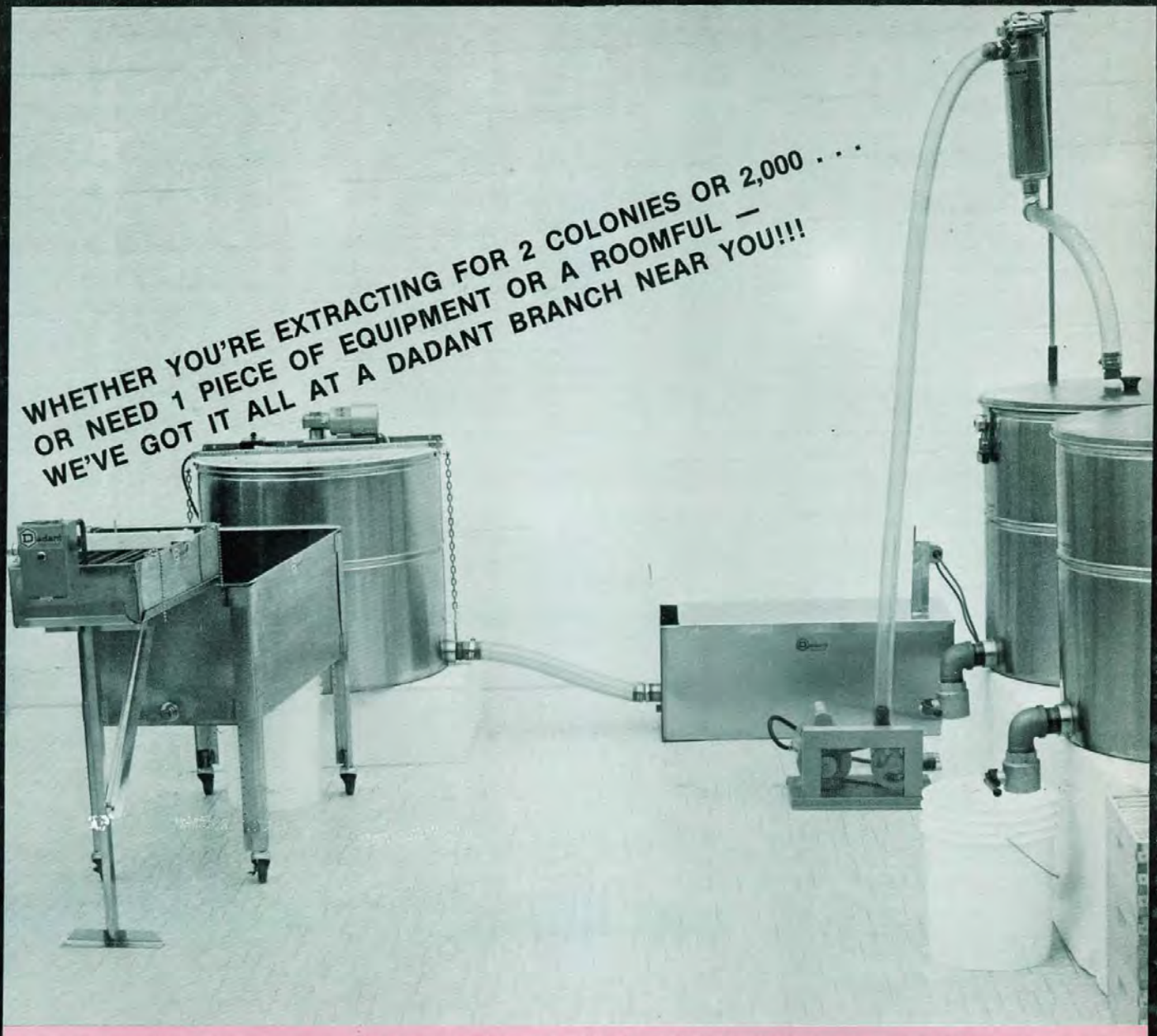
GLEANINGS IN BEE CULTURE

AUGUST 1984



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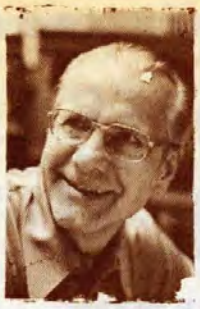

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GLEANINGS IN BEE CULTURE

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CONTENTS

COVER STORY

The beeyard at its peak: the pastoral atmosphere earned by the beekeeper after many, many hours of planning and work. The harvest awaits.

NOTES FROM THE BEEYARD

by Mark Bruner

ACARINE MITES FOUND IN TEXAS

Betsy Adams, Public Affairs specialist with APHIS (Animal, Plant Health Inspection Service), has confirmed that three colonies of honeybees in Wesleco, Texas (on the Mexican border) were discovered to have been infested with *Acarapis woodi* -- otherwise known as the Acarine mite. These pests, hitherto unestablished within the U.S., were detected on July 3rd during a routine survey by APHIS. The infested bees were the property of a local queen breeder. Because of the possibility that bees, with mites, were shipped by that breeder to other parts of the country, APHIS has begun an immediate survey, not only of the immediate area, but of all shipments to other locales. APHIS has an eradication plan which will be relied upon as soon as the extent of the infestation has been determined.

The mite, an arthropod, lives in the trachea of the honeybee where such infestation can significantly weaken both individual bee and colony strength. Several chemical treatments such as methyl salicytate, methanol and chlorobenzilate have been suggested, but none has been uniformly accepted.

The consequences of this infestation remain to be seen. Obviously, if unchecked, the Acarine mites might have serious implications, especially in the Southern breeding and package bee states. At present, APHIS, the State Department of Agriculture of Texas, and representatives from Texas A&M, are working to contain the immediate infestation and identify the extent of its spread. Until a further report is released, all other concerns are premature.

THOUGHTS ON SWARMING & BOTTLING

Our swarming season, here in northeast Ohio, has finally fizzled out and, as beekeepers are fond of doing, reflecting on what has been learned is the avocation of the day. Some of us are quite fond of capturing swarms -- it strengthens our need to be patient, reminds us that what holds true in 9 out of 10 times will surprise the bee veil off of you in that 1 of 10 times, and gives us a chance to meet some nice folks, many of whom are scared out of their wits because of the blob of insects which has chosen to visit the tree outside their living room. We have a few chuckles about this. Last year, Larry Goltz and I even went so far as to make up our own list of certainties about receiving phone calls:

1. If they tell you the swarm is within easy reach, you usually need binoculars to see it and a cherrypicker to reach it.

2. If they say the swarm is enormous, the size of a volkswagen -- you can usually depend upon it being about the size of ball that Arnold Palmer would use to tee off with.

3. Invariably, your immediate presence will be demanded or begged for because every living soul in the household suffers from sting allergy, including Zippo the family dog and Swimmy the pet goldfish.

Of course, it's easy for a beekeeper to chortle a bit at all of this. Sadly though, we don't take into account, often enough, the sincere fears many non-beekeepers have about swarms. I have a good handful of unfortunate examples of this: all basically the same. We, at the Root Company, receive many swarm calls during the season. Often, the person calling has already contacted other beekeepers who, for one reason or another, were unable or unwilling to catch the swarm. This year, on at least 6 occasions, after talking with the caller I have asked: "Now, has anyone explained to you why these bees have swarmed and what their behavior is likely to be like?" On each of those occasions the answer was no. Generally, these folks thought the bees were going to permanently nest out in the open on their tree limb. They assumed that they were dangerous by virtue of the fact that some were always in the air, and because a large quantity of stinging insects presents such an image.

I ask you: "Does not a beekeeper have an obligation, whether he or she is interested in capturing a swarm, to explain to a frightened caller, that swarming is a natural offshoot of overpopulation -- that these bees are in transit; that although there is always the potential for being stung, swarming bees are principally interested in relocating and, as such, are docile as a rule?"

I believe the answer is yes, and think it is almost unforgivable that an important public relations job like this is neglected.
Let me give you another example of neglected responsibility. I tell this story on myself, because I am as guilty as are many others who will read this.

We have been extracting honey these past few weeks. Like many folks, the crop got a little ahead of us and we found ourselves rushing to put our honey room together. With equal haste we extracted a few hundred pounds and set about to process it. It the middle of this whirling dervish of activity, a brother beekeeper of ours, from Pennsylvania, visited us and, upon seeing our honey house, chided us about its condition. "If this were a dairy house, or any other type of agricultural processing site, do you think it would pass health standards inspection?" The answer, quite frankly, is no. Not that we are contaminating our honey due to gross negligence. In fact, we take care to ensure that our honey has been handled in accordance with prudent processing practices. But,

the answer is still no. In comparison to the demands made on other food processors, we don't hold up at all. We compromise a bit here and there because we're pushed for time. Perhaps we don't take adequate care in this cleaning or that disposal operation. In fact, sometimes we forget, I'm afraid, that what we are packing is a food. We do not face the multitude of potential heath problems other food packers risk from improper processing, but we are, after all, intending to sell something for human consumption. Simply from the standpoint of attracting repeat sales from having offered a clean product, that should be incentive enough.

So, when we think of our operation, which has its sorry points, and then think of other operations we have seen: set up in gravel-floored garages or soiled basements, we realize that most of us, who are packing honey in relatively small volume, have room for improvements upgrading the cleanliness of our activities. Very seldom do we beekeepers, find ourselves pressured by state authorities into assuring these processing standards. We are lucky in that respect. However, if we don't assume that responsibility for ourselves, we are likely to be generating our own bad fortunes.

August Moon

These summer nights
When Delia,
Ornamented by the stars,
Spreads her cool mantle
On the meadow's brow
and trails a silver train
Across the brook,
Runs her slim fingers
Through the maple's crown
And outlines the white lily
In its early bloom,
Tips the bedew'ed grass
And glances on the rock—
These are the nights
When fairy cups are filled
With nectar, and the bee
Trembles with dreams
Of dawn's surprise;
Then the night air
Moves hesitantly
For within these hours
Lies the enchantment
All the year will share.

—Fanny Kraiss DeVine

The Monthly Honey Report

July 10, 1984

The following figures represent the current prices reported by beekeepers and packers over the country. They are based on reports from many states averaged out 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

Sales of extracted, unprocessed honey to Packers, F.O.B. Producer, Containers Exchanged	1	2	3	4	5	6	7	8	9
60 lbs. (per can) White	42.00	38.00	42.00		36.12	40.00	35.00	38.00	38.00
60 lbs. (per can) Amber	39.00	36.00	40.00		31.62	37.50	29.60	35.00	35.50
55 gal. drum (per lb.) White	.60		.56	.58	.57		.56	.56	.58
55 gal. drum (per lb.) Amber			.50		.57		.49	.54	.55
Case lots — Wholesale									
1 lb. jar (case of 24)	30.50	24.90	25.75	25.92	38.40	24.50	24.75	26.25	28.40
2 lb. jar (case of 12)	30.25	23.30	23.75	23.76	34.80	23.00	24.00	24.95	26.20
5 lb. jar (case of 6)	32.00	27.80	25.40	23.04	27.50	25.50	24.25	27.25	27.90
Retail Honey Prices									
½ lb.	.90	1.22	.80	.84	.84	.90	.88	.90	.90
12 oz. Squeeze Bottle	1.50	1.44	1.30	1.25	1.75	1.35	1.42	1.40	1.27
1 lb.	1.65	1.50	1.35	1.50	1.85	1.55	1.49	1.49	1.54
2 lb.	2.70	2.60	2.65	2.65	2.72	2.60	2.63	2.65	2.60
2½ lb.	3.50			3.27		3.25		3.26	3.50
3 lb.	4.00	3.50		3.87		3.85	3.95	3.85	3.75
4 lb.	5.00	4.95		4.99		4.90	4.51	4.89	
5 lb.	6.00		5.95	5.90	5.99	5.80	5.50	6.00	5.74
1 lb. Creamed			1.50		1.55		1.50	1.59	1.67
1 lb. Comb	2.25	1.95	2.25		1.95	1.85	2.10	1.85	2.25
Round Plastic Comb	1.75	1.75	1.85	1.69			1.80	1.76	1.50
Beeswax (Light)	1.25	1.25	1.35	1.35	1.25	1.35	1.28	1.15	1.22
Beeswax (Dark)	1.15	1.20	1.20		1.10	1.25	1.15	1.10	1.12
Pollination Fee (Ave. Per Colony)	21.00	23.00	24.00	18.00	19.00		19.00	18.00	21.00

MISCELLANEOUS COMMENTS

REGION ONE

Hot weather and rain. More than normal swarming. Vegetation looks good but alfalfa is cut three weeks before bloom. Not much clover bloom so far and lack of same because of fewer being planted. Honey market slow. Less demand for honey. Perhaps because of recent bad publicity. Connecticut reports that black locust saved feeding this June. Pollinators are being asked to do custom work that costs beekeepers too much -- $35.00 is necessary for this area.

