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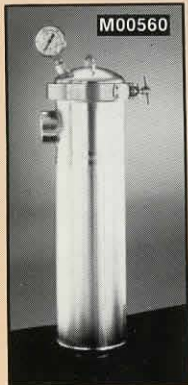
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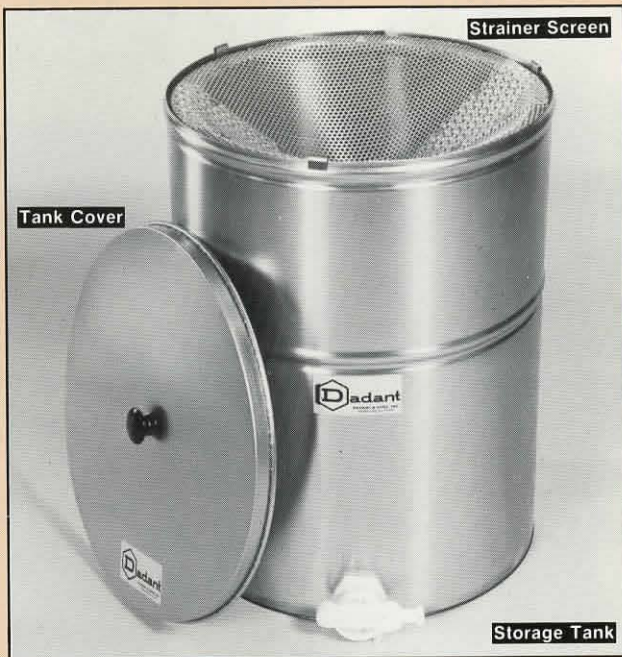
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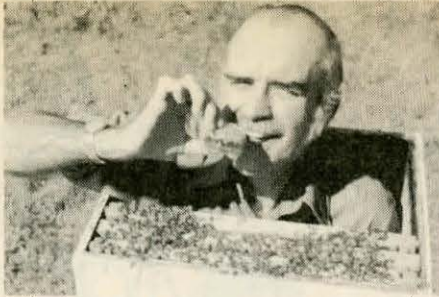


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JUNE, '88

CONTENTS

(ISSN 0017-114X)

Vol. 116, No. 6

115 Years Continuous Publication by the Same Organization

Features

- **AFRICAN ODYSSEY 332**
The African Honey Bee has not been easy to 'define'. It is different in different places. Consider these essays and stories, then decide for yourself. A Bee Culture extended feature.
- **HARVESTING HONEY WITH HAPLESS HARRY 344**
A Pictorial Primer on How-Not-To harvest your crop this season. A picture can save your crop (and maybe even your marriage!)
- **VARROA QUARANTINE KILLED 361**
Plagued by not enough time, money, people and cooperation, APHIS revokes it's month-old ruling.

Articles

A Keeper of the Bees: A Poem For Fathers	Teresa Crone	315
The <u>Other</u> Down Under - Part II	Beryl Stringer	324
The Buccaneers of Buzz	Carsten Ahrens	346
A Spectacle to Marvel At	Bruce Robertson	347
Funny Beesness	Roger Welsch	365

Columns

The Bee Specialist	Elbert Jaycox	328
Research Review	Roger Morse	322
Testing	C. Collison	330
Bee Talk	Richard Taylor	356
Drones	Steve Taber	352
Questions & Answers	Richard Taylor	359
Extracting	Jim Tew	341
Home Harmony	Ann Harman	350
Koover's Korner	Charlie Koover	362
Siftings	C. Mraz	354
Politically Speaking	Glenn Gibson	360

Departments

Coming Next Month	314
The Inner Cover	Kim Flottum 315
June Honey Report	316
Mailbox	Readers Forum 319
News	368
Events	369
Obituary	372
Classified Ads	373
Display Ad Index	376

NEXT MONTH

One of the most overlooked aspects of marketing honey is producing a unique product — and we have several for you to consider next month.

We start with honey vinegar, nearly a lost art in this country, which is an exceptional product if made correctly.

Honey and fruit spreads can increase your honey sales, too, and Dr. Robert Berthold shows some unique recipes.

Propolis — another crop to harvest and sell — we'll have the how-to's here next month.

Of course, the National Honey Board is playing an even larger role in our marketing strategies and Dan Hall has an article that will give even greater insight on how to make it work for us.

Marketing. Next month in *Bee Culture*.

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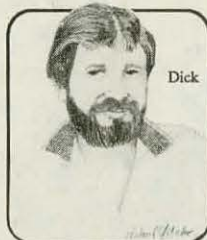
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Subscription Rates: United States, one year, \$12.49; two years, \$23.99. **Newsstand Price: \$1.95.** Other countries (U.S. Currency only) \$6.00 per year additional for postage. Remittance should be sent by post office money order, bank draft, express money order or check. Published monthly. Discontinuance: Subscription stopped on expiration. Change of Address: Fill out and return form contained inside issue. Articles are solicited. Stamps should be enclosed to insure return of manuscript to author if not printed. *Opinions expressed by the writers in columns or articles are not necessarily those of the publishers.* Advertising rates and conditions sent on request. Advertisers' Reliability: While the publishers do not guarantee advertisements in this journal, over the years few complaints have been received. Microfilm copies available at: University Microfilms, Inc., 300 North Zeeb Road, Ann Arbor, Michigan 48103. Second Class Postage Paid at Medina, Ohio and additional offices.

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THE INNER COVER

When I was a boy of fourteen, my father was so ignorant I could hardly stand to have the old man around. But when I got to be twenty-one, I was astonished at how much he had learned in just seven years.

— Mark Twain

It used to be that you did what your parents did when you got to be an adult. That was a long time ago, though, and the ties that bind families together are not as strong as in the past. This is particularly true in agriculture in this country. I once read that for every farmer's son (or daughter) that takes over the family farm, 125 do not. That is a statistic that can cause you to lose sleep at night if you think about it. Sometimes I do.

I don't know if there are any records on parent/child beekeeping history. Probably not. My guess is that most, but not all, beekeepers have a family heritage — it's in the blood, maybe.

If your parents were beekeepers, this is a good time of the year to thank them for sharing that part of themselves with you. But if they weren't, this is the time to start a family tradition. My parents weren't beekeepers, but they had a friend who was, and they had a deep and abiding respect for the natural world.

Maybe that's why I am where I am today. Δ

A KEEPER OF THE BEES

T. T. Crone

"My father had a hive of bees when I was just a child,"
The young man tried explaining, the old man only smiled,
"When I saw yours behind the barn I thought of one he had;
Funny how something like that would make me think of Dad."

"I only stopped to see them and, I wonder, would you please
Explain what is it makes you want to have those hives of bees?"
The old man smiled, his many years had helped him to be wise
To something else which now he saw within this young man's eyes.

"Sit down," he offered, knowing well his guest would not leave soon,
And he began a talk that carried through the afternoon.
He shared the stories of his hives and how his stands had grown,
Then, when he'd finished, asked, "Would you like one of your own?"

"I know you don't know much of bees, but please don't be concerned,
I've worked with bees for fifty years and still have much to learn."
With gleam in eye, he pointed to the first hive on the right,
"It's getting dark," he said, "You could take that one home tonight."

And so, with eagerness the young man loaded his first stand,
Gratefully took final tips and shook his mentor's hand.
"One final thing," the old man winked, "Your father would be pleased,"
"It takes a special kind to be a keeper of the bees."

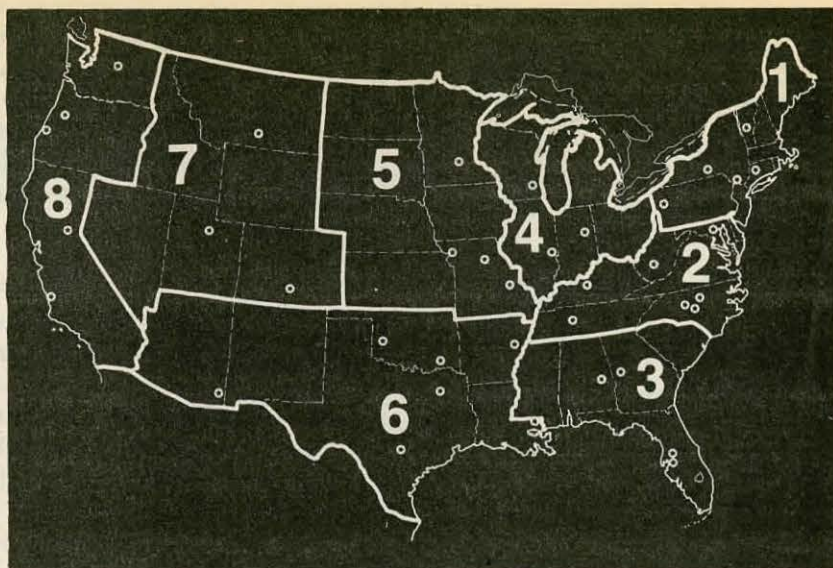
COVER . . . Dr. Elbert Jaycox displays the perfect crop — straight from the comb. But convincing most consumers to 'pick your own' won't work so we have to make it available on their terms — bottles, jars and the like.

Harvesting — the art of *not* destroying a perfectly beautiful food by putting it in a bottle.

JUNE Honey Report

June 1, 1988

The following figures represent current prices reported by our contributors. They are based on reports from many states and averaged for each region. Where insufficient information is received, no price is shown. The retail prices represent the price of each size jar.



Wholesale Extracted	Reporting Regions									
	1	2	3	4	5	6	7	8	R	A
Sales of extracted, unprocessed honey to Packers, F.O.B. Producer.										
Containers Exchanged										
60 lbs. (per can) White	42.50	39.00	24.00	27.00	34.80	35.83	38.63	40.60	24.00-44.00	36.56
60 lbs. (per can) Amber	41.50	33.95	21.00	21.60	30.09	32.23	35.75	35.75	21.00-43.00	33.41
55 gal. drum/lb. White	.50	.45	.41	.40	.49	.62	.60	.59	.40-.63	.54
55 gal. drum/lb. Amber	.49	.39	.39	.36	.41	.55	.53	.50	.36-.56	.49
Case lots — Wholesale										
1 lb. jar (case of 24)	28.65	26.60	23.00	23.95	24.88	24.38	26.95	27.97	22.80-31.20	24.80
2 lb. jar (case of 12)	26.35	25.23	—	22.75	25.00	23.87	28.20	27.44	21.00-32.40	25.73
5 lb. jar (case of 6)	30.00	26.50	23.00	23.95	24.16	24.00	26.60	26.85	23.00-30.00	25.80
Retail Honey Prices										
1/2 lb.	.93	1.05	.79	.85	.90	.85	.93	.85	.75-1.29	.91
12 oz. Squeeze Bottle	1.50	1.41	1.19	1.29	1.30	1.24	1.24	1.44	1.08-1.79	1.35
1 lb.	1.55	1.63	1.29	1.55	1.49	1.67	1.53	1.43	1.10-1.89	1.54
2 lb.	2.75	2.84	—	2.75	2.75	2.69	2.86	2.67	2.25-3.70	2.76
2-1/2 lb.	3.35	3.75	—	—	3.51	3.41	3.84	—	3.15-4.85	3.60
3 lb.	4.13	4.13	3.49	3.25	3.75	4.13	3.74	3.40	3.25-4.55	3.86
4 lb.	5.00	4.78	—	—	4.75	4.83	4.70	—	4.49-5.39	4.81
5 lb.	6.50	5.50	5.49	5.75	5.61	5.51	5.74	5.85	4.95-7.00	5.75
1 lb. Creamed	1.87	1.40	1.39	1.55	1.50	1.65	1.76	2.55	1.35-2.00	1.67
1 lb. Comb	2.37	1.77	3.00	2.25	2.00	2.30	2.69	2.19	1.70-3.00	2.26
Round Plastic Comb	2.00	1.79	2.00	1.85	1.75	1.92	1.85	1.50	1.50-2.25	1.87
Beeswax (Light)	1.05	1.01	.95	1.10	.99	.81	.95	1.20	.75-1.25	.99
Beeswax (Dark)	.92	.90	.85	1.00	.88	.68	.83	1.00	.67-1.10	.87
Pollination (Avg/Col)	27.50	18.50	—	27.50	20.00	19.00	23.00	20.08	16.75-30.00	22.58

Region 3.

Price Index .55. Prices and sales depressed, and depressing, in most areas. Late spring has retarded build up and feeding required for many colonies.

Region 4.

Price Index .70. Prices and sales steady to slowing a bit. Demand at seasonal low. Weather variable throughout region with IN cool and slow, while IL right on schedule.

Region 5.

Price Index .84. Prices steady to increasing and sales steady. Local shortages helping in price increase. Most areas building strong and on time. Good crop expected.

Region 6.

Price Index .85. Sales slow, but prices steady to strong. Most areas tending toward dry and rain is needed generally. Early crops (Huajillo) looks good.

Region 7.

Price Index .93. Sales and prices strong and getting better. Recent rain has helped most of region and improved crop prospects, however, not enough has fallen yet.

Region 8.

Price Index .90. Sales and prices steady to slowly decreasing. In the north, early swarms are reported, honey in and conditions look good. CA pollination of apples and pears finished, swarming high but are small.

Honey Report Graph Features

On the far right hand side you will see two different columns. The first, labeled "R", is the price range of prices reported from all contributors — lowest to highest. The second column, labeled "A", is the average price of a particular commodity across all regions. Example: the range in price of a 1 pound jar of honey sold retail is \$1.10 - \$1.89 and the average price across the country is \$1.54.

In the comments section you will see a figure called the "Price Index". This figure is only a descriptive statistic that compares ALL regions to the highest region of the month.

Example: Region 1 has a price index of 1.00 this month and remaining regions are compared to that index.

Region 1.

Price Index 1.00. Sales steady to increasing, but slowly at present. Colonies generally in good but lean shape. Spring feeding required. Varroa confusion continues, with some pollination contracts difficult to fill.

Region 2.

Price Index .90. Sales steady to slow, but prices strong. Weather causing delays in some areas, and early swarms in others. Dry or wet weather also confusing. Tulip and locust looking good.

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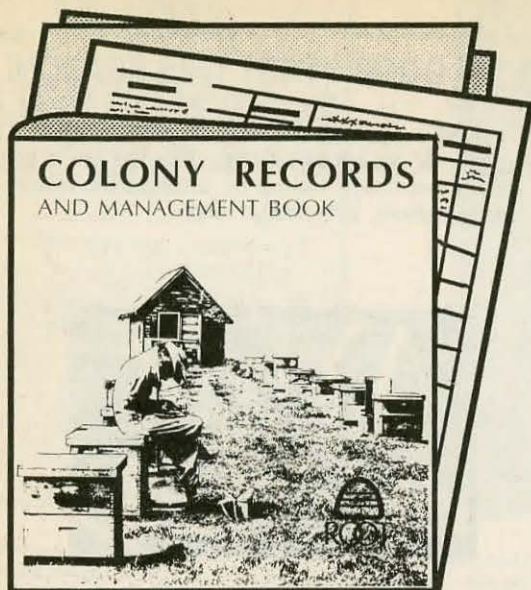
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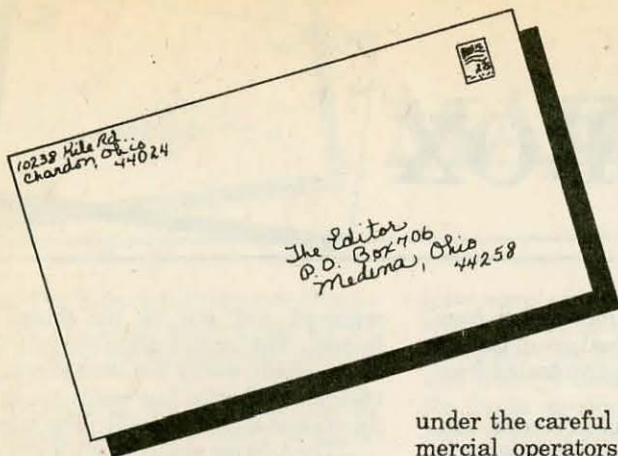
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Takes Taber to Task

It is surprising how often I observe behavior which is almost certain to cause an effect which is the opposite of that desired.

In his article in the April issue, Steve Taber tells us about beekeepers who do not read books or magazines about bees and yet his strident warning in "Bee Havers — Beware!" is so irritating that it seems calculated to cause thoughtful beekeepers to avoid reading such poorly thought out publications.

Although my experience may not be typical, my observation has been that those beekeepers who may have only a few colonies and are disinclined to participate in local organizations are generally the best informed about the science of bees because they truly love the bees and enjoy their interaction with the natural world.

This disregard for the natural process is what most concerns me about Mr. Taber's approach to beekeeping. The major fallacy in his article is that he seems to assume that his problems would be significantly reduced if the "pecker-wood Bee-Havers" had no more colonies. Of course, he should know that, at least in the southeastern United States, the majority of bee colonies which are not

under the careful control of the commercial operators are not the ones being mismanaged by the Bee-Havers. Most of the bees come from feral colonies which have, so far, escaped those arrogant, self-appointed experts planning to get out and "beat the bushes to round up all of those pecker-wood Bee-Havers".

To the extent these feral colonies escape detection and continue to live in the natural state, they may one day provide the genetic diversity which will be sorely needed to resist any truly new bee disease that may develop.

David Adcock
Rt. 3, Box 187-A
Blythewood, SC 29016

Confessions of a Bee-Haver

I don't think anyone starts out to be a Bee-Haver. I know that's not what I started out to be in the early spring of 1985. I had high hopes, lots of enthusiasm, and good intentions when I started.

I went to the local beekeeping school; subscribed to 3 beekeeping publications; and joined local, state, regional, and national beekeepers organizations.

I watched carefully from inside my veil and gloves as an experienced beekeeper, dressed in street clothes, shook the remaining bees from a package. His only apparent concession to the bees was that his short sleeve shirt was white. When I installed my package, I got a sting on the ankle. Was this an omen?

I also invested in a going hive to increase my chances of getting some honey the first year. Wrong! I didn't get any honey from either hive the first summer and the going hive starved in March. I didn't take any pleasure from this learning experience, but I immediately put a feeder on the other hive.

Maybe I missed something . . . I went to the local bee school a second time and bought some more books on beekeeping.

I restarted hive two with a 2 lb. package. Both hives made it through the second winter. I got about 15 lbs. of honey the second summer from hive one.

What does it take to make a good Beekeeper? I thought I was on my way, but it takes more than good intentions, a honey yield, and beekeeping school to make a good Beekeeper.

I manned a booth at the flower show for the local association, went to the State Beekeepers meeting, and went to EAS (where I met Kim Flottum and heard lectures by some of the big names in beekeeping). Gee, this beekeeping stuff is fun!

The third summer I was having fun giving cut comb honey to friends, watching my bees flying in and out, and even watching a bee Martin prey upon my bees (I'd never even seen one until I had bees).

On August 25, 1987 the state Bee Inspector found American Foulbrood in hive 1. That really let the air out of my balloon! Will I ever earn the title of Beekeeper?

I didn't go to any local meetings, didn't even go to fall potluck or the Thanksgiving supper meeting. I was afraid someone would ask how my bees were doing.

Maybe I'll become a vicarious beekeeper, just read books and *Gleanings*.

It is with great chagrin that I admit to being a "Bee-Haver". It is not an epithet to be worn proudly — there goes "Ivan the Bee-Haver". If hive two doesn't make it, I may even be doomed to "Ivan Who-Used-To-Have-Bees".

It is now decision time. Is the

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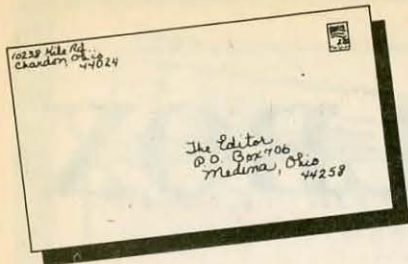
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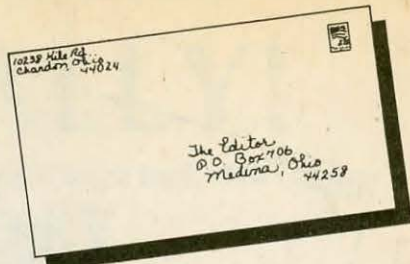
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mental anguish, expense, and pain offset by the fellowship, honey, and enjoyment? Should I clean up the hive and try again to earn the title of "Bee-keeper" or take the bee inspectors advice and not keep bees because there is a source of foulbrood in my area? A goal of becoming a master Beekeeper doesn't seem very realistic for this year.

Anyone can think they are a beekeeper during the good times, but it is the problems that separate the Beekeeper from the Bee-Haver. I now have a far greater respect and admiration for Beekeepers that strive, and prevail, in spite of all the problems they must face.

Name Withheld By Request

Pollination Figures Revisited

A table published in the bulletin of the Entomological Society of America (Vol. 29, No. 4, Winter 1983, pp. 50-51) is the source of the \$19 billion value of bee pollination to U.S. agriculture that Mr. Oertel questioned in the April, 1988 issue. The table provides an estimate of \$6.0 billion for commodities resulting from seed requiring bee pollination and \$7.1 billion for commodities indirectly dependent on bee pollination which were not accounted for in Mr. Oertel's table.

Fred Hoff
USDA/ERS
Washington, DC 20005-4788

Clever Cover?

Here's how I protect my combs from wax moth.

First, select a spot under the eaves of an outbuilding or barn. Next, remove the frames from a super and drive a small nail through the end of the top bar from the underside. Place the frame with the top bar flat on the wall with the nail at the top and drive the nail all the way in. You may line the wall with frames close together. Since this is at the top of the outside wall, the overhang of the eaves will sufficiently protect the frames from the sun and rain.

It is the exposure to light that

either prevents the moth eggs from hatching or kills the real small larvae. Either way, the wax is protected from damage.

My experience is in the South, however, I feel that this would work in the North, also.

If there is a lot of pollen present in the cells, it does not work well.

I hope this will be of help to beekeepers with a small operation.

B. Rank Griffith
Rt. 8, Box 190, 2101 N. Main
Sumter, SC 29150

Clean Bees?

Is there such a thing as "begging to be cleaned"? I have observed, in an observation hive, bees vibrating madly with their wings held out from their body. Others will "attend" to them by running their tongues over the beggar's body. The beggar will flex her abdomen so as to expose the area between her abdomen and thorax for "cleaning". I like a good backscratch at times... why shouldn't the bees? This behavior is, I feel, different from begging to be fed. It is not associated with the short "buzz" of begging for food, the vibrations are much greater in amplitude and are slower. Is this a sign of mite infestation?

David H. Kesler
Associate Professor of Biology
Rhodes College
2000 North Parkway
Memphis, TN 38112-1690

Perfect Propolis

Reference my 1983 articles on methods of collecting propolis which I have dubbed 'the most mysterious hive element'. Interested readers should know about the latest device I've purchased in travels abroad.

Originating in Holland and bought in England from Steele & Brodie (Beehive Works, 25 Kilmany Road, Wormit, Newport-on-Tay, Fife DDP 8PG, United Kingdom), the \$7.00 propolis collector is described as "a flexible plastic grid with tapered rectangular holes — just too small for the bees to fit through so they fill them with propolis. The grid can then be

removed and put in the fridge or freezer. The brittle propolis will flex out in small, easily handled granules. 16-1/4" x 20" only, but easily cut to fit the National (standard British hive)".

The catalog neglects to inform the ignorant that the tapered holes go down, that the device replaces the inner cover and that, given my experience with my described screen collectors (GBC, April 1983, p. 202, 204), it'll take one season to fill that collector; therefore, a serious propolis man would have to purchase many grids for a bountiful, single-season harvest. It is obvious that this is perhaps the *cleanest* method of collection on the market today; however, it is obviously not the *fastest*.

My first choice is the Bell Propolis Collector (W. Roland Bell Jr., 6901 Robinhood Lane, Ft. Worth, TX 76111), a slotted wooden board made out of 3/4" lumber, 3-1/2" wide by 21" long, which fits into the long side of a brood box or super that has a matching piece of lumber cut out (see picture in GBC, August 1983, p. 432). In warm weather, the bees fill the eight slots every seven to 10 days. The speediest device around!

J. Iannuzzi
RD 8
Ellicott City, MD 21043

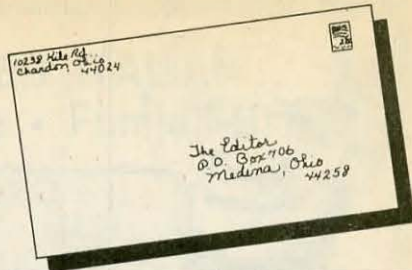
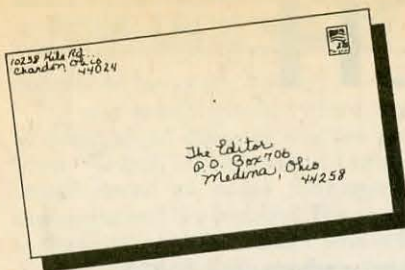
Peer Review!

As the editor of a small daily newspaper here in southwestern New Mexico, I find the occasional compliment from a reader is good to hear. Here goes:

You have a great staff. It's obvious that a conscientious, credible job of writing, rewriting, editing and proofing is under way at *Gleanings*. Certainly, I see the occasional goof — but every publication has those, especially mine!

Too, I see photographs which don't reproduce very well, just as in our publication. We keep on accepting those color photos and trying our best to make 'em look good, and it's my guess you're in the same boat.

Most important, though, is your news content. Although I've been a hobbyist beekeeper for the past 25



MAILBOX

years, I've been subscribing to *Gleanings* for only slightly more than a year now. It gives me all the information I need.

This spring, for example, I had to get a new queen in a hurry. A quick check among your advertisers found a commercial apiary in an adjacent state. And what are the latest suggestions on introducing her? A review of your back issues helped me.

On another occasion, I had to write a story about the Africanized bee. *Gleanings* was invaluable.

I find the columns informative, the advertisements darned useful, and the entire publication essential, particularly as mites and "hot" bees draw closer to this rural mining/ranching community. *Gleanings* helps my hobby to be a lot more enjoyable. Thanks.

Richard A. Peterson
P. O. Box 13
Silver City, NM 88062

Un-Organization

A letter from President Richard Adeo asked for help with membership recruitment. This reminded me of a memorable conversation with an old timer a few years back.

Responding to my question about membership affiliation he said, "Yes, I belong to 4 beekeeping associations."

I was a bit puzzled since he had told others that he did not belong to any organized group of beekeepers, so I asked if he was kidding me.

He replied, "No, I wasn't kidding. I joined in *hopes* that they would become organized someday!"

Glenn Gibson
P. O. Box 368
Minco, OK 73059

Perma-Comb Preferred

I do not understand beekeepers! For a number of years I looked at Perma-Comb and knew I had to have them. For a while I couldn't afford to have them. Now I can't be without them.

It was only after I was invaded by a bear and had 1,500 frames damaged in the middle of a honey flow and no chance to remake new combs that I pleaded with Dr. Drapkin to let me

have some of his old two-piece units, which he was no longer selling. I know I was told that they would come apart and after I promised to only use them for honey production did he let me have them. Quickly they went on the reworked hives and even though I was hit again by the same bear, I managed that year to be able to produce 85 barrels of honey using a hand uncapper and a sixty-frame extractor.

Boy, did I work my tail off! Whenever a full extractor of Perma-Comb was spun, I could not keep up with the machine. You don't lose any comb at full speed. I also brought a frame to the L. A. Co. Bee Association meeting which showed the bears bottom clearly outlined on it where he sat down, with no damage to the plastic comb.

