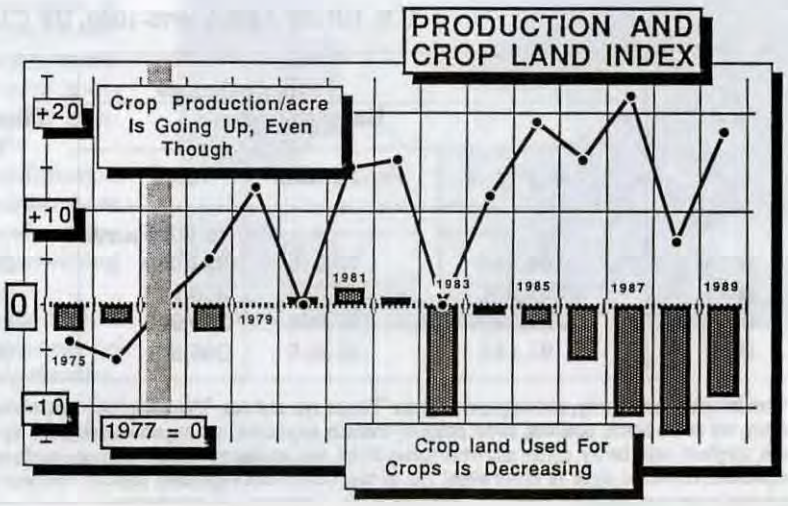


Living well.

and dying all use land, too.

THE LAND ... Cont. From Pg. 33

bers do not reflect the many, many smaller communities that surround these cities, which are the growth portion of urban expansion. These surrounding areas sport, and support the shopping centers, strip malls, housing developments, new industrial and office complexes and the Edge Cities often heard of. And even these grow, and their expansion does not stop at the city's limits. The Top Ranked Counties list shows urban density pretty clearly, though, on page 39.

ACRES OF HARVESTED CROPS PER CAPITA, U.S. 1975-1089 (ERS) (Million acres)

Year	Crops harvested	Area used for producing –		
		Export products	Products for domestic use	
	(Million Acres)		Total	Per Capita (Acres)
1975	336	100	236	1.09
1980	352	137	215	.94
1985	342	81	261	1.09
1989	318	102	216	.87

How do farmers, or beekeepers for that matter, cope with expanding urbanization? There are probably as many opportunities as there are problems for farmers and beekeepers associated with encroaching civilization.

When an area that was once considered rural suddenly isn't, attitudes and skills of local governments must change to accommodate the sophistication required to run a village, town or city. The new inhabitants, too, begin t a restrictive influence, and certainly the value of th increases.

Direct loss of land to nonfarm uses – houses, shopping centers, schools, gas stations, office buildings, parks, roads – is the most visible change of urban expansion. But even if your bees aren't directly affected by these (i.e. moved), other, more subtle changes occur.

Part of the local farm land was purchased by the county park system, which bought up the area surrounding the small creek that passes through. Though it won't be developed for awhile (no funds available), plans are already in place for access roads, parking, three shelters, bike paths and picnic areas. No bees, and little forage in these areas.

U.S. CROP AREA 1975-1989, BY CROPS (NASS)

Year	Principal crops Harvested area			Planted area Total[4]	Commercial vegetables harvested area	Fruits and planted nuts, bearing area[5]
	Feed grains[1]	Food grains[2]	Total[3]			
			(x 1000 acres)			
1975	104,683	73,045	324,040	332,236	3,416.6	3,437.6
1980	101,391	75,087	340,103	355,677	3,044.9	3,556.0
1985	111,729	67,904	330,942	342,146	2,462.5	3,493.7
1989	91,111	65,315	305,641	317,188	2,619.8	3,48

[1]Corn for grain, oats, barley, and sorghum for grain. [2]Wheat, rye, and rice. [3]Corn, sorghum, oats, barley, wheat, rice, rye, soybeans, flaxseed, peanuts, sunflower, c all hay, dry edible beans, potatoes, sweet potatoes, tobacco, sugarcane, and sugarbeets; popcorn, dry edible peas, Austrian winter peas and lentils. [4]Planted acres for corn, sorghum, oats, barley, durum and other spring wheat, rice, soybeans, flaxseed, peanuts, sunflower, cotton, dry edible beans, potatoes, sweet potatoes, and sugarbeets; harvested acres for winter wheat, rye, all hay, tobacco and sugarcane, popcorn. [5]Includes citrus fruits, deciduous fruits and nuts.

Between 1970 and 1990 major crops that are routinely ...nated have generally decreased, but some dramatic ...eases have been seen.

Apples	+21%	Limes	+72%
Peaches	-25%	Tangeloes	-55%
Pears	-25%	Temples	-58%
Cherries	-14%	Strawberries	-10%
Prune/Plums	-8%	Avocados	+350%
Oranges	-26%	Nectarines	+326%
Tangerines	-25%	Cranberries	+28%
Grapefruit	-4%	Kiwi Fruit	+456%
Lemons	+15%	Almonds	+242%

But in a newly urbanized area vandalism increases, new zoning ordinances appear, complaints from neighbors begin or increase and the cost of yard rental may go up. There will be fewer local outlets of equipment and supplies, too, and finally, the 'idle' land your bees sat on may be sold because its value suddenly increased when the population grew.

Even if after all this the bees stay where they were, the nature of available forage changes. My friend's bees, had they stayed, would have found slim pickings from an asphalt and gravel environment, and acres and acres of manicured lawns offer little in the way of nectar and pollen. On the other hand, introducing the gardens and flower beds that accompany new developments may actually enhance production, at least in the short run. And, as what was once farmland is converted to more manageable lawns, parking lots, parks and the rest, ...r plants are the first to move in, and dandelions and ...eeds are always more productive than the corn fields ...odlots that were once there.

But often suburban neighbors will actively support growth controls and require the retention of at least some of the farmland that was the initial attraction for moving in. Maintaining the 'country' appeal is what keeps land values high, and the living easy.

On the busiest corner, near our farm, on what only eight months ago was a quiet country road a gas station/convenience store went up, drawing on the increased traffic, increased population and easy access due to the large parking lot constructed. Country charm is O.K., I guess, as long as you can still rent videos just down the road.

Although traditional farming usually disappears as cities expand (dairy, beef, feed and grain production are low intensive forms of agriculture, requiring large amounts of land), specialized agricultural enterprises (requiring far less of what is now very expensive land) generally increase and usually do well. Pick-your-own operations, intensive management crops (vegetables, fruit) and farm market businesses thrive on the urban fringe.

From a beekeeper's perspective these offer pollination opportunities, increased markets for honey (both from more people and more outlets), and the recreational side of the business – tours and the like – that showcase a beekeeping operation.

One striking aspect of keeping bees on the edge is that ...rvivors are good managers. Whether in business on ..., or with only a few colonies near a shrinking woodlot, ...g bees in this type of environment is more stressful for both bees and beekeepers, and closer attention to detail is required to do well. Let-alone beekeepers usually don't last long.

And my local farm? There's almost a community living there now. The government has increased a bureaucratic notch, there is the gas station and store and plans are in place for a medium sized (two story, plus parking) office building to go in next to it.

A new bridge has appeared over the little creek, the road's wider and pretty soon a stop light will be at the corner, where cows once grazed and blackbirds flew.

But there is some hope for bees and blacktop. Urban and suburban beekeeping may soon become an environmental requirement for every city and urban area. Far fetched? Perhaps, but consider these two points.

First, and probably most obvious, there will always be people who absolutely cannot live without their idea of real, honest-to-goodness honey. Not the commercial kind in stores, but the kind that comes in old peanut butter jars. And there will always be a beekeeper who will have enough colonies, somewhere nearby to keep that customer happy.

And second, several recent studies have shown that urban and suburban areas that do not have resident, managed bees (and their keepers) have more feral colonies than the same types of areas with managed bees and beekeepers.

This condition – more feral colonies and fewer beekeepers – may be balanced by the fact that there will probably be fewer healthy feral colonies because of mites and diseases.

However, the AHB has already shown some resistance to these problems, and some strains of European bees will undoubtedly develop resistance and make a population comeback, in time.

Whenever you see one of those lovely orange and white barrels, suspect another 20 acres or so gone to a roadway.

Continued on Next Page

THE LAND ... Cont. From Pg. 35

Land use in America is changing. Cities are eating real estate at an incredible rate that shows no sign of slowing down. But beekeeping will survive in urban and suburban areas, probably very much like it does now, only there will be much, much more of it, because country-side bee sites will be harder to find, more expensive to operate and more difficult to get to.

CHANGES IN SPECIAL USE LAND

Special use areas	1959	1978	1987
		Million acres	
Nonagricultural:			
Intensive uses	25.0	26.7	25.7
Highways & roads	20.2	21.5	21.2
Railroads	3.4	3.0	2.3
Airports	1.4	2.2	2.2
Extensive uses	87.7	122.8	245.8
National & State parks	29.7	38.5	96.0
Wilderness & primitive areas	14.5	18.1	32.5
Federal & State wildlife areas	17.2	41.3	96.4
National defense & industrial areas	26.3	24.9	20.9
Agricultural:			
Farmsteads, farm roads, and lanes	10.1	8.4	7.1
TOTAL	**122.8**	**157.9**	**278.6**

WHAT EACH OF US EATS, IN LBS. 1981-89

Commodity	1981	1985	1989
Meats	125.1	124.9	115.9
Fish	12.8	14.4	15.8
Poultry	43.9	49.4	60.8
Eggs	33.6	32.4	29.9
Dairy Products	540.9	592.1	565.0
Fats & Oils	57.7	64.0	60.7
Selected Fresh Fruits	83.8	86.1	93.9
Citrus	24.2	21.9	23.8
Apples	16.5	16.8	20.9
Selected Fresh Veg.	79.4	88.5	100.0
Veg. for Freezing	14.7	17.1	16.9
Veg. for Canning	85.5	87.8	91.9
Wheat Flour	115.8	124.3	122.7
Rice	11.0	9.1	15.7
Pasta	10.3	11.3	12.8
Caloric sweeteners	124.1	130.0	134.1
Sugar (refined)	79.4	62.7	62.3
Corn Sweeteners (dry)	43.5	65.9	70.4
Honey & Edible Syrups	1.2	1.4	1.4
Coffee	10.0	10.5	10.3
Soft Drinks (gallons)	27.1	30.4	31.8