REGION TWO

Grocery store prices not reflecting wholesale prices in NY. Bees are in very good condition as are honey plants. Honey sales in MD reported good. Beekeeping groups picking up new members. Some

owners moving bees to Eastern coast for pollination. Some dry areas on the east shore. PA reports excellent flow after May rains stopped, but honey sales VERY slow.

REGION THREE

MO weather good with adequate moisture. Honey sales have picked up and prospects for a good crop are indicated. Indiana reports no honey coming into hives as of June 19th. Sweet clover not yet yielding. Sales slow. Wisconsin reports good plant outlook. Almost too much rain. Bees in good shape. Shop sales of honey gifts look good. Illinois reports late swarming. but good clover crops. Hot, dry and little rain. Many beekeepers producing some kind of comb honey. Wholesale honey not moving well.

REGION FOUR

N.D. season on time. Most hives made a living by June 20. Excellent rainfall. General good condition of bees except for starvation reports on unattended light hives. Some beekeepers pushing syrup before flow. Sunflower acreage planting up reflecting high oil prices. Some southeast areas of N.D. flooded with problems to some in getting to hives.

REGION FIVE

Tulip polar flow short due to rain then long dry spell in N.C.

REGION SIX

Prospects for sourwood in TN look good. Honey sales slow but not unusually so for the season.

Continued on next page

REGION SEVEN

Oklahoma reports spotty crops with some booming yards and others barely making it. Moisture below normal except in northeast. Sales slow.

REGION EIGHT

Late June rains helped all areas except north central and northeast areas of Montana. Rainfall still below normal. It looks like a poor honey crop. AZ reports good flow from mesquite, catclaw and Palo Verde.

REGION NINE

Honey flow has dried in coastal California. Small amount of Eucalyptus being harvested in cooler/damp locations. Pollination about half finished. Some pesticide damage in Lompoc, Santa Maria areas. Celery pollination just starting. Prospects for seed alfalafa contracts uncertain. Feeding of Washington bees heavier than normal. Weather finally nice and much nectar coming in. Crop prospects good. Honey demand and sales strong.

Gleanings Mail Box

Two Letters About The Coggshall Brush

Dear Editor:

In response to Walter Hess' query in the June issue of *Gleanings* about the *coggshall,* not coggshell, bee brush pictured on page 89 of *Fifty Years Among The Bees,* by Dr. C.C. Miller; W.L. Coggshall was described by A.I. and E.R. Root (1) as in some ways, the most remarkable beekeeper in the United States. In the 1880's and early 1900's he owned between 3000 and 3200 colonies of bees distributed among some 15 different yards in the Lake District of New York. He also had yards in Colorado, Arizona, and Cuba. He didn't seem to care too much about his bees; Root says his first concern was the locality, second, the man (who worked for him), and lastly the hives. He was an extremely efficient honey producer of *unorthodox* methods. At harvest time he went out with two or three men and they'd rip the hives apart, kicking them if that was the quickest way, they'd drive down the bees with smoke and then with a peculiar trembling motion which they'd perfected, they'd shake the bees almost entirely off. What few remained were cleaned off with one or two sweeps of a long whiskbroom which the apiarist carried tied to his person.

One of Coggshall's "lightning operators", and two boys actually took off 1400 pounds of honey in an hour and a quarter or at the rate of over 1000 pounds an hour. All by horse and wagon and hard labor!

Root notes that they donned "suits of armor" as the air was soon full of stinging bees and sting-proof bee gear was not enough.

(1) from an article by E.R. Root in *Gleanings* for Dec. 1, 1899 which appears in *The ABC & XYZ Of Bee Culture,* A.I. and E.R. Root, Medina, Ohio 1903.

Leonore, M. Bravo, 47 Levant St., San Francisco, CA 94114

Bee-Brushes

Dear Editor:

Sometimes it is not desirable to get all of the bees off, in which case, or with very light combs, no brushing is needed. But if all the bees are to be cleared off, and sorted too, I know of no brush better than one made of goldenrod, aster, etc. No little bit of a thing, but a good, big bunch, well tied together with a string.

But like many a thing that costs nothing, these weed brushes are too expensive, for they dry up so that a fresh one must be made every day, and that takes a good deal of time. So I generally use a Coggshall brush. The essential thing about a Coggshall brush is that it must be made of long broom-corn with a very thin brush, and not trimmed at all the ends.

Now if Walter Hess will look at his copy of *"Fifty Years Among The Bees",* and turn to page 75 down to the middle of the page is "Bee Brushes".

Frank Shaffer, 1125 Seartes St., St. Eureka, CA 95501

My Method Of Swarm Control

Dear Editor:

Much has been written about swarm control. Some reverse hive bodies, some cut out swarm cells, others say give plenty of room and on and on it goes.

I've kept bees for 50 years. Never more than 40 colonies, my count right now being 13 colonies.

I extract my honey in the fall and put my supers away for the winter wet and sticky.

Some put their wet supers back on in the fall for the bees to clean up, but not me, as this causes robbing and would defeat my purpose.

When spring comes and when the pear trees are in bloom I put two sticky and wet shallow supers on each over-wintered colony.

The bees get so interested in cleaning up the wet supers that they forget all about swarming.

This works for me and I havn't had a swarm in years from my own hives. **Edwin L. Scales, 51515 Wegee Rd., Bellaire, OH 43906**

Sing Out If You Can Help

Dear Editor:

I wonder if there is any old timer out there or ABF official who has knowledge of the songs they sang at conventions in the days of Dr. C.C. Miller. If so, I'd greatly appreciate securing copies of them. **Leonore M. Bravo, 47 Levant St., San Francisco, CA 94114.**

Response To Dave Tozier's Article On Plastic Foundation

Dear Editor:

In reference to Dave Tozier's article, "Plastic Foundations — A Back-lotter's Viewpoint," I can empathize with the author. While some of his points have been born out in my experience, others need some qualification.

I would question his hypothesis that the manufacturers of bee equipment cater to the commercial beekeeper. As a hobbyist, I can take the time to try and correct some of the problems created by plastic frames and foundation, I don't think a commercial beekeeper would want them at all.

With the exception of one sample frame, I have never used Pierco **full depth** frames; however, I do have a quantity of the medium depth Pierco's. I have several hundred Bee Plasticomb medium depth frames, and about fifty Arnaba full depth foundations. Some of the Arnaba are mounted in conventional wood frames, others are in Arnaba's own plastic frames.

Quality control in the production of the actual comb foundation seems to be a major factor in how successful they are. If the edges of the cell bases are not sharply defined, the bees have a strong tendency to disregard the cell bases completely, building comb any way they see fit. Both the Pierco and Arnaba products have very sharp edges.

On the other hand, my Bee Plasticombs are an utter disaster. As I recall, I made an initial order of twenty. These all appeared to have sharply defined edges. I then ordered about 200 more. As soon as I opened the cases, I could see trouble. The first thing that caught my eye were long hair-like pieces of plastic from the hot frame having been removed from the mold. As I set about removing these pieces of plastic, I noted that on one side of the frame the cells were sharply defined, while on the other was just a rounded edge. I have yet to have one good comb produced on these frames. Most appear like the illustration on page 245 of Tower's May article.

I don't know what the author's experience may have been with conventional wax foundation; but I have not noted any more tendency to draw out full depth Arnaba foundation unevenly than conventional foundation. Sometimes bees just seem dead set on doing this, no matter what the foundation is made of.

Continued on next page

One point that I have found particularly distasteful about both the Pierco and Bee Plasticomb is propolis buildup. The way the end-bars are designed, makes what is essentially a hollow end-bar. If the end-bars are not lined up precisely, the bees attempt to fill this hollow area with propolis. When one extracts, a large quantity of propolis ends up in the honey. The hollow end-bar goes all the way to the bottom on the Pierco frames. Usually the bees build cells in this lower end-bar area. These cells are difficult to uncap with one pass of the uncapping knife, so extra work is involved when uncapping.

To facilitate rapid uncapping, I prefer to use nine frames, rather than ten in my supers. While Tozier may take the time to carefully align each frame in a ten frame configuration, I don't. Propolis in a nine frame arrangement is almost overwhelming because big chunks of the bitter tasting stuff comes out of the frames during extracting.

Most of my honey goes to local residents who believe any sort of processing detracts from the quality of the honey. Consequently, I do not strain or filter the honey. It goes directly from the extractor into one gallon jars. I let it sit for a week or so until any wax chips rise to the surface, skim off the wax, and sell the honey, as is. Trying to remove a lot of bitter tasting propolis from honey, without filtering, is very time consuming.

The design of the Arnaba frame is more like that of a conventional wood frame; so if anything there is less propolis on one of their frames than on a wood frame.

This leads directly into another aspect of the plastic frames. One of Pierco's selling points is that by eliminating the thickness of the wood, their frames provide more cell area. For me, this is a qualified advantage. While the thin frame does allow more cells per frame, the bees tend to build frames between supers; sort of like one continuous long comb from the top of the hive to the bottom. When the supers are separated, one is faced with a lot of leaking honey.

I, too, have had problems with the comb separating from the frame during extracting. I use a conventional four-frame extractor. Normally, I extract a part of the honey from one side of the frame, turn the frame around, fully extract the second side, then turn the frame around again, and finish the first side. If I don't do this, the weight of the honey jams the comb into the extractor basket and when one attempts to remove the comb, the wax stays stuck in the basket and one ends up holding a frame bare down to the plastic on one side. Certainly Tozier's problems are multiplied when using a radial extractor, for there is no basket to help keep wax and plastic together.

I have had separation problems even before the actual extracting process. I use a hand-held electric knife. If I attempt to rush my cut even slightly, the wax pulls away from the frame all the way down to the plastic. Generally, the bees rebuilt this torn area all right, but if a large area is removed, it causes quite a vibration in the extractor due to imbalance.

Here in Arizona, any plastic soon turns quite brittle. I have had problems with the old Pierco frames because the thin top bar becomes brittle and cracks when I attempt to separate frames with a hive tool. I think this more a problem of geographic region than anything else, but it is important to those of use who live in hot, arid climates.