Now I have over 2,000 of the new one-piece units. I don't worry about bears or wax moths. Many times I have offered beekeepers the chance to see how they work, and no takers. Again, I say, "What's wrong with beekeepers"? I hope to add another 2,000 units this year. If you don't think the combs are good you might ask me about Dr. Drapkins pollen substitute with the vitamins. My bees, for the past two years, explode getting ready for the almonds.

Klaus Koepfli
Star Rt. 4, Box 5465-I
Tehachapi, CA 93561

Breeding Programs

Cobey and Lawrence elucidate the key concept in reproducing queens with desirable traits (April, page 183). The problem was expressed elegantly by Ragnar Frisch (Norwegian beekeeper and winner of the 1969 Nobel Prize in Economic Science for his work in econometrics):

"A fundamental problem in bee-breeding — I would be inclined to say THE fundamental problem — is how to reproduce at will the genetic structure of an OPTIMATOR, i.e., a queen that is found by chance or by breeding experiments, and for one reason or another is considered as outstanding. In considering this reproduction problem I shall not follow the procedure of studying specific loci or genes and making hypothesis about whether this, that or the other gene may be dominant or recessive in its effect, etc. I believe that whatever merits such a procedure might have in the study of some easily recognized exterior character, it will never lead to definite results when we are discussing the whole spectrum of characters that may be economically important. In considering this spectrum I shall so to speak start in the other end of the problem by building up a logical scheme that will hold good NO MATTER what special kind of association that exists between the genotype and the phenotype . . . From a statistical and mathematical viewpoint this would seem to be the most promising avenue of approach."

The above quotation is from "Basis-line breeding for an optimizer", a manuscript requested by *Bee World* but not published. It and other publications are listed in *Apicultural Abstracts* 1956/56. Professor Frisch visited USDA bee-scientists in 1947, and concluded that the geneticist Sewall Wright best understood the scheme used for breeding queens in Norway. A five page reply by Frisch to L. Armbruster's 1952 critical review illustrates the difficulties of changing perceptions.

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RESEARCH REVIEW

DR. ROGER A. MORSE • Cornell University • Ithaca, NY 14853

"If we wait long enough, bees somewhere will show resistance to varroa."

In a recent issue of the *American Bee Journal*, Steve Taber said he thought it was time to import some queens from abroad. It is not legal to do so at present. Specifically, Taber wrote he would like to go to Brazil "and select 20 to 30 of the gentlest of their Africanized queen bees . . . and . . . start a breeding program", using those queens here. There is no question that there are a small number of gentle Africanized bees in Brazil. In fact, at least one Brazilian beekeeper has already started a selection program centered on finding gentler Africanized bees.

Taber indicated one of the reasons he was interested in Africanized bees is their apparent resistance to varroa mites and American foulbrood. It is true, according to the observations made by Dr. De Jong, an American who has been in Brazil with the Cornell program for six years and is now on the faculty of the University of Sao Paulo, that we find very few mites on Africanized bees (de Jong, 1984). We have found no American foulbrood there despite the fact that we know it was once in Brazil.

While I think Steve's ideas are practical, my concern at present is more about tracheal mites and chalkbrood. Dr. David De Jong worked on chalkbrood when it first arrived in New York State. We saw hundreds of colonies, especially in the southern part of the state, die from this disease. I think there is a little less chalkbrood today than there was 15 years ago because the more susceptible colonies have died, or have been weakened and as a result have not contributed drones for mating. Often, when a disease kills a portion of a population, those that survive are more resistant to the disease than the average member of the population before the disease hit.

Several New York beekeepers have reported to me that their winter

losses are higher than normal this year. Some of these same beekeepers had difficulty last year as well. We collected some bees from surviving colonies last year and sent samples to Dr. Shimanuki in the USDA's Beltsville laboratory for analysis. Several beekeepers have done the same both years. The results show, on average, a high incidence of tracheal mites. This suggests, and I hasten to point out this is not conclusive proof, that tracheal mites probably contributed to the cause of death of those colonies that perished. I am of the opinion, as a result of my reading and conversations with those in Europe who know the mite, that the mites by themselves will not kill colonies. However, if the tracheal mite problem is added to the problems caused by chalkbrood, nosema, European foulbrood and sacbrood, or only one or two of these, we can have a fatal situation.

Both chalkbrood and tracheal mites have been present throughout Europe for a great number of years. As a result European bees have been exposed to both of these problems. Whether or not tracheal mites caused the great losses attributed to them in the early part of this century is questionable. Still, because European honey bee populations have been exposed to these problems for such a long period of time they can now tolerate both to a considerable extent. Those colonies that could not are dead. Thus, Europe could be a fast, easy source of resistant bees for a breeding program in this country.

It is important to remember that the reason the laws preventing the importation of honey bees from abroad were enacted in 1922 was because of tracheal mites and the fact that we wanted to keep them out of the country. Since the tracheal mites are now

here, as well as chalkbrood and varroa mites, it is questionable, in my opinion, if we should continue to enforce these laws. It is true that there is a small danger of importing some other diseases we do not yet have. However, if the importations are put into the hands of a USDA laboratory geared to handle imports there should be no problem in this regard.

Also supporting this thought is recent research by Gary and Page (1987) that shows that American bees show a wide range of susceptibility to tracheal mites. Anytime one finds such a range it suggests the agent causing the disease is new to the animals concerned. In other words, American bees have not heretofore been exposed to tracheal mites.

If we wait for 15 to 25 years I have no doubt that honey bees in this country will gain a considerable degree of resistance to chalkbrood and tracheal mites. I have no doubt too that if we wait long enough some bees somewhere on earth will start to show resistance to varroa mites. However, waiting and allowing disease resistance to arise by itself is a slow, costly process. So long as the generic stock is out there, whatever the disease or problem, I think we should go out and get it.

At this time the chief question is who will do the breeding? As I've stated before this country needs a federal bee breeding program. I say federal because I don't think any of the state colleges have sufficient funds to support such a project. However, at present the USDA has not shown interest in developing such a program. Perhaps the best answer is for a federal laboratory to make the importations and then to turn the stock over to private enterprise for development. No doubt that thought will gladden the hearts of those that think government

• **RESEARCH REVIEW** •

dabbles in too much already.

I was asked recently why I wrote so much about diseases and bee problems. Wouldn't it be better if I concentrated more on some management questions and bee biology? The answer is that I would like to but I, and other researchers in this country, are caught in the same trap that European researchers found themselves in a decade or so ago. The bee disease problem has become so overwhelming that it often stands in the way of other research. Δ

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De Jong, D. *Current knowledge and open questions concerning reproduction in the honey bee mite, Varroa jacobsoni*. Advances in Invertebrate Reproduction 3:547-52. 1984.

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PART II of An Interview With Gavin White, Takaka, New Zealand

Introduction

In the second part of our interview with Gavin White, we take a look at his stock selection, honey production and packaging, and some of the diseases and pests he has to contend with in New Zealand.

Requeening

I personally prefer to requeen every year and most of the better beekeepers in New Zealand requeen every second year. The average in New Zealand is once every five years because people are just too miserly to spend the money. When you work it out, half a frame of honey pays for the cost of the queen and your hive is only as good as the queen.

We raise all our own queens, and because I sell queens we're always short and I never have enough for my own use! All my own requeening is done with queen cells in the spring

and in the autumn. If a queen doesn't take in the autumn, it's not a big concern because we know we have young queens all the time when we requeen every year.

We use hive mats (inner covers) because the bees stick things down so badly. We can just scrape these clean and also write all our information on them, and their cost is low.

All of our hive mats have a division-board entrance so they can be used as an inner cover or a division-board. In spring we split the hive and make a division, putting the queen cell in the division. We move up three frames of brood and bees and two combs of honey, block the entrance with some grass, and introduce a laying queen or a queen cell. It's just like making up a nuc on top of your hive, with the added advantage of heat going through from the bottom unit. We've still got a queen laying all the time below, so we're not losing egg numbers. Once the upper queen starts laying, we can use it for an increase, or unite it back as a two-queen unit. On uniting we have twice the capacity of eggs again, which is one way of getting the strength up.

So the hives that accept the new queen, we actually run on a two-queen system through the year. If the queen doesn't take, we've lost nothing because we've already requeened the previous autumn. It's constant — we're doing it all the time, and it does save us time later on. We don't have the same swarming problems because we've got young queens. We spend more time in the hives each spring, so we know what our hives are doing. Some guys don't tend to go through their hives as often in the spring and the next thing they know, they've lost a swarm and lost their honey production. Splitting the hives and two-queening them is a form of swarm control.

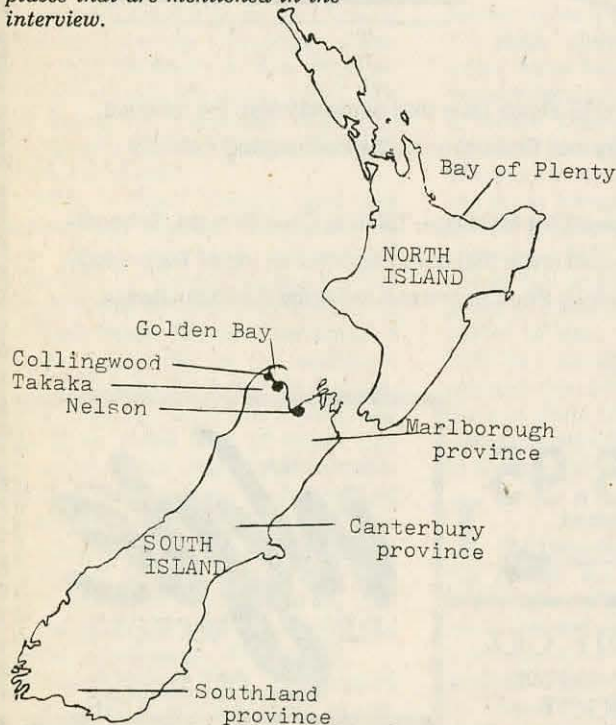
In spring we try to two-queen everything. Last spring we had exceptionally bad mating and only got about 55% over the whole outfit. We went around again this autumn doing the ones that we missed in the spring. It's cheap, at \$1.20 for a cell compared with \$7.50 for a queen, but there is the element of risk.

The one disadvantage of a two-queen system is that we use two queen excluders per hive, so it gets rather expensive. But it'll be worth another two boxes of honey to us, so it doesn't take long to recoup that cost.

In autumn we pull the queen excluder from between the two brood boxes when we take the honey off, and unite them. If we want to make increase, we just slip a division board in. Now that we have our numbers, we don't need to make any increase, so we simply pull the excluders and leave them like that.

When introducing a laying queen, I find and kill the old queen, split the two boxes, put the cage between two frames, close it down and leave it for two or three weeks. When we've

Map of New Zealand showing the places that are mentioned in the interview.



had bad luck with introduction, it's mainly because the bees and attendants have Nosema. The queen will come out and lay and then just vanish. A lot of beekeepers are feeding more Fumidil-B now, and that seems to be solving the problem. We're introducing laying queens with a consistent 98% acceptance rate, and never have a problem. Some people take the attendants out of the cages, but you shouldn't have to do that.

Stock

Author's Note: Honey bees were introduced to New Zealand by early settlers of the country. In 1839, German Black bees were introduced; these persist as feral colonies of 'wild' or 'black' bees. Italian stock from California was released in 1880 and Italian bees from Italy were released in 1883. Syrian bees were also brought in during 1883.

The stock that I breed from was initially Italian from Canterbury. The Italians here don't survive in the bush in the wild over winter. The German black bees are more predominant in this area and after three generations, the Italians are converted back. So you don't find Italian wild hives in these parts where there's a lot of bush, but there may be some in Canterbury where there are very few black bees.

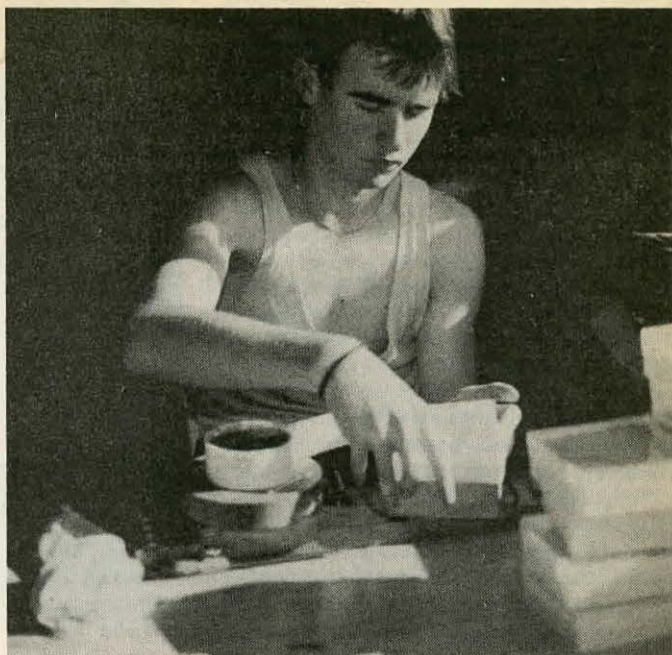
The German black queen has a football jersey (stripes) when she's young, but when she's old she is straight black and very difficult to find on the comb. The black bees tend to run on the comb — you're looking at a comb and the next minute you've got no bees there! They'll all around the back! Or else the hive will run out the front and under the bottom board. At least Italians just sit there and don't run away at all.

I'm originally from Canterbury, and I used to bring my breeding stock up here to Takaka and cross them with the black bees, ex-German stock. Our progeny were rather strong and rather stropky and a lot of people didn't like them. So I changed my tack and I now select my own breeders from my hives here (which have been crossed) and I bring in other stock for the drones. Since I've done that, everything has clicked into place. We take our cells out of honey-producing hives in the bush area with the black bees. The progeny of the breeder queen is normally much lighter than the offspring mated here, with the black bees in the wild. That way we can always add a bit of zest to them, as opposed to having too much darkness in the progeny here. I've found that when beekeepers send me a breeder queen, in actual fact it's a hybrid and they don't realize it. So the moment we start grafting off it, we're just going backwards.

I now select here for my characteristics, and the main traits may not be honey production. If you get all the other things right, honey production comes naturally anyway. It's bee numbers that produce honey and if you don't have egg-laying capacity, you don't have bee numbers — it just follows through.

We also breed for pollen stores. There are areas of Canterbury and the south that are very prone to pollen shortages. In our first round of all the hives in spring, we mark colonies that have more stores than the others. After keeping records on pollen stores, temperament, and honey production for a season, we bring them in for a test graft, to see what the daughter queens look like. We've got to breed a queen that's just as good in her second year as in her first, for the beekeepers who requeen every second year. Some breeders just take a strain and graft off it, not knowing how long it's going to last. We graft off older queens that are mostly 18 months to 2 years old and have proven themselves. By confining them to a small nuc, we can keep them going for maybe three or four years at most.

Temperament is not as important as it used to be. I don't



One of Gavin White's sons wrapping comb honey for export to Japan.

mind a few extra stings if I can get a few extra boxes of honey, and a lot of beekeepers are changing their attitudes now, too. If you're in the serious business of honey production, your hives will be so black, you'd have to wear gloves the whole time you worked them. But you've got to have a compromise between what you can handle and whether the land owner likes getting stung! I never wear gloves and I find the extra honey production to be worth a few extra stings.

We do breed quite a few queens for cosmetic reasons, because people buy with their eyes. It's crazy: if it looks pretty and it's gold, then they like it regardless of how it produces.

I sell a lot of my queens to the Bay of Plenty area where the climate is similar to ours and they're mainly into pollination. They need a colony that builds quickly, and that's the niche for our stock. People down south don't like our bees because they're too aggressive, and the beekeepers get too many stings. They don't tell you about the extra box of honey they might get — to them that's not important, but to me it is. The straight Italian lines do quite well in those areas with exceptionally cold winters, but they consume a lot of stores. In Canterbury, the bees are so quiet you can work them without a smoker. Here, those same bees are hopeless — too lazy! In the last five years, there has been a trend in New Zealand towards the darker bees. They've finally woken up!

Our mating yards are up the road. We have drone hives in the yards and also in a mile radius of the mating yards. Of course, there's the odd wild colony around that you just can't find — they are in places you never suspect. Overall, our matings are pretty good now. Our bees are still a bit stropky and some people don't like them, but that doesn't concern me anymore — you can't please everyone.

Because of our quarantine status, New Zealand has not had new input of breeding stock. The only way I can get new stock is by bringing in different drones. The argument is that the whole of the country's bees are interbred anyway, but I disagree. There are only a few queen breeders, and there are geographic barriers that probably keep populations apart.

I'm the Vice President of the New Zealand Beekeepers Association, and the queen breeders are pushing to import Carniolan bees. They're the 'in thing' in Canada right now. I oppose it because I believe they're trying to rush in too

quickly without thinking. The intensity of the Canadian season is so different from ours. Also, if the Carniolans are so good, why haven't all the California beekeepers changed to them? Predominantly, the queen breeders are still raising Italians. There is the disadvantage of Italian queens that they keep laying as long as there are stores. And the Caucasians and Carniolans do stop laying when the honey flow stops, which is what the beekeepers are wanting now.

Honey

The bulk of our honey is sold creamed. We have a cool room with a tank and stirrer. We just leave a portion of the previous mix in the tank all the time as 'seed', and it's a continual process. I take out about 2/3 then top the tank up again, but everyone's got his own way of doing it. There's nothing complicated about it: just a matter of having the crystals fine enough and keeping it cool, about 10°C (50°F). We keep a good proportion of the finer-crystaled honeys, such as Rata and Clover, in the mix. Manuka and Kanuka have very coarse crystals. I've got it to a fine art now, where the honey stays semi-soft after creaming, even in the coldest part of the winter. We find that creamed honey is easier to transport than liquid honey. I think it has more goodness in it as well, because it hasn't been heated or had the pollen filtered out of it.

We make a darker honey in this area, from the bush around the hills. You can't rely on any single source, and our bush honey contains Manuka, Kanuka, a little Clover, and the Northern Rata. The Rata makes a milk honey, but it only flowers every two or three years. Our darker honeys are thixotropic, and we can't spin them out to extract them, so we do comb honey. We cut out the comb from the frame and seal

it in plastic boxes. It's a labor-intensive process, as we wire the frames for the combs and do all our packing by hand, but we get twice as much for dark comb honey as we do for the water-white.

Our set-up for extracted honey is pretty simple. I don't believe in having a lot of money tied up in equipment we use only fifteen or sixteen days a year. I'd rather put the money into the production units. We can extract a ton a day, even with our hand-knife and 1930's extractor, and that's all we need to do. Because our honeys are dark and difficult to extract, this is the way that suits us. However, in areas like Canterbury and Marlborough where they have lighter honey that extracts easily, beekeepers have more modern and mechanized set-ups.

We sell everything we produce, in fact, I have to buy in honey to keep up. We sell it as darker honey and don't try to hide it. People have come to prefer the bush honeys. The myth that it had to be water-white to be honey is finally dying.

We used to have waxed cardboard containers for our honey, but they've been phased out and everything is plastic now. A few beekeepers use glass, but it is so expensive, and heavy to ship. We're in the process of altering our packaging, putting bar-coding on it and changing over to plastic containers.

We used to have a Honey Marketing Authority and clover commanded the highest prices on the world market—not because of the flavor, but because it blends so easily. Most New Zealand honey goes to the UK and Europe. In the UK, our clover honey was blended with heather to extend their honey. In Germany, it was blended with honeydews to make them go further. Our exports bring high prices because the honey is water-white, tasteless and easily blended.

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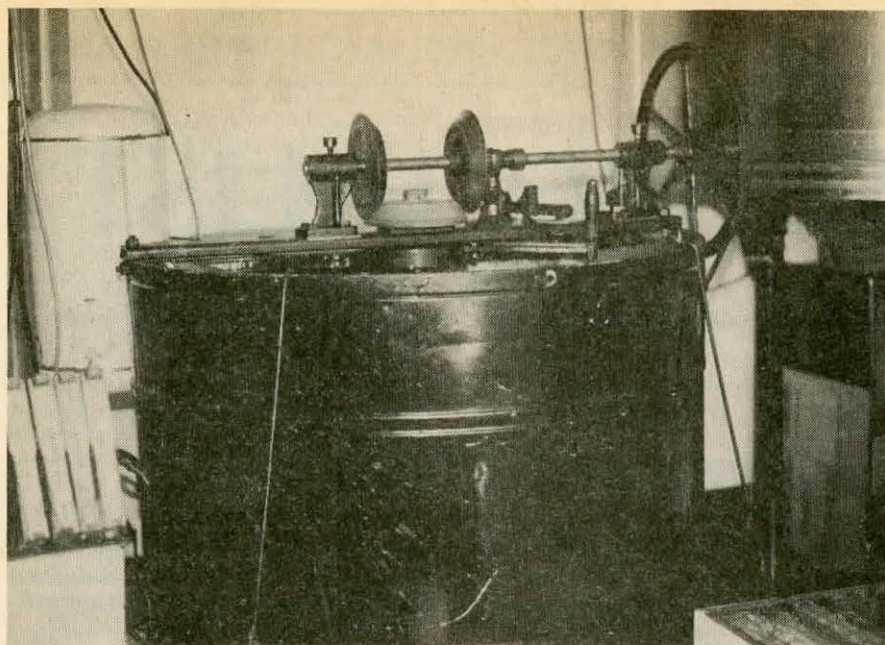
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Our season is very long in this area. There's a bush called Hakea (*Hakea acicularis*) which flowers from May to August. In Collingwood, the bees make half a box of honey off that and Spanish Heath (*Erica lusitanica*) in the middle of the winter!

At certain times we have trouble with swarming. The Barberry is commonly used as a hedging plant and it produces an unbelievable amount of nectar. It flowers in a 3-week period, just after willows, when the hives are building up. The bees go crazy and swarm on it. It produces a dark honey, but we don't really want it because it comes just at the wrong time. In other areas where they don't have Barberry, they wish they had it! That nectar flow can really cause a problem, especially with an old queen in the hive. We find that splitting the hives and 2-queening them early, along with keeping young queens, usually gets us through this period.

Pests and Predators

The Greater Wax Moth is a serious pest in the North Island and the warmer areas of the South Island such as Nelson and the West Coast. In Canterbury and Southland, the colder winters have prevented this moth from spreading. The moths eat the wood and everything, and are incredibly damaging. They don't bother foundation, and they don't hurt the white comb as long as there's not a lot of pollen in it. If there's a hive that is weakened or failed to raise a queen, it's often full of cocoons. Not a bit of wax

left. We just burn the frames in cases like that. We can fumigate or use crystals, but the idea is to avoid storing dark combs, especially ones with pollen in them.

AFB is the only bad disease that New Zealand bees have. The average incidence is 1%, and we burn infected hives as we're not allowed to feed drugs. We can sterilize our good boxes by immersing them for 10 minutes in boiling paraffin, but we don't save frames. I believe that drugs only hide the disease, and do not actually pre-

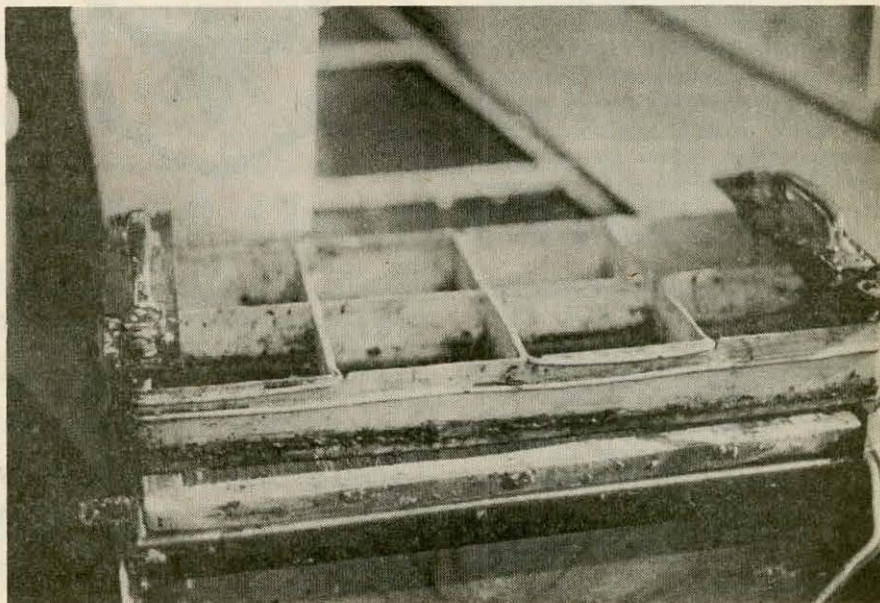
vent it. More importing countries are becoming concerned about antibiotics in the honey and the time is coming when they will not allow such products on the market.

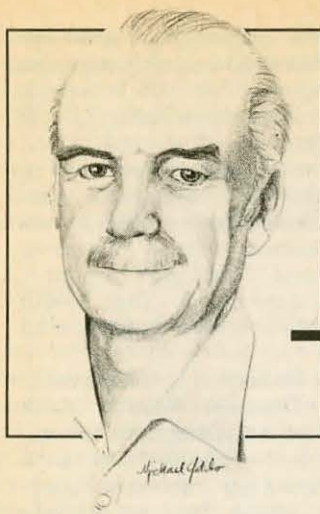
We have a quarantine and no honey or used bee equipment is allowed into New Zealand. EFB is considered a serious disease of bees in Australia, and if that gets in here it blows our quarantine. That would restrict us from a lot of countries and markets.

Wasps are becoming considerable pests. The Common Wasp is worse than the German Wasp, both as competition for food and as a menace to the hive. They are a big problem in honeydew areas, where their populations are exploding. They haven't been too bad in this area this year, probably because few of their overwintered queens made it through our exceptionally wet spring. The wasps pick on one hive, especially a mating nuc, and wipe it out. Then they'll go on to the next one and do the same. They can fly at cool temperatures when the honey bees can't. The honey bees are in a tight cluster and the wasps just come along and pick one bee at a time off the cluster, cut them up and take them home.

All we can do is to restrict the hive entrance, and find wasp nests and kill them. There are so many nests now that it's impossible to get them all. For the mating nucs we make a guard against wasps and robbers from an old wooden queen cage. We nail it over the entrance hole and the bees find their way out the hole in the cage while wasps and robbers go to the screen.Δ

Electrically-heated tool for cutting out 8 squares of comb from deep frames.





THE BEE SPECIALIST

ELBERT R. JAYCOX • 5775 Jornada Road North • Las Cruces, NM 88001

“Carbolic Acid — Bee Repellent AND Throat Spray”

Carbolic acid (phenol) is no longer recommended for use as a bee repellent when removing honey combs from colonies of bees, for reasons not entirely clear to me. I am not certain whether the decision was based on 1) The danger of using it, 2) The chance of honey contamination, 3) The health aspect of eating traces of the acid, or 4) All of the above. In spite of official attitudes against its use, carbolic acid remains popular and in use everywhere by beekeepers who can still obtain it. Perhaps they agree with Lee Watkins' assessment that the use of “acid boards” and moving bees without closing or fastening them together were the two most important “inventions” of the 20th century in relation to time — and labor-saving in the beekeeping industry.