METROS WHOSE POPULATION TOPPED ONE MILLION IN THE 80'S

		1990 Popula
1	Los Angeles-Long Beach, CA	8,863,164
2	New York, NY	8,546,846
3	Chicago, IL	6,069,974
4	Philadelphis, PA-NJ	4,856,881
5	Detroit, MI	4,382,299
6	Washington, DC-MD-VA	3,923,574
7	Boston-Lawrence-Salem-Lowell-Brockton, MA	3,783,817
8	Houston, TX	3,301,937
9	Atlanta, GA	2,833,511
10	Nassau-Suffolk, NY	2,609,212
11	Riverside-SanBernardino, CA	2,588,793
12	Dallas, TX	2,553,362
13	San Diego, CA	2,498,016
14	Minneapolis-St. Paul, MN-WI	2,464,124
15	St. Louis, MO-IL	2,444,099
16	Anaheim-Santa Ana, CA	2,410,556
17	Baltimore, MD	2,382,172
18	Phoenix, AZ	2,122,101
19	Oakland, CA	2,082,914
20	Tampa-St. Petersburg-Clearwater, FL	2,067,959
21	Pittsburgh, PA	2,056,705
22	Seattle, WA	1,972,9
23	Miami-Hialeah, FL	1,937
24	Cleveland, OH	1,831,
25	Newark, NJ	1,824,321
26	Denver, CO	1,622,980
27	San Francisco, CA	1,603,678
28	Kansas City, MO-KS	1,566,280
29	San Jose, CA	1,497,577
30	Sacramento, CA	1,481,102
31	Cincinnati, OH-KY-IN	1,452,645
32	Milwaukee, WI	1,432,149
33	Norfolk-Virginia Beach-Newport News, VA	1,396,107
34	Columbus, OH	1,377,419
35	Fort Worth-Arlington, TX	1,332,053
36	San Antonio, TX	1,302,099
37	Bergen-Passaic, NJ	1,278,440
38	Ft. Lauderdale-Hollywood-Pompano Beach, FL	1,255,488
39	Indianapolis, IN	1,249,822
40	Portland, OR	1,239,842
41	New Orleans, LA	1,238,816
42	Charlotte-Gastonia-Rock Hill, NC-SC	1,162,093
43	Hartford-New Britain-Middletown-Bristol, CT	1,123,678
44	Orlando, FL	1,072
45	Salt Lake City-Ogden, UT	1,072
46	Middlesex-Somerset-Hunterdon, NJ	1,019,

Source: American Demographics tabulations of 1990 census

Continued on Page 38

TRENDS – MORE PEOPLE. . .

The population of the United States counted in the 1990 census is 249,632,692, an increase of 10.21% since the 1980 census of 226,504,825 and an increase of 64.4% since the first post-World War II census in 1950.

Nevada recorded the greatest percentage growth in the 40-year period (650.8%) as well as in the 1980-1990 period (50.4%), and California led the nation in numerical growth, with 6,091,459 persons in the 1980-1990 period and 19,173,798 persons in the 1950-1990 period.

Final 1990 census figures show that the nation has 39 metropolitan areas of at least one million population, including four – Charlotte, Salt Lake City, Orlando and Rochester – that have reached that size since 1980.

The 39 areas have 124.8 million people, or **50.2% of the national total.** The 1950 census showed only 14 metropolitan areas of this size, and their combined population of about 45 million amounted to less than 30% of the national total.

The census shows that the U.S. population living in ***all*** metropolitan areas totals 192,725,741, an increase of just over 20 million (11.6%) since 1980. The same areas grew 10.6% in the 1970s. **The population living outside metropolitan areas totals 55,984,132, increasing by only 2.1 million (3.9%).** The metropolitan population now constitutes **77.5% of the U.S. total** compared with 76.2% in 1980. Ninety percent of the nation's growth in the 1980's took place in metropolitan areas.

Among the top 10 metropolitan *areas*, New York and Los Angeles are followed by Chicago (8.1 million), San Francisco-Oakland-San Jose (6.3 million), Philadelphia (5.9 million), Detroit (4.7 million), Boston (4.2 million), Washington (3.9 million), Dallas-Ft. Worth (3.9 million), and Houston (3.7 million). Of these areas, San Francisco passed Philadelphia in size, and Dallas-Fort Worth passed Houston.

Florida dominated the list of the most rapidly growing metropolitan areas of any population size, with nine of the 11 top areas. Naples increased by 77%, followed by Fort Pierce (66), Fort Myers, Ocala, Orlando, West Palm Beach, Melbourne-Titusville, Daytona Beach, and Bradenton. Las Vegas grew by 60%, and Austin 46%. □

. . . BUT FEWER BEES

We contacted some of the largest and some of the fastest growing cities to see if beekeeping was allowed within city limits.

Dealing with large and growing bureaucracies can be an experience not soon forgotten. Once the correct office is located (not as easy as you might think), the people in charge of answering the question we put to each (I'm moving to your city soon, and I have a couple of colonies I'd like to bring with me. Can I put them in my backyard?), often had no idea people even did that, let alone whether permission was required.

Although most were able to find out, the exceptions are worth noting. One agent called us back several times, each with more information on where, how, etc. Another couldn't find an ordinance, so called a friend who had a friend who knew a beekeeper. The beekeeper knew.

And then there was the secretary who when asked, laughed so hard she couldn't continue and requested we call later. We didn't.

So here, in no particular order of size or location are the results of our survey.

Los Angeles – No
New York – No
Chicago – No
Philadelphia – Yes
Detroit – No
Washington, D.C. – No
Boston – Yes
Houston – Yes
St. Louis, MO – Yes
Anaheim – Yes
Baltimore – Yes
Pittsburgh – Yes
Miami – Yes
Newark – No
Denver – No
San Francisco – Yes
Kansas City – Yes
Cincinnati – Yes
[illegible] Orleans – No
[illegible]bus – Yes
[illegible]ukee – No
[illegible]ord – Yes
Chattanooga – Yes
Scranton – Yes
Springfield, IL – Yes
Naples – No
Riverside – Yes
Fort Pierce, FL – No
Fort Meyers, FL – Yes
Las Vegas – No
Orlando – No
Austin – Yes
Daytona Beach – No
Phoenix – No
Yuma – Yes
Manchester, NH – Yes
Stockton – No
Fort Worth – No
Bakersfield – No
Sacramento – Yes
Laredo – No
San Diego – Yes
Atlanta – Yes
Reno – No
Tampa – No
Indianapolis – Yes
Roanoke – Yes
Wichita – Yes
Louisville – Yes
Erie – Yes

You can keep bees in 29 of these large and growing municipalities, but you can't in 21 of them. Where there were restrictions or limits or other rules and regulations affecting where bees could be kept on the property, or whether selling was allowed, or any of hundreds of other things beekeepers need to atend to – we counted that city as a yes, even if difficult.

This report specially prepared by Stephanie Grieve & Dawn Brotherton

THERE'S FEWER BEES TO BE FOUND OUT THERE, AND EVERY YEAR IT'S HARDER TO FIND A PLACE TO GO

Year	Colonies (x 1,000)
1945	5,460
1950	5,612
1955	5,252
1960	5,005
1965	4,718
1970	4,285
1975	4,206
1980	4,141
1985	4,325
1988	3,186
1990	3,188

URBAN AREAS & SPECIAL USE LAND

(1,000 acres)

State	URBAN GROWTH OVER 27 YEARS 1960	1970	1980	1987	1987 Total Land Use in Spec. Areas	Grand Total
Maine	556	471	581	612	429	1,041
New Hampshire	310	323	359	412	263	675
Vermont	51	41	78	93	422	515
Massachusetts	909	1,027	1,286	1,125	557	1,682
Rhode Island	123	172	182	190	59	249
Connecticut	574	578	745	770	311	1,081
New York	1,353	1,570	2,058	2,241	3,898	6,139
New Jersey	1,129	1,212	1,392	1,411	712	2,123
Pennsylvania	1,186	1,450	1,770	1,944	2,409	4,353
Delaware	53	79	111	134	113	1,086
Maryland	290	483	836	973	654	1,627
District of Columbia	39	39	40	40		
Michigan	1,017	1,286	1,540	1,632	2,488	4,120
Wisconsin	616	766	902	983	2,150	3,133
Minnesota	707	905	1,299	1,466	7,565	2,222
Ohio	1,415	1,816	2,093	2,286	1,184	3,470
Indiana	520	829	1,012	1,191	966	2,157
Illinois	992	1,400	1,730	1,905	1,881	3,786
Iowa	416	573	666	746	1,564	2,310
Missouri	518	798	1,020	1,237	1,743	2,980
North Dakota	39	62	95	112	1,601	1,713
South Dakota	62	81	106	126	1,521	1,647
Nebraska	121	178	232	269	1,514	1,78
Kansas	241	376	505	636	1,703	2,339
Virginia	486	768	1,183	1,404	1,449	2,853
West Virginia	138	150	200	236	683	919
North Carolina	488	688	1,164	1,477	2,118	3,595
Kentucky	247	404	570	708	1,006	1,714
Tennessee	492	840	1,278	1,650	2,154	3,804
South Carolina	267	408	757	1,005	1,124	2,129
Georgia	612	920	1,454	1,891	1,625	3,516
Florida	881	1,573	2,617	3,643	4,505	8,148
Alabama	703	1,052	1,483	1,834	4,376	3,210
Mississippi	228	366	580	749	880	1,629
Arkansas	222	384	605	784	1,368	2,152
Louisiana	468	523	796	883	1,318	2,201
Oklahoma	480	814	1,136	1,471	1,471	2,801
Texas	2,113	2,870	4,017	5,161	4,681	9,842
Montana	54	76	118	142	6,145	6,287
Idaho	74	105	154	187	187	5,465
Wyoming	36	49	91	111	6,293	6,404
Colorado	203	343	597	792	4,795	5,587
New Mexico	184	255	361	471	3,647	4,118
Arizona	320	463	892	1,194	9,849	11,043
Utah	190	254	420	526	5,451	5,977
Nevada	72	255	238	300	7,517	7,817
Washington	422	607	845	1,012	6,637	7,649
Oregon	239	333	458	519	3,568	519
California	2,352	3,328	4,200	5,224	14,769	19,993
Total	**25,208**	**34,343**	**46,852**	**55,908**	**135,273**	**191,18**

Commercial beekeeping, and most of the country's honey production, will be located in much the same locations as now, and unless major climatic or environmental changes occur, will probably change little. However, a several-year drought in the Dakota's or Florida could change all tha it has already happened in California.