Another problem I have had that was not mentioned in this article involves storage of combs. With wood frames, I have always used paradichlorobenzene without problems. It is very difficult to use with plastic frames, because it melts the plastic. I usually place several layers of newspaper over the frames, then sprinkle on the flakes. Even with several layers of paper the frames immediately below the chemical appear to have had acid dripped on them.

Probably anyone reading this letter would say if everything is so negative, why use plastic? For me, there are two main reasons — convenience and wax worms. What could be easier than opening a case of plastic frames fitted with plastic foundation and immediately placing these in a super and setting the super on a hive? While I make every effort to keep my colonies strong and my combs protected from wax worms, they still get in occasionally. With conventional wax foundation in wood frames one is faced with at least replacing the foundation, at worst, the frame also must be replaced. With plastic, all one has to do is scrape off what remains of the comb and replace the plastic in the super. As soon as the honey flow comes along, the bees will draw it back out.

I believe most of us hope to find easier ways to do things. The glowing claims for many beekeeping products seem to pale when the products are placed in our hands. While the plastics do offer some advantages, the old reliable wood frame fitted with a wax foundation is difficult to beat. I for one, will continue to try out different products; but I definitely will never make another 200 frame order because a small sample order looked all right.

I enjoyed reading Dave Tozier's article and would like to see more of the same type. Sometimes I feel quite apart from other area beekeepers because most seem to be masters of the "leave it alone" and the "if it was good enough for grandpa, it's good enough for me" schools of thought. Their combs are just one big ugly mess of wax. It would seem they only use frames because state law requires access to inspectors. From the messes I have seen in most local hives, their owners would wonder what Tozier is complaining about. While I would never take the time that he does in an attempt to get good combs, I can understand the frustration he must feel when he attempts to get good combs. Let's see more articles relating to how well products stand up over the long run. Too many articles seem to reflect one successful season's use of a product, not how well it stands up season after season. **Demorest B. Howard, Route 1, Box 65E, McNeal, AZ 85617.**

Two Brickbats

Dear Editor:

In the June 1984 issue of *Gleanings*, B. Neumann and A. Switzer repeat what E.E. Ball, a Wisconsin bee inspector, considered the "bogy of the diseased bee-tree". He charted specific movements of hives and combs that were verifiable sources of disease, rather than the alleged wild colonies. (*Jour. Of Economic Entomology* (1918) 11(2): 200-205).

L. Bailey in England found many reasons for beekeepers' colonies having more disease than wild colonies living at considerable distances from one another (*Bee World* (1958) 39(4):92-95). It would be interesting to know if any recent investigations have provided data to settle this question. **Toge S.K. Johansson, R.D. 1, Box 256A, East Berne, N.Y. 12059.**

Praise For A.T.I. Program

Dear Editor:

Last week, June 11-15, it was the privilege of the undersigned and one of my associates, Miss Dorianne Voneida, to attend the "Queen Rearing Seminar" offered by the Department of Beekeeping Technology at the Agricultural Technical Institute of O.S.U. at Wooster, Ohio.

To say that the 5-day program was satisfactory in meeting our expectations would be a considerable understatement. The seminar, especially being the first of such distinctive programming, was extremely well organized and conducted. The schedule was intensive, as should characterize an area of specialization, yet was smoothly and effectively administered in a manner which allowed for flexibility and individual attention.

In my opinion, the main reason for the merit and efficiency of this program was doubtless the knowledge, capabilities, and obvious expertise of Dr. James Tew and his able assistant Phil Mariola.

With a classroom full of highly experienced beekeepers from several states, many of them moderately large commercial operators and/or inspectors, there wasn't a question, however broad or technical, for which Professor Tew didn't have a specific,

Continued on next page

pertinent, and incisive answer or a strong case-building rationale in the event insufficient research in a problem area determined that a resolution had to be inconclusive.

Although 'queen rearing' was slightly out of our immediate frame of reference as small-time hobby beekeepers, we have done a good deal of reading and study on the tenets of basic beekeeping and we received answers on the first day that had eluded us for years!

We will definitely be registering for the "Basic Beekeeping Seminar" in July along with two or three other friends to whom we've recommended the program. We strongly feel that the worth of this program should be advertised widely in the beekeeping communities. With some 10,000 registered beekeepers in Ohio alone and with few other institutions making this kind of instruction available, it is our firm contention that this program, particularly under the extraordinary competence of Dr. Tew, is a valuable resource that should be expanded and increasingly exploited.

The extensive knowledge imparted along with the reasonable cost should witness every beekeeper in this area of the country availing themselves of such seminars. Certainly we give the itinerary and Dr. Tew and his assistant our unqualified recommendation. **John R. Allen, 148 Jean Avenue Munroe Falls, OH 44262.**

Admitting A Mistake

Dear Editor:

As is, I suspect, the case with most beekeepers, I learn from my mistakes. Let me share with you:

A few weeks ago I gathered my equipment and prepared to check my hives which are located in a wooded area behind my house. I put my smoker down on the forest floor, lit it, and gave it a few vigorous puffs to get it going, while my five year old daughter looked on from a safe distance.

A few minutes later, I was inspecting frames when I heard the local fire whistle go off at noon and my daughter said to me, "Daddy, there's a fire." Without looking up I said, "Yes Nancy, that's the fire whistle." A minute later Nancy said, "But Daddy, shouldn't you do something about the fire?" I looked up and where I had lit my smoker the leaves and pine needles were burning!

The next few minutes were a flurry of excitement to say the least. By scraping the ground with my hive tool and stamping on the burning leaves, I managed to confine the fire, then put it out.

It is scary to think the damage I could have caused if the fire had gotten out of control.

Now I put my smoker on a large rock to start it, and I am very careful where I put my hot smoker. **Larry Ouillette, RFD #1, Box 197-D, N. Grosvenordale, CT 06255.**

More on the Coggshall Brush

Dear Editor:

Our worn-out Coggshall brush is about to be replaced with a new one we have in reserve. They are almost 18" in length, look like a whisk broom, and are made of untrimmed broom corn to keep the ends of the strands thin (p. 77 of Miller's book).

W.L. Coggshall, "whose annual crop goes up into the tons", used and recommended this brush. According to Root's 1895 *ABC of Beekeeping,* Mr. Coggshall removed about half of the strands to make a softer brush. Root's listed it in the 74th edition of their price list (Jan. 1892). The earlier 72nd edition (Jan. 1891) listed a brush made of yucca, and Davis' improved bee-brush of unspecified fiber. When F.R. Cheshire published his *Bees and Beekeeping* in 1888, he indicated that a feather or goose-wing was the brush of choice; although he preferred a painter's large duster. J. Phin makes no mention of any bee brushes in his comprehensive 1884 dictionary of terms used in practical apiculture.

Broomcorn is a variety of sorghum (*Sorghum vulgare* var. *technicum*), and grown chiefly in the Mississippi valley. The dwarf form is used for whisk brooms. cogswellia or biscuit root is not listed in any of our reference books, but it may have other common names? Broomroot or zacation (*Epicames macroura*) is a grass found from Texas to Central America whose roots are used for cheaper brushes. In broomcorn it is the seed head that is used for brooms. **Toge S.K. Johansson, R.D. 1, Box 256A, East Berne, N.Y. 12059.**

An Updated Report On The Bee Program At ATI

A recent article in the *Speedy Bee* (May 1984) reported that the bee program at the Agricultural Technical Institute had been abolished. I am happy to report that this is not the case. Admittedly, the program has recently been operating under tighter budgetary conditions. Unfortunately, for the U.S. Beekeeping industry, the situation at Ohio State's Agricultural Institute is not unique but rather is exemplified by many other major universities across the nation.

In an attempt to anticipate student profile changes, ATI recently began offering five-day courses. The first one, Queen Rearing, was offered June 11-15, 1984. There were 28 students enrolled in this class. Eight of these students chose to register for three hours of college credit for their participation. The remaining students took the class for personal enrichment. This first queen rearing course was resoundingly successful. The Queen Rearing course will be offered again in Columbus, Ohio September 10-14, 1984. A course in introductory apiculture will be offered July 23-28, 1984. Student pre-registration for this class has been extremely good.

A course such as the three described allow considerably more students an opportunity to participate in the bee program. However, all other dimensions of the program are still offered in their entirety (eg. two-year degree program 9 month certificate program, and special contractual programs). The program is fully equipped to offer physical support (ie. colonies, equiment, etc.) for any of the programs offered. Even more, construction of a new bee facility is slated to begin in October 1984. The new facility, along with this program's current inventory of equipment, will combine to form one of the best training sites for beekeeping in the United States. My recent tenure and promotion to the rank of associate professor will assure me an active part in this educational development.

The administration at the Agricultural Technical Institute has long been a staunch supporter of the bee program. We are constantly trying (during a difficult financial period) to offer an assortment of the highest quality programs in technical education in apiculture. I sincerely request your suggestions and support of our efforts here.

Photo of this year's Queen Rearing class.

James E. Tew
A.T.I.
Wooster, Ohio

Research Review

By DR. ROGER A. MORSE
Department of Entomology
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The Two-Queen System In Alberta

Beekeeping in the Peace River District of Northern Alberta is compressed into five months. The following is a review of a paper by a beekeeper from that area who starts each year with 1500 two-pound packages and uses a two-queen system of management. The bees are installed during the first few days of April. Harvesting the crop starts in mid-July. The bees are killed with cyanide at the time of the first hard frost sometime in late August. Obviously, this management scheme demands an exact schedule.

During the past ten years colonies have averaged 250 pounds where two queens were used. Beekeepers who use single queen colonies average only 175 pounds. The cost of the extra queen, labor to install her and the equipment involved amounts to $28 (Canadian) but the extra honey produced is worth $47 for an extra profit of about $28,000 for the year.

In the early spring when the bees are installed they are given some honey but also fed Fumidil-B in sugar syrup to protect against nosema. Terramycin is also included in the sugar syrup for protection against European and American foulbrood.

Interestingly, the second queen is not given the colony until June 5th to 15th. By this time of year the colonies occupjy two supers and the queen is laying in both. when it is time to install the second queen, the original queen is placed in a single super, with some capped brood, on the bottom board. An excluder is placed over the single super. Two honey supers are placed on top of the excluder with a solid division board above.

The second super with most of the brood and bees is placed on the division board. The new queen, in her 3-hole cage is placed in this super. She is released by the bees eating away the sugar candy. Green grass is stuffed into the upper entrance so as to delay flight on the part of the bees above the division board. as it wilts, it is slowly removed by the bees.

After about two weeks, the division board is removed and a queen excluder with a single sheet of newspaper below it is put in its place. A third queen excluder is added above the upper brood chamber. It is pushed back so as to make an upper entrance to make up the one lost when the division board was removed. Another super for honey storage is added above.

The next check of the colonies is made about July 15th to 20th when the honey harvest starts. At this time the brood nests are combined.

It should be clear that management scheme such as one reviewed here could be successful only in an area where there is an intense honey flow. Two queen systems of management have been advocated by many people many times. However, in general, they have not been adapted by beekeepers because of the extra management and time required. There is no question that one can build big populations of bees using two queens in a single colony. As is done in the paper reviewed here there must be a good separation of the two queens in the colony.

The best publication on the subject of two queen systems for the United States is that by the late Dr. Floyd E. Moeller entitled, *Two-Queen System of Honey Bee Colony Management*, USDA Production Report. 16 pages. 1977. Unfortunately this report is out of print, but anyone who wishes to try the two-queen system should track down a library copy to study.