According to Watkins, the use of carbolic acid began before 1875 in England as a means of quieting and repelling bees. By 1886, cloths dipped in dilute solutions of carbolic acid were being draped over “section cases” to free them of bees. From the beginning, beekeepers found that *direct* contact with carbolic cloths left an odor in the honey; one remedy was to use an unlit smoker with a piece of sponge soaked in a weak carbolic solution. When Charles Mraz began using fume boards in 1931, he solved the problem of direct contact of acid and honey and provided a system that is still used today.

Some of the early contamination problems of carbolic acid were related to the use of an impure form of phenol. By using the pure material carefully, beekeepers were unable to detect any off-flavor in their honey. Only once have I ever tasted carbolic in honey and that was in a watery sample that I judged at a State Fair.

Peter Sporns of the University of Alberta, Canada, has reported finding low levels of phenol (under 13 ppm) in

U.S. and Canadian honeys. He found that 11 days of aerating the honey in the laboratory and 6 days airing combs in the honey house did not reduce the levels of phenol. However, he did not give figures for residues in honey before and after being heated during processing. Capped honey is less affected than open cells, and residue levels are directly related to exposure time — how long the fume board is in place.

I picked this topic after watching a television commercial which proudly proclaimed that the product Chloraseptic® contains phenol. In fact, the liquid for use as a gargle has 1.4 percent phenol content as does the throat spray. The lozenges include 32.5 mg/lozenge of phenol and sodium phenolate. The label of the throat spray container directs you to spray your throat five times and to swallow



the solution. You can do this every two hours. And of course, you also swallow the lozenges. In addition to Chloraseptic, **Anbesol**®, also used in the mouth, contains 0.5 percent phenol and **Campo-Phenique**®, 4.4 percent.

Surely we can't be limiting the use of carbolic acid as a repellent because of health reasons. The Chloraseptic dosage is above any level you might get from eating honey. Perhaps our fears are not justified, and the careful use of carbolic acid after 100+ years of experience is not such a bad idea. After all, whenever you eat honey you are also

consuming acetic acid, butyric acid, formic acid, formaldehyde, and acetone. All of these are part of the natural mixture we enjoy as honey.

Speaking of formic acid, it is gaining increased importance in controlling the *Varroa* mite because it can penetrate brood cappings when placed close to and below infested brood. Like carbolic, formic acid can taint honey but in this case, contamination is not all bad. Residues of other treatments such as fluvalinate cannot be detected by beekeeper or consumer. With formic acid, you can tell when the contamination has dispersed without expensive analyses., simply by tasting and smelling the honey in question.

Save Your Feet

Whether you have a few colonies or thousands, uncapping and extracting can be tough on your feet and legs. Studies have shown that the harder the floor surface, the more fatigue experienced by the worker, which results in lower productivity. The concrete floors in most honey houses are tough places to stand all day without some way to soften or add “spring” to that surface. Some shoes are of value, but more help is needed.

One way to improve the situation is by using wooden floor racks or stands in all those spots where people have to work at uncappers and extractors. The racks are easy to make from soft wood such as pine, spruce, or fir. Cut strips 3/4 to 1 inch wide and nail them to cross cleats about 1/2 to 3/4 inch apart. The cleats should be two to three feet apart, depending on the flexibility of the wooden strips. The finished product is a walkway of wood that flexes as you stand or walk on it so you can work with less fatigue. Tailor the racks to fit the work space and keep them wide enough so you don't easily step off the edge unintentionally.

•THE BEE SPECIALIST•ELBERT JAYCOX•THE BEE SPECIALIST•

There are also commercial products to serve the same purpose. One suitable for honey houses is called Dri-Dek, made by Kendall U.S.A., P.O. Box 8839, Naples, FL 33941. This is a polyvinyl chloride "tile" with a non-skid surface, holes to allow water to pass through, and hundreds of flexible support pegs that give the spring you need. The tiles come in nine different colors that can be used to influence your perception of the work area. Tiles are one foot square and snap together to make a flexible, porous mat 9/16 inch high. The Dri-Dek pattern (there is also a Solidek) costs \$3.12 per square foot in lots of 50 tiles.

Sorting Combs Before Extracting

There are times when it is not a good idea to uncap combs at random and run the honey all together into one tank. You may want honey of a particular color grade, or you may want some very light honey for a special purpose. Perhaps you know that part of your honey is alfalfa or clover and the rest is some darker honey with a more pronounced flavor. In that case, you would be wise to sort the combs before they are uncapped. To do the sorting you can "candle" the combs in front of a bright light. This may not do

you much good if you have all old, black extracting combs, but with reasonably light combs you can put them into groups according to color. Different supers on the same hive may show distinct color (and flavor) differences and they may show up also in adjacent combs in the same super.

After sorting the combs, uncap and extract them so that all honey of one group can be stored separately. Start with the lightest group and work toward the darker ones.

Obviously, such sorting is not always worthwhile because a natural blend can be as tasty and easily sold as the separate colors/flavors. However, if the mixture includes some off-flavored honeydew, you can help yourself by keeping it separate.

If you think that such sorting is only for the hobby beekeeper, think again. When I visited Russell Berry, an extensive beekeeper with thousands of colonies in New Zealand, he told me that he sorts combs in his operation, segregating as many as three different honeys at a time. He is looking for an easier system of diverting the honey from the extractors into different tanks for storing each type of honey.Δ

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Testing Your Beekeeping Knowledge

By CLARENCE H. COLLISON
 Pennsylvania State University • University Park, PA 16802

Early spring is a very difficult time of the year for the honey bee colony because of unstable weather patterns in many parts of the United States. During this time the colony food stores must be carefully monitored. As fresh pollen and nectar become available, they serve as strong stimuli for brood production. As a result, the size of the brood area may increase faster than stores are replenished. Colonies often run a tight line between available food and starvation, since weather often inhibits flight activity for extended periods of time.

Stress diseases (European foulbrood, sacbrood and chalkbrood) are also most prevalent in the spring and further complicate the problem. As a result, many colonies that have survived the winter are often lost during the spring, when the rate of brood rearing is rapidly increasing.

Please take a few minutes and answer the following questions to determine how well you understand bee diseases, the stressful conditions that colonies face in the spring, and what management decisions the beekeeper faces. The first nine questions are true and false. Place a "T" in front of the statement if entirely true and an "F" if any part of the statement is incorrect. (Each question is worth 1 point.)

1. ___ The development of chalkbrood disease within the honey bee colony is enhanced by excessive hive moisture, nutritional stress and colony weakening

- by another disease such as European foulbrood.
2. ___ Two different strains of mycelia must be present before the chalkbrood fungus, *Ascosphaera apis*, reproduces by forming spores.
 3. ___ Swarming only occurs during the spring of the year.
 4. ___ The quickest and most efficient way to feed a colony early in the spring is to sprinkle dry sugar on the inner cover.
 5. ___ Hives totally buried in the snow during the winter usually smother to death.
 6. ___ Primary swarms are normally composed of a mixture of bees of all ages, the old queen of the parent colony, a few drones and 50 to 60% of the workers.
 7. ___ Adult bees normally detect and remove diseased larvae very quickly.
 8. ___ American foulbrood-killed larvae are seen as coiled or twisted remains and are easily removed from the cell.
 9. ___ Antibiotic extender patties are prepared by mixing fumagillin, vegetable shortening and sugar.

Multiple Choice Question (1 point)

10. ___ Larvae are no longer susceptible to American foulbrood after they are ___ hours old: A) 24; B) 53; C) 36; D) 48; or E) 30
11. Please give three reasons why equalizing colony strength in the spring is an important manage-

ment technique. (3 points).

Numerous chemicals are used in the fight against pests, diseases and to assist the beekeeper in routine management manipulations. Please match the following list of chemicals with their appropriate uses. (1 point for each correct response).

- A) Ethylene Oxide; B) Fluvalinate; C) Terramycin; D) Certan; E) Carbolic Acid; F) Fumagillin; G) Menthol Crystals; H) Butyric Anhydride; I) Benzaldehyde; J) Sodium Sulfathiazole; K) Paradichlorobenzene; L) Tetra Bee Mix (Terra Brood Mix); M) Beltsville Bee Diet; N) HFCS; O) Resmethrin (SBP 1382)
12. ___ Recently approved in the United States for the control of varroa mites.
 13. ___ Was used to remove honey bees from honey supers; no longer legal to use.
 14. ___ Being used extensively in the United States for the control of tracheal mites.
 15. ___ Was used for the prevention of American foulbrood but is no longer legal to use.
 16. ___ A pollen substitute.
 17. Requeening is often recommended for colonies having European foulbrood and sacbrood. Explain why this is a useful approach. (2 points).

EXTRA CREDIT QUESTIONS

18. ___ Larvae affected with sacbrood appear normal until after they are sealed in their cells. (True or False, 1 point).
19. ___ Hairless black syndrome is caused by a: A) virus; B) bacterium; C) protozoan; D) fungus; or E) mite

There are three species of mites that are closely related to the tracheal mite but live on the surface of adult bees. Where are they normally found?

20. *Acarapis vagans* ___
 21. *Acarapis dorsalis* ___
 22. *Acarapis externus* ___
- A. Dorsal surface of the thorax
 B. Behind the head capsule and on the lower side of the neck
 C. Near the base of the hind wings

ANSWERS ON PAGE 367

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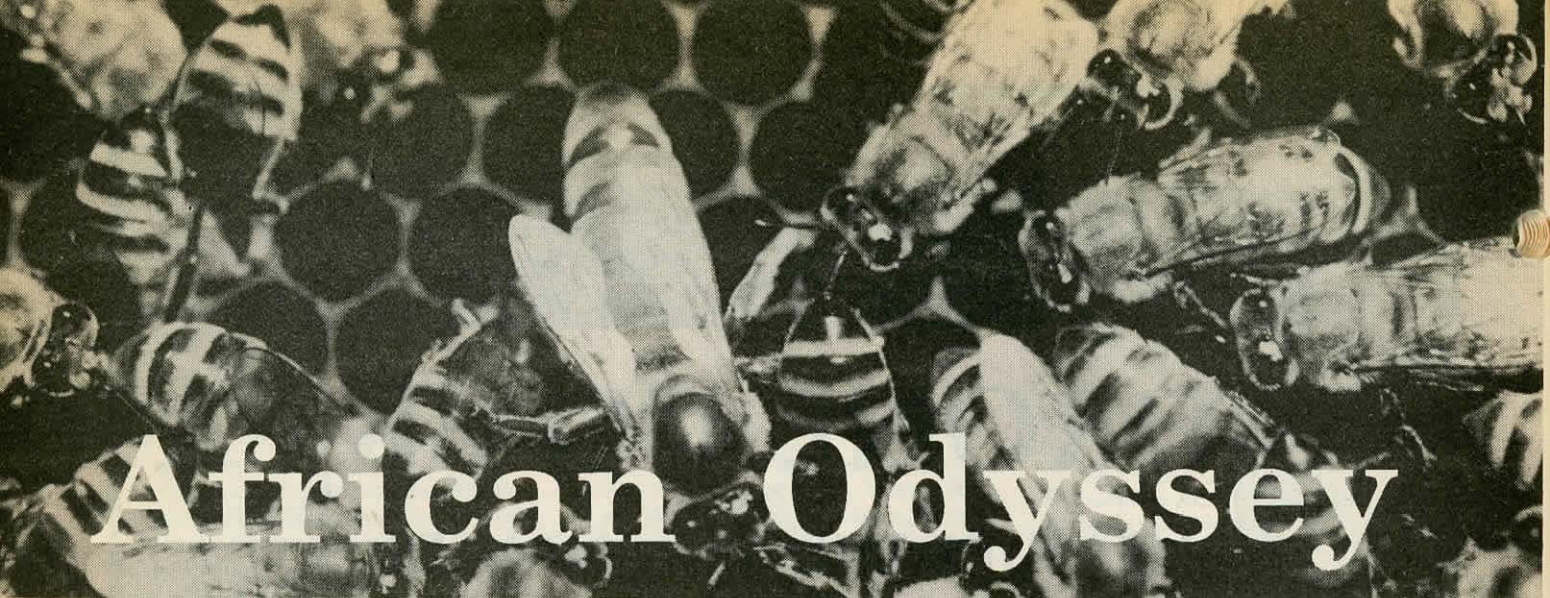
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African Odyssey

For nearly 30 years, we have been reading, listening and watching stories and reports about the African honey bee. Movies, books, television shows and certainly magazine articles have all told us that they are, essentially, a harbinger of change to the areas they inhabit. Inhabit, however, may not be quite the right word—conquer is more commonly used. Their advancement northward from Brazil has often been characterized as a military invasion.

But why, with all the doom and gloom, do some beekeepers stay in business? How, with the world against them, do some still prosper?

It is true that many have not prospered, but there

is a constant in every country—those who adapt, those who learn, are those who continue.

But there is also variety in every situation. No two colonies, no two beekeepers and no two countries are alike—and this too has caused controversy. What was absolutely true in Brazil 10 years ago is not absolutely true today. Further, what is true in Panama right now may not be the same in Honduras.

So who is right? Or, for that matter, who is wrong? We offer several versions of the same story here to convince you that this is not a beginning-middle-end, black and white story, but rather a grey, on-going adventure.

Back to the Future

We start with a visit to the beginning—Dr. Warwick Kerr's beeyard, as it is today, told by Stephen Adjare.

Dr. Chaud-Netto took me to the apiary where Dr. W. E. Kerr had originally hived those African bees. There were no fewer than 250 normal bee colonies and 100 nucs, all with Africanized bees. He showed me two types of smokers, one as huge as a blacksmith's forge and the other the same size we used in Ghana and Europe. He told me they no longer use the huge smoker and then lit the normal-sized one and I followed him to the apiary.

I was not happy, "I am definitely going to be stung", I murmured, but he did not hear me. He wore only a veil and no gloves, a pair of dark trousers and a short-sleeved shirt. He led the way and I followed as he blew the smoke out.

The walk to the apiary was short. I could see the nuclei boxes as well as the double and triple decker producing

colonies. The distance was about ten meters and flying bees were visible.

In the first nuc, the bees were working, carting pollen and flying about in their usual way. I went nearer but no bee minded my presence. We went closer still and passed about six boxes. At last we reached our destination. Dr. Chaud bent down, puffed smoke three times and did not wait for the bees to gorge themselves with honey as we do in Ghana, but opened the hive immediately and installed the queen we were carrying.

There was no reaction. The bees looked friendly, similar to European bees, but that was a nuc with only three combs, and the bees had been without a queen for some time. Normally, colonies are very aggressive during the first few days after losing the queen. If their efforts to replace her are fruitless for a long time, they lose hope. Pollen collection ceases and worker bees turn to keep their nectar harvest in their honey sac for them-

selves. At this stage, the bees look calm and friendly and all their aggressiveness is lost. This is what I knew from experience in Ghana, and I thought the same thing was happening to the hive where this queen had just been installed.

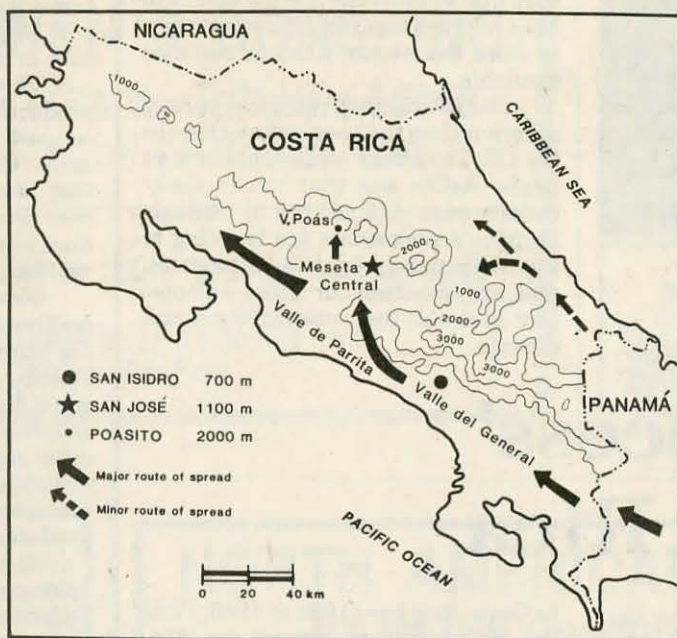
The next afternoon I went with some technicians to visit more colonies. This time it was not to see nucs, or those containing only a few bees and few combs, but to be exposed to the real triple- and quadruple-decker hives.

The two technicians put on only veils for protection. They were wearing trousers, short-sleeved shirts, and no gloves. We did not take the large smoker with us, but only one normal-sized one. I was given a white beesuit, veil, leather gloves and long boots to wear. I rejected everything except the veil. "I want to be stung, that is why I am here," I said.

I needed to know and compare the degree of aggressiveness of both the African and Africanized bees. I needed to know what the Africanized bee sting felt like. The European bee sting is much more painful than the African bee sting.

One technician puffed the smoker for just a few strokes and stopped. I used the hive tool to pry open the hives. The bees looked the same color as the bees I know in Ghana, but were slightly larger. They were all the same color. They had built comb cells as large as those of European bees. Their general behavior was not much different from that of the Californian bees I had worked with for six months. I did not find any aggressiveness. None of us were stung. We opened much stronger colonies and their behavior was the same. Their aggression was completely lost.

I told the technicians, "I want to be stung today, by all means, so give me more time. Let's go to those colonies over there". This time I made the hive selection. We opened over ten colonies and ransacked the combs of most of them but nobody was stung, and I never saw an aggressive bee. It was indeed strange. I could not believe I was right in an apiary in Brazil.



bance that can lead to a stinging incident.

Within the apiary, colonies are now almost always placed on individual stands separated from others.

Apiaries are fenced for livestock, because animals, as well as humans, have suffered from stinging accidents.

Beekeepers now have, and use, extra clothing. Sturdy veils and gloves are a must, as are coveralls, heavy pants and boots, to reduce the number of stings. Large volume smokers including a gigantic smoker 3 times the size of a normal smoker are also used. It is necessary to don the protective clothing before entering the apiary and to keep it on until well away from each site.

Panama beekeepers are only learning how to manage Africanized bees. One change is in the management to keep productive bees in a hive. The Africanized bee has a tendency to abscond. It reduces brood production during non-resource times

and then, very quickly, expands brood rearing when conditions are more favorable. This is rapidly followed by queen rearing activities. Therefore, to keep colonies productive, conditions in the hive must be continuously monitored and managed accordingly.

Feeding sugar helps keep colonies from absconding during the rainy season. Beekeepers can purchase a partially refined sugar at a subsidized price to feed their colonies. Although some flight is possible during the days of the rainy season, and there is some bloom year round, sugar feeding helps stabilize the colony, as there often is very little brood in colonies at this time.

The transition from a small, quiet colony to one rearing replacement queens is rapid. Beekeepers try to manage swarming as they do in temperate areas by cutting queen cells and providing sufficient room for brood nest expansion. But swarms are still common and since their capture usually is not worthwhile they are left alone. Although some colonies swarm repeatedly, those that swarm least often produce some surplus, whereas those that abscond are gone.

The Africanized bee does produce honey like our honey bee. They have much heavier pressure from wax moth and other stored comb pests than we

Panama . . .

Mr. Adjaré's experiences are not unique in an area that has had extensive research and intensive beekeeping for a number of years.

Dr. Dewey Caron relates a more dynamic situation, telling of the African impact on Panama.

The Africanized bee first arrived in Panama in early 1982. Panama, connecting South America to Costa Rica and the rest of Central America, is a country of 2 million inhabitants about the size of South Carolina. It has a tropical climate but also some high elevation agriculture where potatoes, coffee, vegetables and dairy cattle thrive.

Within two years of arrival of the Africanized bees, the 20,000 bee colonies of Panama were completely africanized. In the following 4 years the number of bee colonies dropped by over 50% due, in part, to the difficulty of maintaining active, productive colonies of Africanized bees. Because of high swarming, absconding, and aggressive hive defense, beekeepers have abandoned apiaries and reduced

their managed colonies drastically.

Honey production in Panama has plummeted. Official honey statistics had been growing steadily by 10-20% per year since the 70's but now Panama harvests less than 1/4 of what it did in the last year of beekeeping with European-race bees — 1982. The decline is largely due to lack of management although competition from wild colonies may play a role. Wild (or feral) colonies, as well as swarms were largely non-existent in Panama before the Africanized bee arrived. Now swarms can be found everywhere, creating problems for humans and animals, as well as competing for nectar and pollen resources. Unlike the US, beekeepers do not capture the swarms nor attempt to remove wild colonies except by killing them because the effort usually is not successful. Captured swarms readily abscond unless they have sealed brood.

Nowhere are the changes more evident than in the apiary itself. Virtually all apiary sites have had to be moved. Isolation is necessary with this bee since even examination is a distur-



A commonly used Jumbo Smoker.

face here in the US, so frames are often removed to be extracted and then put back on colonies the same or next day for refilling. When there is a population buildup, colonies store the surplus nectar. Beekeepers report yields of individual Africanized colonies as similar to European race bees. What they find so different is their ability to keep colonies together and productive to store the nectar when it becomes available.

The Africanized bee is not greatly different than the bees we keep here in the US. They have some behaviors we might dislike and they are in many cases a more difficult bee to manage. Panama's beekeepers are learning to live with those negative differences, and are selecting for those colonies that best suit their management and climate.

The 'Process' in Costa Rica

Moving north from Panama lies Costa Rica. Marla Spivak was there during the 'Africanization Process', and relates how some beekeepers remained successful even during the invasion.

The following is a condensed version of a chapter to be published soon in a book entitled *The "African" Honey Bee*, edited by D. J. C. Fletcher and M. D. Breed.* My aim here however, is to emphasize that a population of Africanized bees is highly variable and can be influenced by simple management and selection techniques. I do not wish to give the impression that Africanized bees will not be a problem in the United States, and that beekeepers do not need to be prepared for the "worst case scenario." It is hoped that by stressing a beekeeper's perspective of the Africanization process, a more practical approach to future selection and breeding programs will be taken. Also, there is a vast amount of literature published by Brazilian beekeepers and researchers which stresses the same points outlined here, and which has led to successful management of the Africanized population in the southern part of that country (see references in Michener, 1975, *Ann. Rev. Entomol.* 20:399-416).

While conducting research on the survivorship of Africanized and European bees over an elevational gradient

in Costa Rica from 1984 to 1986, I had the opportunity to witness the Africanization of the honey bee population in various areas of the country. Every three months over the two years, I surveyed and sampled many swarms and hived colonies with the following question in mind: Can colonies be found with "intermediate" characteristics? Are there colonies which are not typically "Africanized" or "European", but share characteristics of both types to varying degrees? If there are "intermediate" types, under what conditions might they persist in different areas with and without introduction of European stock? To emphasize the perspective of a beekeeper working with bees in the field, only behavioral assessments and cell size measurements will be used to characterize colonies or swarms (these techniques are described in full in the chapter text).

I concentrate on two main areas in this discussion: the Valle de El General and the Meseta Central (see map). These areas range from 700 to 2000 meters in elevation, and are characterized by different vegetative and climatic patterns. The regions also differ in the degree of sophistication in management techniques practiced by beekeepers. When the entire "Africanization" process is observed in different areas, it is evident that Africanized bees display a wide range of characteristics which span a continuum from European-like to African-like.

Continued on Page 336

Ups and Downs of Honey Production

There's a swarm of controversy about how Africanized bees affect honey production. Dr. Robert E. Page, entomologist at Ohio State University, hopes his research of US honey yields will help decide the issue when the bees arrive in the United States.

"Researchers in Brazil say honey production *increased* when the Africanized bee was introduced," Page says. "But in Venezuela and Panama they say it *decreased*. So Africanized bees produce more honey or they produce less honey. I wondered, what can we really say about this?"

Some researchers say the Africanized bee doesn't store as much honey as the European bee and is more likely to swarm, sting and abandon a colony when disturbed. That, too, could cause reductions in honey yields. However, other reports from South and Central America say the Africanized bee is tamer than previously thought — and produces more honey.

"Both camps are basing their opinions on data that is deficient," Page says. The problem is that honey yields normally fluctuate from year to year, depending on the weather, area crops and other factors. So it's hard to tell if increases or decreases are due to Africanization or something else.

A new system was needed to measure the impact of Africanized bees on honey production, so he and two researchers from the Univ. of Wisconsin analyzed 42 years of data. They used honey production figures compiled by the USDA Statistical Research Service from 1939 to 1981 in the US. As expected, honey yields from year to year fluctuated wildly within states but as they compared states, correlations in the ups and downs of honey yields began to emerge.

The researchers identified 11 that could be used to compare honey yields. The states within the regions had similar patterns in honey production while neighboring regions also shared similarities. By using this system, factors that affect honey production — such as the Africanized bee — can be analyzed by comparing yields:

- In highly correlated states.
- Of an individual state with its regions average.
- In correlated regions.

"I hope this research sets a standard by which we can truly talk about beekeeping problems," Page says. Now, when the Africanized bee arrives in the US, researchers will be able to make meaningful interpretations about honey yield fluctuations.Δ

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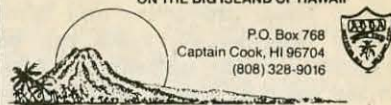
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The majority of Africanized colonies in Costa Rica displayed characteristics intermediate between the two extremes. These productive and manageable intermediate types can be maintained when undesirable Africanized colonies are consistently requeened or killed.

San Isidro del General

The lowland town of San Isidro del General (elev. 700 m) is located in a valley (Valle del General) about 65 km north of the Panamanian border (see map). The land is mostly cultivated, or is grazed by cattle, and is intermixed with small stands of secondary forest. Before the arrival of Africanized bees, there was virtually no feral honey bee population. Before 1983, approximately 2400 standard colonies were operated by about 86 beekeepers. Honey yields averaged from 40-50 lbs., although up to double these yields were obtained by more experienced beekeepers.

By July, 1984 the area was considered to be "Africanized." Only 7 beekeepers were managing their colonies, and virtually no one was producing honey. Numerous stinging incidents of both people and livestock were reported.

The Africanization process appeared to have happened in this area in the way most often described in the literature: a high-density front of swarms, not barred by geographical obstacles, moved quickly into the lowland region mostly during the dry seasons. Many absconding and migratory swarms issued throughout the rainy season. These occurrences resulted in the establishment of a high density feral Africanized population. Any new queens (by supersedure, or swarming) of the hived European colonies probably mated with Africanized drones from the feral population, resulting in rapid "Africanization."

On closer inspection, however, even by July 1986, not all of the feral swarms or colonies in any managed or abandoned apiary were extremely defensive, or "strongly Africanized."

For example, of 18 colonies hived from new swarms for which I was able to make repeated behavioral assessments and obtain reliable cell measurements between 1984 and 1986, I considered 1 as "strongly European" by behavior, (10 worker cells = 5.3 cm); 12 as intermediates, (10 cells = 5.03 cm), and 5 as "strongly Africanized" (10 cells = 4.9 cm). A common occurrence from the beekeepers' perspective was that in the first stages of "Africanization," one to several colonies in an apiary became highly defensive rela-

tive to what they were used to. When they entered an apiary and attempted to manage their colonies in the usual manner (i.e., without adequate protective clothing, little smoke, and disregarding bumping, or jarring of the colony), extreme stinging responses were sometimes elicited from one or several of these more defensive colonies. This made it undesirable or impossible to inspect other colonies in the apiary. Since essentially all of the beekeepers in the area had access to only low quality protective clothing (relative to US standards), most opted to give up their hobby or livelihood.