The Africanized honey bee will cause local zoning ordinances to occur where none were before, and these too, will

URBAN AREAS AREN'T CONFINED TO CITY LIMITS. ENTIRE COUNTIES ARE OFTEN URBANIZED WITH ONLY LIMITED ROOM FOR AGRICULTURAL PURPOSES.

Top-ranked counties, population growth 1970-90, and density in 1990, within metropolitan areas including consolidated metros of 500,000 or more.

rank/county (metro area)	pop. change 1970-90	persons per sq. mile 1990
1 Fayette, GA (Atlanta)	449.2%	316
2 Collin, TX (Dallas-Ft. Worth)	294.6	311
3 Gwinnett, GA (Atlanta)	387.8	815
4 Hernando, FL (Tampa-St. Petersburg-Clearwater)	494.7	211
5 Denton, TX (Dallas-Ft. Worth)	261.6	308
6 Cherokee, GA (Atlanta)	190.4	213
7 James City, VA (Norfolk-Virginia Beach-Newport News)	95.3	244
8 Osceola, FL (Orlando)	326.4	81
9 Howard, MD (Baltimore)	202.6	743
10 Loudoun, VA (Washington)	131.8	166
11 Stafford, VA (Washington)	149.1	227
12 Pasco, FL (Tampa-St. Petersburg-Clearwater)	270.1	377
13 Forsyth, GA (Atlanta)	160.4	195
[illegible] Paulding, GA (Atlanta)	137.5	133
[illegible] Douglas, CO (Denver-Boulder)	618.3	72
[illegible] Henry, GA (Atlanta)	147.6	182
[illegible] Seminole, FL (Orlando)	243.6	933
18 Chesterfield, VA (Richmond-Petersburg)	172.3	492
19 Prince William, VA (Washington)	94.1	637
20 Palm Beach, FL (W.Palm Beach-Boca Raton-Delray Beach)	147.6	424
21 Calvert, MD (Washington)	148.4	239
22 Rockdale, GA (Atlanta)	198.0	414
23 St. Johns, FL (Jacksonville)	172.8	138
24 Clay, FL (Jacksonville)	230.6	176
25 St. Charles, MO (St. Louis)	129.0	379

Both plowed land and honey bee colonies are getting closer to the edge of urbanization. And the city's appetite for land shows no sign of letting up. Learning to keep bees on the edge seems an appropriate skill for survival, in the 1990's and beyond.

affect where and how bees are kept.

But there will be bees. And enlightened municipalities, whether a million or a hundred strong, will see to it that that does not change – especially where and when guided by intelligent and well organized beekeeping organizations. □

SOURCES

The information for this article was obtained from a wide variety of sources, most of which are listed here.

- Several issues of *Choices* magazine, published by the American Agricultural Economics Association (1990 & 1991)
- Several issues of *Rural Conditions and Trends*, published by the Economic Research Service, USDA (1990 & 1991)
- *Fruit and Tree Nuts, Situation and Outlook Report Yearbook*, published by the Economic Research Service, USDA, 1991
- *Farming and Farm Programs, Impact on Rural Economy and on Farms*, published by the U.S. GAO, 1990
- *1987 Census of Agriculture, Vol. 1, Part 51*, published by U.S. Dept. of Commerce, Bureau of the Census
- Several issues of *World Watch* magazine, published by the Worldwatch Institute (1991)
- Several issues of *Agricultural Outlook*, published by the Economic Research Service, USDA (1991)
- *Metropolitan Growth and Agriculture, Farming in the City's Shadow*, published by the Economic Research Service, USDA, 1987
- Several issues of *American Demographics*, published by Dow Jones & Co. (1990 & 1991)
- *Major Uses of Land In The U.S.*, published by the Economic Research Service, USDA, 1987
- *Agricultural Resources, Cropland, Water And Conservation*, published by Economic Research Service, USDA, 1990
- *Farm Numbers, Land In Farms*, published by the National Agricultural Statistics Service, USDA, 1991
- *Agricultural Statistics, 1990*, published by the National Agricultural Statistics Service, USDA
- Several issues of *Business Week*, published by McGraw-Hill, Inc. (1991)

Because we have drawn from such a diverse group of sources, natural differences in up-to-date dates occur. Some are current to 1987, some to 1989, others to 1990. Whenever possible we compare apples to apples (so to speak) so no gaps occur in the data. Which means, of course, the most current information in one area may be 1987, while in another 1990. We've used the most current information available to provide the best possible picture of U.S. land use. □

MEET THE STAFF

Of The National Honey Board

These are The People who do the day-to-day activities, who carry out the dictates of the Board, and who make sure the work gets done.

We'd like to take you on an informal tour of the National Honey Board office to meet the staff. We're glad to have the opportunity to make introductions.

Linda Hampel is the first person you'll meet when you come into the Honey Board office. Linda answers the phone, directs callers to the appropriate person, receives and distributes all of our mail and helps visitors find the [illegible]nd facilities.

[illegible] also takes care of the secre[illegible]uties for the export director. The entire staff takes advantage of Linda's ability to get things done by effectively filling her "spare time" with various projects. Linda has the diplomacy to put up with an office full of perfectionists who tell her everything is urgent and top priority.

The corner office belongs to Mary Humann, marketing director. Mary started working for the Honey Board at its inception and is the force behind the Honey Board's advertising and promotion programs. She directs the creative people, manages public relations, acts as the Board's key spokesperson to the media and inspires all of us.

Mary is the consummate professional. She manages to balance her duties at the Honey Board with motherhood. You may remember seeing Mary at a number of state meetings toward the end of last year. No, she wasn't fat – just pregnant. Daughter Samantha is now eight months old.

If you call the National Honey Board be[illegible] 8:00 a.m. or after 5:00 p.m. MST, [illegible] hear Gretchen Frederick's [illegible]oice on the answering machine greeting. Gretchen is Mary's assistant. In addition, she coordinates all of the orders for videos, recipe brochures, posters, bears and so forth.

Gretchen also works with the food manufacturers who qualify for the Honey Bear logo, assists with all the media materials for National Honey Month promotions and administers the mailings of monthly news releases. Gretchen takes care of all this responsibility with smooth efficiency and cool composure.

Take a short walk down the hall from Gretchen's office and you will find the coffee, the bathroom and Industry Relations. Nothing and no one gets by

Diego Garcia

Sherry Jennings – we all have to go sometime! The Honey Board's newsletter, beekeeping industry news releases, Honey Month articles and annual videotapes are generated in this office.

We think Sherry writes this stuff. She spends a lot of time staring at the computer in her office. Occasionally, we hear the keyboard clicking. Sherry also travels to speak at numerous beekeeping meetings each year. She's an excellent spokesperson who knows what's happening at the Honey Board.

The executive director's office is next. As usual, Bob has a phone glued in his ear. We'll come back to Bob.

Let's meet Diego Garcia, export director. Diego has one of the most difficult jobs in the office. He works directly with the government most of the time. (Of course, we don't mean the government is difficult, they just like a lot of paper.)

Diego administers the generic and branded promotions of U.S. honey in three major foreign markets – the Far East, the Middle East and Northern Europe. He makes sure the Honey Board and brand participants receive funds from the government which help U.S. honey compete overseas.

In the next office is Julia Pirnack, the compliance coordinator and our newest employee. She's the one who handles assessment documents and refunds. Many people who call Julia are confused about assessment or refund procedures. Julia provides assistance to these callers with patience and finesse.

Since the refund provision was eliminated in the referendum vote, Julia will be spending more time assisting honey handlers meet compliance regulations. Julia is a typical native of Colorado – friendly and easy going.

Near Julia is Jean McNeill. She is

Bob Smith

Contined on Next Page

THE STAFF ... Cont. From Pg. 41

our part-time data entry person. Jean enters all the assessment and refund data in the computer.

Brigitte Hennig takes care of the accounting. Brigitte prepares all the checks. She also helps us manage our

Mary Humann

budgets by providing accurate monthly reports on spending. Brigitte manages the system we use to document purchases and payments to vendors.

Brigitte is one of the other culprits who helps expand our waistlines. Her baked treats are often sweetened with honey. She's as good with honey as she is with money.

The next office belongs to Bruce Boynton. Bruce is our controller. A controller does mystical and magical things. He invests money to turn it into more money. When money disappears, he can show you where it went. Better yet, he shows how the income and expenditures balance at the end of the year. Bruce is renowned for his budgets as well as his assessment and financial reports.

Bruce makes a mean honey mustard dressing, too! The next time you see Bruce, you might ask him to share the recipe. Or, you can see it prepared on the National Honey Board's "Just Add Honey" video or check it out in the cooking column this month.

Well, Bob Smith is still busy. That's normal. He's got to run this whole show. An executive director's job requires a combination of many skills – juggling, organizing, planning and managing personnel. He is responsible for ensuring that the Board of Director's policies are implemented efficiently and effectively.

Bob asks tough questions and tells bad jokes. Overall, he makes sure the job gets done – that your assessment investment is managed prudently and wisely to increase the demand for honey.

Thank you for taking the time to meet the National Honey Board staff. □

There's one more staff member we want you to meet.

Tina Tindall is Bob Smith's Administrative Assistant (which means keeping track of Bob). She also plans and coordinates the Board Meetings – attending to the thousand details needed to make the Board, and the annual Nominations Committee meetings work.

"I'm sort of the Mother Hen around here", she once said.

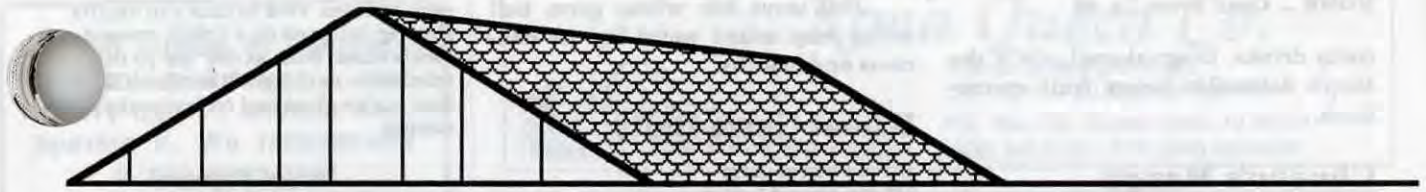
She's earned the right to take care of this bunch though. Before coming to the Honey Board four years ago, she spent six years as a conference coordinator at Washington State.