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Two-queen hive management using package bees in the Peace River Area, Alberta, Canada. *Bee World* 65:80-84. 1984.

Accuracy In Pesticide Applications

A recent study showed that only one in four of the 152 private and commercial pesticide applicators observed were making their applications within five percent of the desired dose. Inaccurate calibration of the application equipment was the greatest problem. A second problem was tank mix error. Errors ranged from 60% underapplication to 90% overapplication.

This is the first study of this nature that I recall. However, it was a problem I remember studying as a graduate student. My impression is that pesticide applicators are much more careful today than in times past. Reminding people that errors can be made may cause more applicators to be more.careful and this is a desirable goal.

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Rider, A.R. and E.C. Dickey
Field evaluation of calibration accuracy for pesticide application equipment. Transactions of the American Society of Agricultural Engineers. 25:258-260.

WINNER of the ROSSMAN APIARIES CONTEST!

We are pleased to announce that Mr. Philip Stanley, of Ore City, Texas, has won the Rossman Apiaries Contest publicized, through insert cards, in the April and May issues of GLEANINGS IN BEE CULTURE. Mr. Stanley wins a complete standard Root Quality hive with frames, foundation plus a three pound package of bees and a queen. Congratulations!

Update on Honey Production, Imports and Exports

Prepared by DR. ROGER MORSE
Gleanings Research Editor

The chief honey exporting countries in the world have been Canada, Mexico, Argentina, New Zealand and Australia. In about 1962 Mainland China joined their ranks and today is the world's major honey exporter. In 1981 the Director of the Apiculture Institute in China wrote that beekeeping "requires little investment" and "yields a rapid return". In a country where labor is cheap, that statement may be true but it is certainly not the case in the United States.

The chief honey importing countries have been Germany, England and, to a lesser extent, other European countries. Japan joined this group in the mid-1960's. The United States imported about as much honey as it exported until the early 1970's. Recent figures are as follows:

U.S. Honey Production, Imports and Exports
(Millions Of Pounds)

Year	U.S. Production	Imports	Exports	Honey taken by Govt.
1970	221.8	8.9	8.2	0
1971	197.4	11.4	7.6	0
1972	214.1	39.0	4.1	0
1973	237.7	10.7	17.6	0
1974	185.1	24.6	4.6	0
1975	196.5	46.4	4.0	0
1976	199.8	66.5	4.7	0
1977	178.1	63.9	5.5	0
1978	231.5	56.0	8.0	0
1979	238.7	58.6	8.8	0
1980	199.8	49.0	8.5	6.5
1981	185.9	77.3	9.2	37.3
1982	230.0 (estimated)*	92.0	8.5	74.5
1983	205 (estimated)*	109.8	7.5	115 (estimated)***
1984	---	29.7 (Jan.-Mar.)**	---	---

* The gathering of more precise figures has been discontinued due to lack of federal funds.

** 29.7 million pounds of honey have been imported in the first three months of 1984. At this rate we will import 120 million pounds in 1984.

*** 113.4 million pounds were put under loan from the 1983 crop. 107.6 remained under the loan. However, it is estimated that 115 will be acquired by the government. There is a special feature of the loan program, which has not been used before, that allows a beekeeper to obligate the government to take honey at the end of the year without making a loan. This happened this year for the first time.

Parity for 1983 was $1.037. For 1984 it is adjusted at $1.097 up 6 cents from last year. The program for 1984 will be about the same as for 1983. The Congress will start to work on the 1985 program this fall. However, since this is an election year we can expect that nothing will be done until after elections and it may well be a year from now before we have the 1985 farm bill in its final form.

Beekeeping In The WhiskeyTown-Shasta-Trinity National Recreation Area Of Northern California

By Larry Goltz, Western Editor 1230 Canby Rd. #122, Redding, California 96003

"Grandfather Gannon's first apiary sites are now covered by 3,200 acre Whiskeytown Lake"

When Richard Gannon's grandfather moved from Timmons, Ontario, Canada in 1926 to Stocktown, California he began beekeeping to supplement income from his trade of carpentry. Later, moving up into northern California, he established bee locations in the Whiskeytown area of the north state, little suspecting that some day the sites would lay under a hundred feet of water. The former sites now lie under a lake, part of the 42,503 acre Whiskeytown-Shasta-Trinity National Recreation Area in Shasta County, California.

Richard Gannon, grandson of the founder of Royal Air Force Apiaries, explained the evolution of this family business. This family-owned and operated bee operation began with the side-line business of the grandfather Gannon and now has one year-around employee, three employees working 10 months of the year and approximately ten seasonal people.

Richard Gannon's father and uncle teamed up as business partners in 1946 to continue the business, which was expanded into a fully commercial operation, now diversified to queen and package bee sales, pollination service and honey production. In 1954 the uncle left the business to become Butte County apiary inspector. Richard Gannon has recently assumed full management of the Royal Air Force Apiaries, succeeding his father in this capacity.

Visiting with the Gannons, Richard, Joan and their three children, at their recently built home on twenty acres, six miles out of Redding, California, I found that some of their local bee yards were located in the Whiskeytown-Shasta-Trinity National Recreation Area. Their extracting plant and a warehouse remains in the Chico area, the family homestead. The package bee and queen rearing operation is largely concentrated in Shasta County, the leading package bee and queen rearing area of California. The location of these facilities and eventual residential site became established as a result of this being the

Photo 1. Whiskeytown Lake, which now covers the original Royal Air Force Apiary sites in the Whiskeytown National Recreation Area.

seasonal "bee camp" used by the migratory beekeepers who operated the northern California apiaries. These original sites in the Whiskeytown area had been negotiated for with miners and inheritors of the cliams of gold seekers who first came to the Whiskeytown area after the discovery of gold in 1849. Richard Gannon's parents, who reside in the Chico area, 75 miles to the south of Redding, were largely dependent on the star thistle honey flow of that area, but spent four and one-half months of the year working the bees in the Whiskeytown area, which is predominantly oak-foothills vegetation at the northern terminus of the Sacramento Valley. Star thistle (*Centuarea solstitialis*) was introduced to California circa 1900 and has become a major honey producer for beekeepers in central and northern California. This yellow-flowered thistle, regarded as a pest by ranchers and field crop growers of the Central Valley is practically immune to eradication by grazing and other weed control measures. Bloom begins in about the middle of June and continues to the middle of October. The honey is heavy-bodied, very light in color and of excellent flavor. The introduction of this alien plant has indeed been a mixed blessing to the agriculture of California.

To me, the most unique phase of the Gannon's Royal Air Force Apiary operation was the keeping of bees within the Whiskeytown-Shasta-Trinity National Recreation Area. The Whiskeytown Area is under the supervision of the National Park Service, Department of The Interior. Like the Department of Forestry (United States Department of Agriculture) and the Bureau of Land Management, another government agency, the National Park Service in charge of the Whiskeytown Recreation area issues permits for certain multiple-use cattle, lumbering and for limited mineral rights. A beekeeper, such as the Gannons, may establish apiary sites by permit, which are obtainable from ranger stations in charge of national lands across the United States, provided of course that such a policy is in effect in your local area. Permit charges are usually based on a fixed fee plus an assessment for each hive located in the area. Fees and regulations may vary by agency and

Continued on next page

Photo 2. Richard and Joan Gannon of Royal Air Force Apiaries at the entrance to their home and business.

location. In the Whiskeytown Recreation Area, the Gannon Apiaries are restricted to seven different sites, locations dictated by the geography and public use patterns of the area. The National Park Service-beekeeper agreeement clearly states that apiaries not be located where the bees could interfere with park visitors. The agreement also states that protection of the apiaries from bears, for example, is the responsibility of the beekeeper. Bears, which may find the bee yards convenient fast-food carryouts, will be not destroyed or

Photo 3. One of the seven sites reserved by the Royal Air Force Apiaries in the Whiskeytown Area. Note the electric fence to protect the apiary.

live-trapped for removal by the rangers, although hunting, in season, is allowed in the Whiskeytown Area. Needless to say, the Gannons have found it prudent to enclose all of their present five bee yards in the Area with electrically charged fencing. Shasta County, at least during past years, has had the third highest bear population in California, being exceeded in the number of black bears only by neighboring Trinity and Siskyou Counties. Bears were a temporary problem at one of the camp grounds during the past spring, but thankfully, have apparently moved on into the back country after playing several night visits to camp garbage stands.

The terrain of the Whiskeytown Recreation Area is moderately forested with pine and several species of oak, maple and revierrine trees and shrubs such as alders, willows and also some California buckey. The predominant shrubs are light and dark leaf manzanitas (*Arctostaphylos spp.*), forming dense thickets called chapparral. The shrub bears small, pinkish, urn-shaped blossoms which begin to appear in January. They may continue blooming until the middle of March. Light frost durng this time seems to stimulate strong honey flows and bees eagerly work the brush on warm days. Brood rearing begins as a result and some surplus honey may be stored by strong colonies. Various species of the genus Ceanothus, toyon, Yerba santa and oak honeydews provided additional forage in the Whiskeytown Area. Elevations vary from about 1,000 feet above sea level to an elevation of slightly over 6,000 feet at the top of Shasta Bally, the dominant peak of the Area.

The Royal Air Force Apiarie's year is divided roughly into six segments, described by Gannon as follows: The beekeeping "off season", which is considered to be from the time the bees are brought in from the high mountains and flood endangered regions to the foothills in the fall. The bees remain at these locations until movement begins to the almond orchards in about February. After the pollination of almonds, most Royal Air Force bees, those used for package bee and queen production, will be returned north to the Shasta County locations. A few colonies go to plum-prune orchards to pollinate. Feeding is frequently necessary to provide stores and to stimulate brood rearing. Pollen substitute is fed along with a percentage of natural pollen mixed in the artificial ingredients. No Royal Air Force Apiary bees go to the citrus orchards after almond pollination as is sometimes done by others.

The next major phase of the year's activities is filling package bee and queen orders. Italian bees are the predominant race used in packages but Caucasian queens can be supplied.

Supplying bees for pollination offers an early cash return for beekeepers in California. The Royal Air Force Apiaries avoids total dependence upon the package bee and queen business by diversifing, moving bees to pollinate orchards and field crops and producing honey as well as the queen and package business.

In general, the Whiskeytown National Recreation Area of Northern California is a good location for the Royal Air Force Apiaries. The weather is moderate (only occasional snow and low temperatures dur-

Continued on next page

ing the winter) with protected wintering sites and a fairly steady, though light flow of nectar and some pollen beginning in January from the manzanita. Feeding is necessary at different times of the year, depending upon circumstances. Precautions are taken to protect all apiaries from the brood diseases, treatments being given three times a year with anti-biotics. Inspections are an important part of the year's program to insure that all colonies are disease-free.

Photo 4. "A place for everything and everything in its place," is the rule at the Royal Air Force Apiary warehouse.

Most package bees and queens are shipped by May 25th. British Columbia, Alberta and Saskatchewan honey producers comprise the larger percent of the buyers of Royal Air Force packages and queens.

After the package bee and queen season, the Gannon bees may be trucked to the alfalfa seed fields in the San Joaquin Valley, below Sacramento. Here the bees cross pollinate large acreages of alfalfa grown principally for seed. Little, if any, hay is gathered form this legume crop, the object being to produce the maximum amount of seed, impossible without honeybees. The Royal Air Force bees are loaded six hives to the pallet. Moving is done with two flatbed trucks, one capable of pulling a 26 foot trailer loaded with 216 colonies with the same number of two-sory colonies on the truck. Bees are loaded and moved without screens, with only a few, short stops being made enroute to the alfalfa fields, some 300 miles to the south. A system of gathering colonies from various scattered locations prior to loading the big trucks helps to expedite the movement of the bees. Moving bees to alfalfa usually involves four trips, taking 500 hives per trip; approximately 2,000 colonies moved in four trips. In addition to the freightliner with trailer, a two-ton truck capable of hauling 120 colonies and pulling a fork lift is used. The use of the larger trucks may be limited in moving bees into local sites due to the possible inability to negotiate some of the mountain roads with sharp turns and steep grades, common to the area.