Most hived colonies were abandoned where they stood. Since they were near homes, penned animals and roadsides, numerous stinging incidents resulted.

Beekeepers can, however, control the Africanization problem in managed apiaries. One 21 year old beekeeper in this area, Ronald Montenegro, has stayed in business and is successfully managing Africanized honey bees. In 1986, he produced an average of 90 lbs/colony from 90 colonies, which is equivalent to the highest yields recorded before 1983. There are several reasons for his success: 1) He heeded advice from pamphlets and reports from other South and Central American countries on the importance of relocating apiaries 300-400 meters from houses, animals and roadsides. He put all his colonies on individual hive stands and distributed the apiaries into smaller groups *before* he noticed his colonies becoming Africanized. Consequently, he has had no stinging incidents, or complaints from neighbors; 2) He obtained good protective equipment, including overalls, gloves, and boots which he uses consistently; 3) He pays careful attention to local resource conditions and antici-

pates dearths, or potential absconding conditions, by feeding colonies, and practices effective swarm control measures; 4) He is currently learning queen rearing techniques, which he will implement in his own apiaries; and 5) He is familiar with those few colonies (3 in 90!, personal observation) which are consistently defensive. He either manages them last so as not to irritate the other colonies, or plans to requeen them. Because he has modified his practices, is diligent and careful, he has monopolized the honey market in the area, and plans to expand his operation slowly in the future.

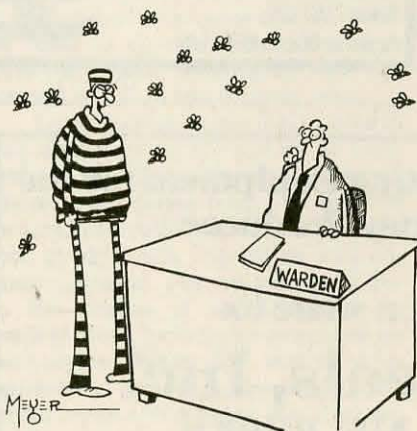
Meseta Central (The Central Plateau)

The capital city of Costa Rica, San Jose, is located at 1100 meters in the Meseta Central. Below 1500 m, the land is largely cultivated. Most of the honey is produced in the coffee growing regions. Honey yields before the arrival of the Africanized bees averaged between 22 - 33 lbs/colony, but more experienced beekeepers with modern equipment produced between 66 - 88 lbs/colony.

The arrival and spread of Africanized swarms into the Meseta Central took much longer than in the San Isidro area. The main reason for the delay was geographical; in order for swarms to reach the plateau, they had to follow the Pacific coast northwest to the Valle de Parrita, then turn north, while climbing in elevation to the San Jose area (see map). Completing this circuitous route took about 1-2 years. Between July 1984 and July 1986, I collected samples from 39 swarms in the San Jose area. I made behavioral assessments and obtained reliable cell size measurements for 29 of these swarms. Bee behavior: I considered 1 as "strongly European" (10 cells = 5.3 cm), 16 as "intermediates" (10 cells = 4.95 cm), and 12 as "strongly Africanized" (10 cells = 4.89 cm).

In June, 1984, beekeepers and fire-fighters trained in swarm capture had captured only a few suspected Africanized swarms, and their arrival remained essentially unnoticed except by the more attentive beekeepers. By the next dry season (January-April, 1985), two years after their arrival into Costa Rica, beekeepers definitely noticed that Africanized swarms were entering the San Jose area.

Honey yields dropped somewhat in the Meseta Central in 1984 and 1985. It is unclear whether the lower yields were due to unfavorable climatic and resource conditions, the



HA! AND NOT ONLY THAT, THEY
MADE ME QUEEN!

arrival and increasing density of Africanized bees in the area, or a combination of these factors. Skilled beekeepers with modern equipment claimed their honey production dropped from an average of 100 lbs/colony before the arrival of Africanized bees, to 65-75 lbs/colony in 1984, and 20-50 lbs/colony in 1985. In 1986, their yields increased again slightly, averaging 50-70 lbs/colony.

Conclusions

The Africanized process in three areas of Costa Rica can be summarized as follows: In a lowland area such as San Isidro, there was a rapid establishment of a feral Africanized population, and there appeared to be a rapid turnover from a "strongly European" to a "strongly Africanized" population. In higher elevations, and more geographically remote areas as in the Meseta Central, and the western slope of Volcan Poas, there was a much slower establishment of a feral Africanized population, and the characteristics of the population did not appear to change so abruptly.

In all regions, there were beekeepers who were unwilling to modify their practices to adapt to the new circumstances. They ultimately abandoned their colonies. Based on these occurrences, the idea was erroneously perpetuated that the entire population displayed uniform characteristics, and all bees were dangerous to the public and undesirable from a management standpoint.

When swarms and colonies from all areas were observed and assessed on an individual basis, however, they clearly displayed a wide range of behavioral characteristics. It was the minority of colonies which were consistently unmanageable and extremely defensive. Those beekeepers who were willing to requeen or kill such colonies, and modify their management practices were able to work Africanized colonies profitably and with minimal danger to the beekeeper or public. The establishment of a feral Africanized population (i.e., in recreational areas, cities, etc.), and the stinging incidences which stem from these colonies has been the most pressing problem in the neotropics. Stinging incidents have been kept to a minimum in the San Jose area however, because of the initiation of a swarm capturing program. The public was also educated about Africanized bees through informative and non-alarmist newspaper articles.

These observations emphasize how beekeepers can reduce the impact of Africanized bees by employing good

management and selection practices. How long do the "intermediate" types persist in different areas with and without introduction of European stock? It depends on the collective cooperation of beekeepers and queen breeders: when the unmanageable Africanized colonies are consistently requeened or killed, more manageable intermediate types can be maintained. This has been emphasized repeatedly by beekeepers and researchers in southern Brazil where they are currently working with productive and manageable Africanized bees.

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Next: Nicaragua

George Meyer has been working in Nicaragua off and on for awhile, and relates this incident of working with bees there.

My experience with Africanized honey bees in Nicaragua have differed from many other reports. The first discovery of the Africanized bee in Nicaragua was in 1984. Currently, I am working to pollinate muskmelons for a Nicaraguan company.

One of our crew grabbed an oversized smoker and headed off in the direction of some buildings, while the rest of us became scavengers, collecting bits and pieces of wood. Lucille, my assistant, handed me a pair of knee-high rubber boots and I put them on. Our departed member quickly returned, his smoker filled with live coals from some kitchen in the area (most people here cook over wood fires). We divided the coals amongst ourselves, added our wood chips, and pumped the bellows.

After we collected our gear, we headed down a dirt trail leading out of the compound. It made a sharp turn to the right and then went down across a small stream. Fifty yards ahead I could see some one-story colonies. We passed these, crossed a small corn field

and entered another well-traveled trail.

The hives were close-by, under the shade of a giant, sprawling tree. Normally, these yards are accessible by tractor; however, the previous week there were significant rains which forced our overland trip.

They have "killer" bees in Mexico so they certainly have them here in Nicaragua. Their reputation preceded them and I entertained certain apprehensions. I rested my gloves on the top of a hive as I put on and adjusted my veil. I had been told that Africanized bees will come out to "greet" you when you enter the yard, but no bees buzzed around me. They all seemed busy collecting pollen.

Lucille, myself and another worker, Gusto Pablo, stayed to work this group of 40 colonies. Except for two, all of the colonies had only one story. Determined to follow Lucille's lead, who had put his gloves in his back pocket, I cautiously followed suit. Then, before anyone could pour smoke on the first colony, Lucille removed the lid. Much to my horror he proceeded to smash the migratory lid onto the topbars to dislodge the few dozen bees that clung to it, which violently jarred the whole colony. I froze in sheer panic and the result was fast. All the bees DIDN'T pour out of the hive with the sole intention of stinging my "bottom board". They acted like an average colony of honey bees. I thought to myself, "maybe this particular hive wasn't hybridized yet. Hybridization doesn't happen to every colony at once".

However, colony after colony proved similar. Some were very gentle, while others were nasty. I could tell little difference in the behavior here to that of yards I've worked in the States. The bees did seem to run more on the combs and I smoked them more regularly than I do most hives in the States.

These bees seemed to be very sensitive to the alarm pheromone. One sting, if left in the skin, was usually followed by a second, and a third. But if it was removed and the place lightly smoked, no unusual behavior would result. They also appeared to be equally sensitive to smoke. Results were immediately obtained from smoking. Many times with European bees, it is necessary to wait a few moments for the smoke to penetrate the hive, affecting the inhabitants. These bees reacted immediately. I don't mean to imply that I didn't take a sting, I did, but at levels that did not differ from European bees in the States.

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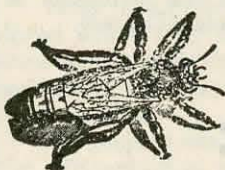


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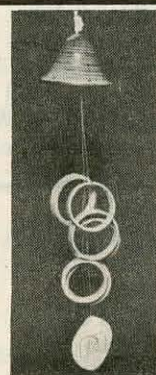
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Smoke Smoke Smoke

Smoke seems important when working this bee (as with ours) and George relates another incident that makes this point very apparent.

The first few female watermelon flowers opened Saturday, and the grower called to say "Today". I had to move bees that night.

I arrived at the apiary about 2:30 in the afternoon. I had to select and nail together 36 hives to prepare for the move. As occasional drizzles ran down the windshield of my truck, I remembered how much bees hate the vibrations from hammering. This yard is located well away from human dwellings, between a banana plantation and a corn field.

Under normal conditions I have found the differences between the hybrid Africanized bees of Nicaragua and the bees prevalent in the United States fairly insignificant.

When I got into the apiary, however, most of the bees were home and in no mood to be bothered. They poured out of their hives with the slightest provocation (definitely different than the last time). Even resting my smoker on the top of a colony was enough to get a response. From what I've seen, Africanized bees react differently than our domestic bees in two respects — running and flying. Everything these bees did, an aggressive hive in the States will do to the same degree. The difference is the percentage of aggressive hives. In the States, only a few colonies will act this aggressive, here it's the majority.

At the first disturbance, the bees ran out of their hive. However, as soon as I smoked them, they ran back inside. In a way it was comical, like a *Keystone Cops* movie. They would charge out of the hive in a wave full force, only to do an almost immediate "about face", climbing over each other as they raced back inside.

After working half a dozen hives, I returned to the first few to see what they were up to. The situation at the entrance was chaotic. Some of the bees were furiously fanning to orient airborne bees, many of whom were landing on the entrance and dashing in. Others were rushing out of the colony, only to sit on the bottom board. Some were running on the entrance lengthwise. It was complete pandemonium, a virtual riot.

On to Honduras . . .

Finally, we present a short experience sent to us by Robert Jazwin who had some basic beekeeping experience in Honduras in late 1987.

During October, 1987, I went to Honduras to help a friend set up bees at the orphanage he was working at. They used about 1,000 pounds of honey there per year and the director was very encouraging.

Africanized bees had arrived in Honduras two and a half years ago so I was sure that they would be a problem.

Honey production has dropped 60% in Honduras in the past year due to beekeepers quitting. Our plan was to purchase several Honduran hives and requeen with my queens mated in

the U.S. After requeening, the bees would no longer be a threat to the children at the orphanage. The teenagers that I was to train would then be able to work with gentle, productive, American bees and periodically requeen to maintain this level.

We purchased some local hives and both trucked and hand carried them over several miles of unpaved potholes, in the middle of the night. Needless to say, the bees got upset. The next morning when I went in to requeen they were waiting, and exploded out of the hives.

One hive was particularly wild when I smoked and removed the top. There were bees everywhere and total chaos in the hive. The nurse bees took to the air and deserted the brood

Profitable Pollinators?

Recent USDA research has shown that Africanized bees may be even better pollinators than our European bees. We won't know until they get here, but researchers in Brazil have looked at some of these questions already, as James Salome explains.

I have been working with Africanized bees in Florianopolis, State of Santa Catarina (Southern Brazil), where, as a student of Biology at the Universidade Federal de Santa Catarina, I analyzed details of their foraging behavior.

I wanted to know if individual Africanized bees tend to specialize in one kind of material, say, collecting mainly pollen, or collecting mainly nectar, along varying periods of time. We know a great deal about the kinds of materials bees collect, in what circumstances, and for what purposes, but we have surprisingly little information on the amount of effort individual bees dedicate to the collection of these materials, or even what proportion of the bees in a beehive are engaged in their collection; this is especially true for Africanized bees.

In August of 1986 I marked 108 bees from a Langstroth beehive. Of a total of 582 loads examined, the majority (400) were nectar only; less commonly (116) were pollen only, while nectar and pollen simultaneously was much less (55). Pollen loads were usually of a single plant species. Less frequently, a single load contained pollen from two species of plants.

Of the 108 bees marked, 65 apparently always brought back the same material or materials, 56 always brought back nothing but nectar; 4 brought back nothing but pollen and 5 always brought back mixed loads.

The other 43 bees were not so faithful, and brought different materials back from different trips. Among the 108 bees, the majority of the loads were still comprised of nectar only (147 loads), followed by pollen only (98 loads), while 47 were mixed. Africanized bees show a short-term fidelity to what they are currently collecting, but may, in the course of their lives, be faithful to different materials in sequence. We are investigating the ecological and behavioral factors associated with these fidelity patterns.

frames even before I removed them. The bees had killed the queen during the night and left her body on top of one of the frames. I dequeened the other hives and was ready to start with push-in cages.

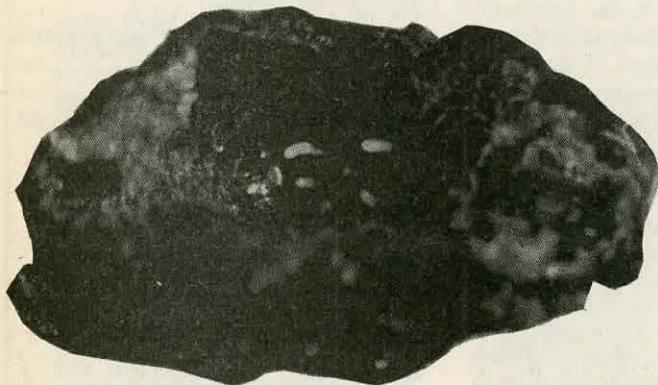
I experimented with trial releases over the next several weeks. Acceptance was slow and difficult and even after a brood pattern was well established, not always successful. After initially accepting some queens, they killed and tried to supercede others. One queen was killed just two days before her own brood was to emerge. Ultimately, two queens survived and two strong hives are now in place. It would have been far easier to requeen into a nuc, but with all the swarms in the area, I only used this as a last resort and then it was only partially successful.

I was amazed at the persistence of the AHB in producing supersedure and swarm cells after a push-in cage or even a freely laying queen was present. In a hive that had been apparently queenless for a couple of weeks, I saw queen cells developed through the pupal stage. And, although laying workers were present, fertile eggs should not have been in the hive. I have no explanation for this.

Also, I saw several queen cells that had multiple eggs present. The photo is one queen cell I removed containing multiple eggs.

A number of observations were made regarding the AHB:

- Defense appears variable from day to day.
- The white screening material on the bee veil reduced the number of workers at face level.
- Inspection of the AHB hive is a two-man job; one person manipulating the bees and one operating the jumbo smoker over the top bars.
- Full bee suits including gloves are a must.



Open queen cell containing multiple eggs.

An Ounce of Prevention: 13 Tips

*What can we learn from this information?
Toge Johansson has 13 good ideas.*

It is time that US beekeepers take responsibility themselves for the control measures recommended by apiculturists in South and Central America to reduce stimuli that trigger the defensive behavior of AHB.

1. Place hives on individual stands. This avoids alerting other colonies on a common stand when the first colony is manipulated.
2. Space hives more than 15' apart to reduce inter-colony communication.
3. Provide 7' shrubbery at the back and sides of each hive stand to reduce visual stimulation.
4. Surround the apiary with 10' tall shrubbery to avoid colonies being alerted by passing people or animals.
5. Keep apiaries small, preferably no more than 10-15 hives.
6. Locate apiaries at least 650' away from human or livestock habitations.
7. Permit all colonies to rear drone brood to increase the probability that European and/or AHB queens will be mated by European drones. Beekeepers may need to provide drone comb in the brood. Frustrating the instinct to produce drones *does not* increase honey production.
8. Rear replacement queens in nuclei established *on top* of production colonies for colonies with undesirable queens or that are queenless. A nucleus is also the most successful way to introduce queens. AHB can be difficult to requeen.
9. Prevent drones from colonies with undesirable traits from mating with queens by trapping at such times as queens are flying.
10. Acquire adequate protective clothing.
11. Cooperate with efforts to control AHB by the use of genetic dilution. The widespread network of hobbyists will be an important source of drones for mating with AHB queens.
12. Modify management techniques to prevent swarming: provide larger hives, avoid reducer cleats, and check for space and swarm cells often.
13. Secure the means of killing colonies rapidly. We need to have suitable materials on hand before the worst possible scenario becomes a reality.

As we pointed out at the beginning, there are as many stories as there are beekeepers. The "Africanization Process", as it is called, seems fairly consistent, however, and follows the basic outline Marla Spivak provided.

But failure and success in beekeeping also follow basic patterns, and are consistent regardless of the country studied.

Who of these is right? For their place and time, they all are. But, the most important factor to remember from all of this is that none of this is right for the US. Already Mexico's story is different than any of these. Remember, no two colonies, no two beekeepers and no two countries are ever exactly alike.Δ



Extracting Operations

DR. JAMES TEW • The Agricultural Technical Institute • Wooster, OH 44691

"The sound of an efficiently operating system can be music to the ear."

At some time, many hobby beekeepers outgrow their hobby and it becomes a business. For many beekeepers, it's one of those trying periods in their operation — a time when they produce too much honey to be a hobbyist, but not really enough by to be a truly commercial operation.

There is simply no way that one can describe the perfect extracting set-up. It depends on so many factors; number of colonies, financial conditions, building facilities, personal time, and beekeeper mechanical skills, are examples of such factors. I have yet to see the ideal "turn-key" extracting operation. No doubt, the equipment manufacturers would contest that statement, but it has been my observation that any honey processing system requires fine tuning.



Fig. 1

The whole procedure seemed so simple when colony numbers were small. A small extractor, an electric uncapping knife, and uncapping tank were the main components of a respectable, if small, honey processing set-up (fig. 1). Such an operation would handle somewhere around 30-40 colonies for most beekeepers. Obviously, the more colonies one acquires, the more work that is required to process the crop with such equipment. At this

point, one of several things can occur: (1) you become tired of the work and reduces colony numbers, (2) you find help, (3) you decide to maintain the work level, or (4) you begin to add processing equipment.

If #4 is the option selected, probably one of the first improvements is to motorize the extractor. Adding a hand cart for moving supers probably comes shortly thereafter. As the processing unit output increases because of the increased production, the filtering device (usually some kind of simple strainer) becomes overloaded. Of course, one could pour honey into settling tanks and allow the debris to rise to the top of the honey, but some kind of filtering is normally desirable. It is impossible to predict how the processing operation will grow. In some cases, you may just take the plunge and buy larger extractors and processing equipment. Maybe used equipment is an option. Regardless of the method, the honey extracting operation begins to grow.

The honey processing equipment at the Agricultural Technical Institute is used in this article to represent a larger operation. The equipment is used in a teaching manner and is arranged so it can be moved to different sites within the extracting room. The equipment at the Institute is discussed, not because it is the best setup, but because it is afflicted with the same problems as are most operations — the problem of keeping all the processing equipment in equilibrium. If the uncapper has a greater capacity than the extractor(s), then the uncapper will frequently sit idle. If the extractor(s) and uncapper is in harmony, the sump and honey pump become potential problems. If the sump/pump has a great enough capacity, the filtering device can be a problem area.

A power uncapper and wax separator are shown in figure 2. The equip-

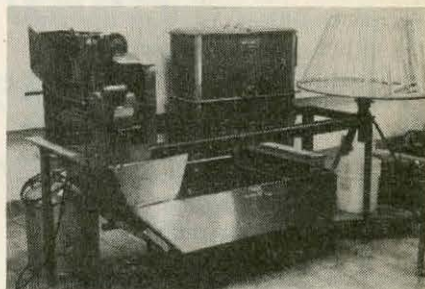


Fig. 2

ment is a delight to use, but is grossly more machine than our 200 colonies require. It takes quite a bit of honey to prime the system and to get the wax separator up to operating temperature; but on the positive side, oversized processing equipment allows great potential for colony number increase. The uncapper complex feeds three extractors (one 24-frame and two 10-frame, fig. 3) via a frame "merry-go-round" (fig. 2). The carousel is simply a lazy-susan arrangement that makes uncapped frames within handy reach. One of the ten-frame extractors is a cabinet model that requires less space and is less prone to wobble when starting an imbalanced load (fig. 2). The 24-frame machine (fig. 3) has a modern solid-state circuit board that allows for automatic cycling, not completely unlike an automatic washing machine. All three machines feed the extracted honey into a sump tank that is attached to a honey pump. The sump has



Fig. 3

a float switch that turns the pump on when the honey fills the sump tank. The sump and pump arrangement is frequently a weak link in the system. If the sump is working correctly, it collects quite a bit of wax residue, and requires occasional cleaning. The sump/pump pushes the honey through clear food grade plastic lines transferring the honey to the honey filter, which is another weak link. The filter should be primed with filtered honey. If one allows nylon strainer bag-type filters to fill with honey from the pump, the wax residues will cling to the filter bag causing flow rate reduction. Additionally, if the filter is allowed to drain, the wax particles will logically line the inside of the filter bag (since wax particles cannot pass through the filter) causing the next tank of honey to pass slowly through the clogged filter. If the honey is to be sold in bulk, it may not be necessary to filter the honey, but simply skim the debris from the top of the honey in the settling tank (fig. 4) and pack in 5-gallon cans or 55 gallon drums (fig. 4), that will be an individual choice.



Fig. 4

Hand truck devices come in a variety of models depending on the projected use (fig. 4). A common hand truck is justifiable under almost any conditions. If one uses 55 gallon drums, a drum truck is mandatory. Such a truck makes moving a 600 lb. drum surprisingly easy. Older trucks had metal wheels while newer models have rubber tires that make rolling and transport easier. The super hand truck shown in figure 4 is a real luxury. A beekeeper can move large numbers of supers and with a release mechanism, detach the truck from the super stack. The hand truck does require that special pallets be constructed that will allow the prongs to slip beneath the super stack. The pallet also doubles as a drip board catching all honey that drip from the supers. Incidentally, these pallets are also very useful even with a standard hand truck.

Many beekeepers pump honey directly into 55 gallon drums ignoring settling tanks completely. Bee supply

dealers stock drum honey gates that can be attached to common 55 gallon drums. That simple attachment makes settling tanks one of the cheapest components of the extracting operation. If stainless steel settling tanks are to be used, costs will be substantial. The settling tanks in figure 4 hold approximately 1750 lbs. of honey in each tank. The settling process allow air bubbles, wax, and other debris to rise to the surface of the honey and be removed from the tank. The honey is most likely drained into 5 gallon cans for subsequent sale or bottling. Not too much goes wrong with the settling process unless the honey is allowed to crystallize in the tanks. Commercial people have drum heaters, but the sideline beekeeper is going to have to purchase a new shovel and scoop the crystallized honey into other cans for liquification.

The final phase of the honey processing procedure is to bottle the honey if the crop is moved in that way. Bottlers for small operations are difficult to acquire. In fact, I have never seen one. Generally, commonly available honey bottlers are purchased from manufacturers and one just sits and fills jars while watching TV or some other pleasurable distraction. It's not a bad job—just slow. Automatic bottlers are available, but are somewhat costly. At least the work is not as demanding as handling supers. Again, some kind of coated tank could be used to make a bottling tank, but a heated tank will make the honey flow much faster.

In one sense, the extracting process comes full circle (almost). One of

the first components I mentioned was the wax separator. It does a good job of putting honey in one area while putting wax in another container even though it may not leave the wax in the neatest form. Figure 5 is a wax melter that processes all forms of wax includ-

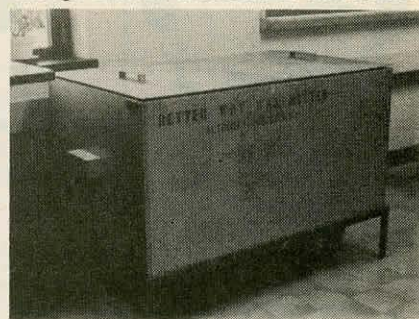
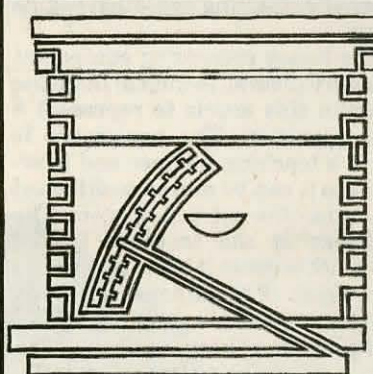


Fig. 5

ing old combs, cappings and blocks. The device pours molten honey into shaped plastic pans and generally consolidates the wax into neater cakes. In fact, it could be used to replace the separator, but the higher heat used may darken the honey a bit. The wax melter does have an adjustable thermostat so the heat could be lowered to some extent.

There are no easy suggestions. In general, each honey house is unique. The manufacturers produce the major components and normally expect the beekeeper to connect the components into a logical and functional string. All this requires creativity. The sound of an efficiently operating extracting system is a very pleasant reward. If at first your system doesn't operate well, take heart. Many modifications are available.Δ



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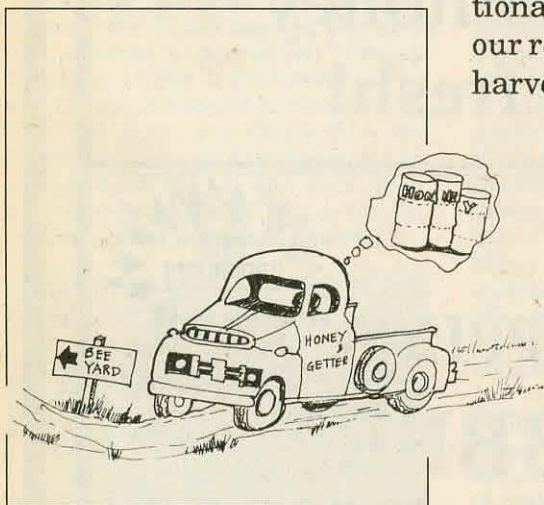
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Harvesting Honey with Hapless Harry!

This month, as a public service, *Bee Culture* offers a "How-Not-To" Primer on harvesting honey. Sponsored by the National Sugar Consortium, Hapless Harry Harms agreed to let our reporters record the highlights of his short, but eventful, harvesting career.



We start with Harry on his way to the beeyard, with visions of a bountiful crop dancing in his head. Unfortunately, he didn't put much thought into the work needed inbetween.