"But there's more to life than work", she says. So everyday, including weekends, this tiny little lady lifts weights (gr[illegible] weights), does aerobics and works ou[illegible] day. Including weekends.

Her husband, Lynn, is the Mana[illegible] of Lender Relations at a local college, loves to golf and doesn't mind Tina's Mother Hen habits.

She's also a walking encyclopedia on the people in the industry. Almost everybody who ever called the Honey Board had the chance to chat with Tina, and, if you ever get to stop by there'll probably be a plate of cookies ready, made with honey, and made by Tina.

The National Honey Board Staff.
Front – Jean McNeill, Gretchen Frederick, Tina Tindall, Amy Zinke (who's just recently left the board – Julia Pirnack has taken over, but isn't pictured) and Brigitte Hennig.
Back – Diego Garcia, Sherry Jennings, Bruce Boynton, Mary Humann and Bob Smith.



HOME HARMONY

ANN HARMAN
6511 Griffith Road • Laytonsville, MD 20882

FROM THE HONEY BOARD

"Tell me what you eat: I will tell you what you are." Do our menus really reveal our personalities as Brillat-Savarin so wisely wrote in 1826: Probably so. After all, each country of this world has individual and characteristic foods. Take a look at your favorite recipes and see if they do indeed divulge your personality.

You have the chance to meet the [illegible] of the National Honey Board elsewhere in this issue. We know what they [illegible]ng for honey producers during the day, but do they use honey at home? Most definitely. Here are their favorite honey recipes, as unique and varied as the individuals who staff the National Honey Board.

Linda Hampel

Linda is the mother of an adorable two year old daughter, Christy. Linda's (and Christy's!) favorite honey recipe is a banana bread.

Banana Bread

1-3/4 cups all-purpose sifted flour
2 tsp baking powder
1/4 tsp baking soda
1/2 cup shortening
2/3 cup honey
2 eggs, well beaten
1 tsp vanilla
1 cup mashed banana (ripe)

Sift together dry ingredients. Cream shortening, add honey; beat until fluffy; add eggs and beat well. Blend in dry ingredients and bananas. Pour into a 8x4x3 greased pan. Bake 1 hour and 10 [illegible]s at 350°. May add nuts to batter if

Tina Tindall

Tina shared a recipe which is a favorite of her husband, Lynn.

Honey Vanilla Ice Cream

3 eggs
1/2 cup honey
2 cups cream
2 cups milk
2 tsp vanilla

Beat eggs and milk together in a large saucepan. Add honey. Cook over low heat, stirring constantly until thickened (approximately 10 minutes). Mixture should smoothly coat the spoon. Cool. Add cream and vanilla. Refrigerate overnight. (Makes one quart.)

Mary Humann

I love all kinds of salads and since Bruce Boynton used my favorite honey mustard dressing, I'll share a honey fruit salad.

Ambrosia With Honey Cream Dressing

1/4 cup honey
2 Tbs lime juice
2 medium oranges, peeled and sliced
2 bananas, peeled and sliced
1 each red and green apples, cored and cubed
1 cup shredded coconut
Honey Lime Dressing

Combine honey and lime juice; toss with fruit. Layer fruit alternately with coconut in serving bowl. Top with Honey Lime Dressing. Makes 4 servings.

Honey Lime Dressing
Beat 1/2 cup whipping cream until fluffy. Drizzle in 2 tablespoons honey and beat until stiff. Fold in 1 teaspoon of grated lime peel. Makes 1 cup.

Gretchen Frederick

Gretchen shared the following recipe which originally called for sugar. Gretchen says that although it does not use a large amount of honey, it's delicious.

Gingered Honey Carrots and Apples

3 Tbs butter
1/4 cup slivered fresh ginger
2 cups thinly sliced carrots
2 large apples
1/3 cup water
1/4 cup whipping cream
2 tsp honey

Melt butter in a wide frying pan over medium-high heat. Add ginger, carrots, apples and water. Cover and cook, stirring occasionally, until carrots are tender when pierced (about 5 minutes). Add cream and honey; bring to a boil, stirring. Continue to boil until cream thickens and glazes carrots and apples (about 1 more minute). Makes 4 serving.

Sherry Jennings

Sherry loves to entertain. Here's one of her favorite appetizers with honey. It's actually a recipe which the Honey Board test kitchens developed.

Honey and Nut Glazed Brie

1/4 cup honey
1/4 cup coarsely chopped pecans
1 Tbs brandy
1 14-ounce (about 5" diameter) Brie cheese

In small bowl, combine honey, pecans and brandy. Place cheese on large round ovenproof platter or 9" pie plate. Bake in preheated 500°F oven for 4 to 5 minutes until cheese softens. Drizzle honey mixture over top of cheese. Bake 2 to 3 minutes longer or until topping is thoroughly heated. Do not melt cheese. Makes 16-20 servings. Serve with crackers, tart apple wedges and seedless grapes.

Diego Garcia

Diego's family owns and operates a coffee shop in Boulder, CO, which specializes in Columbian coffee and spe-

Continued on Next Page

HOME ... Cont. From Pg. 43

cialty drinks. Diego shared one of the shop's delectable honey fruit concoctions.

Chucho's Mango Smoothie

1 large ripe mango
1/2 cup plain yogurt
1 cup milk
1 cup cracked ice
3 Tbs honey

Peel mango and cut into slices. Combine and blend all ingredients in a mixer until smooth. Pour contents into a large glass. Drizzle 1 additional tablespoon of honey on top.

Julia Pirnack

Julia shared a recipe which she prepares with her two children, Aaron and Sheah, each Thanksgiving. She says her kids enjoy adding the sprinkles.

German Honey Cakes

1-1/3 cup honey
3/4 cup sugar
3 Tbs butter
2 cups sifted all-purpose flour
1 tsp double acting baking powder
1/2 tsp baking soda
1/2 cup blanched almonds, chopped
1/4 cup each chopped citron and chopped candied lemon peel
1/4 tsp ginger
1/2 tsp cardamom (or nutmeg)
2 tsp cinnamon
1/2 tsp cloves
1-1/2 to 2 cups more flour
candy sprinkles (optional)

Heat honey and sugar in a large saucepan; add and melt butter; remove from heat. Sift together and add 2 cups flour, baking powder and baking soda. Add almonds, citron, candied lemon peel, ginger, cardamom, cinnamon, cloves and additional flour as needed. Dough should be sticky. Chill overnight in a covered bowl. Remove from refrigerator and let warm to room temperature. Pat dough to 1/4" thickness into 2 oblong buttered baking pans. Bake 24 minutes in preheated 350° oven. Cut into squares. Add glaze and sprinkles (if desired).

Lemon Glaze
Blend 1-1/4 cup powdered sugar, 1/4 cup lemon juice and 1 teaspoon vanilla. Brush on cookies.

Line a storage canister with waxed paper. Put cold cookies in. Cut a 4" piece of waxed paper and place it on top of cookies along with a lemon wedge. Cover and store cookies for 2 weeks before eating.

Jean McNeil

Jean says her wheat germ ball recipe may sound weird but its delicious and healthy.

Wheat Germ Balls

1/2 cup wheat germ
1/2 cup peanut butter
1/2 cup powdered milk
1/2 cup honey

Mix together all ingredients. Roll into balls. Can be rolled in coconut. Refrigerate 1 hour.

Brigitte Hennig

Brigitte says she has hundreds of honey recipes – many from her native Europe. She uses 2 - 3 pounds of honey per month! Brigitte shared a simple honey drop cookie recipe.

Honey Nut Drops

3 cups sifted all-purpose flour
1/2 tsp salt
4 tsp baking powder
1 tsp cinnamon
1 cup butter
1 cup brown sugar
1 cup honey
1 egg
2 cups chopped nuts
1 tsp vanilla

Sift flour with salt, baking powder and cinnamon. Cream butter and brown sugar; add honey and beat light and fluffy. Add egg and beat well. Gradually add dry ingredients beating until smooth after each addition. Fold in nuts and vanilla. Drop by teaspoon on a lightly greased cookie sheet. Bake at 350° for 10 to 1[illegible] minutes or until lightly browned. R[illegible] from cookie sheet and cool on racks b[illegible] storing.

Bruce Boynton

Bruce's prized recipe has become a favorite of many people on the Honey Board staff. It is a delicious honey mustard salad dressing.

Honey Mustard Dressing

1 cup mayonnaise
3 Tbs orange juice
1 Tbs half and half
3 Tbs Dijon-style mustard
2 Tbs honey

Combine all ingredients and mix well. Makes 1-1/2 cups.
Note: Bruce prepares this with regular table mustard rather than Dijon and sometimes adds a bit more honey to taste.

Bob Smith

Bob is a natural organizer. He likes to keep things simple. Here is one of his favorite and simple uses for honey.

Baked Honey Ham Glaze

1/4 cup honey
2 tsp Dijon mustard
ground cloves

Combine above ingredients and brush on ham during last 10 minutes of baking.

GOTTA GETTA GIMMICK

FAITH ANDREWS BEDFORD

These days it isn't enough to produce lots of honey. The market is flooded with the stuff, both imported and domestic. Store shelves are full of tall bottles of golden or amber honey, rounds of comb, chubby jars of chunk honey. The challenge of beekeeping is not so much producing honey but marketing it.

I sell far more honey than I produce. With ten hives, I average a yearly production of about 400 pounds of honey, yet I sell well over twice that and have had to turn down several shops who would like to carry it. My summer harvest is sold out the week it's bottled. After that, I buy honey from fellow beekeepers, blending it with my own for the remainder of the year.

What's the secret of selling all the honey you can produce [illegible]re? Creative marketing. Al[illegible] honey can be given a unique ch[illegible]acter, an eye catching label or a memorable description.

When my apiary grew to the point where I had honey to sell, I quickly decided that I didn't want my product to be one of a dozen honeys on the shelf of a giant supermarket. Specialty stores, gourmet shops, natural food markets and gift and tourist shops were the places I felt a unique product would stand out and be noticed. Not to mention the fact that customers at such places are willing to pay a premium price. (I get $1.50 a pound, wholesale, for my honey.)