Queen mating nucs are scattered through the Redding area during the queen rearing season. About 5,000 baby nucs are in use, while another 2,000 nucs are of the 8-frame size, divided into two compartments. About 2,500 two-story colonies are used in package bee production, plus the breeder and cell care units maintained at the home address.

There have been no serious conflicts between the keeping of bees and the use of the recreation area by people in the Whiskeytown-Shasta-Trinity National Recreation Area. Natural Resource Management people at Whiskeytown realize the value of good pollination to the ecology of this preserved area and cooperate fully with the Royal Air Force Apiaries. Of course, this trust and confidence has been reinforced over the years by good management of bees and yard maintenance in the seven locations within the Area by the Royal Air Force Apiaries.□

Beekeeping Technology

By DR. JAMES TEW
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Paraffin Wax Dipping Of Hive Equipment

Any time a discussion of equipment is conducted, the closing remarks always focus on ways to paint, dip, or otherwise preserve the hive parts in question. Wood decay is a way of life in most parts of the world. Cross (1983) indicated that a few factors are the main causes of bee hive decay. The first is a wooden box that is filled with living, respiring insects (bees) and is positioned on or near the ground. It is often surrounded by vegetation that adds to possible moisture exposure. A second factor that contributes to hive decay is the type and grade of wood used to construct hive bodies. Few beekeepers can justify solid high-quality lumber to manufacture hive bodies. The heavier more durable types of lumber would also add to the overall weight of the equipment.

Water (or moisture) is the main factor in causing wood rot. Under moist conditions, various fungi attack wood. Consequently, protecting wood from moisture is a must. A second alternative would be a chemical preservative to prevent the fungi from growing in the wood. A combination of water protection and chemical protection is probably the best alternative. However, many beekeepers are reluctant to apply a fungicide to their hive equipment fearing either a bee kill or honey contamination. A good paraffin dip procedure seems to do a good job of protecting wood from moisture without requiring a chemical preservative.

It was my good fortune to visit recently with Mr. Dean Compton of Hastings, New Zealand. Paraffin dipping has long been practiced in New Zealand to make non-durable wood (*Pinus radiata*) acceptable for outdoor use particularly in bee hive construction. Dean gave comments on the procedure currently used by the Arataki Honey Company of Havelock, North, New Zealand.

Their wood for hive construction is purchased as cheaply as possible. All wood is untreated. Approximately 200 to 500 hive bodies are dipped per day. Several thousand hive bodies are accumulated to be dipped (or re-dipped). A steel vat (Fig. 1) that measures approximately 12 feet (366 cm) in length, 5 feet (154 cm) in height, and 22 inches (56 cm) wide is used to accomplish the dipping procedure. A tubular track forces the hive bodies into the paraffin dip. As successive supers are pushed into the tubular cage, freshly dipped hive bodies are pushed up and finally out the opposite end of the dipping vat. Four people are normally used to operate the dipping procedure.

Our man puts the hive bodies to be treated into the track. On the opposite end, another operator, wearing heavy gloves, removes the molten paraffin with a vinyl acrylic paint. The paint is pulled into the wood as the paraffin cools. The paint, therefore, is more than the usual paint film in that is has penetrated the wood. However, the main function of the paint is simply to color the hive.

The paraffin is heated between 320° and 400°F (160 to 204°C). It may take as long as three hours to get the paraffin to a temperature that high. The length of time the hive bodies should stay submerged varies but the range is 2 to 10 minutes. Four to five minutes would probably be an acceptable average.

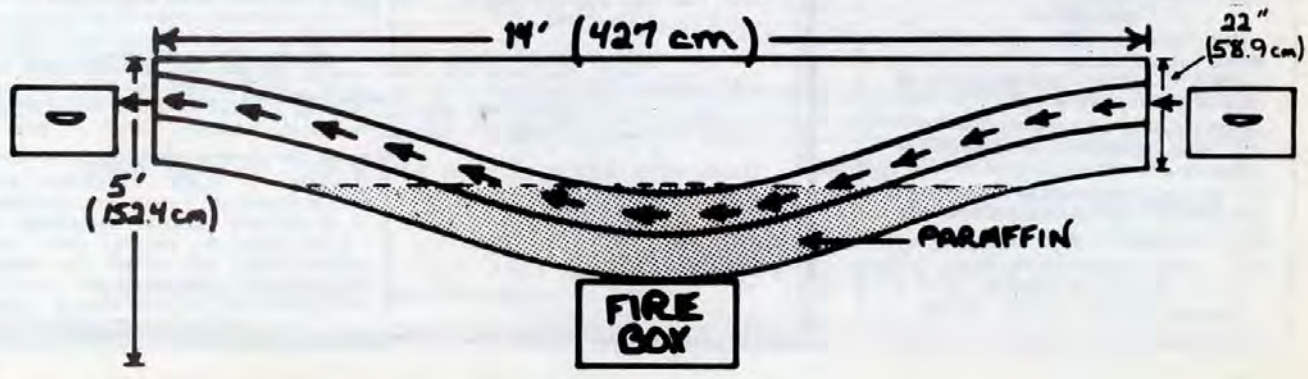
Suggestions also vary on which paraffin wax to use. Some beekeepers report that almost any common paraffin will do very well if hive bodies are allowed to soak long enough. One of the waxes used in New Zealand is Shell Paraffin Wax 6B. After equipment has been dipped, it is allowed to dry overnight.

Sap lumber that normally decays after a few years should last as long as ten years if re-dipped at 3-4 year intervals. Re-dipping replaces paraffin. It also removes wax, propolis, and old paint.

Equipment that was previously painted without having been dipped can be treated with the paraffin process quite nicely. The high temperature of the wax blisters the old paint off.

There have been reports of using the paraffin dip process to treat American Foul Brood contaminated equipment. The literature (Reid, 1978) suggests allowing at

Continued on page 426



Requeening — How And When

By KATHY & ROGER HULTGREN 155 Lovell Road Holden, Mass. 01520

There are as many different methods of requeening as there are beekeepers. It is the intent of this article to define the situations which require requeening and examine the methods to accomplish this end.

Reasons for Requeening

The most obvious reason for requeening is that your hive has become queenless. There are times during a hive inspection when it is difficult to locate your queen. If a frame of eggs is present in the hive then one can assume that a queen has been present within the past 48 hours. However, should an inspection yield only capped brood and not eggs (i.e. eggs standing up in the center of the bottom of a cell) then the hive may have become queenless. Experienced beekeepers can detect a louder than normal hum amongst the workers when this situation is present. The bees also tend to run about the frames and are less productive at this time. If left unattended, selected workers will develop ovaries and begin laying multiple eggs in a cell. The maturing eggs are unfertilized and will evolve into drones. A hive of only drones will soon die off for their function of the life cycle does not involve the various duties of the workers.

A failing queen is another reason for requeening. An indication of this problem is a poor brood pattern. Such a pattern is scattered about the frame instead of being symmetrical about the center. Another recognizable sign of failure is the presence of supersedure cells. These cells are found in the middle of frames and number from one to six queen cells. Swarm cells, on the other hand, are found the majority of the time along the bottom of frames and number from four to twenty cells. Hives, which supersede their queens just before a honey flow, lose precious time. The reason being is that sixteen days are needed for the development of a queen, approximately a week for the queen to mature and mate, three to eight days before she begins to lay eggs and then twenty-one days are needed for the eggs to develop, mature and hatch.

Annual or biannual requeening is the last consideration. Some beekeepers follow this routine in order to ensure a good strong queen, reduce their chances of swarming, eliminate the possibility of the presence of a failing queen and maximize the number of workers for a honey flow.

Obtaining Queens

Queens may be purchased or raised by a beekeeper and both have advantages and disadvantages. One may purchase a queen direct from a queen producer or his local bee supply dealer. The advantages of this method are that one obtains a quality bred queen from a particular race. This can be accomplished either by controlled mating areas or artificial insemination. The draw backs to this choice are the cost which averages six dollars, the concern of mailing which sometimes results in queens dying in transit, replacements being forwarded and hive acceptance which entails the introduciton of the queen to the hive.

There are numerous methods for queen rearing which can be employed by a hobbyist. One can allow the hive to take care of itself which exemplifies poor management. Another approach is to force a new queen by removing the original queen. This method causes distress on the hive and does not produce a quality queen. The best technique is one which employs swarm or supersedure cells. The eggs selected for these cells yield a much higher quality queen. The advantages of this method are little cost is involved, the self pride of the beekeeper is enhanced and if one is satisfied with the hive temperment this can be perpetuated. The disadvantages are the time involved in nurturing a new queen to maturity, the possibility of late emerging queens swarming, a queen on a mating flight being killed by a bird or multiple queens emerging simultaneously which results in a duel which could damage the winning opponent.

Methods of Requeening

Queenless hives, laying workers or requeening each have a different procedure for the introduction of a new queen.

After recognizing a queenless hive condition and obtaining a caged queen one is ready to introduce her to the hive. Some beekeepers advocate puncturing a hole in the end of the cage which contains the candy. Others eliminate this step. The placement of the queen cage with the screen side exposed to the frames is paramount. This cage may be placed on the center top bars, screen side down and exposed between two frames or suspended between two frames. The bees must be able to reach the caged queen in order to feed her. The inner cover is replaced rim side down before installing the outer cover. After four or five days an inspection is done to ensure that the queen has been released. At this time, remove the cage, reassemble the hive with the rim upwards and inspect again in another five to ten days for eggs. Should it be found that the queen has not been released, it is advisable to either release her or remove the majority of the candy plug.

A queenright hive requires one to find the old queen and remove, destroy or cage her. Upon accomplishing this end, the above mentioned procedure for installing a caged queen may then be implemented.

Laying workers, however, require a different format. This situation is identified by the presence of mulitple eggs occuring in the cells and is rectified by shaking bees. The hive should be removed from its stand and placed approximately forty feet away. The bottom board with the remaining bees is then removed, shaken into a large cardboard box and replaced on its stand with a caged queen. Each frame is shaken before being installed into the hive body which is then placed on the bottom board. The result is that the reassembled lower brood chamber does not contain bees. Before beginning this same procedure for the second chamber, place the queen cage on the top of the lower chamber. The purpose for shaking the bees into a cardboard box is that the flying bees will return to the hive while the laying workers will not. If they do return, they will not be allowed to enter the hive for the caged queen will have started to emit her own pheromones.

Queens

Queens may be purchased clipped or nonclipped as well as marked or nonmarked. The established rule for clipping is to clip the right wing for even years and left wing for odd years. The second wing is the one usually clipped about ⅓ of the way from the tip. Care must be taken in performing this operation. A clipped wing too close to the body will injure the queen and result in supersedure. Since the queen's flying ability is inhibited an issuing swarm normally lands approximately five feet from the hive near the ground. This makes the gathering of swarms much easier for the beekeeper.