"HORRIBLE"

The New York Times

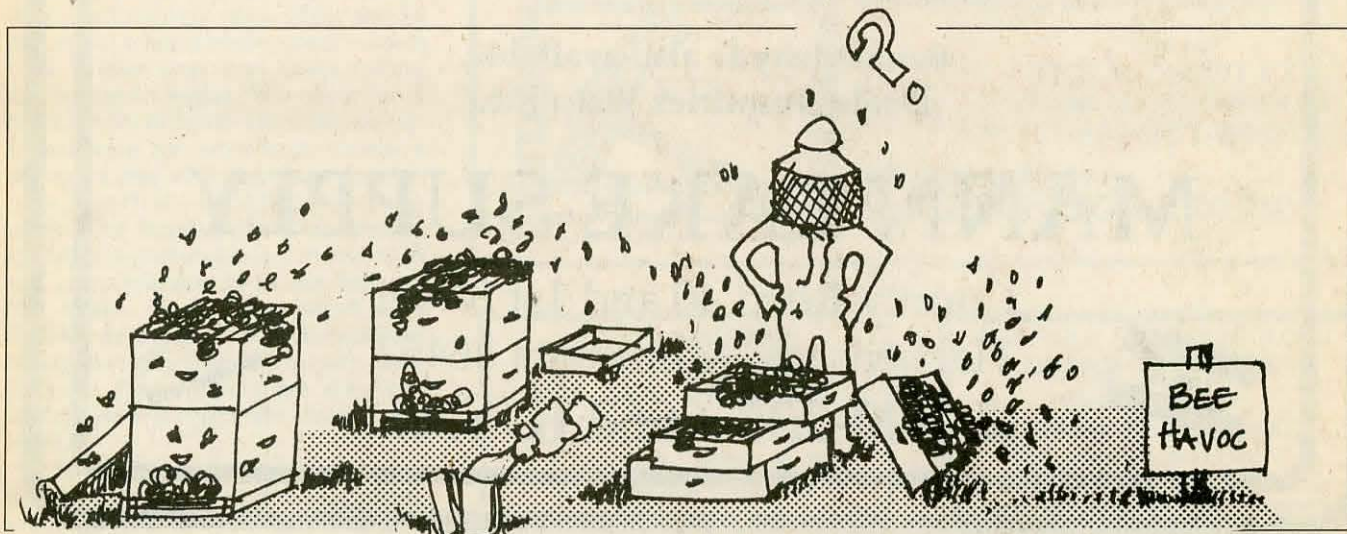
"HARROWING"

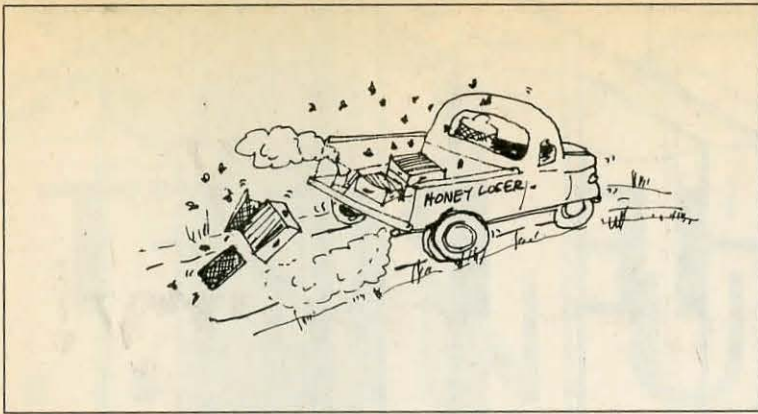
The Chicago Tribune

"HELP!"

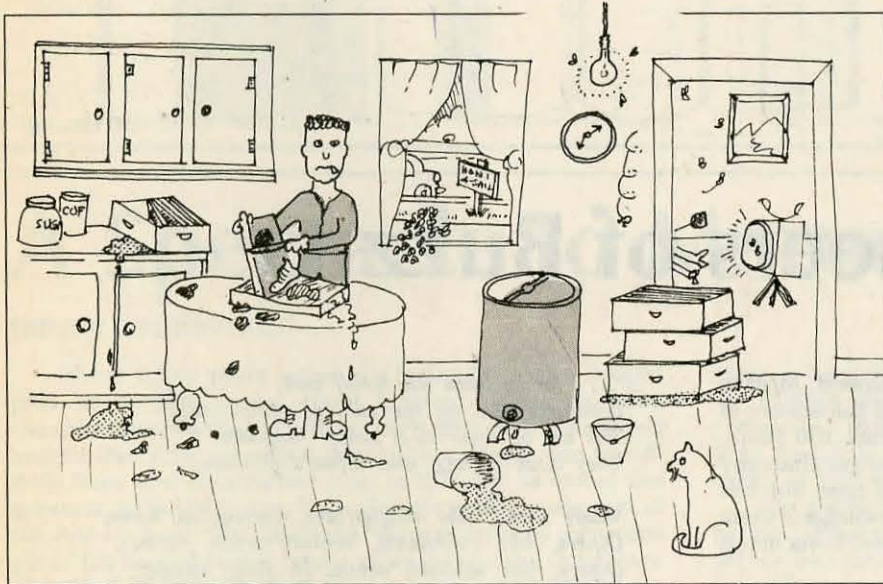
Harry's Wife

Robbing can be catastrophic during super removal — but it can also be easily avoided. Harry didn't keep his supers covered, he didn't work one hive at a time, and he didn't bother removing bees from the supers before he started. Is it any wonder Harry looks confused?

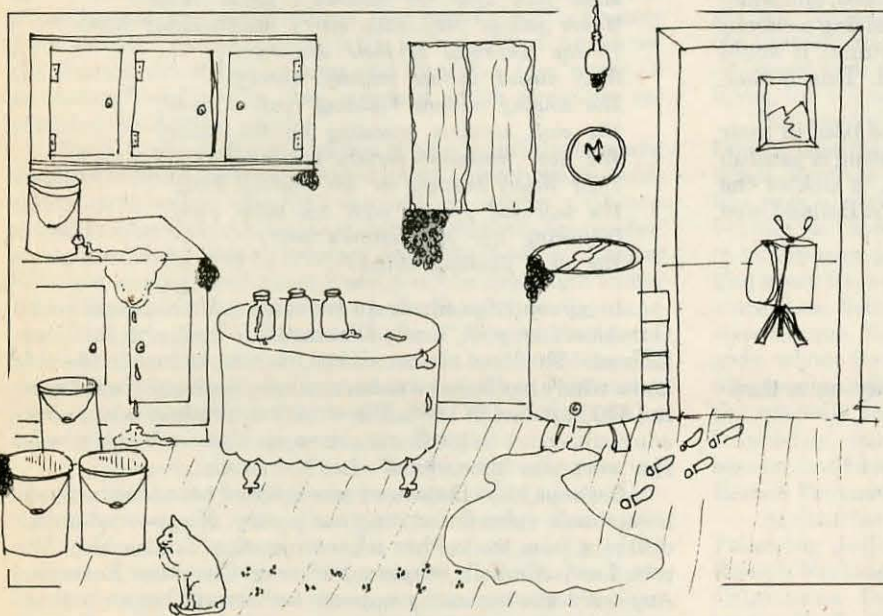




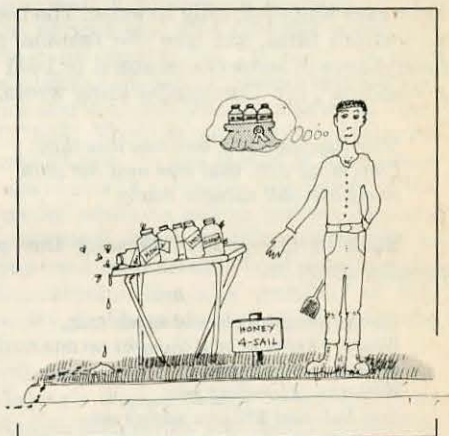
After the beeyard fiasco, Harry took what was left and headed home. Unfortunately, he didn't secure his load, he didn't cover supers — and he didn't notice!



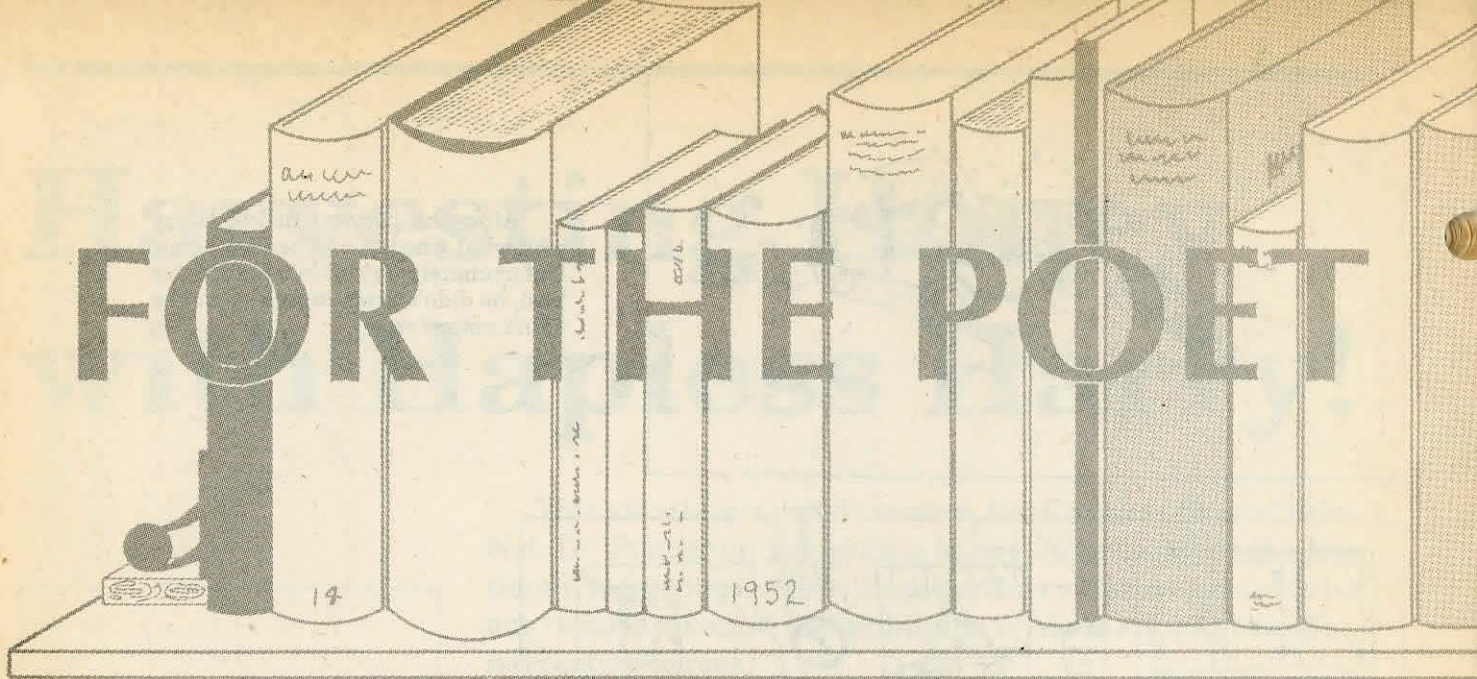
Harry's wife, who is not an avid beekeeper and even less of an extractor, chooses not to help Harry with his chores. And Harry, well, he's having his problems with the task at hand. Can you find 87 things wrong with this picture?



Later that night (much, much later), with extracting chores behind him and a feeling of satisfaction stuck to every square inch of his body, his kitchen and much of the living room, Harry retired for a well deserved rest. But nobody told hapless Harry about the Honey Gate Ghost that haunts every beginners kitchen. Harry's cat wasn't impressed.



Finally, here's Harry displaying all those marketing skills that make the National Sugar Consortium confident of continued good business! But Harry's overjoyed! He has a perfect crop, a clean kitchen and a happy wife — who said she'd be back in 2 or 3 weeks from her sisters.Δ



The Buccaneers of Buzz

CARSTEN AHRENS

As "-ologies" go, apiology is one of the newest. Most of what we know of the entomology of bees and the science of beekeeping has been acquired during the last 150 years, even though man has "kept" these insects longer than any other animal. He has enjoyed the honey of bees but has feared their sting. This may have kept his knowledge of them extremely superficial and he accepted superstitions about them instead of facts.

When I was a boy, all our neighbors had bees, and when swarming time came they believed that by raising a clamor (ringing sleighbells, pounding on pans or drums), it would keep the colony from leaving the beeyard. This notion, around for ages, has never worked!

But poets and would-be poets have used bees in their lines ever since learning to write. The bee's sting is painful, sometimes fatal, yet like the banana peel, it tickles the funnybones of some rhymesters. In 1641 in "A Ballad Upon a Wedding", Sir Thomas Suckling wrote:

*"Her lips were red, and one was thin,
Compared with that was next her chin,
Some bee had stung it newly."*

Back in my youth, we sang this parody on a then-popular song:

*"In the shade of the old apple tree,
Where, of course, she thought no one could see,
My ma would begin
With the old rolling pin,
And lick dad till he couldn't see."*

*In the excitement they tipped the beehive,
And forgot that the bees were alive.
The bees didn't sting pa,
But, my soul, they stung ma,
In the shade of the old apple tree."*

But poets have written soberly about bees too. Shakespeare (1564-1616) in "Henry V" has the Archbishop of Canterbury declare seriously, though quaintly:

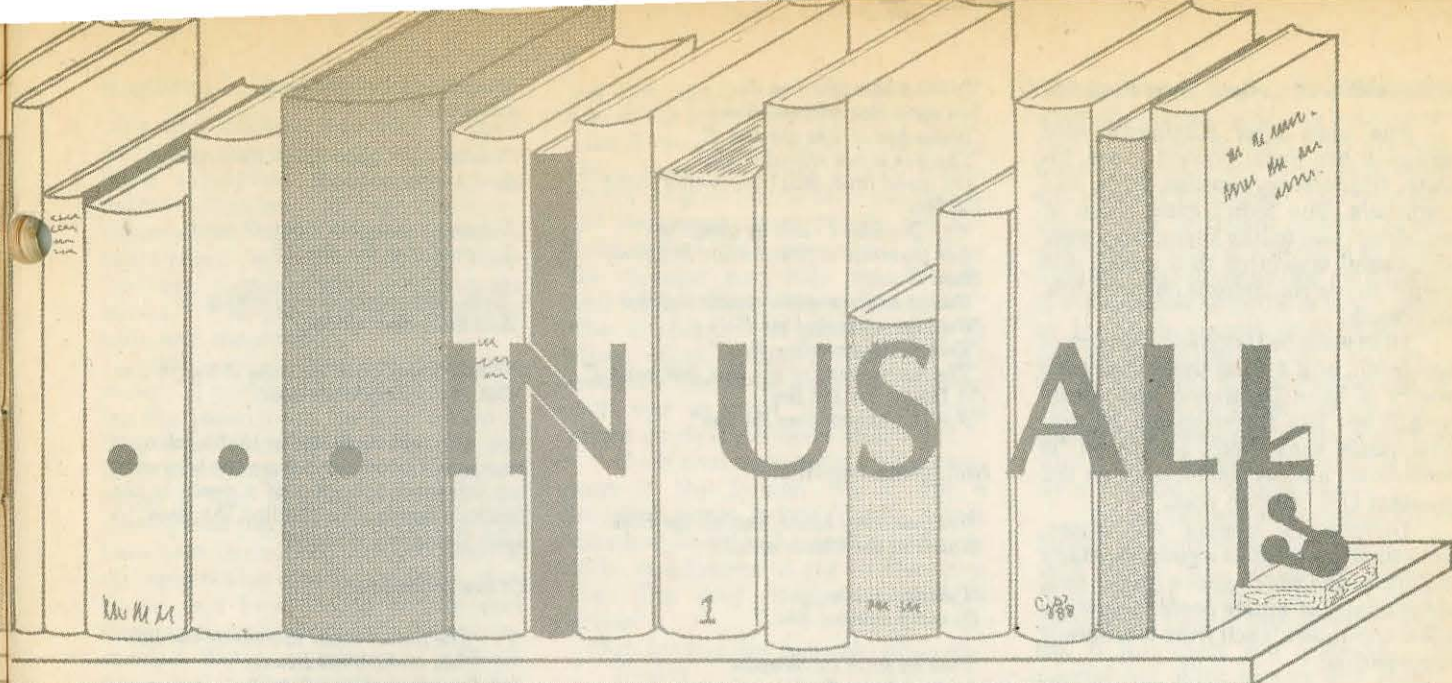
*... for so work the honey bees,
Creatures that by the rule of nature teach
The art of order to a people kingdom:
They have a king, and officers of state;*

*Where some, like magistrates, correct at home,
Others, like merchants, venture trade abroad,
Others, like soldiers, armed in their stings,
Make boot upon the summer's velvet buds;
Which pillage they with merry march bring home
To the tent-royal of their emperor:
Who, busied in his majesty, surveys
The singing masons building roofs of gold,
The civil servants kneading up the honey,
The poor mechanic porters crowding in
Their heavy burdens at his narrow gate,
The sad-eyed justice, with his surly hum,
Delivering o'er to executors pale
The lazy yawning drone."*

In my readings, Shakespeare is second in his use of bees. Our American poet, Emily Dickinson, is first; she out-Bees all poets! She lived almost all her life as a recluse in the old home where her father was born; where she herself was born in 1830 and died in 1886. She wrote hundreds of poems, yet one could count on his fingers the ones that were published. Her work was "discovered" after her death.

Perhaps Miss Dickinson was ignored because she used home-made rules for writing her poetry. It appeared quite different from that of her contemporaries: Louisa May Alcott, Lewis Carroll, Stephen Foster or Christina Rossetti. Any word she especially appreciated always began with a capital letter, regardless where it came in a sentence. So bee was always Bee. She commonly used a dash where others might use a comma, colon, or semicolon. Some found her rhyme-scheme too unconventional. And she never gave a poem a name; each had just a number. If you belong to a Dickinson Club... we used to have one in town... a favorite poem could be #288, 318... but none would have a title.

Continued on Page 348



A Spectacle to Marvel At

BRUCE ROBERTSON

About thirty years before the birth of Christ a Roman poet wrote four poems about farming. These so-called *Georgics* describe the agricultural arts with such beauty and insight that they propelled their author, Virgil into worldwide fame and established him, to this day as one of the greatest poets of any age. Each *Georgic* explains one part of the Roman farm. The first tells "what makes the corn crops glad," the second how to tend a vineyard and the third "care of cattle." But Virgil's last and most important *Georgic* is about beekeeping: as he calls it, "the heavenly gift of honey from the air." In twenty pages the poet eloquently outlines the Roman art of beekeeping and imagines the "world in miniature" within the hive, a world which curiously resembles the Roman empire.

Virgil begins with the basics: where to put the beeyard and how to build the hives. "Avoid a bog . . . or where the voice rebounds in hollow echo from the rock", he suggests. Choose instead a place "unexposed to winds, where there are neither sheep nor frisky kids to trample down the flowers." Rather "let clear springs and moss-green pools be near" and throw willow branches into them where the bees "may alight and spread their wings to the summer sun." Virgil tells how to make hives out of stitched cork or woven tree branches. He warns that the hive entrance must be small and the outer surface plastered with clay and leaves. This technique he says, keeps the hive temperature constant.

Virgil continues with the more difficult art of gathering swarms. Since Roman hives are unexpandable, every summer swarm would "swim heavenward through the liquid air." It seems Virgil, unlike the rest of us, easily lured swarms into a new hive. "They make a beeline for fresh water always." There, he advises, scatter spices and shake a cymbal; soon of their own accord they'll settle in the fragrant quarters.

The poet explains other duties of the beekeeper. He should harvest twice a year: in spring and fall. And "whenever you open the stately home" of the bees "hold before you a torch with searing smoke." Virgil recommends regular inspections of the hives for intruders like the spider who "drapes the doors with her sagging hunting nets." He also

inspects for disease; in sick hives, he says, "the living carry the corpses of the lifeless out of the home in a funeral procession" much like contemporary Roman burial practices. He treats such hives with a mixture of rose-petals and oxgall or fragrant gums burnt beside the hive.

The beekeeper who tends to these things properly has a happiness few people enjoy, the poet claims. He writes of an old Sicilian man he knew who established a beeyard on an acre of unwanted land and planted it with a vegetable garden. He managed the apiary so well that his bees were the first to breed and "the first to have their foaming honey squeezed from the combs." In his little patch with a few hives, the old man "fancied himself a king in wealth."

Yet, even though it contains all this practical advice, the Fourth *Georgic* is not really a beekeeping manual. On the whole Romans loved agriculture, and city-folk especially like to read about the calm country life. The *Georgics* were written for these members of the upper classes who worked in business or politics and who delighted in stories of "getting away from it all." Still, Virgil chose bees as his topic for more than their rustic charm. In the myths of Rome bees were unique. They are blessed by Jupiter, the father of the gods, whom they once fed while he was in hiding. They are also newly-created creatures which wondrously appear in the specially-prepared carcass of an ox. Virgil imagines the "character, pursuits, communities and warfare" of this blessed and fresh society, and he makes it an example to the Roman Empire.

At the time Virgil wrote, the Romans needed examples. Following Julius Caesar's assassination in 44 B.C., the Roman World split for fourteen years. The West was ruled by Octavianus, Caesar's adoptive son, while the East was under Mark Antony who the West saw as dangerously associated with Cleopatra, the powerful Egyptian potentate. Both halves of the Empire were corrupt and bloody.

In delightful contrast the blessed bees pass their lives under exulted laws: "alone they recognize a fatherland and the sanctity of a home." They each do their duties willingly: "the aged ones are town surveyors charged with building

Continued on Page 349

She used New England's wild things in her work: flowers, trees, insects, amphibians, reptiles, birds, and mammals. She didn't extol them or encourage you to like them; they were just useful creatures that would add weight to her convictions on birth, life, and death.

1986 was the 100th anniversary of her death, and during those years the poetry of Miss Dickinson has surely caught on. The Encyclopedia Britannica states that Emily Dickinson "is considered almost universally as the greatest U.S. woman poet."

Dickinson's poems are short, sometimes as brief as a couplet. Many include a Bee which gets a line or two, occasionally an entire poem. Below are a few one-liners, each from a different composition:

"In the name of a Bee -"
"An aged Bee addressed me -"
"Barbs has it, like the Bee -"
"The Bee is not afraid of me."
"Oh fraud (autumn) that cannot cheat the Bee -"
"We - Bee and I - live by quaffing -"
"Her (summer's) Bees have a fictitious Hum -"
"Except to some wide wandering Bee -"
"Bee! I'm expecting you!"
"Escape the prowling Bee -"
"The murmuring of the Bee, has ceased"
"A Dinner for the Bee"
"For Helmsman was the Bee"

And, some two-liners:

*"This, and my heart, and all the Bees
Which in the Clover dwell."*

*"I pledge again,
By every sainted Bee -"*

*"Pick by faith its blossom
And avoid its Bee,"*

*"It's like the Bee -
A dateless - Melody -"*

*"Bees are Black, with Filt Surcingles -
Buccaneers of Buzz."*

*"The Bees - will not despise the tune
Their Forefathers - have hummed -"*

*"The finest Honey - curdled -
Is worthless - to the bee -"*

*"What Mornings in our Garden -
guessed -
What Bees - for us - to hum -"*

*"Partake as doth the Bee,
Abstemiously."*

*"Would deem Ourselves - the busier
As the Minutest Bee"*

*"I haven't quite the strength now
To break it to the Bee -"**

*"Bees - to their Loaves of Honey
Add an Amber Crumb"*

*"When 'Landlords' turn the drunken Bee
Out of the Foxglove's door-"*

* ... of an old superstition that a colony of bees would swarm and leave the beeyard if not informed promptly of a death in the farmer's family. See "Telling the Bees" by John Greenleaf Whittier

Oreven morelines:

*"The flower must not blame the Bee -
That seeketh his felicity
Too often at her door -"*

*"Within that little Hive
Some Hints of Honey lay
And made Reality a Dream
And Dream, Reality -"*

*"The Pedigree of Honey
Does not concern the Bee-
A clover, any time, to him,
Is Aristocracy."*

*"Come slowly - Eden!
Lips unused to Thee -
Bashful - sip thy Jessamines -
As the fainting Bee -"*

*Reaching late his flowers,
Round her chamber hums -
Counts his nectars -
Enters - and is lost in Baums"*

*"Did the Harebell loose her girdle
To the lover Bee
Would the Bee the Harebell hallow
Much as formerly?"*

*"Could I but ride indefinite
As doth the Meadow Bee
And visit only where I liked
And No one visit me*

*And flirt by Day with Buttercups
And marry whom I may
And dwell a little everywhere.
Or better, run away*

*"To make a prairie it takes a clover
and one bee
One clover and a bee
And revery,
A revery alone will do,
If bees are few."*

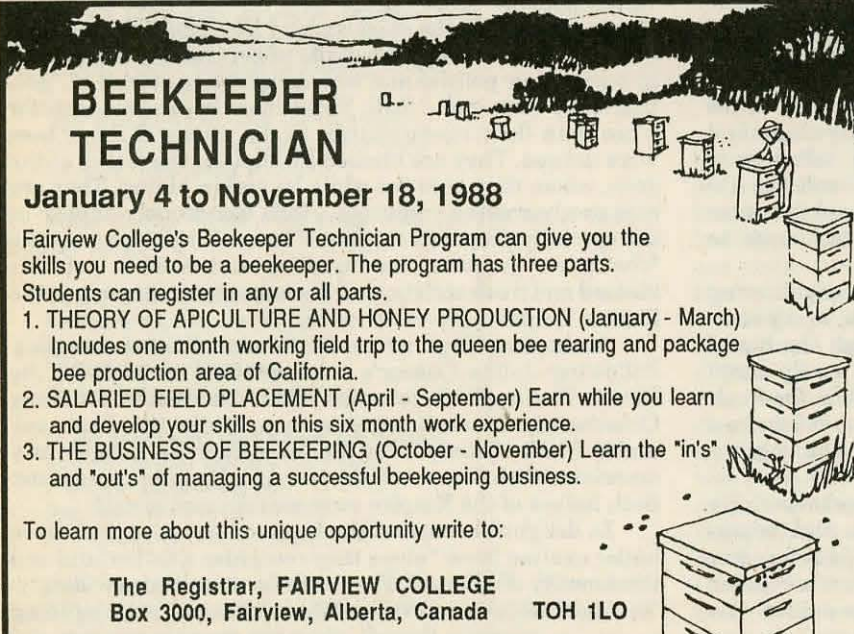
*"Fame is a bee.
It has a song -
It has a sting -
Ah, too, it has a wing."*

*"His labor is a chant -
His idleness a tune -
Oh, for a Bee's experience
Of Clovers and of Noon!"^Δ*

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cells and framing intricate houses, while the younger drag themselves home exhausted" from a hard day gathering nectar. Far from the licentiousness of Rome, Virgil's bees even reproduced without mating, they "gather children in their mouths from leaves." In all the hive is a society of calm and cooperation.

But only one bee maintains this society. If the king, says Virgil, mistaking the queen's sex, "be lost forthwith they break their loyalty" and loot the hive. Rome was in chaos likewise because it had no single citizen who members of the society respected. The bees have their king, "the guardian of all their works, him they admire, surround him in cheering crowds and flock to form his escort": Rome was divided. But soon, almost as if Virgil predicted it. Octavianus became the single beloved leader of Rome and, for a while at least, the Empire lived in comparative peace and virtue.

As Virgil wrote none of this had yet happened. Octavianus was persu-

ing his counterpart, Mark Antony, across the sea to defeat him at Egypt. Like Rome at that time, hives sometimes have two 'kings'. Virgil knows this is not good for the hive; eventually the beekeeper must "single out the inferior and put him to death." Then the stronger may rule prosperously and "yield sweeter honey to extract." The implication of this passage is clear: Mark Antony, certainly the weaker ruler, must die in yet another civil war in order that Octavianus might guide the Empire effectively.