Just what makes a honey unique? In my case, we live outside Charlottesville, Virginia, home of former Presidents Thomas Jefferson and James Monroe. Four of my hives are situated at Ash Lawn, Monroe's home. Our own "historic honey" label reads, "Gathered from the Blossoms at Ash Lawn." It sells extremely well not only at the gift shops at this old home, but also in the shop at the Michie Tavern, a restored inn now serving as a restaurant located on the road to both Ash Lawn and Monticello*. Shops in our local area, as well as resorts located in the nearby Blue Ridge Mountains, clamor to stock our honey. Travelers delight in bringing [illegible] "piece of history" and local townsfolk often use our [illegible] a gift; for the label declares it to be gathered in a spot fa[illegible]ch Charlottesville is uniquely famous.

But, you say, I don't live in a town with a historic site or tourist mecca. Almost every village has an "oldest building" which could lend a historic cachet to your honey. (If that building happens to be in the center of downtown, however, you might not get permission to locate a hive there!)

How about your region? Surely there must be some special feature about your locale that you can tout. Even if it's not "Smoky Mountain Honey" or "Gathered from the Blossoms of the Maine Coast" maybe your county has a special feature that can be made to sound appealing. Did a pioneer trail pass near enough to your hives to call your product "Oregon Trail Honey"? Does your region or state have an identity? "Hoosier Honey" works great in Indiana and would sell well at State University area shops. A label reading "Gathered in the Garden State" promises sales for New Jersey beekeepers. "Great Plains Honey" evokes images of wild and sweeping prairies and covers an enormous area. "Sodbuster Honey" sounds rugged and independent and is equally far flung.

Or get closer to home. "Delta Honey", "Gathered from the Wisconsin Woods" or "Honey from the Desert Blooms" for instance, all carry a certain local identity and will appeal to customers – tourist or otherwise.

Even if you can't find an appealing local feature to stress on your label, look at yourself. Have a grandchild? How about "Granpa's Backyard Honey"? Sounds down home and affectionate. "Soldier's Pride Honey" creates the question, "Which war?" and appeals to buyers' patriotism. Perhaps something like "Mountain Momma", "Fireman's Own" or "The Kids and Me Honey" could work for you if the label sticks literally. Your job, your hobby, your locale, can all lend a special identity to your product.

Remember too, a label with just plain "Honey" on it isn't going to be as appealing as "Wildflower Honey" or "Strawberry Honey" What flowers do your bees visit most? If you know it, say it. But if your honey is a blend, as mine is, pick the most unique or special bloom in the bunch and make that your trademark. In my case "Persimmon Honey" had a more appealing ring to it than "Locust Honey"; which sounded like it would taste like bugs!

A specially designed label can be worth the investment. Local printshops are usually very good at helping you design

Continued on Next Page

GIMMICK ... Cont. From Pg. 47

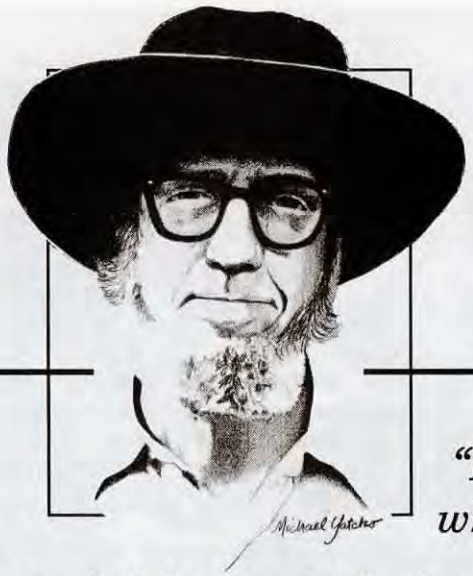
a unique label; they have books of designs and lettering. A calligrapher or artist can design something just for you. Each of the ideas mentioned above could benefit from a small sketch or photo: local blooms, a sketch of your house, a photo of Granpa and the kids, the outline of a mountain, a fireman's hat, illustrations from an antique beekeeping book. The ideas are endless and all can add immensely to the image you want your honey to project. Just be sure to keep the government happy and include your name and address and weight of the jar. Black and white labels are cheapest but color is eye catching – introduced either in the printing process or by hand.

It hasn't hurt business to have my honey win the blue ribbon at the local fair eight years out of nine; we use this in all our advertising. A local artist made "shelf cards" which are fastened above or below our honey. They are basically an enlarged version of our label but also feature the wording "...ner of the Blue Ribbon at the Alb... County Fair" and a small "first... fabricated from two pieces of blue silk ribbon and a gold stick-on star. To mention the county or state fair is to further reinforce the impression that this is a truly "local, down-home product" The card is an eye-catcher and usually causes the buyer to reach for our honey if displayed among others.

Just remember – there's alot of honey out there. To make yours stand out from the rest, you have to have a gimmick. Dwell on your product's uniqueness – be it locality, source, producer or flavor. Make your honey stand out from the pack. Place it in unique stores: by the register at the feed store, on the shelf at the local craft shop, on the table of a nearby Bed and Breakfast or famous restaurant (which then allows you to claim in advertising that your honey is "featured on the tables of the Grist Mill Inn and Chez Phillipe"). If there's someone in your area marketing gift baskets of locally made products, be sure your honey is in the...

Be creative as you "desi... product" and you too may find... mand for your honey far outstrip... supply. □

*I used to have two hives at Monticello until insurance concerns forced the director to ask me to remove them.



BEE TALK

RICHARD TAYLOR

Box 352, Interlaken, NY 14847

"Bees make choices, but on what basis, by what standards are those decisions made?"

I recently had a chance to talk with Tom Seeley, a biologist at Cornell University, whose scientific interests are focused largely on honey bees. Dr. Seeley is somewhat unusual among bee scientists in that he has no official connection with any department of entomology. Not yet forty, he has already received honors and recognition that would be the envy of some who have spent their lifetime in research and teaching. He was graduated at the very top, summa cum laude and Phi Beta Kappa, from Dartmouth before taking his doctorate at Harvard and teaching at Yale, then joined the faculty at Cornell about five years ago.

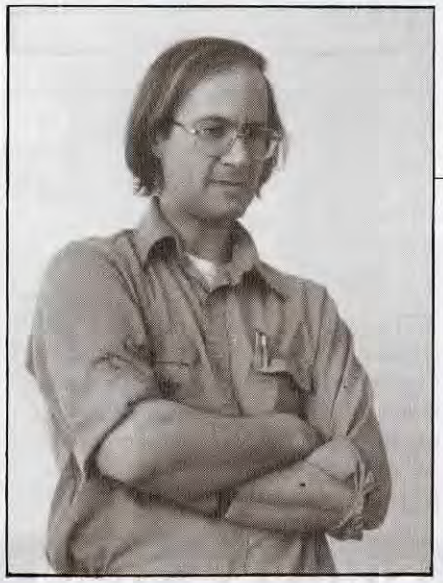
I had read one of his books several years ago, and had been particularly impressed by the explanation given there of how a colony of bees is able to exploit nectar sources with such efficiency, shifting foraging areas from day to day. The basic idea was that it was a function of how fast the hive bees "unloaded" the foraging bees as they returned from the fields. I mentioned this to him, and his immediate response was that the view he had expressed there was mistaken. In spite of its simplicity and beauty, it no longer appears to fit some of the observable facts about foraging behavior.

Dr. Seeley now believes that bees are able not only to communicate to their sister workers the locations of sometimes distant nectar and pollen sources, but to assume by built-in standards the quality of those sources – for example, the amount and sweetness of the nectar there. This is to impute abilities to bees not hitherto suspected and not yet fully understood by any means.

The same holds, even more astonishingly, with respect to a scout bee's ability to evaluate a potential nesting site. This is something which that bee has never done before. Yet she can size up such a site – for example, a tree hollow – with respect to several important factors, the most important being size and shape. She then recruits other scouts to come and confirm her assessment.

It was Dr. Seeley's doctoral research that got him into this area of investigation. It has long been known that bees make choices among various potential nesting sites before a swarm absconds, but it was not known how they evaluate and compare them. Dr. Seeley set about to find out.

He began by studying natural nesting plac[illegible] marily bee tree[illegible] ing with Roger M[illegible] found 21 bee trees in the forests near Ithaca, NY, had them all cut down and analyzed in detail in the



Tom Seeley has found out how and why ...

... this swarm will go where it eventualy goes.

laboratory. He found certain fairly com- atures with respect to shape and cavity, location of entrance, dis- from the ground, and so on. He also found the maximum and minimum sizes of cavity acceptable to the bees.

The question now arises, how does a scout bee assess a potential nesting site, especially with respect to what is perhaps its most important feature, namely, its size? How does she measure it? The answer is, mostly by walking around in it, much as someone might pace off an area of land to see how big it is.

Dr. Seeley learned this by constructing a total of 276 plywood boxes, no two quite alike, placing them around as bait hives, and then seeing precisely which features were preferred by the bees as they were taken over or rejected by stray swarms. Having thus gotten an idea of the optimum such nesting site, he then created such a box, with one side removed, and fastened it to a red-glass window through which he could, from his room other side of the glass, observe es inside. The entire inside of was divided into numbered squares so he could record the exact movements of the scouts as they explored it. All this was set up on an island off the Maine coast where there were no hollow trees to attract a swarm. He then put an unconfined swarm on the other side of the island and waited for a scout to find the new nesting site.

He found that a scout first examines the inside of the site near the entrances, and then, on successive visits, explores more deeply and thoroughly, until she has a clear and comprehensive "idea" of the box's significant properties. But it is not primarily a visual inspection, because the box is too dark to permit this. Its size, in particular, appeared to be arrived at by walking.

To test this Dr. Seeley constructed a cylindrical bait hive having a volume on the borderline between what he had found would be unacceptably small and barely large enough. This he mounted on a turntable so that he could rotate it, but constructed in such a way that the entrance hole would remain in a fixed position. The top was glass, so he could observe what a scout bee was doing. His hypothesis was that if he could make the scout bee think she had walked farther from the entrance hole than she had, by rotating the cylinder appropriately while the bee walked around it, then the bee would assess the cavity as larger than it in fact was, and recruit more scouts to come inspect it. If, on the other hand, he led the scout to think the cavity was smaller than it actually was, then the scout would lose interest, and not lure other scouts to check it out. And that, on repeated experiments, is precisely what happened.