An international code for queen marking has been established. this enables the beekeeper to recognize the age of a queen by her color. Years ending in 1 or 6 use

Continued on page 435

Bee Talk

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Some beekeepers are more skilled at producing honey than at selling it. Just keeping bees, and seeing supers fill with beautiful honey is a joy, but the joy is somewhat dampened if the beekeeper finds, come spring, that much of his crop from the preceding year is still unsold. It is no problem if you have only one hive. You can use the honey yourself. But if you have ten, fifty or a hundred colonies, then you had better have a market.

I suggest that beekeepers around the country might heed the example set by Shirley Fletcher, one of Ohio's outstanding beekeepers, who provided the leadership in creating a flourishing market not only for her own honey crops, but for all the backyard beekeepers in her county and beyond. This resourceful woman, in addition to running a business of her own and taking an active part in the local politics, is marking her tenth year as the country bee inspector — a record for a female bee inspector in Ohio, and possibly a record for the country.

On her rounds as bee inspector Mrs. Fletcher sometimes found beekeepers who didn't even bother to harvest their crops, for they simply didn't know what to do with all the surplus honey. They had lost the incentive of the harvest. She she got together ten dedicated beekeepers and founded the Knox County Beekeepers Co-op.

Here is how it works. Any beekeeper can market his honey through the Co-op just by joining the Kokosing Valley Beekeepers Association, of which Shirley Fletcher is president. Dues are two dollars, and there are currently about 200 members. Seventy-five so far have taken advantage of the Co-op. These beekeeepers deliver their honey, unbottled and in some cases not even extracted, to the Co-op, that is, to the home of Mr. Arnold Murray, one of the other guiding spirits of this enterprise. The honey is then bottled in his basement, and a simple four-frame, hand crank extractor is used for honey delivered there in supers. Volunteers do the work.

This resulted in about three thousand pounds of honey the first year. That crop, made available to the Co-op last October, was all sold in two months, thanks largely to Shirley Fletcher's promotional skills. Now the Co-op is aiming to build up to five tons, which Mrs. Fletcher has no doubt will find a market.

The beekeepers all ended up with 83 cents a pound for their crops, whether their contribution was twenty pounds or two hundred. The charge to retailers was one dollar per pound plus cost of labels and jars. Ten cents per pound was kept out for the association, and five cents per pound turned over to Mr. Murray for use of his extracting and bottling equipment.

Shirley Fletcher bottling honey at the Co-op.

What is important in all this is that a market was made available to all the hobby beekeepers of the surrounding area, giving them a very good return, and providing an incentive to get on with the ultimate practical point of apiculture, which is the harvest. Honey which might otherwise have remained on the hives, or been left to granulate in sixties to no purpose, found its way to consumers, through an orderly, profitable and systematic arrangement.

And how was the honey sold? It was promoted as **local** honey. The same label was used on every jar, no matter which beekeeper had produced it. It was vigorously promoted, by volunteer beekeepers, at the local fair. Ads were inserted in the local newspaper, proclaiming the merits of locally produced honey. The interest of a reporter on that newspaper was aroused, resulting in a feature story that attracted much attention.

Such a marketing system can be put into effect wherever there is a vigorous beekeeping association. Certainly there is no reason why all the honey offered in local markets should be from distant places when there are beekeepers right there who need outlets for their crops, and who are often able to supply honey of better quality. But one thing that is absolutely essential to success, and not always easy to find, is someone with the energy, resourcefulness and dedication of Shirley Fletcher. □

(Questions are welcomed. Please make them short and to the point and enclose a stamped envelope.)

BEEKEEPING TECHNOLOGY

Continued from page 422

least a ten minute dip period for contaminated equipment. To the best of my knowledge, this procedure has not been approved for AFB contaminated equipment in the United States.

Mr. B.C. Otte from Texas dips his equipment, and then quickly re-dips to add an extra seal to his treated equipment. Mr. Dwight Stoller of Ohio uses a mixture of paraffin and tree rosin. He gets good results with this combination. Morse (1980) reported that some beekeepers use a mix of six parts of paraffin with four parts of rosin to treat bottom boards. It is a bit difficult to get rosin in less than 25-pound (11.3 kg) bags. The mixture is heated to 270°F (132°C) outside. Morse reported the flash point is 400°F (204°C).

After the mixture has cooled, a hard finish results that doesn't rub off. All hive parts to be dipped should be dry. Dipping wet hive parts will seal the moisture in and result in internal decay.

Although the dipping procedure seems to do a good job preserving equipment, one should bear in mind that the paraffin wax is very hot. A CO^2 fire extinguisher should be near by. All procedures and equipment developed to dip equipment should include good, solid safety precautions. □

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IT PAYS TO KNOW

How to . . .

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Review Of Swarm Control Methods

The hobby beekeeper's major problems arise from either bad tempered bees or swarming bees. Bad tempered bees can be cured by requeening with a breeder raised new queen from a strain bred for docility and good tempered offspring. Killing the queen and letting the bees raise a new one rarely works. Since there have been recent articles on nearly foolproof requeening methods, there is no point in going through any of the techniques again.

Controlling swarming, unfortunately, is not all that easy. It requires regular, methodical work, and if neglected or if one goofs, the bees swarm. Whole books have been written on control of swarming, and it is a presumption to assume that anyone in a relatively short article can go into all the details. None the less, let's see if a summary will be useful.

Of the available swarm control methods I have encountered some are mechanical by which I mean the hive is manipulated and perhaps special equipment added. Some work on the principle of translocation, and one works on putting the brood nest in a semi-stress position. Let's look at the latter, first.

Bees, if possible, always arrange their brood nest in a ball shape because they can cover, heat, and feed the maximum number of honeycomb cells of brood with the minimum number of bees. Suppose you elongate the brood nest. Say for instance, the brood nest you find in a hive covers a ball of nine frames. Now, if you took nine supers and placed these on frame of brood in exactly the same location in each super and stacked them up, you would have a brood nest nine high and one wide. Obviously no hive in swarming season would have enough bees to cover both sides of that elongated brood nest and keep it warm, and would not have enough nurses in all probability to feed brood arranged like that so obviously you would like your colony.

OK, next, say you have nine frames again and you rearrange the brood nest by placing an empty drawn comb between each frame of brood. What would happen then? Well, you would have more brood nest than bees available to keep it warm and feed, so again you would kill or nearly kill your colony because most of the brood would die of chilling. Yes, I know. The colony would be trying to keep brood warm so hard that food gathering would probably stop and no, they would not swarm. Now, less drastic than those two extremes is a technique I do not know if I dreamed up or someone told me about, but anyway the trick is to merely elongate the brood nest a little. When you elongate the brood nest a little, more bees are required to keep the nest warm because you have increased the radiating area. The nurses have to travel farther to feed brood and generally if you have not waited until the bees are in their minds committed to swarming, they will not. Let me describe. Again let's say you have nine frames of brood in a two-story hive. Get another super and arrange three frames of brood in the center of the lowest box, three in the second box and three in the third — one group exactly above the other. Do you see you have stressed the colony a little in that more bees have to keep the brood warm and hopefully that kills the notion of swarming?

Now before we move on, let's stop and think. With the elongated brood nest and higher radiating area, what if the weather turns cold? Well, some brood may die because there is not enough bees to keep all of it warm. Now here is where you come in. Obviously the bees have invested eggs, food, and labor to raise brood. . .resources which you know are in short supply in spring. To avoid possible catastrophic losses when you set up an elongated brood nest, put your open brood (that's eggs and larvae) on the outer edge of each side of the brood nest and down low. Why? Well, if something has to die let it by the young brood in which the bees have the least investment in time and resources. From an early brood loss, bees can recover quickly, but if you stick old brood about ready to hatch in the exposed edges of the brood nest, you really set the hive back because the bees have invested perhaps 15 to 21 days on that brood.

Well, I trust that the above makes sense and I wish to warn you not to be too quick about elongating the brood nest. Check every 7-9 days, and when you see occupied queen cells, then is the time to try the technique. The longer you can hold off any technique, the safer it is because (hopefully) the weather gets better.

Now, the matter of swarm control by translocation is to the best of my limited knowledge covered by the Pagden and the Heddon systems. I understand the Heddon came later and is supposed to be and I think is a refinement of the Pagden system.

Let's talk about Pagden first. Initially, you get another empty hive. Probably it is better if it is filled with drawn comb, but if you do not have them, you will have to use foundation, but I would be sure to have some drawn comb in the center of the box. You go to the hive which has shown it wants to swarm by making queen cells; you remove the queen and a frame of her capped brood and place her and the brood in the center of the hive you have just set up. You then pick up the whole original hive and place it somewhere else in the apiary (translocate it), and move the new hive, the queen and her frame of brood, the exact spot where the intitial hive was.

Obviously, you must do the setting up of the new hive when bees are flying freely. Otherwise, there will be no bees returning to the original site to keep the queen and the frame of brood warm. You also have to keep an eye on both hives because if the field bees overfill the new hive, it will swarm and the old translocated hive may starve because it has lost all of its field bees. The old hive also will raise queen cells and a queen, so probably it would be better to introduce a new breeder raised queen to it so its brood rearing is not delayed 20 or 25 days while the old hive raises and mates a queen.

Generally, the Pagden system works. It has for me at least, but sometimes original colonies with heavy swarming fever still swarm after translocation — or the new hive will, which is, I think, more likely. Obviously you must recheck the original translocated hive for additional queen cells, and if you don't plan to requeen it, destroy all but the best cell.

The Heddon system starts with an empty hive, the queen and a frame of brood

Continued on next page

like the Pagden system, but instead of moving the original hive to a new location, it is merely moved slightly and turned at right angles to its original position with the new hive in the old hive's position. After two flying days the old hive is moved again to the other side of the new hive and again faced 180 degrees from its just prior facing. Finally, two flying days later, the original hive is translocated just as in the Pagden method.

Now frankly, I never did the full Heddon method, but it is well recommended. I will also admit I only tried the Pagden procedure a few times because I almost never had a hive or two that needed more bees. What I did instead of using Pagden or Heddon was pick up the hive that wanted to swarm and place it where the hive that needed bees was and where the hive was that wanted to swarm. This sort of translocation I have not found to be risky if there is a honey flow because bees seem to accept returning foragers with full honey stomachs. Trying this when there is no honey flow can start a real disaster. Do not try it without a honey flow, and if they fight anyhow, do not say I did not tell you a possibilty of a fracas does not exist.

The most mechanical methods of swarm control were, I think, devised or improved on by an Englishman named L.E. Snelgrove who is now deceased. His book on swarming is available second hand or is often available at a library or via inter library loan. It is a big book and exhaustively covers swarming. Snelgrove's gadget is a sort of double screened board with four paired entrances. Each side of the board has a pair of entrances. The entrances are one above the other the top entrance opens above the double screen, and the lower of each pair opens below the double screen. All the entrances have either removeable plugs or pivot closures.

To prevent swarming, again you place the queen and a capped frame of brood in a bottom box full of empty honey combs. Add the necessary supers and then you put on the Snelgrove board, with the upper top entrance facing the front of the open hive. Then you place the supers full of brood on top and finally the lid. At the end of the week you cut queen cells above the Snelgrove board and plug the entrance that has been open; the entrance directly below it, and any other upper top entrance. Now what happens is this. The bees in the upper box or boxes, fly out the just opened entrance but return to the front of the hive and using the lower front entrance in the Snelgrove board enter back into the main hive. That is it — simple and neat, but in the event that you have large amounts of brood hatching in the top boxes, you might again switch flyers down by opening and shutting entrances. You should also remember if there is a lot of open brood that needs feeding above the Snelgrove board to provide food in as much as you will be switching the upper flyers down into the main hive.