Such civil wars were all too common in the Roman World. For a hundred years before Virgil, people attacked Rome and seized power only to be overthrown in yet another civil war. The poet imagines this hive scene:

Then bustling they assemble; wings are flashed

Stings sharpened upon beaks and muscles tensed.

And round their king, right up to the royal tent.

They mass, and loudly challenge the enemy.

Somehow this begins to seem silly; after all, though their war must seem very important to them, they are only bees. The beekeeper, Virgil adds, could end the war with ease: "all these epic battles and turbulent hearts you can silence by flinging a handful of dust." Similarly the Romans and perhaps we today consider the affairs of the times to be all-important and forget the powers which control us. The hive is made by nature and sustained by Jupiter. So, says Virgil, are we; and if we are to achieve any of the greatness which Virgil finds in the world of bees we must first recognize this.

These are some of the points Virgil makes by comparing the bees' society with Rome. Still, for all its political implications, the Fourth Georgic never loses sight of introductory promise, "I will show you a spectacle to marvel at." With beauty and insight the poem describes the Roman art of beekeeping and the "world in miniature" within the hive which somehow resembles our own.Δ

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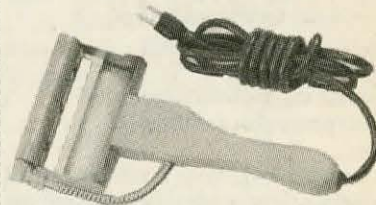
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HOME HARMONY

By ANN HARMAN
6511 Griffith Road
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June — the month of Brides. The arrival of a wedding announcement frequently starts the search for a suitable gift. Instead of a toaster (the lucky couple will probably get at least 7 of them) or linens (what size, shape, color?) why not give a gift from you and the bees. Honey with a beautiful honey pot is an excellent beginning. However, without recipes the gift is only partially useful. A good honey cookbook plus an assortment of your favorite honey recipes will give the bride and groom a good start in honey cookery. Include some beeswax candles to enhance a romantic dinner or a special occasion.

You might be called on to bring some food for a bridal shower. Here is a good opportunity to take some traditional foods, such as this bread recipe.

BRIDE'S BREAD

- 2 eggs
- 1/2 cup honey
- 1/3 cup orange juice
- 1/3 cup light oil or melted sweet butter
- 2 tbs. Cointreau or other orange liqueur or rum
- 1/4 teaspoon almond extract
- 1 tbs. freshly grated orange peel
- 1 cup blanched sliced almonds
- 1 cup white or unbleached flour
- 1 cup rye flour
- 2 teaspoons baking powder
- 1/2 teaspoon baking soda
- 1/2 teaspoon salt
- 1/2 teaspoon ground cardamon
- 1/4 teaspoon ground allspice

In a large bowl, beat the eggs until light and slightly thickened. Add the honey and beat well. Beat in the orange juice, oil or butter, Cointreau, almond extract and orange peel. Stir in the almonds. Sift together the white and rye flours, baking powder, soda, salt, cardamon and allspice. Gently fold together the flour and liquid mixtures until just mixed. Pour batter into a buttered, medium-size loaf, round or oval casserole pan. Bake 40 minutes at 325° or until the top feels springy when

pressed and the bread is brown around the edges. Don't overcook. Cool in the pan about 10 minutes before removing to cool on a rack. Feel free to sniff frequently.

The Garden Way Bread Book
Ellen Foscue Johnson

Roses are frequently associated with both June and brides. Try this easy recipe when your roses are blooming.

ROSE HONEY

Martha Washington is credited with the recipe for this delicately flavored honey. Serve it as a spread or try it in a honey custard recipe.

- 1 cup mild-flavored honey
- 1/2 cup fresh rose petals

Bring the honey to a boil in a heavy saucepan. Be careful that the honey does not boil over or burn. Turn off the heat as soon as the honey starts to foam up. Stir in the rose petals. Let the mixture sit for four hours. Bring to a boil again. Turn off the heat and cool the honey somewhat. Pour it through a strainer and discard the petals. Store the honey in a covered jar. Makes 1 cup.

The Honey Book
Lucille Recht Penner

This recipe for a fruit salad will make 50 servings. It may come in a handy at a bride's luncheon or dinner. It is not necessary to have exact amounts of the various fruits and substitutions are certainly possible.

FRUIT SALAD

- 1 pound seedless grapes
- 1 pound apples
- 2 pounds pears
- 2 pounds fruit in season: raspberries, strawberries, blueberries, blackberries
- 12 bananas
- 1 medium can mandarin oranges, drained
- 1 can cherries, drained or fresh
- 1 can peaches, drained or fresh
- 1 melon
- 1 pound honey

Cut grapes in half; peel and slice bananas finely; cut peaches in thin slices; and peel, core and grate the apples. Cut the orange sections, melons and pears into bite-sized pieces. Combine all fruits in a large bowl and pour the honey over and stir gently. Cover and leave at room temperature for several hours, stirring occasionally. If the mixture appears to need more juice, add some orange juice.

Honey in the Kitchen
Joyce White

In addition to your own favorites, some easily made but delicious recipes will encourage both the bride and groom to use their gift of honey.

HONEY CHILI

- 1-1/2 pounds lean ground beef
- 1 cup diced celery
- 1/2 cup chopped onion
- 1/4 cup diced green pepper
- 1 cup tomato puree
- 1 can (16 oz) whole peeled tomatoes
- 1 can (30 oz) red kidney beans, drained
- 2 teaspoons salt
- 2 to 4 tbs. chili powder, to taste
- 2 tablespoons wine vinegar
- 1/4 cup mild-flavored honey

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In large, deep pan, cook meat until it loses its red color. Drain off excess fat. Add next eight ingredients. Mix well, bring to boil, cover and simmer, up to an hour, stirring occasionally. Stir in vinegar and honey. Makes approximately 6 servings.

Treasured Honey Recipes
California Honey Advisory Board

We all need some recipes for those fresh summer berries. The following sauces can be frozen for use after berry season is over.

HOT SPICED BLUE-BERRY SAUCE

1 cup blueberries
1/4 cup honey
1/2 teaspoon cinnamon
1/4 teaspoon nutmeg

Combine and heat, stirring gently. Keep hot for about 5 minutes. Serve

hot over ice cream, cakes, desserts.
adapted from
The Blueberry Connection
Beatrice Ross Busek

BRIGHT STRAWBERRY SAUCE

This recipe will make enough to use right away and some to store for a winter's day.

1-1/2 cups water
2 cups honey
About 6-1/2 cups sliced strawberries
2 tablespoons cornstarch
1/4 cup fresh lemon juice

Heat water and honey to a simmer. Add sliced berries, stir gently, and simmer uncovered about 3 minutes. Dissolve cornstarch in lemon juice and add to the sauce, stirring over low heat until glossy and slightly thick, another 3 minutes or so. Serve hot over ice cream, pancakes and waffles or cool over cakes and desserts. Makes about 2-1/2 pints.

Strawberries
Maggie Waldron

Now that you have started the bride and groom on cooking with honey, be certain to keep up their supply of new recipes, especially for those everyday meals. Δ



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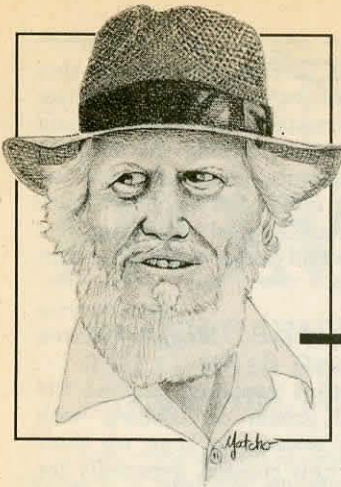
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Drones

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“Do drones inhibit honey production?”

This happens to be one of my favorite subjects concerning bees, and I haven't written anything about these nice, big, burly bugs in a long time, so here goes. Why do so many beekeepers have such a dislike for drones? Why do they make such an effort to keep their bees from raising drones? The list of 'why not' is long, and fraught with pure prejudice. *Did you know that there is no evidence to show that drones in any number reduce or inhibit honey production in any way?*

Let's start at the beginning with a few fundamental questions. Why do worker bees rear drones and why do worker bees NOT rear drones? Let's get a bit more basic. Why do worker bees sometime build drone comb and other times not? I have puzzled over those questions for years, and some day someone a lot smarter than me will solve this question. I would like to relate a few trials and experiments I have made in the past to illustrate how complex it is.

About 1960 or so, when I was with the USDA bee lab in Baton Rouge, I had a nice little bunch of bees, maybe 4 pounds, in a one-story hive with 8 combs with all worker cells. This was during the spring when there was lots of nectar and pollen coming into the hive. I gave them two empty frames that had no foundation put in. What kind of comb did the bees build? Well, of course it was drone comb. I removed one of the original worker combs, shoved all the combs to the left and placed an empty next to the wall.

As I said, there was a lot of nectar and pollen coming in and the bees needed more comb space. The first two frames were practically full, and this third one was having drone comb built in it, too. I removed another of the original combs that were all worker, inserted a fourth empty frame, shoved all the frames to the left again and inserted the frame next to the wall.

Now, would you like to guess what kind of comb was built? Think hard, because the bees did a strange thing as far as I was concerned. They built nothing but worker cells in the fourth comb; and, in the third comb where they had been building drone comb, they changed, so that on the bottom and sides of the partially built comb they began constructing worker cells. Even on the second empty frame, now nearly full of drone cells, there was an empty triangular space at the bottom of each end of the comb and they filled these with worker cells.

This was the first time I had ever seen worker cells attached to the bottom and sides of drone cells. It had always been just the reverse: any time a hole was made in a comb from an accident, mice or wax moths, the bees always filled it with drone cells.

Then I was transferred to the Tucson bee lab, where I continued to ponder the drone puzzle. I had these two beautiful, brilliant young ladies working under my supervision who thought it would be a good project to work on. They were Marla Spivak, now with a PhD from Kansas, who worked two years on the Africanized bee in Costa Rica, and Abby Zeltzer, who now runs her own bee outfit in Patagonia, Arizona. They became the best of friends.

In the experiment they set up, they measured a certain number of bees, about a pound or so, into each hive of the same size. Then they gave

them a frame with foundation (worker size) and empty frames. Some of the bees built some drone comb and others did not—a very distracting and inconclusive experiment.

So, as you can see, the puzzle is not solved, but I will give you some hints. There has to be genetic variation in the bees' behavior in deciding to build either drone or worker cells. And, furthermore, I think there has to be a pheromone, a chemical scent given off by the comb, that regulates the bees' behavior.

When people begin doing artificial insemination of queen bees and breeding, they want drones, and they want them *now* people have decided long ago that they were smarter than bees, especially me). The way to get drones in a hurry was to build a queen excluder cage over and around a fully drawn drone comb, put the queen you wanted the drones from in it and place that in the center of the brood nest. So, what happens? Usually, the queen would fill the comb with eggs that would all turn into workers raised in drone cells.

This brings up another subject which was debated back in the '30's. Would these bees be bigger because they were raised in larger cells? Roy Grout, a former editor of the *Hive and Honeybee*, took the subject as his Master's thesis when he was in college. At the time, he was employed by the Dadant and Sons firm and they had built a set of foundation rollers that made cell sizes larger than standard. One of the reasons for all this interest in getting a bigger bee was the suggestion that normal size worker honey bees could not get nectar from or pollinate red clover. Grout did succeed in getting a slightly larger bee but not enough to make much of a difference.

Once, while I was visiting Dr. Roger Morse at the Dyce Laboratory of Cornell University, one of his students



took me aside to show me something in the apiary. He took me to a 10-frame standard hive that had been stocked with bees on combs that were all drone. He wanted to show me the bees which were all super small. Yes, they were all very small bees that were emerging from the big cells. Why? What a puzzle. Can you get a bigger and faster growing baby by putting it into a larger crib?

For years I have used either little or no wax foundation. When wax foundation is used, only a starter strip is placed in the frame. I do not recommend that all beekeepers do this because most of you want and need straight, flat combs that are easy to uncap to extract your honey. When you let the bees build their own combs, they are almost never flat and straight; they are usually curved and wavy. But, what you get to see is how, and what kinds, the bees build in nature. For instance, one of the first things is a contradiction to what you will see in most books about comb building. Bees rarely slant their cells upwards; only combs built on foundation have all the cells slanting up-

wards. When bees build their own comb with no foundation to influence their work, they will have their cells slant up, sideways and even downward. Try it. It won't cost you anything and afterwards you can throw it in your wax melter.

But, back to drones, and what we don't know. In a normal hive in the spring or early summer when the bees are rearing the most drones, how many of those drones come from eggs laid by workers? I think lots, but I have never run an experiment to find out and it wouldn't be a difficult experiment to run, either. Once, when I was working with a pretty smart scientist (H.K. Poole) at the Tucson lab, he had his technician dissect hundreds of bees taken from normal colonies at that time of year to examine their ovaries. They found about one bee in every hundred capable of laying an egg that day. That is, there was a fully developed egg in the worker bee's ovary. Considering there were probably 40,000 bees in those hives, that means almost 400 bees could have been laying an egg every day!

So, the next time you discard some drones, drone brood or drone comb,

think about how little we know about what you are consigning to the trash. But, before I sign off, I have a little tale to tell. The first commercial beekeeper I ever knew, and a fine old man he was to know, was T.P. Gaskin, who lived near Columbia, SC. There was a farmer's market in Columbia back then, during the Great Depression, and Mr. Gaskin had a stall where he sold honey, beeswax and *sealed drone brood*. A piece of drone brood about 2 inches by 2 inches sold for \$0.50 — yes, fifty cents, and he sold lots of it in the spring. Who to? Fishermen, for bait. Mr. Gaskin had 200 colonies, a bunch of kids to feed and support, and he made enough money from his bees to put them all through the University.

Now, about this time, across the street from my house lived the head of the English Dept., Dr. H. Babcock. He would write an article for *Field and Stream*, and sometimes even for our daily newspaper, about fishing. He started the trend of using drone brood by writing about how good drone pupae were to catch certain fish. He had the fishermen lined up to buy drone brood from Mr. Gaskin, and later he told me that his drone brood sales were what kept him from the poor house. Δ

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For the past 10 years or so, many efforts have been made to identify Africanized bees when they move into an area. These efforts include; Chromatography of the DNA and dimensions and configuration of various body parts, cell size, etc. It is indeed a tremendous amount of work just to identify a little insect that, admittedly, is not accurate. Not many beekeepers are willing, or able, to pay for such a “scientific” performance.

Fortunately, there is a far easier, and cheaper, way to identify Africanized bees. Beekeepers in S. America know nothing about computers or chromatography, yet have learned to identify Africanized bees in just two seconds after the bees invade their hives, just by looking at them.

I learned this method some 10 years ago while observing two hives of full blooded African bees in a research apiary in Germany. I assure you this method is quick and easy to learn and the identification is positive, no “ifs” or “buts”. I suppose it should have a “scientific name”, like “Entrance Behavior Factor”, or “EBF.”

As every beekeeper knows, when European bees fly into a hive entrance, they usually land on the alighting board and walk into the hive.

African bees would never do such a foolish thing. With the pests they have in Africa lurking at the entrance of the hives, any bee that just drops down outside of the entrance will be quickly gobbled up by predators.

Wasps, toads, badgers and birds will pounce on any bee they can catch at the entrance. So, African bees learned to never loiter at the entrance of the hive.

The first thing you will notice when African bees control your hives is “Entrance Behavior Factor.” They fly directly into the entrance without landing. Their aim is uncanny, they can hit the open entrance dead center

and are halfway into the hive before they land. This “EBF” is so distinctive in these Africanized bees, when you first see it, you can identify Africanized bees instantly, just as quickly as you can see them.

Learning this will not make it easier to handle them, but at least you won’t need to spend money or time identifying them. You will know the minute you see them by their Entrance Behavior.

During March this year, we had the 7th meeting of the North American Apiotherapy Society. Thanks to Ann Harman and Maj. Jurgen von Bredow there were excellent speakers with experience on the subject. The main speaker was Dr. Christopher Kim of the Monmouth Pain Inst. of Red Bank, New Jersey. With excellent slides and data, Dr. Kim talked of his 90% success rate with those that come to him suffering from pain from many causes.

As Dr. Kim emphasized, almost all his patients are those for whom conventional medicine was unsuccessful and were given up as “incurable”. To have a success rate of 90% with these patients is indeed a remarkable

record.

Dr. Kim has had training in Acupuncture in Korea and China. This knowledge has made it possible for him to apply Bee Venom Therapy with great effect.

Our next speaker was Dr. Cesar Mishan from Guatamala. His presentation was of special interest since he uses different “Immune Enhancers” to stimulate the Immune System, of which Bee Venom is a good example.

Dr. Mishan uses a combination of vaccines and snake venoms as Immune Enhancers. I have heard of snake venoms being used to treat Rheumatic Diseases, but have had no experience with it.

Maj. Jurgen von Bredow spoke of the results of several veterinarians who have been treating dogs for rheumatic diseases. Dogs seem to suffer from rheumatic diseases as much as people do. It is interesting that the results of BV Therapy on arthritic dogs are almost exactly like the results on human arthritics. Often, under drug therapy dogs do not make much improvement and may become so crippled that they have to be put away.

Maj. von Bredow said that no dog treated with Bee Venom Therapy had to be disposed of because of Arthritic problems. That Arthritic dogs respond so well to Bee Venom Therapy is interesting because it is difficult to credit their cure due to any “Faith” they have in Bee Venom Therapy. This is often said with human Arthritics, that they get well not because of any curative action of Bee Venom, but that it is purely a psychological effect. The fact that BV Therapy worked equally well with dogs as with people proves that this is not the case.

Ann Harman will make reports of the papers given. Anyone interested in getting them can contact Ann at 6511 Griffith Road, Laytonsville, Maryland, 20879. Δ

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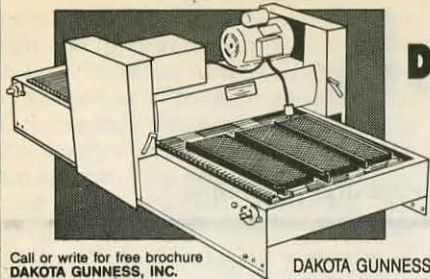
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Hint of the Month

Comb honey, round or square section, makes an attractive gift and may well introduce someone to the delights of honey in the comb. However, instructions are essential for the uninitiated. I well remember the story one woman told me about her comb honey. She had been given a beautiful round section — and no instructions. She related to me how she puzzled over removing the honey “from all the little holes”. Her solution to the problem was simple — she put the comb section in the oven “at a fairly warm temperature”. You and I know the result. Indeed, the wax melted, much to her astonishment. She then let the mess cool. Then what? Well, since she could not figure out what to do with a pan full of honey with solidified wax, she threw the whole thing out. How sad. Introduce someone to comb honey by serving them a hot, homemade biscuit with a generous piece of comb honey on top. Then they will understand why you think comb honey is something special!

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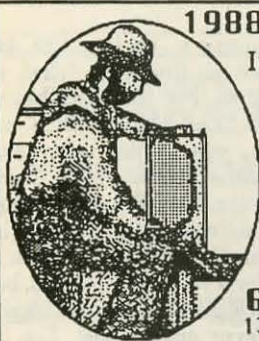
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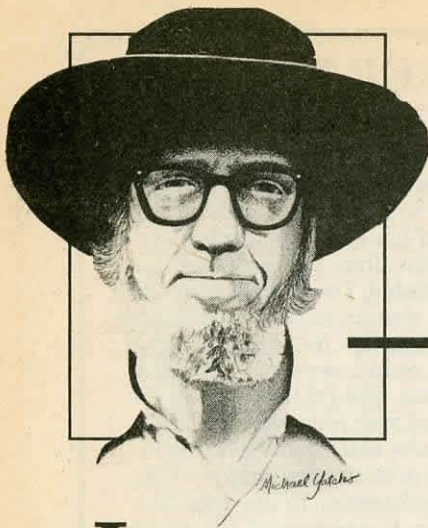
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BEE TALK

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“17,000 comb honey sections per year — and a marketing plan to move them all!”

In June the beekeeper's thoughts turn to swarms, but as I write this (late April) it is still cold and winter-like, and I don't feel like thinking about swarms yet. Besides, that's something I've talked about many times, and I haven't anything new to say on the subject. If you want to learn the best swarm control system I know of, it is in my Bee Talk of last month, where I described the honey production methods of Kent and Sharon Wenkheimer. By a routinized procedure, these outstanding beekeepers manage to (a) double-queen every colony each year for the honey flow, (b) get every colony requeened, (c) get the brood nest of each colony divided prior to the swarming season, virtually eliminating swarming and finally, (d) with the powerful colonies resulting from this management, produce tremendous crops of the most beautiful extracted and comb honey found anyplace.

Now, having described how these great beekeepers *produce* honey, I'm going to describe how they *market* it.

Marketing honey is, I believe, the biggest single challenge of beekeeping. If you have only one or two hives then there is no problem, but it has been my experience that those who keep bees on this scale usually lose interest after a few years. Truly devoted beekeepers tend to expand, and as soon as you have a half dozen or more colonies, then you have to confront the problem of marketing your crop.

The Wenkheimers have six hundred colonies and are about to expand to what they consider their eventual limit of perhaps fifty more. This is the foundation of the Mountain Star Honey Co., of which they are the sole proprietors, in Peck, Idaho. At the heart of their marketing system is specialization: Their honey production is aimed primarily at getting comb honey in round sections. This exempts them from dependence on government

purchase and loan programs, which sap the entrepreneurial spirit. They also avoid competition from imports. Indeed, the Wenkheimers are about to begin *exporting* their product, a program that holds promise of enormous sales. Their label and promotional literature is printed in German, Arabic and Japanese, as well as in English.

What you have to do to sell large quantities of comb honey at the best price, Mr. Wenkheimer tells me, is to establish a reliable market over the long term. This means having a consistently high quality product and being a reliable source. Living in a sparsely populated area, the Wenkheimers depend entirely on wholesalers who will buy large quantities year in and year out, and who will never have to be told that, as a result of poor planning, the supply is sold out. They sell about two-thirds of their crop before Christmas and hold back the rest for the demand that will arise before the next crop.

But above all, the wholesaler is entitled to expect consistency of quality. You cannot supply him with first-quality honey one year and seconds the

next. Consumers, seeing the same label, expect to find just what they found last time. For the Wenkheimers this means that their entire comb honey crop, year after year, comes from the same source, Star Thistle. Their extracted honey comes mostly from other sources. Star Thistle yields a pure white honey that does not granulate for a year or more and, being a wild source, it is not at the mercy of changing farm operations. The Star Thistle bloom comes at just the right time — early July to early August — to fit into the Wenkheimers' production methods.

But most important of all, the name, Mountain Star Honey, comes to mean the same thing everywhere, from one year to the next. This is rather difficult for a beekeeper to achieve, since we have so little control over honey flows and the vagaries of the seasons, but Mr. Wenkheimer thinks it is of the utmost importance in marketing, and he has managed to achieve it.

Having a continuity and reliability of sales outlets season after season is at the heart of large-scale marketing, according to the Wenkheimers. The same wholesalers keep coming back with essentially the same or larger orders. Getting paid is sometimes a problem, but this is partly solved when the buyer has come to depend on you, as he will if the principles mentioned above are maintained, especially uniformity and high quality. It is these, too, that somewhat reduce the other chief problem of marketing, which is, getting a good price. The Wenkheimers currently get \$1.35 per section and pay half the freight charge. This means that the ultimate purchaser will probably pay less than three dollars which, it has been found, is the point at which sales resistance is met.

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quantities, Mr. Wenkheimer has designed shipping crates in two sizes, one to hold 18 boxes of 54 sections each, and the other 27 boxes of the same size. Thus his bulk shipping lots are 972 for the smaller crate and 1,458 for the larger one. The sections are for the most part, shipped unlabeled, although some wholesalers purchase them with labels. Using a system of styrofoam packing, they have never experienced any breakage problems, particularly since the round section is, in itself, a strong container, not easily broken.

And what of the future? The export market is just beginning for the Wenkheimers. In fact, all they have exported thus far are samples. But they are vigorously pursuing this, have made some of the necessary contacts, and there seems to be no doubt that this will open up vast new outlets. The demand for honey in Japan and in Arab countries is enormous, and all that seems to be needed is for seller and buyer to make contact, although this, Mr. Wenkheimer has learned, is a laborious process.

In addition to this, Mr. and Mrs. Wenkheimer have their eye on the market for pollen. Pollen sources are abundant where they live, and they figure that, from perhaps two hundred of their colonies, they can get from seventeen to twenty pounds of pollen a year. This, they note, would be equivalent in terms of profits, to getting a hundred pounds of honey from each such colony.

So one can see, from this two-part account I have given, that it hardly does them justice to say that Kent and Sharon Wenkheimer are resourceful beekeepers. They are a great deal more than that. What I have not mentioned is that they built up their Mountain Star Honey Company while Mr. Wenkheimer was holding down a full-time job in an area unconnected with beekeeping. But he gave all that up very recently, to devote all his planning and energy to beekeeping. It is not difficult to predict what the result of this is going to be.

Questions and comments are welcomed. Please send a stamped, self-addressed envelope to the Trumansburg address above for a prompt response.

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QUESTIONS?

Q. You can tell when a colony has tracheal mites by the behavior of the adult bees, dragging themselves out and falling in front of the hive. Is there any kind of behavior of the bees that will tell us when they have the varroa mite?

Steve Moritz — Dayton, Ohio

A. Such behavior is not a good indicator of the presence of mites of any kind. (This behavior may be due to many problems — pesticides, nosema, etc. — Editor). Accurate diagnosis of tracheal mites must be done with a microscope, but in my opinion it is not worth the trouble, for these mites have only negligible effect upon a strong and well-established colony. One good way to diagnose for varroa consists of inspecting the debris on the bottom board. The presence of these mites in a hive cannot be ascertained from the behavior of the adult bees (but individual bees can be inspected). Precise directions for checking for varroa are available from bee supply companies. This parasitic mite has not yet gained general distribution on this continent, although it almost certainly will in time. Meanwhile, it is likely that many, perhaps most, beekeepers will not confront this pest for some time, possibly even a few years, no one knows yet.

Q. My standard comb honey supers are 4-3/4" deep. Can these be used to produce round comb honey sections?

G. Hartke — Middletown, CT

A. No. It is unfortunate that some bee supply companies do not realize that the round section comb honey super is only 4-1/2" deep and have been supplying round section equipment with the wrong super. Using the larger super will result in much burr comb, which is both messy and wasteful. But it is a simple matter to put the larger super

on a table saw and rip off a quarter of an inch, even after it has been nailed together.

Q. Which is better, the all-metal queen excluder or the wood-bound?

Name withheld by request

A. The metal ones are of course more durable but not otherwise any better, in my opinion. Those having alternate wood slats and excluder strips work just as well as those that are made up entirely of excluder wire.

Q. I hived my first swarm this spring but when I checked it a few days later I found that I had left one of the frames out and the bees had built a comb in that space. The comb, full of brood and honey, collapsed when I removed the inner cover. What should I do about this comb, now lying on the bottom board? How can I determine whether the queen survived this accident? And can I boost this new colony by adding frames of brood from my strong colony?