This is but one of the lines of inquiry Dr. Seeley has pursued concerning the scout and foraging activity of bees. By other experiments he has learned that, of the bees in a colony engaged in foraging at a particular time, about 15% are true scouts or explorers, who find and evaluate the ever-changing nectar and pollen sources, the other 85% being recruits who act upon the information brought back to the hive by the scouts. He has found that the likelihood of the scouts finding a patch of buckwheat one kilometer (about 6/10 mile) from the hive is about 70%, and that this goes down to about 50% at twice that distance. He has shown that about half the foraging bees from a given colony forage within a half mile of their nest, but that they sometimes are found as far away as six miles. Some of his most exciting experiments involve the extent and the manner in which scouts communicate to the colony what they learn from day to day about the changing nectar sources of the vast areas they explore. This is an ongoing process, of bewildering complexity, and a very great deal remains to be learned concerning the manner of such transfer of information.

I encountered Dr. Seeley again several weeks later. Every new scientific discovery raises still more questions, I noted, and Dr. Seeley became almost wistful as he reflected on the capacities contained in the brain and nervous system of a honey bee – a brain no larger, he noted, than a seed of grass. I recalled with new appreciation what I had myself been taught as a student, so long ago, that a scientific account of something is one that is supported by observation, and not merely something that fits neatly into some preconceived notion of what the world must be like. And I realized, once again, that awe and wonder are the driving forces of science, as well as of so much of human endeavor. □

Beauty and the Bees

B.A. STRINGER

Commonly grown for their bright colored fruits and evergreen foliage, Firethorns are vigorous, adaptable shrubs. In early spring, clusters of creamy-white, fragrant flowers produce both nectar and pollen and are very attractive to honey bees. Firethorn flowers resemble small single roses, and indeed the plants belong in the Rose Family, or Rosaceae. They are often called by their botanical name of Pyracantha, which is derived from Greek words for 'fire' and 'thorn'

Showy orange or red fruits persist in winter as bright reminders of the summer past. The glossy green leaves remain on the plant year round, but beware of the spiney thorns which impale and leave a burning sensation.

Firethorns are easy to grow and are used in a variety of ways. Most are thorny and make good barrier plantings, hedges or screens. They are also valuable as free-standing specimen shrubs or as espaliers against walls or fences.

Originally from Southeast Europe and Asia, the Firethorns are hardy in the United States about as far north as New York City. This corresponds to the USDA plant hardiness zone 7, or to minimum temperatures around 0-10°F. The shrubs grow best in full sun with good drainage, and should not be planted where they are constantly exposed to moisture from lawn sprinklers or run-off.

Young nursery plants transplant best, but in general these shrubs resent root disturbance and need care in moving. Size and shape of the bush or espalier can be controlled by pinching out shoots of new growth. Longer woody branches may be cut back before new growth begins, to redirect the plant's energy and direction.

Flowers and fruit are produced on spurs of wood which grew the previous year. To obtain the greatest number of flowers, leave as many of these spurs as possible when pruning.

Although nursery container plants are quickest and easiest you can grow your own Firethorns from seeds, layers, or cuttings under glass. Commercial propagation is almost always by cuttings which are treated with root-promoting substances.

Firethorns are susceptible to fire-blight, a bacterial disease in which shoots suddenly wilt and look scorched. Fire-blight can be controlled by treating with a fixed copper spray, or by pruning out and burning the affected twigs and branches. Local nurseries and your University Extension Service have more information if you need it.

One of the most common species in cultivation is the Scarlet Firethorn, *Pyracantha coccinea*. An abundance of cream flowers is followed by a profusion of small scarlet berries. As a bush it may reach about 10 feet, but trained against a wall it may grow to 20' in height.

Of the many cultivars of Scarlet Firethorn, *Pyracantha coccinea* 'Lalandei', or Laland Firethorn, is the most hardy and vigorous. There are also cultivars bred for red flowers or for thornless branches, some of wh[illegible] be hardy in your area.

You can incorporate Firethorns into your landscaping and benefit bees and other insects as well as beautifying your yard. □

Firethorn

INNER ... Cont. From Pg. 4

e (very) long article on land use banization we put together this month was actually fun to do, even though it took a lot of time to develop.

The story it tells won't come as a great surprise, I imagine, but some of the actual numbers can be startling. There really aren't many farmers, anymore. And the amount of land considered urbanized is almost unbelievable.

But we intentionally left undiscovered one aspect of the story – the number and age of people *entering* the agricultural profession.

Like the farm we followed in the story, many, many farms are no longer being taken over by one or more children in the family.

But measuring the change in farms must consider both the numbers of people entering and leaving the profession. Between 1978-82, 4.2 million more people quit farming than started. But between 1982-87, 30.6 million more people quit than started. Since almost the same number quit during each time, (105 vs 106 million) the major loss of farms and farmers is due to fewer people

g the profession, not really so e number leaving the farm.

e greatest decline occurred within the group of people who were the youngest – those between 21 and 34 – fully 42% of all involved.

Does this sound familiar?

The most common lament heard whenever two or more beekeepers get together is that there aren't enough new or young people getting into the industry.

It certainly seems that way sometimes, doesn't it? If you've ever stood in front of a large group of beekeepers the majority appear to belong to the Silver set. But is that really the way it is, or are these simply the people we see the most of? Or are they the most easily seen?

One group of beekeepers that might be able to tell us something, we reasoned, were the subscribers to this magazine. We wondered how they compared to the group of farmers just mentioned, and how they compared to other groups of beekeepers in the U.S.

A significant drawback to compar- readers to the farmers mea- the USDA is their information s 10 years, a whole decade. And a volatile decade it was, too. Considering the upheaval the farm industry went through with financial hardships, land prices, subsidy cuts and foreign market problems, it's a wonder more farmers didn't abandon the land. Ours, however, is only a single picture in time – 1991. Nevertheless, I think we can develop some reasonable conclusions.

"The most common lament heard whenever two or more beekeepers get together is that there aren't enough new or young people getting into the industry."

According to the USDA data, approximately 84% of all farmers entering the profession in the 1978-82 time frame were younger than 54 years old (there were 30,000 of them). In the 1982 - 87 time frame 79% were within that age cohort (but there were only 20,400 starting out then). There were fewer young farmers (if you consider this young) entering the field, and fewer farmers altogether entering the profession, when you compare these two time periods. By the way, in 1986 only 7.5% of all farmers had been farming for five years or less.

Meanwhile, during 1990 both our magazine and the National Honey Board (NHB) conducted independant surveys of U.S. beekeepers, and although we weren't measuring many of the same things, there were enough similar items that some comparisons can be made.

Forty six percent of our readers are less than 49 years old, and 68% are less than 65. The NHB survey found that approximately 60% of their respondents were under 54. This isn't an apples to apples comparison, for sure, but a rough extrapolation shows about 50% of the NHB's respondents are 50 or less – close enough to ours to compare, we feel. But neither compare favorably to farmers. Most of them (79% & 84%) were this age or younger when starting out.

"We took data from surveys conducted by both this magazine and the National Honey Board to derive this story"

But neither of these surveys measured new, or entering beekeepers, making them comparable to the USDA study. But a backdoor approach could be made if you look at how long our readers have been keeping bees. And, as a reinforcing aside, perhaps how many bees these groups kept should be looked at, too. Fortunately we have that information.

Exactly 28% or our readers have been keeping bees for five years or less, 23% between five and 10 years, and 49% for 10 years or more. We certainly don't have as many people starting up each year, and of those that start roughly 50% are under 50, compared to around 80% for farmers. However, fully 23% of our group seem to have been at it for five years or less, while less than 8% of the farmers fall into that group.

Now most of those 'youngsters' aren't big beekeepers, you know. Of those keeping bees five years of less, 43% have 10 or fewer colonies, 22% have 10 - 50 colonies, and fully 35% have 50 - 100. Only a small percentage have more than 100. Unless you buy a big operation, or inherit a business it usually takes awhile to build up in this industry. Of course this isn't possible when entering the farming profession. You don't start with two acres, then four, then 20 then 450 (well, hardly ever, anyway).

When you look at absolute ages though, it's plain to see few people younger than about 30 start keeping bees, seriously. We've discussed this before, though. Financial restraints and resources, available time, dedication and maturity and other factors all play a role in when you can easily start keeping bees, and will keep keeping bees.

A conclusion, if you consider it thus, is that there really are quite a few 'newcomers' out there, but for the most part they're not 10, or 19 or even 25. They're more like 35, or 45 or even 55. And if your group is looking for members, that's where to start.

We will more than likely be doing this sort of survey again in the next year or so. This will begin to give us the type of data the USDA has now (and has had for years and years). My only hope is that there will still be enough beekeepers out there to count. It's not going in the right direction now.

Anyway, Happy New Year.

Kim Flottum

GLEANINGS GLOBE

JANUARY, 1992 ALL THE NEWS THAT FITS

Outstanding Service To Beekeeping

DUTCH GOLD AWARD TO WILSON

At the annual American Honey Producers Association meeting, to be held in Nashville, Tennessee, the **Dutch Gold Honey Bear Award** will be presented to Dr. William T Wilson by Bill Gamber. The Dutch Gold Honey Bear is awarded each year to an individual who has made significant contributions to the beekeep- stry. The award is in honor and Ralph Gamber, the s of Dutch Gold Honey, Inc.

Dr. William T. Wilson

The award is a bronze honey bear on a walnut base – a replica of the original model created by Woodrow Miller and W. Ralph Gamber in 1956. A $1,000.00 research grant in honor of Dr. Wilson will also be presented to further bee research.

Dr. Wilson completed his Mas- e at the Colorado State y with a thesis on *Nec- Pollen Plants of Colorado*. His PhD dissertation focused on *American Foulbrood Studies* and was completed at The Ohio State University.

Wilson's contributions to the beekeeping industry range from determining the hazards of insecticides to honey bees, to disease control and Africanized Honey Bee migration. Dr. Wilson is well known as a meticulous researcher with a practical outlook and the needs of the beekeeper close to his heart.

Many of Dr. Wilson research projects have had immediate benefits to the beekeeping industry. One of his pioneering works was the antibiotic extender patty for the prevention of foulbrood. This work has saved beekeepers from spending unnecessary resources on American Foulbrood infested hives.

Wilson has held the position as the former Research Leader at the Laramie USDA/ARS Honey Bee Research Laboratory and at the Weslaco Honey Bee Laboratory.

Currently Dr. Wilson is a research entomologist at the USDA Weslaco Honey Bee Laboratory investigating methods of mite control and monitoring the movement of the AHB into southern Texas.

One aspect of his mite research is to develop practical methods of menthol application to control tracheal mites in bee colonies.