I think you have to make your own Snelgrove boards unless you want to order them from England. (See diagrams elsewhere in this issue of *Gleanings*) The advantage of the Snelgrove system is you can start them before you see swarm cells, so I encourage you to try it using it or a variant because the technique is useful. Especially if you have to be out of town during swarming season.

Now before I leave the Snelgrove system let me again, for the umpteenth time, say even it does not take the place of giving the bees an extra super or two before they need it too urgently. Let me also again insist you should read this book, and if you can't afford a copy, at least take notes from it so you manipulate the bees in accordance with one of the techniques.

I do not know of a better place to discuss Shook Swarming. Dr. Richard Taylor, I understand, uses Shook swarming regularly to set up his hives for comb honey production. Because Shook swarming really starts out like the Pagden system obviously you Shook swarm bees after you put your hive in (and a frame of brood in a new hive) and set it where the original hive was. You then shake all the bees into the new hive and super it. Following that, you break up the brood from the original hive and distribute the frames of brood to other hives which have sufficient bees to cover, keep warm and tend to additional brood. Of course, when you add brood, you also have to provide those hives receiving additional brood with space for the brood when it hatches. My rule of thumb is two frames of brood hatches out almost 12,000 bees and 12,000 bees, I think, about fill a full deep hive body so don't save your supers for the cat to sleep on.

I always thought that George DeMaree invented the swarm control system bearing his name in 1892. A reference I have by Dr. Mike Burgett of Oregon State University whom we hold in high esteem and affection locally says DeMaree invented it in 1884. At any rate the system has been around for a long time. It works well and only requires excluders as extra equipment (and for me who always uses excluders, they obviously are not extra equipment).

A Demareed hive is set up like this: a bottom board[1], a chamber containing the queen and a comb of brood, nine empty drawn combs, the queen excluder, original brood chamber or chambers, and the lid or inner cover and telescopic lid. as you see, the upstairs bees have access to the queen downstairs and the bees can go either way through the excluder to forage, to borrow a cup of sugar or whatever. The upstairs bees quite often raise queen cells and so those have to be cut at the end of 7-9 days or cut all but one and provide a rear entrance and let them raise a new queen if you wish. That is about it for the DeMaree system. It is really very good, I think, but again, if the hive you are Demareeing is really crowded, I would recommend an extra super just above or just below the excluder.

I know I have belabored the giving of extra supers throughout this article. Take the matter seriously. If you do not want to believe me, read Dr. Tom Rindereer's recent article on the increase of honey production due to what some people claim is over supering. Let me again repeat, bees need space to come in out of the rain and sleep at night. They also need a lot of space for nectar. Suppose, for instance, the nectar is 25% evaporated honey. OK, then you may need three deeps perhaps to let the bees spread the nectar around so it will evaporate well before they concentrate it and cap it over into just one deep

I guess that about covers the topics I had on my mind, but I have not told you what I do. Me, I'm old and not very strong so each and every year I requeen with high quality breeder raised queens and over super. I do use excluders, but I never force bees up through the excluders. About two or three weeks before the major honeyflow, I chase little mother to the bottom box and put on an excluder above that bottom super. The bees above the excluder think mother is nuts to buy a house with that excluder but it's just a way of life so they do not fight it. When mother is confined to just one super, she cannot lay much for several months. That means thousands of nurses born above the excluder have no brood to nurse so they go out at an early age and forage, which gives, in effect, a larger foraging force. When I put the excluders in of course, I have to cut queen cells at least twice above the excluder because some upstairs bees want a queen up there and may steal eggs and carry them upstairs and start queen cells. I also provide a Bailey excluder or lift up the super just above the excluder stick, say an old ball point pen, between the top of the excluder and the box immediately above. This provides, for 30 days, an escape for drones. I do not want drones born above the excluder to die trying to get out. It demoralizes the bees, I think. What else? Well, I go to the bee meetings and lie about my honey crops. I also read and re-read bee books. I recommend that you should too!□

Wintering The Honeybee Colony: Part 4

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Editor's Note:

The following 4 items are addendum's to last month's section of *Wintering The Honeybee Colony — Part 3.* **These additions are followed by the closing chapters in this series. They were inadvertently omitted from the June issue of** *GBC* **and their sequential placement, for those of you following these articles, is at the beginning of Part 2, June, 1984.**

1. The March 1924 issue of *L'Apicoltura Italiana* **has an advertisement by the Renzo Piuma firm for a hand pump sprayer to fill comb with sugar syrup, including a stand that collects the runoff. The use of such a hand pump garden sprayer (or gasoline powered centrifugal pump for larger operators) was suggested by W.G. Lord in the September 1981 issue of** *Gleanings* **(p. 474-475).**

2. The May 1924 *La France Apicole* **(p. 108-110) has an article describing a frame filler utilizing sprinkler pipe to fill frames with syrup, also developed by the Italian firm mentioned above. A hand pump was used to produce pressure in a tank, and 30 or more frames could be filled per hour. An April 1981** *Gleanings* **article (p. 198-199) on Louis Harbin and Sons mentions they also developed such a machine now manufactured by Walter T. Kelley.**

3. Float-controlled internal feeders are also available (*Gleanings,* **July 1980, p. 403.)**

4. Honey boards with openings were once used to support boxes or glass jars over the frames to be filled with comb by the bees. Instead, A. Page placed jars of syrup on shallow wooden trays in an empty super (*Australasian Beekeeper* **(1940) 42(4): 108-110). P.F. Thurber uses a single 9 x 9 x 3/8" piece of plywood with 4 holes, and ½ x ½" strips underneath to raise the board so the bees have access to the feeders. Any holes not used are covered with a block (personal communication). We might refer to these useful devices as "feeder-boards". They make it necessary to cut holes in inner covers for this purpose.**

Bee Breeding

If beekeepers intend to requeen with stock other than their own, they may wish for data on which to make a selection as dairy farmers choose semen for their cows from published statistics on the progeny of bulls. Although honey production heads the list of most beekeeper's breeding priorities, hardiness is often second. The importance of longevity of queens and workers is "coming to the front" as important for both productivity and winter survival[24].

Individual beekeepers may have tested various strains of bees, but the results are not generally published. Hogarth's 1941 test of four stocks using 1700 colonies in Ontario is an impressive exception. There was considerable supersedure in one of the stocks and it also wintered poorly. The recent evaluation of six commercial stocks in Minnesota using standardized procedures showed no differences in wintering ability, but two stocks had supersedure rates of 85% and 73% respectively. That the test coincided with a mild winter was unfortunate, as only severe winters can select for hardiness. The author's colonies all survived the mildest winter of the century, but not the worst[25].

The proposal by G. Otis to study the survival of feral colonies may ascertain what factors correlated with hardiness can be measured in the laboratory. For example there are changes in water, fat, glycogen, and nitrogen content of bees preparing for winter. A patented technique forecasts hardiness by weighing the rectum as a measure of the rectal glands which secrete the enzyme catalase that breaks down hydrogen peroxide in the gut[26].

A most important consideration in bee breeding that has come to be appreciated recently was stated succinctly by Columella in 60 A.D.: "We must especially be careful, that they (bees) be brought rather from the neighborhood than from distant regions, because they used to be highly provoked with the strangeness of the climate". It is now understood that bees inherit a program of colony development that corresponds to the pattern of nectar flows for their specific region. Bees from higher altitudes produced 70% less honey than local bees at lower altitudes, but bees from the lowland produced 135% of that produced by local bees in the mountains because they built up earlier (as if they were still at the lower altitude). Even though the mountain bees were surrounded by nectar and pollen in the lowlands, they stuck to their inherited program of development for the shorter flowering season in the mountains. The lowland bees in the mountains would not have surivived without the helping hand of a beekeeper to feed them during their population explosion prior to the first flowers. Local breeds in Finland are better adapted to wintering conditions, produce larger crops, and exhibit less swarming than bees from abroad[27].

There have been recent efforts to improve bees by importing from abroad stocks with a reputation as phenomenal producers in their locality. This has created the threat of crises resulting from mites, not tolerated by the local bees, imported on infected bees, as well as the aggressive genes of the African *M. adonsonii*[28]. Since the productivity of a colony is a reflection of floral and climatic conditions, there is no reason to hope that bees from excellent beekeeping regions can improve yields in marginal regions. There may be better odds that selected thrifty local races of bees will do better than imported strains with patterns of spring buildup, fall brood rearing, etc. adapted to regions with very large nectar flows. Reports of better yields of honey with queens reared from selected homebred stock compared to purchased queens should not be interpreted as a reflection upon the skills of commercial queen breeders; rather the local bees are an ecotype in harmony with the rhythm of local climate and flora.

If chapters on genetics in a biology text are consulted, it will be seen that the mechanisms and illustrations of these concern morphological features primarily such as color, size, anatomy, etc. Genes for longevity, behavior, disease resistance, and other important characteristics are complex, involving many sets of genes whose specific modes of operation have not been analyzed. The genetics of 30 visible or measurable features such as eye color, wing mutations, body color, etc. in the honeybee are known where the mechanisms involve only a few genes. The genetics of honey production involves an unknown number of genes and is also directly and profoundly affected by the environment. It has been calculated that 10% of the factors in milk production in cattle are determined genetically, and the remaining 90% are environmental. An investigation

Continued on next page

WINTERING

Continued from previous page

of the inheritance of honey production may be invalidated by the drifting of bees, and other external circumstances such as local differences in rainfall, etc.

The U.S.D.A. has initiated a breeding program to produce stock that will be productive, overwinter well, and resist using 35 queens selected from around the United States. It is reasonable to expect the ecotype will be suitable for the major commercial beekeeping regions. L. Connors has raised the question of whether it would be desirable to have a bee bred specifically for the Northeast, but a single stock could not meet the requirements of the many diverse ecological niches in New England. It has taken 60-70 generations to isolate a strain compatible with a significantly different forage pattern. Connor's estimates that it would cost a total of $25,000 to evaluate five stocks (180 hours per stock at $12 per hour plus expenses) may explain why beekeeping organizations or commercial breeders have not undertaken evaluations of stocks[29].

The Population

"A sufficiently strong stock relatively to the size of the hive. If 5000 to 8000 bees are sufficient for a small skep in autumn then for a moderate box-hive 8000 to 12,000 and for a large hive 15,000 to 20,000, will not be too many. For after an unfavorable winter, perhaps there will not be half of them left at the beginning of spring. A stock is relatively strong when its bees can fairly cover the entire comb in the warmer days of autumn."

When we read Dzierzon's *Rational Beekeeping* it is hard to believe this book was published in 1868. In the above succinct paragraph, even the numbers are contemporary. Hamilton in England also recommended 15,000-20,000 bees. In Nova Scotia populations of 20,000-25,000 (losing 10-20% between October and May) were best. Farrar's definition of a suitable colony was one unrestricted by human interference in a 3-brood-chamber hive (Langstroth depth or approximate equivalent volume in shallow depth bodies) to provide the necessary space for brood rearing and honey storage. He assumed 8-10 pounds of bees as optimal (30,000 + 5,000), and generous stores of honey and pollen in each colony to be overwintered. Simpson in England confirmed that an average colony does require such space[30]

Quinby recommended that it was best to avoid excessively large, or extremely small colonies; research has confirmed such optimal populations for overwintering. Jeffree and Allen found colonies of 8-15,000 to be most efficient (colonies of at least 8,000 have a lower incidence of Nosema), and Fee and Racey found no advantage in autumn populations larger than 18,000. Colonies with Nosema lost about 1750 more bees during the winter than comparable populations. If the theoretical optimum autumn (September) population is 15,000, then those with Nosema should have about 19,000.