L. F. Wood — Joplin, MO

A. The collapsed comb has got to be scraped loose and removed. Leave it in front of the hive and bees will clean the honey out. Forget the brood in it and the queen is probably okay. See if there are eggs in the remaining comb. And yes, you can add (a couple at a time) brood combs, bees and all, from another hive, but check closely to make

sure you are not adding another queen. If in doubt, brush the bees off.

Q. I bought a hive in which no foundation had been used, so the bees built their combs crosswise to the frames. How can I correct this?

Richard Tysinger — Lexington, NC

A. You'll have to treat the hive as a box without moveable frames. The best procedure would be to turn it upside down, make a good-sized hole in the bottom (which has now become the top) and set a hive properly fitted with frames of foundation (but without bottom board) over that hole. The bees will, over the course of a few weeks, abandon their upside-down combs and move up into the new hive, which can then be removed. The abandoned combs can be scraped out and melted for wax.

Q. Is it safe to requeen a double hybrid hive with a different breed of queen such as a Carniolan or golden yellow?

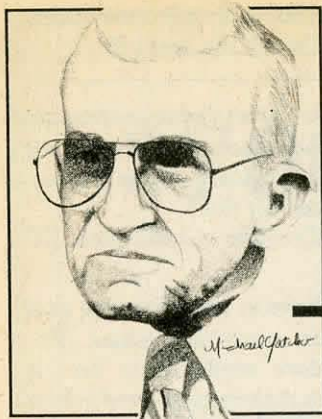
Brian D. Jeffers — Oneida, TN

A. I'm not sure what is meant by a double hybrid hive, but I take the question to be whether a colony can be requeened with a queen of a different race. Yes, there is no special difficulty in this, but to ensure acceptance I would suggest introducing the queen first to a three-frame nuc, then combine the nuc with the colony a week or so later. If that is not feasible, then destroy the old queen, make sure there are no queen cells in the colony, and remove the attendant workers from the mailing cage before introducing the new queen.

Questions are welcomed. Send a stamped, self-addressed envelope to: Dr. Richard Taylor, R. D. 3, Trumansburg, NY 14886 for a prompt reply. No phone calls, please.

& ANSWERS!

Richard Taylor



POLITICALLY SPEAKING

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"It is beekeeping blood that flows when beekeepers battle. Can we afford this?"

I am now without an official industry position for the first time in forty years. I should qualify this since the AHPA by-laws provides for an office of Past President. This means that I will hold this position until the present president retires. I have advised the Executive Committee that I will not be involved in Policy-making, which is tantamount to being inactive. Since resigning last summer, I have concluded that past presidents should be seen and not heard on intraorganizational affairs. If I am asked for comment, I will probably respond but I hope I can stay with the resolution to offer no free advice. Free advice costs nothing unless one uses it.

My official connection with the industry has been unique. I doubt that anyone in the future will be so foolish for forty years. I was a member of the American Beekeeping Federation for more than 20 years. During that time I represented Oklahoma beekeepers on the ABF Board of Directors. Also, I held the following offices: President, 3 years; Executive Committee member for a number of years and Secretary-Treasurer for 4 or 5 years. During the 19 year life of the American Honey

Producer's Association, AHPA, I served 15 years as its' Executive Secretary and 4 years as President.

Truthfully I enjoyed the association with industry leaders 98 percent of the time. The 2 percent segment was made up of "foot-in-mouth" wrong guesses, plain goofs and creation of some first class political enemies.

Since my family is still involved in beekeeping, I will probably continue my subscriptions to the bee journals, attend a bee meeting now and then, and write some articles. Once in awhile I have an urge to write a book, but this idea quickly fades when I visit with friends who have an understanding of writing and publishing. I am hoping that I will be able to write in a way that will be helpful to the industry. This means I would address subjects or problems in a general way and try to avoid the pros and cons. The material would cover important issues that have been overlooked or not fully explained by the industry leadership. This is easier said than done. For example — if one writes over a period of time his material will undoubtedly reveal an image of optimism or pessimism. Hopefully, it will be inbetween.

United In Washington

Recommendations from the recent American Beekeeping Federation convention in Houston included a call for cooperation between ABF and AHPA on industry projects in Washington. Over the years several such resolutions have been adopted and several meetings have followed. Some have been fruitful, but the majority have been friendly visits. The most productive was a meeting which forged an agreement on the honey program in the 1985 farm bill. However, amendments to this program in 1986 and 1987 have produced a sharp disagreement between these organizations, producing a pro-con situation in the halls of Congress.

Belatedly, both organizations have hired lobbyists and appealed for funds to insure approval of their positions with their friends in Congress. The urgency of cooperation was brought forcibly to the attention of Federation convention attendees by the Honorable E. (Kika) de la Garza, Chairman of the House Committee on Agriculture and Larry Myers, ABF lobbyist. Both men recommended a

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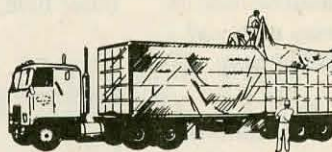
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united front. During a pleasant 3 days at the ABF convention, scores of beekeepers sought my views on unity. I hardly knew how to respond since I was no longer in an official position.

If achievable, unity is always best. A favorable consensus from all concerned should be the first order of business in all lobbying. I am pleased to see the matter discussed. I was surprised to see so much emphasis placed on this point at this time.

During the course of a year I guess that the matter of industry unity is mentioned in so many ways and times that I have come to think of it as routine. AHPA banquet speaker at Albuquerque, Mr. Mel Ustad (Senator Larry Pressler's aide) advised us to unite with other industry organizations if possible (I doubt that many remember Mel's advice.) At any rate, lobbyists who do not check the extent of opposition and explore ways of coping will not remain lobbyists long. There is nothing new about congressmen advising constituents to unite. In my mind the point is commonplace as: "Buckle up"; "Don't drink and drive"; "Brush your teeth"; and so on. We know the alternative in each case, but reminders might be boring.

Soon I will contact the Oklahoma congressional delegation about industry problems and if the conversations of the past are followed, I will be asked in some way if we have industry opposition. They may or may not give advice about unity because they will assume that I have addressed this problem and understand the risks involved.

Conversations at the Albuquerque and Houston conventions revealed a syndromic good-guy/bad-guy tone where the culprits could be identified by their respective positions. Nothing new here; neither is this predictable rhetoric disturbing. There are some encouraging points, notably more producers are interested in industry politics and have indicated a desire to learn how Washington really works.

Mr. Good-guy when you are writing or visiting with your national president, please bear in mind that producers are the backbone of the industry and that it is beekeeping blood that flows when beekeepers battle in the halls of Congress. Also, keep in mind that our leaders are fighting an uphill battle in Congress and the Administration that will be difficult to win. Our leaders will need the wisdom of Solomon and the patience of Job. Let's wish them well.Δ

Too Many Problems

QUARANTINE KILLED

Mite Wins Round 2

May 10, 1988. APHIS today announced they will revoke the Federal quarantine for restricted movement of bees, queens and packages from areas infested with the varroa mite.

They urged all states to adopt programs similar to the revoked measures they had in place to help control or retard the spread of varroa in the absence of the federal guidelines. On initial review, APHIS officials felt that implementation of the quarantine would abate the spread of varroa. However, continued testing showed that the 2-1/2% Apistan strip used to control mites in packages was not 100% effective. Further, even the 21 day treatment period for a colony was not 100% effective in killing all mites present.

"The demand for pollination, the lack of support and cooperation from the industry, and the ineffectiveness of available materials led APHIS to revoke the quarantine", said Milt Holmes, Operations Officer. "We will continue to assist states in the apiary survey already started with either financial or personnel assistance. We strongly urge all states to monitor incoming bees, but to do so with the thought of allowing beekeeping, as an industry, to continue rather than restrict it to death."

To do this, Holmes listed 5 considerations:

- Bees should be allowed to be moved if from mite-free areas.
- Queens from infested areas should be allowed to be moved if they have been treated with the Apistan queen tab, shown to be 100% effective after extensive testing.
- Packages from mite free areas should be allowed movement.
- Bees in hives should be allowed to be moved if they have passed either the ether roll or fluvalinate test.
- Bees in hives that have been treated for at least 21 days with the Apistan strips should be allowed to be moved.

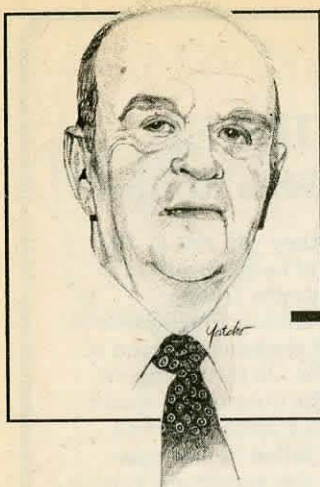
Mr. Holmes went on to say, "We (APHIS) continue to encourage USDA ARS and state researchers to maintain, and even upgrade, their excellent research programs on control and biology of the varroa mite."

The section 18 restriction remains intact for Apistan strips however, so only certified pesticide applicators, or their designates, can apply them. States can choose to use these strips to test for or to certify colonies free of the mite. However, ARS research has shown that the 21 day minimum treatment is not 100% effective for control. It is not known if a longer treatment period, as called for on the Apistan label, is 100% effective.

There were compounding problems leading to this action, Holmes stated. "The seasonal demand for bees — for pollination, honey production, and queen and package shipment — invited wholesale violation of the quarantine restrictions. Also, the Apistan strips, used for treatment or testing, were initially difficult to obtain on a timely basis, as are the DeWill testing boards. When ARS withdrew recommendations that the 2-1/2% package strip gave 100% control in packages, we had just about had it", Holmes said. "We couldn't control movement of bees, and even if we could, we didn't have a foolproof method of controlling the mite — we were essentially out of business from a regulatory aspect."

Unconfirmed reports at presstime indicate that NorAm Chemical Co., producers of Amitraz, is planning the release of their product under a Section 3 (general use) permit in the not-to-distant future. Apparently this product is effective against both tracheal and varroa mites.

Bee Culture will continue to bring you further updates on new varroa finds, chemical controls or other information as they become available.Δ



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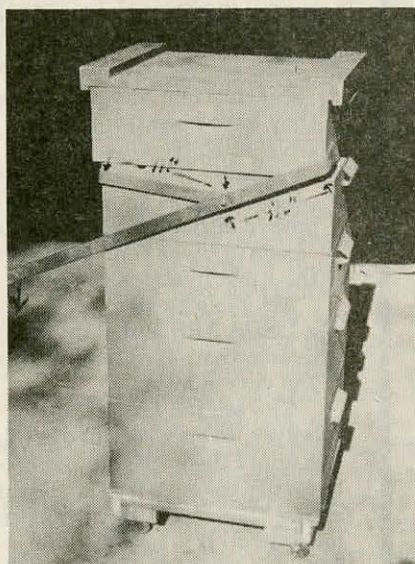
"You have neighbors to consider, so what's the hurry?"

I know a fellow here in Honolulu who never wears gloves or a veil and never gets stung. He is exceptionally slow in his movements and his bees treat him like a pal. Of course bees here in Hawaii are gentle, even the "mama flew away and papa unknown" variety. The air is balmy and there is always enough to eat so why get mad in Paradise?

Temperatures are high and propolis is soft so there is no "snap-crack-pop" when you break the hive body apart from the cover. Even in Southern California it's different on a cool day. I remember opening a hive one Sunday morning when the weather was cool and no matter how careful I was some bees got mad. My neighbor, a nice retired man was enjoying his Sunday paper when one of my bees flew over the hedge and began buzzing near his nose. He waved at her and she hauled off. I felt ashamed.

I had observed, in a very old ABC-XYZ, a picture of a hive tong and that is my summer gift to you. I made one and have used it every time I opened my hives for all of 50 years. If you have a junk yard in your town, and every town should have one, tell the owner what you are looking for. He will tell

you where to look. You don't want steel. Just common black iron. Not too heavy for you are going to lug it around. Long enough to give you plenty of leverage which you will need



Exact measurements from bolt to bend are shown above. Observe angle of bend to prevent damage to super. Make leverage handle long enough.

when you open a hive my way. Then get a shorter piece, not as heavy. Remember, it is junk so you can haggle with the junk yard owner.

Take it home and put one end in a vise. Light your torch if you have one and heat the iron until it glows red. Put the red hot end in the vice and bend it at the right angle. You don't want the hook end to dig into your hive body. Look at the picture, and observe where to drill the 2 holes — not too small. Find a bolt that fits, heat it and upset the end after you slip it into the holes. Now try it on the hive and mark where the second bend will be on the smaller iron. Heat it and bend it. Let it cool and you are ready to enjoy beekeeping as you never did before. Remember, I am talking to amateurs. Not commercial men. They got to get a move on or they never get done. But you got neighbors to consider, and what's the hurry?

Next time you open a hive, just slide one super on the other until you have small crack the bees can't get out of. Put in a little smoke and wait a minute. Now you can shove the upper body forward and lift it off. Nobody will feel insulted — you are a gentleman beekeeper.Δ



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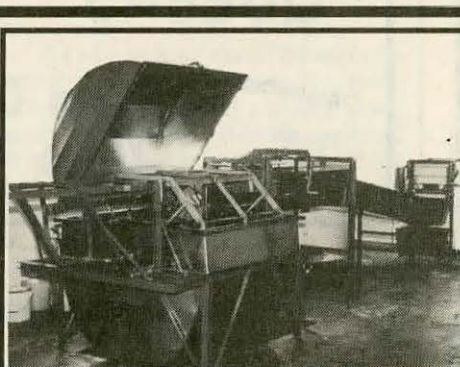
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Funny Beesness

ROGER WELSCH

We have a rule here at the National Liars Hall of Fame in Dannebrog, Nebraska, that lawyers cannot be nominated for membership. Why? Because the Hall of Fame is open only to amateurs.

I always break into a sweat when I get a letter from a lawyer, and you can imagine how nervous I was the other day when I found a letter in the egg basket from a *New Jersey* lawyer!

Well, William Kearns of Liberty Corner, New Jersey, wrote that he desperately wants some aluminum handkerchiefs, and so I am sending him four, as well as a copy of my book **Shingling the Fog**. Bill says that people are quite surprised to find that they can buy honey from his hives right in the neighborhood. In fact, he writes, one fellow, the chairman of a large banking corporation, came by one day and stopped to buy some honey from Bill's daughters Kate, Mary, and Peg, who were selling apples and honey bears at their apple stand.

The banking Exec asked the young businesswomen, "Is it hard to raise bees?"

Peg, aged 9, must be a little sharpie, because she sensed the opportunity to land a sucker and set the hook, but good. "The hardest part," she said, "is naming them all, since there are three hives and about 60,000 bees in a hive. We ran out of girls' names. Some bees are very upset because we gave them boys' names."

The banker sputtered, "You're kidding!"

Peg fessed up, "Yes, I am. Actually, the hardest part is feeding them. I am so afraid that Dad will squish them when he holds them for us or that we'll get too much syrup in the eyedropper."

My mother once asked me much the same question, and I explained to her that what I hated most of all about keeping bees was giving them their annual rabies shots. But frankly I still preferred that to the enemas I had to administer when the rascals got too much nectar from peanut flowers. She came out of that conversation with

new respect for her favorite son.

If I am uneasy about believing a story from a lawyer, I am *really* troubled by the prospect of passing along something from a Texan. But another set of aluminum sneezers and a book go out to reader Leon Fink, Plano, Texas, for a story that runs along much the same lines as Bill's.

"Where can you buy a bee brander, anyway?"

Leon writes, "When I thought about owning a bee hive I had no idea how much work would be(e) involved. After getting the queen and her entourage situated in my backyard, I got to thinking that once word got out that I had bees, anyone who happened to get stung by *any* flying thing would blame me and my bees.

"So I decided to mark them. In the tradition of the Old West I recruited the family members for an old-fashioned branding party right there in the backyard. It took real teamwork.

"James, the strongest, would grab

a bee by its antennae, swing it over on it back, and then Linda, Jason, and Keith would rush over to grab legs, one pair each. Then I would move in with the hot branding iron.

"Someone had to do the ugly part.

"The above scenario was repeated for maybe three or four thousand times. It was a full day's work.

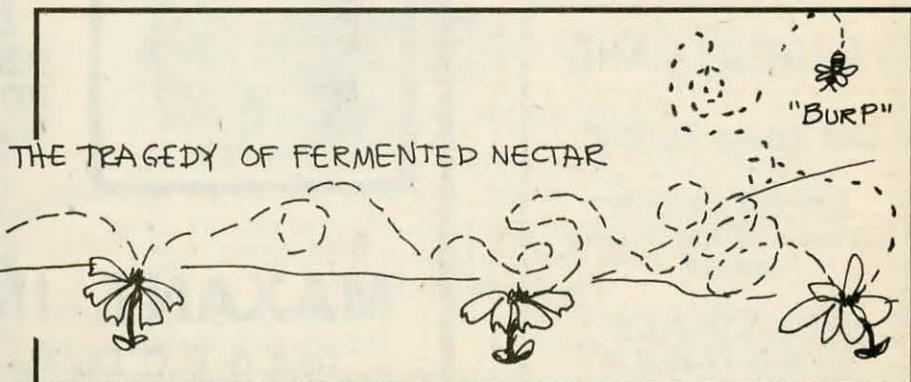
"At the end of the day the family would huddle around the campfire and tell bee-musing tales."

Our favorite was the one about the old bee who took a youngster out for a training flight. While they were observing the activity of their fellow bees around the hive, the pair noticed a human approaching the rear of the hive. He had a can of black paint and proceeded to paint a small black spot on the rear of the hive. It looked like another entrance.

Sure enough, before long some bees started flying into the black spot, only to slam into the hive wall and bounce off.

The old bee shook her head slowly and sadly, turned to the young trainee, and quoted Shakespeare — "What bees these mortals fool!"

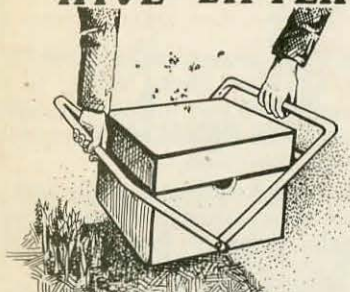
Now it's your turn. Send me your favorite joke, story, anecdote, tall tale or bumpersticker about bees and beekeeping to Primrose Farm, Dannebrog, NE 68831-0160. If I use your story in *Funny Beesness*, I'll send you one of my books and some valuable prize like a new throne for your queen.Δ



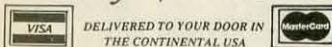
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Answers To Testing Your Beekeeping Knowledge

1. **True** Chalkbrood is a fungal disease and cool, damp conditions that are normally found in the spring usually enhance fungal growth. Excessive moisture buildup within the hive provides optimum conditions for chalkbrood development. When a colony is under additional stress from limited food supplies and another stress disease, the susceptibility of the colony to chalkbrood is increased.
2. **True** The honey bee larva is transformed into a white chalk-like mummy when the mycelium of only one strain (+ or -) infects it. Spores are formed within dark gray or black fruiting bodies only when mycelia of opposite strains (+ or -) come together.
3. **False** The swarming impulse is strongest in the spring when colony strength is rapidly increasing, but is not limited to the spring of the year. Research in New York has shown that approximately 80% of the swarms occur in the spring and 20% in late summer or early fall.
4. **False** While placing dry sugar on the inner cover in the spring is a quick attempt in providing food, it is not an efficient way to increase food stores. To take full advantage of the dry sugar, colonies must be strong, temperatures warm enough so the cluster can be broken, and adequate moisture must be available. In some instances, bees will carry dry sugar out of the hive and discard it. This feeding approach is not well suited to colonies that need food immediately to survive.
5. **False** Colonies buried in the snow normally overwinter very well due to the insulating properties of the snow. Death of colonies from smothering have been reported only after heavy ice storms.
6. **True** Primary swarms are normally composed of the old queen, a few drones and 50 to 60% of the workers; a mixture of bees of all ages.
7. **True** Brood that dies in the comb for any reason is normally removed

very quickly, if the house bees are able. This hygienic behavior is important in maintaining a healthy environment within the hive.

8. **False** European foulbrood, not American foulbrood-killed larvae are seen as coiled or twisted remains within the cell. Scales of dead larvae are easily removed unlike AFB scale which is firmly attached to the bottom of cell.
9. **False** Antibiotic extender patties are prepared by mixing terramycin with vegetable shortening and sugar. In this manner the antibiotic is protected from water and the shortening slows down the consumption by the bees and prolongs treatment.
10. B) 53 hours
11. Equalizing the strength of your colonies in the spring is an important management consideration. Weak colonies remain weak for long periods of time and often fail to produce a crop of honey. Extremely strong colonies in the spring have a strong tendency towards swarming thus often fail to become productive colonies. Equalizing the strength of your colonies will help reduce the incidence of swarming and will aid the weaker colonies in building up faster. Having all colonies similar in strength will mean that all colonies in the apiary will be ready for a given manipulation at the same time, such as supering. Total number of bees in the apiary is likely to increase since every queen is laying to her capacity; not restricted by congestion in the

broodnest or having only a small number of nurse bees to feed her or care for the brood. In the long run, less time will be needed in basic management when the honey flow begins.

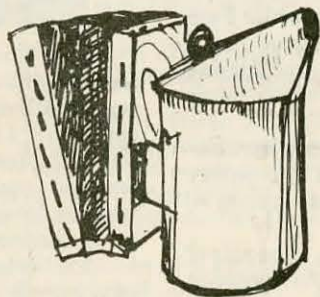
12. B) Fluvalinate
13. E) Carbolic Acid
14. G) Menthol Crystals
15. J) Sodium Sulfathiazole
16. M) Beltsville Bee Diet
17. Since European foulbrood and sacbrood are both stress diseases, requeening accomplishes two things: it gives the colony a more prolific queen which may be genetically less susceptible to the diseases and permits a time lag between brood cycles that allows the house bees to remove diseased larvae from their cells.

ANSWERS TO EXTRA CREDIT QUESTIONS

18. **True** Sacbrood virus multiplies in several body tissues of young larvae but they continue to appear normal until after they are sealed in their cells. Then they are unable to shed their last larval skin, because the thick tough endocuticle (inner skin layer) remains undissolved, and they die.
19. A) virus
20. C) Near the base of the hind wings.
21. A) Dorsal surface of the thorax.
22. B) Behind the head capsule and on the lower side of the neck.

There were a possible 25 points in the test this month. Check the table below to determine how well you did. If you scored less than 12 points, do not be discouraged. Keep reading and studying, you will do better in the future.

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



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NEWS...

Bee Culture Contributor Goes On The Air

Roger Welsch, Nebraska folklorist and humorist, has signed a contract with CBS-TV to write and host a new segment for the popular CBS program "Sunday Morning", with Charles Kuralt. The series will start about May 1 and air once a month, featuring Welsch's wry humor and intimate knowledge of Plains life. Segments already filmed deal with rural honesty, bullet holes in highway signs, and the proper way to wear bib overalls.

Welsch has known Kuralt for almost 15 years, first appearing with him on his "On the Road" series when Welsch ran for the Lancaster County Weed Control Authority — on a *pro-weed* ticket. Since then, Welsch has appeared five more times with Kuralt shows, ranging in topics from jackalopes to Omaha Indian music.

Welsch is on leave from the University of Nebraska, where he is a professor of English and Anthropology, but he is currently making his living as a banquet speaker and writer. His humor columns appear in six Nebraska newspapers and a remarkable variety of agricultural magazines, ranging from the *Nebraska Farmer* to *Gleanings in Bee Culture*. Welsch labels himself "a humorist", explaining, "A humorist makes about \$1000 less a month than a comedian".

When asked how he thought rural, Plains subjects would succeed on national television, Welsch laughed, "You have to remember that this same program let go Jeff Greenfield and Ray Gandolf, two of the best TV essayists around. I just intend to make the most of the situation while I am here, lying low in the hopes that no one notices me. I understand that I am replacing Beverly Sills on "Sunday Morning", I suppose because she is an even worse banjo player than I am".

Welsch said that the hardest part of his work with CBS-TV was not the taping of the segments but the salary negotiations. "I decided to be hard-nosed: I made it clear to CBS that I wouldn't pay a dime over \$500.00."

Welsch is serious about his humor. He says, "The role of the creative writer is to make life believable, of the humorist to make it bearable".

All Beekeepers Invited to EAS-'88 in Massachusetts

The Eastern Apicultural Society will hold its 34th Annual Conference and Short Course in beekeeping at Mount Holyoke College in South Hadley, MA during the week of August 8-13, 1988. All beekeepers, worldwide, are invited to attend this year's conference.

EAS is an organization of



serious hobbyist and professional beekeepers, drawing from the area of Ohio, Kentucky, Tennessee, North Carolina and all states and Canadian provinces to the north and east of these states. Many persons from the rest of the US and Canada, Europe, Africa and the Caribbean also participate on a regular basis in EAS activities.

The Society's Annual Conference offers a top-quality 3-day "Short Course" in beekeeping, taught by a faculty of nine beekeeping educators and practitioners (Monday-Wednesday), followed by a 2-1/2 day program of timely presentations, workshops and panels concentrating on both recent research and events and practical aspects of beekeeping. A major theme of this year's conference is a complete update on the varroa mite — how to discover and identify them, and how to cope with them once they are present. Our presenters are recognized experts with current hands-on experience from China, Europe and South America.



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The Conference is well suited to beginners and "old timers", and it also features several enjoyable and entertaining social events in the evenings. Supervised activities, day camp, and a field trip are offered for all children while their parents attend conference activities. And, the Annual Show features competitive judging and awards for honey, beeswax, cooking, gadgets, and photography entries submitted by conference attendees.

Full details on the short course content will be published next month along with a complete application form. Program and workshop schedules appear in the Events section. For additional information and/or registration forms, please contact Allan B. Corderman, EAS President, 112 Balls Hill Rd., Concord, MA 01742, tel. (617) 369-0467 (days), 369-8440 (evenings).

Fletcher Proposes Importation

LEWISBURG, PA. A Bucknell University professor is proposing the importation of gentler honey bees from Africa to interbreed with and dilute the strain of Africanized bees expected to cross the Mexican border into the United States during the next two years.

"No other strategy is likely to modify the Africanized gene pool more rapidly or more favorably," says David Fletcher, Bucknell associate professor of animal behavior.

Fletcher's plan calls for release of the bees repeatedly at

and behind the bee front. It would require exemption from, or adjustments to, existing statutes that currently make it illegal to import live honey bees.

An entomologist who has studied bees for nearly 20 years, Fletcher also advocates improvement of the Africanized bees through selective breeding.

More dangerous than the bees themselves is the public's fear of them, which could precipitate problems in the agricultural economy. "Where there is a fear of the bee, this can disrupt the agricultural system, because honey bees are used to pollinate billions of dollars worth of crops in the United States, and there may be a flood of lawsuits if people are stung," says Fletcher. He also worries that farmers who do not need bees for pollination but have nectar-producing crops might begin declining apiary sites to honey producers for the same reason.

Apiculture Awareness

J. E. Tew

USDA Extension, Apiculture

Africanized bees have always brought out controversy in many of us. Anticipated questions such as How far north will they get; Will they be stopped in Mexico; Will they be bred out? are asked by many concerned people. At times, such questions can be difficult to honestly address because the scientists' opinions vary so greatly. Speculations made concerning the Africanized bees' activities in one state may be totally unrelated to speculations made for another state. One would expect the same situation from one country to another that already has Africanized bees. It is not surprising that some researchers find Africanized bees manageable in some areas while other researchers report that the bees

seem to be hopelessly out of control in another country. Environmental conditions vary drastically, even within a specific country. It should not be surprising that the bees' activities within a country would be variable. The very hybrid pedigree of Africanized bees would predict that colonies would exhibit variable behaviors — especially as it relates to aggressive behavior.