The beekeeping industry is fortunate to have the talents of Bill Wilson working for our benefit.

MADIGAN NAMES ED MELLAND NEW APHIS ADMINISTRATOR

Secretary of Agriculture Edward Madigan has named Robert B. Melland as administrator of USDA's Animal & Plant Health inspection Service, the agency charged with protecting U.S. agriculture from foreign animal diseases and plant pests. The agency also administers laws governing humane treatment of certain animals, regulates veterinary biologics and carries out an animal damage control program. Melland has been acting administrator since Sept. 8 and was previously associate administrator. He has been with USDA since 1987. A native of North Dakota, he attended Jamestown College in Jamestown, ND and Concordia College in Moorehead, MN.

OHIO'S COBEY WINS LEADERSHIP

Susan Cobey has been selected as one of 30 to participate in Class IV of the Ohio Leadership, Education and Development Program. Cobey is currently the staff Apiarist for the Rothenbuhler Honey Bee Lab at Ohio State University in Columbus, Ohio.

The goal of the LEAD program is to encourage personal growth and to develop more effective leaders and spokespersons for agriculture. Participants attend a series of seminars on topics designed to broaden their knowledge, awareness and understanding of complex issues facing agriculture. Training and instruction is offered in leadership, communication, political processes, agriculture and economic trends, international trade, international relations and the development and welfare of local communities.

The two year program includes state, national and international study tours.

Participants of LEAD are men and women who represent all areas of agriculture who have demonstrated leadership potential. The areas represented include grain and livestock farmers, vegetable and fruit producers, farm credit and agribusiness professionals, and of course, beekeepers. Graduates of LEAD are among the top leaders in agriculture at the local, state, and national level.

Send Your News To the *Globe*

Not One In Beekeeping

FFA HAS NEW OFFICERS

Lee Thurber, 20, of Roca, Nebraska, is the national FFA president for 1991-92. He was elected with five other national officers on Nov. 16 at the 64th National FFA Convention. Thurber, the son of Thomas and Beverly Thurber, is a member of the Norris FFA Chapter. His local advisor is Doug Malone.

In Nebraska, Thurber served as state FFA president in 1991. He was the state winner in both the extemporaneous and prepared public speaking contests, and was a national FFA scholarship recipient.

Thurber's Supervised Agricultural Experience program consists of a feeder-to-finish swine operation, market cattle and market lambs.

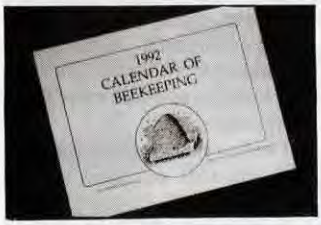
In order to serve the organization, Thurber will take a year's leave of absence from the University of Nebraska-Lincoln, where he is a sophomore pursuing a degree in agribusiness. He plans to pursue a master's degree after graduation.

During his year of service, Thurber will travel more than 200,000 miles making hundreds of appearances on behalf of the FFA. The national officers represent members to officials in government, education, business and agriculture. As they travel during the year, they meet with members on the chapter, state and national levels.

FFA is a national organization of 382,748 members in 7,744 local chapters preparing for careers in science, business and technology of agriculture, including beekeeping. Local, state and national activities and award programs provide opportunities for students to apply knowledge and skills acquired through agricultural education. FFA members strive to develop agricultural leadership, cooperation and citizenship.

North Carolina Does It Again

1992 CALENDAR READY



The NC State Beekeepers Association is continuing its tradition of publishing an annual beekeeping calendar and the 1992 edition is available to interested beekeepers.

Each month contains information on honey plant blooming dates and suggested management practices. This information is especially applicable to the middle Atlantic states but it is of use to all beekeepers. In addition, there are in-depth articles on several beekeeping topics such as the life of A.I. Root, the development of honey jars in the U.S., and classic beekeeping patents. All of this is complemented by very attractive and accurate drawings of selected honey plants.

The price for each calendar is $5.00. However, by paying $10.00 dues to the NCSBA for 1992 you will receive both a 1992 calendar and a 1993 calendar (when produced) and all other benefits of NCSBA membership.

Send checks (note number of calendars and/or dues) and mail to: NC State Beekeepers Association, 1403 Varsity Drive, Raleigh, NC 27606.

How Much Did You Know?

QUICK NUTRITION QU...

Find Out What's *Really* Right!

These statements were used in a survey asking people how much they knew about nutrition.

Answer true or false:

1. Sugar causes hyperactivity in children.
2. A vitamin or mineral supplement is necessary to good health.
3. Too much salt will cause high blood pressure.
4. Saturated fat and cholesterol are the same thing.
5. Consuming a variety of foods will provide all the nutrients I need.
6. Vegetable oils are low in cholesterol and saturated fat.
7. All cereals are good sources of dietary fiber.

Answers:

1. **False.** Research has failed to find a definite link between sugar consumption and hyperactive behavior in children.
2. **False.** People don't need supplements as long as they maintain a well-balanced diet. However, many doctors recommend supplements for pregnant women and nursing mothers.
3. **False.** High blood pressure may be aggravated by a high-salt diet, but research does not indicate that salt **causes** high blood pressure. There may be a very few salt-sensitive individuals that are an exception.
4. **False.** Cholesterol is found in animal products, while saturated fat can be found in either animal or vegetable products. A diet high in saturated fat is closely linked with high blood cholesterol in humans; the amount of cholesterol in the diet is important, but not as important as saturated fat.
5. **True.** This is the basis for the age-old advice, "Eat a well-balanced diet."
6. **False.** Vegetable oils don't contain cholesterol because they aren't an animal product. However, they do contain varying levels of saturated fat, which is linked to blood cholesterol.
7. **False.** Some cereals are good sources of fiber, but many are not. Check the label. The National Cancer Institute recommends 20 to 35 grams of fiber per day.

EUROPEAN FOULBROOD FOUND IN NEW ZEALAND

BURNING COLONIES ONLY CURE, SAYS OFFICIAL

European foulbrood disease has been detected for the first ... in New Zealand and the ... has resulted in drastic ... moves from the Ministry ... culture and Fisheries.

Several hives in the Nelson region at the southern end of South Island were found to be infected.

The ministry ordered the immediate destruction of the hives by burning, rather than have them treated with chemicals.

New Zealand's honey trade is based on selling pure, chemical-free honey. If the disease had been improperly treated it may have left a residue in the honey and pose a threat to the NZ$6 million (US$3.3 million) a year honey export industry.

SEND YOUR MEETING NOTICE TO THE CALENDAR AT LEAST ... MONTHS ADVANCE!

CA Beekeepers & Others Provide Assistance

OCK PROGRAM GETS OFF THE GROUND

A cooperative effort between the research community and the beekeeping industry is being established to maintain and distribute selected, industry proven honey bee stock. A stock maintenance program is being realized through the cooperative efforts of the California Bee Breeders Association, Inc. (CBBA) and The Ohio State University (OSU). This program is designed to provide field selected, quality Carniolan stock to benefit the entire beekeeping industry. The CBBA has demonstrated foresight and industry leadership in addressing this need.

The goal of the Cooperative Stock Maintenance Program is to establish and maintain a closed population breeding program. The program enables selection from a large number of colonies with a diverse gene pool and al- the continuous selection ety of traits. The New arniolan (NWC) Closed Population maintained at OSU is formerly of Vaca Valley Apiaries in Vacaville, California. This stock has been selected for traditional Carniolan characteristics and high productivity for the past ten years. Many CBBA members are currently using the NWC stock and recognize the need to continue this program at the industry level.

The combined efforts of CBBA and OSU will focus on the selection and maintenance of economically important characteristics. The CBBA Core Group will annually evaluate and choose breeder queens based upon colony performance in the field. This annual selection will increase the consistency and frequency of desirable traits in the population over time and enable the continuous selection of stock from a large gene pool. A major emphasis will be placed high productivity and enhancing resistance and/or tolerance to tracheal mites. No miti- tments have ever been the NWC closed popu- Ohio or at Vaca Valley Apiaries in California. This population is known to have tracheal mite infestions for at least two years. The highly susceptible colonies have eliminated themselves.

OSU has provided New World Carniolan breeder queens to establish the initial closed population in northern California. A Core Group of CBBA members will be responsible for maintaining, selecting and distributing production queens and breeder queens from this stock to the industry. On an annual basis OSU will provide additional stock selected for specific traits in Ohio and the instrumental insemination of stock selected in California.

The CBBA Core Group will maintain several sub-populations of the closed population for field evaluation and selection. This will provide the industry with a source of proven, high quality stock of known genetic origin.

New World Carniolan naturally mated production queens will be available this spring. Look for more information in this and other trade journals or contact the CBBA, P.O. Box 95 Red Bluff, CA 96080. NWC instrumentally inseminated breeder queens will be available in the spring of 1993.

Good For Beekeepers, Too

SOIL CONSERVATION SERVICE GETS BUDGET BOOST

The final 1992 appropriations package for agriculture, rural development and related agencies includes an increase of almost 10 percent in the overall budget for the USDA SCS.

"These days, it's a major accomplishment just to avert spending cuts and maintain the previous year's appropriation levels," said NACD Executive Vice President Ernest C. Shea. "The fact that SCS actually saw some increases is a significant achievement," he added.

SCS received $477.8 million for conservation technical assistance, up from $426.3 million in fiscal 1991. SCS's conservation operations subtotal went from a 1991 level of $509.6 million to a 1992 level of $564.1 million.

Most of the new $50 million appropriated for conservation technical assistance will be used to fund Pay Act increase and support the operation of SCS field offices. The Office of Management and Budget has earmarked a portion of the funds to complete the process of field office automation.

The agriculture appropriations bill also provides $46.4 million for the Wetlands Reserve Program authorized under the 1990 Farm Bill. The funds will be used to enroll 50,000 acres in five pilot states.

Congress also authorized $194.4 million for the Agricultural Conservation Program, with $6.75 million of that amount earmarked for the Water Quality Incentives Program. The Conservation Reserve Program was funded at $1.6 billion.

"Congress is becoming more aware of the importance of providing adequate funding for the conservation activities of SCS and other federal agencies," Shea said, noting that NACD has received positive feedback from members of the appropriations subscommittees.

"They're considering our recommendations and will continue working with us to secure the funds needed to protect our nation's soil and water resources," he said. "We're making progress, but we still have a long way to go," he added.

Special Honey Grows In US, Too

NEW ZEALAND HAS ULCER TREATMENT

Clinical trials are go begin this year on the use of honey produced from New Zealand's native manuka bush to treat ulcers.

The move comes after Peter Moland, senior lecturer in biochemistry at Waikato University in Hamilton, carried out research that found anti-bacterial properties in the manuka honey.

He said the honey eliminated the bacteria *helicobacter pylori* – the main contributing factor to stomach ulcers.

Honey has already been used for thousands of years to treat such medical problems as bed sores, blisters, burns and major wounds.

"Honey is the perfect wound dressing," Moland said. "It not only destroys any bacteria on a wound, but provides an effective barrier to any reinfection. The honey then feeds the tissues around the wound and speeds up the healing process. It also assists wounds to knit together."

It is actually not surprising that honey from the manuka tree should show such medicinal possibilities – the tree itself has always had that reputation.

The Maoris of New Zealand knew of its medicinal properties before the Europeans reached New Zealand. Captain James Cook boiled its leaves in 1769 to make a tea to help fight scurvy among his crew – giving rise to manuka's local name of tea tree. Early European settlers also used it as a medicinal herb.

The manuka tree or bush, found all over New Zealand, has the scientific name *Leptospermum scoparium* and belongs to the family *Myrtaceae*.

It has pink to red flowers and there are a number of varieties – from dwarf plants a few inches high to 25' tall trees. The leaves contain aromatic oils that give off a distinctive odor when crushed.

It has a hard and durable wood, making it popular for fence posts and its slow-burning quality has the wood in demand for barbecues.

Varieties are also found in Australia and botanists have cultivated the manuka into new types that now are also grown in North America.

National Honey Board
Members and Alternates
(Term ends on March 31 of year indicated)

Chairman: Bill Gamber
Vice Chairman: Binford Weaver
Sec/Treas. Steve Klein
Executive Director: Bob Smith, National Honey Board, 421 21st. Ave. #203, Longmont, CO 80501 Ph. 303-776-2337.

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Producer Region 2 Harry Rodenberg (1992) Box 3047 Wolf Point, MT 59201 406/653-1488 (fax also)	Larry Krause P.O. Box 1625 Riverton, WY 82501 307/856-4239
Producer Region 3 Richard Adee (1992) Box 368 Bruce, SD 57220 605/627-5621 Fax: 605/627-5622	John R. Miller P.O. Box 213 Gackle, ND 58442 701/485-3350
Producer Region 4 Stephen M. Klein (1992) 401 Charles Avenue Marshall, MN 56258 507/532-5550 (fax also)	Ann Garber 300 West Marion Corydon, IA 50060 515/872-2119
Producer Region 5 Binford Weaver (1994) Rt. 1 Box 256 Navasota, TX 77868 409/825-2312 Fax: 409/825-7267	Harry Fulton Div. of Plant Ind. P.O. Box 5207 Miss. St., MS 39762 601/325-3390
Producer Region 6 Bill Merritt (1993) Star Rt. 1, Box 1080 Tallahassee, FL 32310 904/962-9051	Frank Randall 389 S. Central Ave. Umatilla, FL 32784 904/669-2441
Producer Region 7 Ed Doan (1994) 1263 Redman Road Hamlin, NY 14464 716/964-3121	David Hackenberg 1041 Wm. Penn Road Lewisburg, PA 17837 717/524-9592
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Handler 2 William Gamber (1992) 2220 Dutch Gold Drive Lancaster, PA 17601 717/393-1716 Fax: 717/393-8687	Robert G. Appel 118 Iowa Avenue Streator, IL 61364 815/672-3127 Fax: 815/672-2060
Importer 1 Mike Ingalls (1993) P.O. Box 989 Sultan, WA 98294 206/793-2241 Fax: 206/793-2485	Linda Sandt 714 Wagener Lane Easton, PA 18042 215/252-6511
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Public Member Melissa Hart (1993) 1406 Humes Huntsville, AL 35801 205/539-2408	Betty Lane P.O. Box 1806 Statesboro, GA 30458 912/681-1818

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Key to Regions

Region 1	WA, OR, ID, CA, NV, UT, AK, and HI
Region 2	MT, WY, NE, KS, CO, AZ and NM
Region 3	ND and SD
Region 4	MN, IA, WI and MI
Region 5	TX, OK, MO, AR, TN, LA, MS and AL
Region 6	FL, GA and PR
Region 7	IL, IN, OH, KY, VA, NC, SC, WV, MD, DC, DE, NJ, NY, PA, CT, RI, MA, NH, VT and ME

RANCHERS GET BREAK

Following two weeks of debate on the 1992 Interior appropriations bill, conferees agreed to drop a House proposal which would have raised the fees Western ranchers pay for grazing their livestock on public lands.

The Interior bill also authorizes spending for the USDA Forest Service. State and private forestry program levels include: $58 million for forest pest management, down from last year's $60.2 million; $16.8 million for rural fire protection, up from $15.7 million in 1991; and $88.2 million for forest management and utilization, as compared to $74.2 million in 1991.

The measure also authorizes the transfer of $12 million from the Interior Department to SCS for the Rural Abandoned Mine Program. This is the sam as last fiscal year, but $ more than the administration's recommendation and $8 million less than NACD"s recommendation.

Honey was featured recently in two segments of "Cookin' USA", a television cooking show on the Nashville Network cable channel.

Mary Humann, the National Honey Board's marketing director, joined host Merle Ellis to discuss honey and to prepare a honey mustard salad dressing and honey barbecue sauce.

The honey show aired on November 11 and 12 and will be aired again on February 10 and 11.

The Nashville Network is available to 52 million cable subscribers across the nation.

Nova Scotia Beekeepers Need Bees

LIFT BAN ON BEES!

tia's blueberry produc- the federal and provincial governments to end the ban on important bees from the rest of North America. Nova Scotia Blueberry Producers Association president Gary Chapman said his members can no longer rely on Nova Scotian bees and the bee import barriers are gradually making their C$12-million-a-year industry uncompetitive with their American counterparts.

Nova Scotia is second only to Maine as the largest wild blueberry producer in North America. Nova Scotia produced 5.8 million pounds in 1990. Most are sold in the U. S. and Europe.

Blueberry producers used to import bees from New Brunswick and Maine to pollinate their crops. After mites were detected the province banned them.

But mites now have been found in local bees and the growers feel there is no point to continuing the ban.

Chapman said that because of the Nova Scotia climate, local beekeepers are unable to supply the 1,000 blueberry producers with enough high-quality homegrown bees. "The only place we're allowed to get bees from is New Zealand", he said. "They're very expensive for the beekeepers and in turn they have to charge our growers the additional cost."

He said on average Maine growers pay $30 less than Nova Scotians for each hive they rent.

Our Honey Market is Looking For Reporters in Regions 3 & 5. If Interested, Call 800-289-7668 – Ask for the Editor.

Display Index

Beekeepers I Have Known

OLDER, BUT WISER

Why on earth would any one in their right mind look forward to putting on a pair of hot coveralls, a restrictive veil, long gloves and then walk out into a 100° day just to stand in the middle of a cloud of honey bees? Why?

Over several decades, and after meeting hundreds of beekeepers from all over the United States, Europe, Africa, the middle east and Russia, I have come to recognize there are several reasons for keeping bees.

In fact, when I was a graduate student I read a beekeeping report from the California Department of Agriculture. It was an accountant's approach, using dollars as a measuring tool. The conclusion went something like this. "If the time it takes to run bees in California is taken into account, the labor involved, the difficulties a beekeeper with over 1,000 colonies must face, the typical owner averages about $2.50 an hour for his time. From a financial point of view, there must be some other reason for this breed to stay in the business of beekeeping." I have come to this same conclusion.

I know why I'm a beekeeper, but I've made it a life-long study to understand why others take care of bees for reasons different than mine. So, for what it's worth, here's a lifetime of research results on this topic.

When I was younger I saw the price of honey go from the traditional $12.50 for five gallons (the price it had been for decades) to an astronomical $45.00 for the same bucket. I watched the tidal wave of the Get-Rich-Quick-Beekeepers flood into the business for the money. I even watched some of these same beekeepers survive when the prices changed, and I wondered why they kept bees. But when the price really dropped I bought a lot of them out. When the tide of lost profits rolled over the industry, I was still there, high and dry on my lifelong foundation of love and caring for the bees.

I suppose the saddest of all I've met is the Inherited Beekeeper. Typically this is the kid who had to wire frames and extract honey to help out his dad. And when dad couldn't take care of the bees anymore, the son took over. Too often these aren't the happiest beekeepers.

Then there's the Orchardist Beekeeper, who's typically a fruit grower with grandiose ideas about saving money on pollination fees and not having to put up with beekeepers. Orchardist beekeepers know they need bees for their almonds, apples, cherries, or whatever. But of all the types of beekeepers, these typically have the greatest disasters because the care of the trees conflicts with the care of the bees. The bees lose because they won't tolerate waiting to be taken care of.

How many times I have bought out the Easy Money Beekeeper? I usually meet them about three years after they start. You know, these are the beekeepers who think the bees do all the work and the beekeeper reaps all the benefits.

Then, of course, I have known many bee-men I call Truck Driver Beekeepers. They really love to drive their neat rigs, and move bees, I guess. Actually, they spend more time moving bees than they do taking care of them. Often, I found truck driver beekeepers never really know what good bees look like and what they can do. All the ones I have ever known were cranky. The huge numbers of hives they run to support their trucks somehow are supposed to make up for the lack of quality care. Sort of bee havers on wheels, you might say.

Others go into bees to become closer to nature and to produce a pure, unspoiled food. I call these Naturalist Beekeepers. They are long on compassion, but usually woefully short on know-how. Some of the most bizarre and destructive beekeeping practices I have ever seen were performed by this group.

Then there is another breed that populates apiaries, I call them Honey Producers. Their only desire is to make tons of honey. Sometimes this group comes to understand the deeper reasons to keep bees.

There is also the self sufficient type which I call the Small Farm Beekeeper who look at bees as a means to become self-sufficient. They figure a farm without a beehive is not complete. They usually have chickens, pigs, cows, goats, an orchard – and bees. Often the hives are not taken care of, especially after a year or two, when the keeper becomes knee deep in day-to-day animal care. The usual three year nose dive takes a large toll on these beekeepers.

Closely related are the Escapist and the Last Chance Beekeeper[illegible]e

BOTTOM·BOARD