Even though this concept is simple, the media people are not always so happy with this explanation. It doesn't read neatly. In some geographical areas, it may not even have catastrophic consequences, but such information is not really the stuff of which news is made. Maybe the scandal stories are given preferential exposure within the media. For sure, however, expect the opinions to continue to vary — even after the bees' arrival — until they are established within the borders of the US.

Not to be forgotten is the Honey Bee Cooperative Program in Mexico. The program is in place and functional. No one yet knows what effect that program will have on the continued advance of the Africanized honey bee toward the southern borders of the US. The Africanized Honey Bee Cooperative Program in Mexico is designed to impede the northward movement of Africanized honey bees (AHB) and is operated by the USDA and SARH (the USDA Mexican counterpart). The cooperative program includes two operational units in strategic locations along the Pacific and Gulf coasts where high mountain ranges form a narrow passage with the ocean. These units contain various technologies against the advancing AHB to reduce its population, while increasing that of the European honey bee (EHB) to give it a mating advantage, and change the genetic characteristics of AHB to make it less aggressive and more manageable.

... & Events

Your Next Meeting Notice should be here. Why isn't it? Send in your information now, while you're thinking about it. Allow a 2 month lead time — 3 is even better.

THE EASTERN APICULTURAL SOCIETY Conference will be held at Mount Holyoke College, Wednesday, August 10 through Saturday morning, August 13th. The following is the tentative schedule:

Wednesday, August 10

- 8:00 Final Day of Short Course (until 5:00 p.m.)
- 10:00 Preparation and Review Session for Master Beekeeper Exam. C. Collison assisted by Master Beekeepers
- 12:00 Lunch
- 1:00 Conference Registration Desk Open
- 1:00 Master Beekeeper Written and Laboratory Exams, C. Collison
- 2:00 Registration for Annual Show
- 4:00 Delegates Meeting

- 6:00 Family style dinner in your dormitory
- 8:00 Brian Sheriff - Beekeeping in England Slide Show; Directors Meeting
- 9:00 Jim Norcross - Stereo Slide Show on Beekeeping and Flowers (limited to 100 people per show)
- Thursday Morning, August 11**
- 8:00 Conference Registration Desk Open
- 9:00 Mr. A. Corderman, President, Call to Order; Rev. A. Blanks, Invocation; Ms. T. Hamilton, College Welcome; Dr. J. Edman, U. Mass. Entomology Dept.; Mr. A. Schumacher, Opening Remarks
- 9:30 Mr. K. Showler, In the Hot Seat: British Apiculture as seen by the chairman of the BBKA
- 9:55 Coffee Break, In Exhibit Area (courtesy Exhibitors)
- 10:10 Dr. J. Tew, The Federal Extension Program. How Does It Work?
- 10:35 Dr. J. Ambrose, The North Carolina Master Beekeeper Program, An Educational/Public Service Program for Beekeepers
- 11:00 Dr. G. Waller, Foraging Activity and Crop Pollination by the Honey Bee
- 11:25 Dr. R. Morse, Africanized Bee

- Research in Brazil and Mexico
- 12:00 Break for Lunch, Annual Spouses Luncheon at Willitts-Hallowell Center

Thursday Afternoon

- 1:30 Workshops:
 - Walt Blohm, Bees out of buildings
 - Frank Lagrant, Queen Rearing
 - Bill Denhard, Two Queen System
 - Tim Smith, Over Wintering Colonies Indoors
- 2:30 Wayne Andrews, Brood Diseases
- Bob Bury, Preparing Honey for Show
- Al Blanks, Crop Pollination
- Linda Boucher, Beeswax Products and Wax Cleaning
- 3:20 Coke break at Workshop area and in Exhibit area courtesy of Exhibitors
- 3:30 Al Delicata, Chunk Honey
- Larry Connor, Writing Bee Newsletters
- Ann Harmon, Honey Cookery
- Bill Denhard, Two Queen System
- 3:30 Clarence Collison, Master Beekeeper Program Critique
- 4:30 Professional Apiculturists Meeting; Live Bee Demonstration, Bees on crosses
- 6:00 New England Clam Bake, Beer available by the cup or pitcher on

a cash basis

9:00 Jim Norcross - Stereo Slide Show on Beekeeping and Flowers (limited to 100 people per show)

Friday Morning, August 12

8:00 Conference Registration Desk Open
9:00 Mr. R. Bonney, Vice President, Call to Order
9:05 Dr. D. Caron, Honey Marketing at Roadside; a survey in Delaware
9:30 Mr. D. Hall, Progress and Present Marketing Programs of the National Honey Board
9:55 Coffee Break in Exhibit area courtesy of Exhibitors
10:10 Dr. J. Keffuss, The Influence of Static Magnetic Fields on Bees
10:35 Dr. C. Collison, Quality of the Honey Bee Queen
11:00 Dr. D. McRory, Self-Sufficiency Rearing Queens and Bees
11:25 Dr. C. Peng, Varroa Mite Resistance Mechanism in *Apis cerana*
12:00 Break for Lunch

Friday Afternoon

1:30 Workshops:
Ann Harmon, Honey Cookery
Frank Lagrant, Queen Rearing
Bob Bury, Preparing Honey for Show
Tim Smith, Overwintering Colonies Indoors
Al Delicata, Chunk Honey
2:30 Walt Blohm, Bees out of buildings
Wayne Andrews, Brood Diseases
Al Blanks, Crop Pollination
Linda Boucher, Beeswax Products and Wax Cleaning
3:20 Coke break in Exhibit and Workshop areas courtesy of Exhibitors
3:30 Varroa Mite Panel Discussion, Dr. J. Keffuss, Dr. R. Morse, Dr. C. Peng, Moderator Dr. R. Berthold
4:30 Annual Business Meeting
6:00 Awards Banquet, Wine available by the bottle on a cash basis. Dinner served at 6:45 p.m.

Saturday Morning, August 13

9:00 Mr. J. Blodgett, 1989 President, Call to Order
9:05 Mr. J. Villa, Africanized Bee Control in Mexico
9:30 Student Award Winner
10:00 Coffee Break in Exhibit area, courtesy of Exhibitors
10:15 Hambleton Award Recipient
10:45 Dr. E. Southwick, Thermoregulation and Optimum Environmental Temperature for Bee Culture
11:15 T.B.A.
11:45 1989 President, Invitation to 1989 EAS
12:00 Meeting Adjourned

☆ **INTERNATIONAL** ☆

BEEKEEPING TOUR OF ISRAEL. Harold Liberman, 2701 Oxford Circle, Upper Marlboro, MD 20772 (301) 627-3990/4777. Note: Because of the disturbances there, this has been postponed a year.

SECOND AUSTRALIAN AND INTERNATIONAL BEE CONGRESS.

Brisbane. July 21-26. Registration \$A200 (includes Congress, Congress dinner, technical tour lunch, trade and honey exhibition). For further information contact: The Convenor/SAIBC, GOP Box 1402, Brisbane, QLD Australia 4001. Phone (07) 2290-1333. Telex 42723.

BEAVERLODGE BEEKEEPERS' FIELD DAY.

The 35th Beaverlodge Beekeepers' Field Day will be held on June 10th at the Beaverlodge Research Station. Dr. Don Nelson says the program will include beekeeping displays as well as research highlights. The afternoon program will be on bee-related topics by guest speakers, researchers and provincial apiarists. The field day program will be available about mid-May. For further information contact: D. L. Nelson, Agriculture Canada, Box 29, Beaverlodge, Alberta, Canada TOH OCO, Phone (403) 354-2212.

SINGAPORE. The Postal Authorities of Singapore (Southeast Asia) have issued a set of postage stamps of eight (8) insects in which they include a honey bee endemic to the region: the



Apis javana (enderlein), order - Hymenoptera, Family - Apidae. *Apis javana* is a common wild honey bee of Southeast Asia. It is found in Hainan (People's Republic of China), southwards to Sumatra and from Malaysia eastwards to Ambon. Slightly smaller than the European honey bee, it is gentle and can be domesticated. To order, ask for the "new definitive stamps low value 24-4-85", send \$2.25 for the entire set and write to: Postal Authorities, Philatelic Bureau, Singapore, Singapore, Asia.

MALI, WEST AFRICA. The Postal Authorities of the Republic of Mali, Africa, a former French colony, have issued a set of four stamps about honey bees. To order, ask for "honey bees



1987 stamps", enclose \$1.75, and write to: Postal Authorities (Postes), Philatelic Bureau, Bamako, Mali, W. Africa.

☆ **CALIFORNIA** ☆

INSTRUMENTAL INSEMINATION TRAINING and Practical Bee Breeding Course. Designed for the serious beekeeper who wants to become familiar with the technique of instrumental insemination and plans to establish, or is operating a breeding program. The class is divided into two sections to provide the information necessary to develop and maintain a breeding program, and also to provide individual instruction in the technique of instrumental insemination.

- SECTION 1. An intense one day seminar includes: basic bee genetics, various breeding systems with emphasis on the Page-Laidlaw Closed Population Breeding Program, colony selection methods and evaluation procedures, how to establish a selection index, pre- and post-insemination of queens, equipment set-up and adjustment, and a detailed, step-by-step slide show of instrumental insemination.
- SECTION 2. The technique of instrumental insemination is precise. Consequently, individual class time will be arranged with each student at their convenience. This allows us to provide the detailed, individual, hands-on instruction necessary for you to become comfortable with the technique. Use of standard and large capacity syringes, glass tips, plastic tips, and the short term storage of semen will be covered.

Seminar class dates are June 18 and July 16, 1988. Fees for complete class including seminar and laboratory training is \$200.00. Seminar only is \$75.00. For more information, contact the instructors; Susan Cobey and Timothy Lawrence, at Vaca Valley Apiaries, 6745 Bucktown Lane, Vacaville, CA 95688. (707) 447-6723.

STEVE TABER is again offering 2 classes this summer.

•July 16, 17, and 18 will be on Intermediate Beekeeping, including location and ID of parasitic mites, bee diseases, queen manipulation and basic bee genetics. Included are field trips and guest lectures. Cost is \$200.00 with a limit of 35 participants.

•July 21, 22, 23 and 24, a course on Artificial Insemination will be offered. This will include semen collection and injection, and care of virgins and drones. Evening lectures will cover bee genetics and various breeding programs. Cost of this course is \$300.00 with a limit of 16 participants.

Noon meals and a banquet are included in both classes. Speakers include Steve Taber, Tom Parisian and other experts in the field of Beekeeping and AI. For more information contact Honey Bee Genetics, P. O. Box 1672, Vacaville, CA 95696. (701) 449-0440.

Participants from developing countries will be charged \$150.00 and \$250.00 respectively for these classes. Cost for meals for an accompanying person who is not a participant is \$35.00.

☆ GEORGIA ☆

THE ANNUAL BEEKEEPERS SHORT COURSE for beginners and more experienced beekeepers will be held on June 11, 1988, at the University of Georgia, Athens, GA. The meeting, sponsored by the Department of Entomology and the Georgia Beekeepers Association, runs from 8:30 a.m. to 5:00 p.m. Registration will start at 7:30 in the Biological Sciences Building, Auditorium 404E. Demonstrations of practical beekeeping will begin at 1:30 p.m. at the University Apiary on the Horticulture Farm located on Highway 53, six miles south of Athens, GA.

Topics and demonstrations will include honey bee life cycles and activities, queen rearing and colony division, management for honey production, honey house operation, recognition of bee diseases and parasitic mites, prevention and control, and package bee installation. The potential impact of Africanized honey bees and the parasitic Asiatic mites on beekeeping in the U.S. will be highlighted.

The teaching staff will consist of several honey bee specialists, including well known commercial honey and queen and package bee producers from Georgia. The course fee is \$20.00 per person. Advanced registration is requested by June 9, 1988.

Requests for additional informa-

tion, program and registration forms should be addressed to Dr. Alfred Dietz, Department of Entomology, University of Georgia, Athens, GA, 30602, or telephone (404) 542-2816.

☆ ILLINOIS ☆

THE ILLINOIS STATE BEEKEEPERS' ASSOCIATION will host a Mid-Summer Meeting on June 25, 1988 at the Collinsville Holiday-Inn, 1000 Eastport Plaza Drive, Collinsville, IL 62234-6103. The Collinsville Holiday-Inn (formerly the Collinsville Hilton) is located just off I55-70, exit 11 onto Route 157.

A noon buffet style luncheon is planned. Advance reservations for the buffet lunch are required by June 15th, 1988. Reservations are \$7.75 each, which includes tax and gratuity, make checks payable to St. Clair Beekeepers' Association and mail to: Mr. Mike Buss, 110 Eastern St., Sparta, IL 62286.

Special room rates have been reserved for meeting attendees. Room rates are \$55.00 plus tax, single or double occupancy. Make your room reservations directly with the Collinsville Holiday-Inn by calling 1-800-551-5133.

During the course of the meeting, the ladies attending will car pool a trip to Union Station in downtown St. Louis, Missouri. This trip will be for interested ladies who would like to partake of an exciting shopping trip in the over 100 exquisite shops inside Union Station.

☆ IOWA ☆

THE CENTRAL IOWA BEEKEEPERS are sponsoring a symposium to be held June 24th and 25th, 1988 at the Starlite Village Motel in Ames, Iowa. The Starlite is located on 13th Street east of Ames proper and 1/4 mile west of the 13th street exit off Highway I-35.

A registration fee of \$25.00 will cover the cost of the Friday evening banquet as well as the noon luncheon on Saturday.

Friday, June 24th

- 10:30 Registration
- 1:00 Opening Remarks, Herbert Spencer, President
- 1:20 Beekeeping Equipment and Honey Production, William Eickholt
- 1:50 Making Creamed Honey and Marketing, Richard Moenck
- 2:20 Dealing With the Africanized bee, Dr. Joe Moffett, USDA
- 3:05 Wintering Bees Successfully, Glen Stanley, State Apiarist
- 3:40 Africanized Bees: What are Our Options?, Dr. Elbert Jaycox

- 4:20 Bee Diseases and Proper Treatment, Glen Stanley.
- 6:30 Banquet, Dr. Elbert Jaycox, Speaker, New Zealand Beekeeping

Saturday, June 25th

- 8:45 Spring and Summer Management Using Brood Equalization, Glen Stanley
- 9:45 Dealing With and Treating Bees for Acarine Mites, Dr. Joe Moffett - Research in NB
- 10:45 Bee Management when the Pests and Diseases are 'piling up' on us, Dr. Elbert Jaycox
- 12:00 Luncheon
- 1:15 Questions and Answers
- 2:00 Proceed to apiary for demonstrations. Immediately following the demonstrations everyone is invited to visit the Stanley Bros' storage and processing plant where the top priority is providing a top quality product. Lloyd and Glen Stanley will be honored at the banquet since this is the year "Stanley Bros' Apiaries", Gilbert, Iowa, celebrate their 50th year as partners in beekeeping.

Pre-register by sending your check or money order to: Charlet Meiners, Treasurer, 3505 Emerald Drive, Ames, Iowa 50010. For further information call: Herbert Spencer, President, Cambridge, Iowa 50040 (515) 383-2287.

☆ NEW JERSEY ☆

Instructors with more than a century of combined beekeeping experience will present a three-day short course in beekeeping at Cook College on June 28-30, 1988.

The class combines lectures and slide presentations with actual bee handling exercises. Topics include the life history of the honey bee; diseases and enemies of bees as well as colony manipulation, apiary location and how to obtain bees. The instructors also will demonstrate swarm prevention and swarm control practices. Other topics include honey removal and processing, mead making and candle making.

The program is designed for beekeepers as well as anyone interested in learning more about the field, including science teachers and high school students. The faculty features Dr. Robert Berthold, Associate Dean of Science at Delaware Valley College; Jack Matthenius, State Apiarist with the New Jersey Department of Agriculture; Radclyffe Roberts, Associate Professor of Entomology at Cook College; and Frank Wojcik, Apiculturist at Cook College.

The course is sponsored by Cook College Office of Continuing Professional education in cooperation with

the New Jersey Department of Agriculture. Registration fee of \$40 includes course materials and coffee and danish each morning. For a brochure or more information, please contact the Office of Continuing Professional Education, Cook College, Box 231, New Brunswick, NJ 08903. (201) 932-9271.

☆ OHIO ☆

ATI WORKSHOPS. For the past few years, the **Agricultural Technical Institute of the Ohio State University** has offered summer short courses. These courses are actually compacted regular classes, they are intensive and comprehensive. We realize that many beekeepers have problems finding time to attend summer programs, therefore, we are always searching for the right "mix" of course content and dates. This summer, we are trying the long weekend approach.

- On June 10, 11 and 12, 1988, we are offering a new program — Contemporary Issues in Beekeeping. On June 10, a full day of Africanized Beekeeping — the latest information. On June 11, Varroa Mites — What They Are and How Can They Be Controlled. On June 12, a discussion of Tracheal Mites during morning hours and a short discussion of Honey Marketing during early afternoon hours.
- The VIII International Beekeeping Seminar will be presented July 18-29, 1988. As in past years, this is a symposium on the International Aspects of Beekeeping. During the past years, approximately 200 participants have participated from 30

countries. We anticipate another successful year.

Additional information on all courses are available from: The Office of Conferences, Ms. Gail Miller, The Agricultural Technical Institute, Wooster, OH 44691. (216) 345-8336.

If we can be of any assistance, feel free to contact us.

☆ PENNSYLVANIA ☆

DOYLESTOWN. With the close of the recent spring beekeeping short course, plans are now being made for the summer course, which will be held on one weekend, Friday through Sunday, June 24-26, at Delaware Valley College.

Although the spring course was



Jack Matthenius examining a frame.

plagued by cool, wet weather which somewhat limited field activities, it was well-attended and well-received by the students. While many "harbin-

gers of doom" say that beekeeping is threatened by the recent invasion of the two mite species and the imminent arrival of the Africanized bees, this spring's course had a 50% increase in enrollment over the 1987 course.

The course featured many aspects of Apiculture including beginning beekeeping, apiary location, disease and pest recognition and control, swarm control, mead making and uses of beeswax, including candle making. The traditional highlight of the last day of the short course is a talk by Marnie Berthold about the home uses of honey, featuring samples of baked goods prepared with honey.

Jack Matthenius, New Jersey's Supervisor of Bee Culture, and Dr. Robert Berthold, Beekeeping Specialist at Delaware Valley College, will again serve as instructors for the summer course.

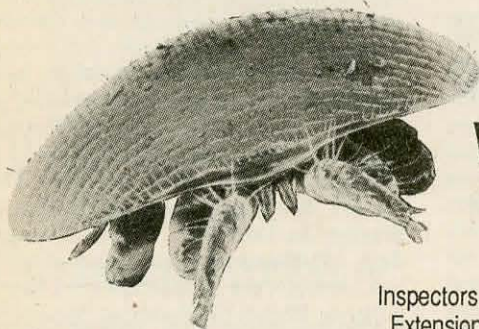
Additional information on the summer short course can be obtained by writing Delaware Valley College, Doylestown, PA 18901 or by calling (215) 345-1500.

☆ OBITUARY ☆

LEONARD CAHN, Master Beekeeper of High View, W. Virginia, died April 1, 1988 at the age of 75. He was formerly of Bethesda, Maryland and active in the Maryland State Beekeepers Association. After his retirement, he moved to West Virginia and became active in the West Virginia Beekeepers Association. He was not only a beekeeper, but a serious student of Apiculture.

He is survived by his wife, Ruth, also a beekeeper and active in the West Virginia Beekeepers Association.

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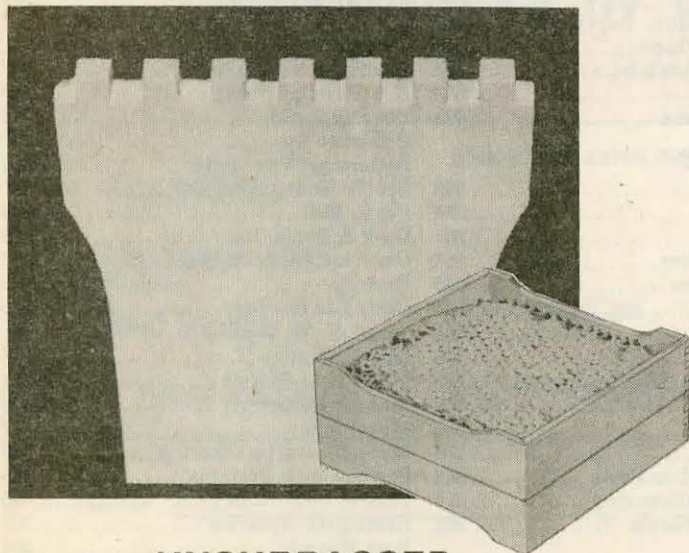
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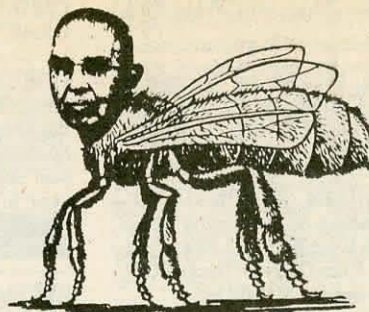
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DISPLAY INDEX

Bees & Queens

Alamance Bee Co.	354
Allen's Bee Ranch	353
Bee Happy Apiaries.....	366
Berry's, M. C. & Sons	351
Calvert Apiaries	364
Can-Am Apiaries	364
Curtis, Harold P. Honey Co.	353
Dunn Bee Farms	342
Glenn Apiaries.....	355
Gregg & Sons	323
Hardeman Apiaries	351
Harrell & Sons	338
Hawaiian Queen Co.....	338
Homan, Farris.....	366
Homan, Holder Apiaries	363
Honey Bee Genetics	366
Koehnen & Sons	335
Kona Queen Co.....	335
Midwestern Queens	353
Millry Bee Co.....	356
Mitchell's Apiaries.....	353
Norman Bee Co.	357
Plantation Bee Co.	364
Royal Air Force Apiaries	351
Rossman Apiaries	318
Scherer Bee.....	350
Strachan Apiaries	358
Taber Apiaries	349
Tate, W. L. & Son.....	363
Vaca Valley Apiaries	363
Weaver Apiaries, Inc.....	357
Weaver, Howard & Sons	335
Wenner Honey Farms	329

Wilbanks Apiaries.....	329
York Bee Co.	317

Education

Bee Films, Ink.....	364
Specialist, The.....	362
Beekeeping Educ. Service.....	317
Fairview College.....	348
Swarm Prevention.....	335
Peace Corps	353
The Swarm Game	363

Equipment

Arnaba Ltd.....	362
C C Pollen Co.	351
Condo, Loy	364
Cowen Uncappers.....	363
Dakota Guinness	355
Fager Corp.....	335
Fairfax Eng.....	314
Holly Bee	338
Johnson Dovetailing Equipment	337
Meyer, A. H.....	326, 360
Pierco Inc.	357
Sherriff, B.J.	338
Southwestern Hive Parts	342
Strauser Manufacturing	314
Stoller Honey Farms	363

Related Items

American Bee Breeders Assoc.	329
Aussie Bee Farm Sale	318
Balans Craftseat	329
Clearview Hatchery	366

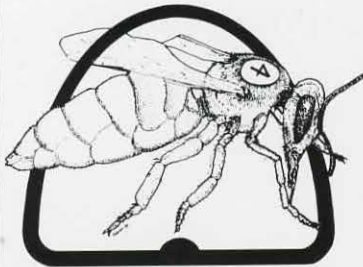
Custom Labels	335
Field Honey Co.....	323
Hamm's Bee Farm.....	326
R. M. Farms Labels.....	319
St. Charles Trading Co.	349
Y. S. Honey Farms.....	338

Suppliers

American Bee Supply	355
B & B Honey Farm	366
Bee Supply Co.....	364
Betterbee Inc.....	357
Betterway Wax Melter	360
Broff's Honey Products.....	321
Cary, M.R.....	338
Cook & Beals, Inc.....	335
Chrysler, W.A. & Son.....	323
Dadants	Inside Front Cover
Glory Bee Bee Box	330
Jones, F. W. & Son.....	367
Kelley, Walter T.....	376
Mann Lake Supply	317, 343
Maxant Industries	349, 366
Merrick's	317
Mid-con Agrimarketing.....	348
Perma-Comb Systems	326
Prairie View Honey Co.	366
Rheingold Apiaries	352
Ross Rounds	364
Root, A.I.	318, 323, 331, 338, 342, 349
Silverbow Honey Co.....	338
Silver City Supply	353, 363
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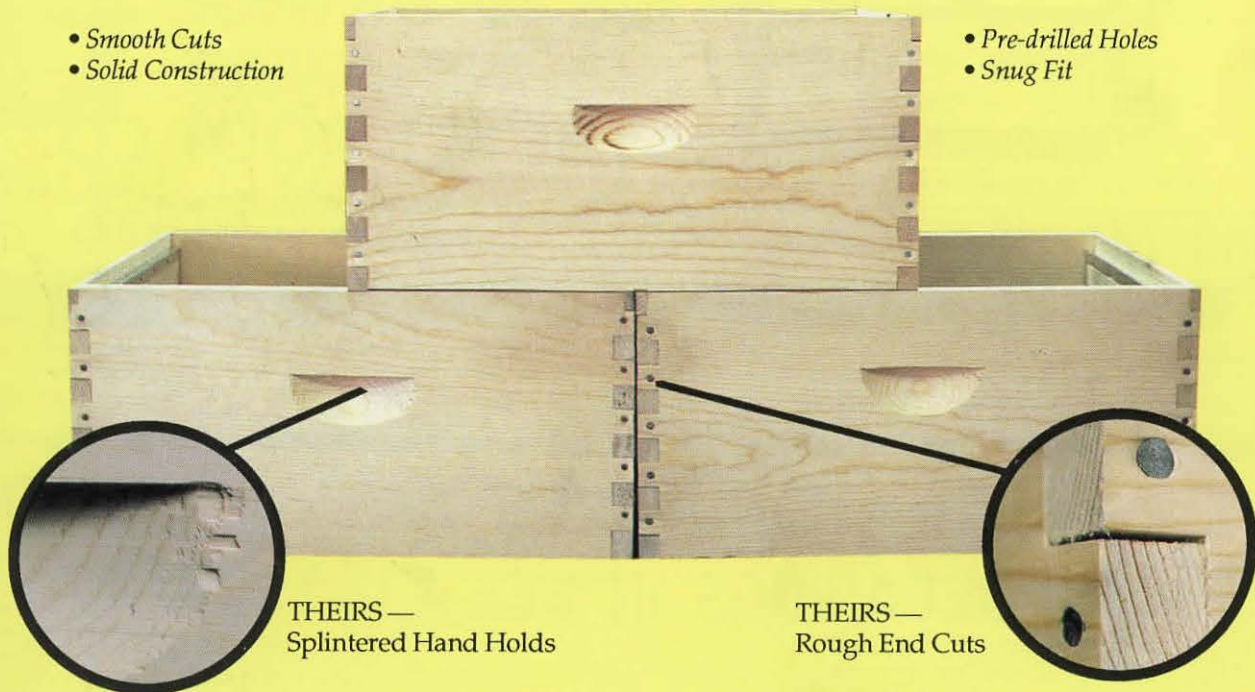
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