Harbo concluded there was no advantage with broodless populations of more than about 10,000 bees, but larger clusters maintained higher temperatures without consuming more honey per bee. He also suggested that large populations, although less efficient, do have an advantage in exceptionally severe winters when larger than usual numbers of bees perish. Medium sized clusters might reach a critical level threatening their survival. Of course, extremely large colonies may die from starvation during a long cold spell that prevents their reclustering on other combs when they use up the honey in combs on which they are clustered. Large colonies cease brood rearing earlier in autumn, and have more brood in the spring.[31]

Colonies maintain brood rearing until October (later in the South), so there are 15,00-20,000 bees by the end of October. Colonies requeened early enough to get a month of egg laying while nectar and pollen are available should have enough bees for winter. The use of queen excluders to restrict brood rearing, and top supering may result in small clusters in some locations if the brood chamber becomes honey bound. This may be especially true if there is a long or recurring flow in August and September as in regions where the honey crop is from a fall flow of golden rod (*Solidago*) and aster (*Aster*). There should be at least 20 deep Langstroth (or equivalent) combs available for brood rearing during autumn, and spring. There are special situations such as colonies on heather (*Calluna*) that do not produce brood. They must be fed to make up for the shortage of bees. In some localities beekeepers deliberately restrict space for brood rearing to reduce the number of bees that must be supported during the winter, and hope to force the bees to place more nectar in the honey supers. But apparently increased honey production is, in fact, correlated with an excess of space[32].

Whether the colonies are the proper size for overwintering is determined by an inspection at August's end when the bees should have brood in at least five combs or more (preferably 10). Where bees are in more than one brood chamber, the bees may cover fewer combs because they extend through two or three stories. If there is no nectar flow, the examination must be brief to avoid inciting robbing.

Small colonies consume more food per bee to maintain the cluster temperature, and cover less honey and brood. They may survive an ideal winter, but will still be a weak colony in the spring. Frames of brood taken from strong colonies to equalize weaker colonies will reduce the number of bees available to the stronger for foraging in the spring. However, if such equalization is done at the beginning of August, the stronger donor colony will replace the bees they lost and they can be fed if necessary. It is possible to winter nuclei outdoors by placing them above full-size colonies where winters are not severe.

As long ago as 1774 Eyrich warned against wintering weak colonies, and recommended removing the queen and placing the hive on top of another hive. Nuclei, late swarms, and queenless colonies with less than a five comb cluster should be united to a normal, or slightly substandard colony that will benefit from the added bees and stores. This is best done in the early morning or evening to avoid robbing. Week's instructions for uniting (1840) included the essential ingredients for success: move the smaller colony to where the stronger one stands, and place the small colony under the strong one (the bees from the latter will exhibit defensive behavior as they enter the strange (weaker) hive below)[33].

It has been stated that the populous colony prerequisite for successful wintering consists of mainly **young** bees. Pubescent, newly emerged workers are easily differentiated from the worn, hairless verterans; but bees intermediate between these extremes can be identified by inspection only if they are first marked. Dzierzon described what happened to colonies of black bees when he introduced a yellow Italian queen in the spring or summer: "There will be very few black bees left in the hive at the end of six weeks, and none, perhaps, at the end of two months". He noticed that workers produced in September look as young and strong in February and March as if they had left the cells only a few days before. Those that had passed the summer in a similar state of inactivity (as in a queenless colony), also lived much longer.

The workers in a colony are equivalent to the cells like skin, hair, or intestinal lining of an animal that require constant replacement. The length of a workers' life is dependent upon the amount of labor it performs; a physiological odometer that stops after 500 miles of foraging (or

Continued on next page

equivalent expenditure of energy). Of 750 bees marked the end of September, 13 were alive 249 days later when the main nectar flow began[34]. A worker lives between 25 and 70 days during the summer. It seems then that it would be ideal to have predominantly young bees in the winter cluster, and to provide adequate room for brood rearing in autumn makes good sense.

In experimental colonies with all young bees or all older bees, there were no significant differences in the amount of spring brood in the first trial, but there was a difference in the second season[35]. Surprisingly there is no significant difference in the longevity of young or old winter bees; they seem to physiologically same-aged[36]. All ages are represented proportionately in the 10-20% of bees that die when they fail to keep up with the contracting cluster during temperature declines. They revive if taken to a warm room within 24 hours, an indication they did not starve. An active summer bee can be transformed into a long-lived winter bee by placing it in a queenless or broodless colony during the summer or artificially shortening the day-length. Such bees develop pharyngeal glands and a fat body characteristic of winter bees[37]. It appears then that there is no point in taking special steps to encourage increased brood production at the end of the season, beyond making certain there is adequate space in the brood chamber. The authors do not use a queen excluder, and when the colony moves into the lower deep hive body, we add an empty shallow above the second (upper) deep. In this way we are assured that there is always explosion space for brood rearing or honey storage, whichever is required. Stimulating the colony by feeding sugar syrup will result in the aging of bees who collect and store it.

Colonies tend toward a population norm. Weaker colonies produce brood longer in autumn than strong stocks. Colonies that are exceptionally strong in autumn probably have no more brood the following spring than just a strong one, and small colonies produce more brood per bee. By the time of the major nectar flow, differences seen in the fall are no longer present.□

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REQUEENING

Continued from page 423

white, 2 or 7 use yellow, 3 or 8 use red, 4 or 9 use green and 5 or 0 use blue. This year's queens will be marked with green. An enamel base is utilized in the marking. Care must be taken in the selection of the material for marking so that foreign odors do not remain on the queen. Should these odors be present when the queen is returned to the hive she might be mistaken as an intruder. Such an error would result in her being killed.

The focal point of any hive is the queen. She alone is responsible for propagating workers and drones, maintaining hive temperment and building a maximal force of field bees for a honey flow. The process of requeening although simple in concept can be an influencial factor in the colony's strength, the winter honey stores and/or the harvesting of a honey crop.□

A PLEASANT SUMMER DIVERSION

The reader who opens the cover of this book embarks on a magical, imaginative pursuit.

The reader can indulge in a world of riddles and metaphors, with detailed and colorful pictures to help cap the imaginative flair.

The imagination is not limited to reading the book's content. The English author, Kit Williams, has devised a fascinating new treasure hunt and a prize for the winner he chooses. The search is for the title of his book.

•

There is no title on the cover. In fact, the only titled copy in the world lies sealed beneath the honeycomb marquetry of a mahogany bee box , guarded by a queen bee made of pure gold.

Continued on next page

On May 25th, 1985, Kit Williams will break the seal and open the bee box to reveal the title.

Meanwhile, the reader will search for the title. The clues that can enable the amateur sleuth to discover it are hidden within the pages of the book. Kit Williams challenges his readers to discover that title and express it without using the written word.

He will award the golden queen bee and the box to what is, in his judgment, the most imaginative reply he receives.

Answers may be sent to Kit Williams, P.O. Box 15, Grantham, Lincs, England.

Williams has created a whimsical notion. Not only is his idea unique, but his style is unusual, as well.

He has constructed a fantasia, intertwining dreamlike flashes with riddles that require a beekeeper's expertise to solve.

Williams embellishes his non-plot with a personification of the seasons and animated allusions. Illustrations, by subtle clue, repeat these references.

There is one human character in the story to whom the reader will identify. He is Ambrose the beekeeper, who appears when summer has broken into the air.

Ambrose is introduced as if he were a bear, awakening after a long winter's nap.

In a sense, perhaps he was napping, as his bees were boxed up for winter and he was left to anticipate their peak season of activity.

Ambrose is not without imagination, for as he opens his bee hive he listens to the zzz's of his colony ready to emerge...

He listens to them and deciphers the meaning of their language. "Summer izz as Summer Duzz," he believes they whisper amongst themselves.

Williams intersperses this "sound language," giving additional life and an element of realism to the fantasy he creates for the reader.

After all, he creates a new perception of bee culture. Perhaps they are, as he implies, "citizens" in countries composed of departmentalized "cities," ruled by a magnificent queen.

BZZZZZZZZZZZZZZZZZZZZZZZZZZ

Perhaps his fantasy is not only to exercise the creative function of the mind, but also

Continued on next page

to remind mankind that bees are but a microcosm of the same structured world in which we, as human beings, live and work together.

Williams' book can be purchased at major bookstores for $10.95. The 32-page, richly illustrated book, was published by Alfred A. Knopf, 1984.

Diane Fencl

Book Review

BEEMASTERS OF THE PAST, BY Victor Dodd. Pub. by Northern Bee Books, Scout Bottom Farm, Mytholmroyd, Hebden Bridge, West Yorkshire, England, HX7 5Js. Pp. x + 107. $6.80 U.S. funds.

This book is for educated beekeepers who want not only to know about bees, but also about the history of their craft. It thus belongs n the class of Frank Pellet's engrossing *History of American Beekeeping,* which is now unfortunately out of print and scarce. Mr. Dodd's book covers more ground, dealing with some of the great figures in apiculture from the continent and the United States as well as the British, but in far less detail. The emphasis is on the British bee masters.

This book is basic for anyone who goes in for collecting old bee books. Accounts of the British authors of the great apicultural classics are all here— Charles Butler, Warder, Thorley, Wildman, Huish, Bevan, Cotton, Simmins, Cheshire, Cowan, Digges, Herod-Hempsall, as well as the more recent authors such as Tickner Edwards, Herbert Mace, L.E. Snelgrove, R.O.B. Manley and many others. Accounts of American bee masters do not go much beyond the five great classic names— Langstroth, Quinby, A.I. Root, C.C. Miller and Charles Dadant. It is also a feature of this book that all, or virtually all, of the persons described were not only beekeepers, but writers on apiculture. The period covered is 1600 to 1939.

It is a fascinating little book, quite unlike any other currently available, and exhibiting a formidable erudition on the part of its author. Scattered through it are many very nice sketches from the pen of Jenny Brown.

— Richard Taylor

The Difficulty In Being A Philospher These Days

One must keep up
With the bees
Scape their hives free
From excess propolis

after that,

To order the mushrooms
Calling names, separating
Wholesome delights
From culpable poisons

after that,

The Indian Constitution
Splendid in its way,
Could be reorganized for
The State of Massachusetts . . .

after that,

One must save one's own
Soul, and those
Of Passers-by,
Giving a fatherly interest

after that,

There is hardly time
To settle back
To view one's own thoughts
And find them good.

—Ann Kucera

Testing Your Beekeeping Knowledge

By CLARENCE H. COLLISON
Extension Entomologist, The Pennsylvania State University, University Park, PA 16802

Bees likely develop from a wasp-like ancestor. Instead of feeding their young on insects and spiders as wasps do, they adapted to the use of pollen as a source of protein. This step likely coincided with the development of the angiosperms of flowering plants, which fossil studies indicate took place over 60 million years ago. In visiting the flowers for pollen, bees provided cross-pollination, which benefited the flowering plants so the arrangement was exceedingly successful and mutually beneficial.

Through this coevolutionary relationship, bees have assumed the major role for pollinating the flowering plants of the world. Today in the United States, over 90 crops depend upon bees to some extent for pollination. How well do you understand honey bee foraging behavior and pollination biology? Take a few minutes and answer the following questions to find out how well you understand this important topic.

The first 6 questions are true and false. Place a T in front of the statement if entirely true and F if any part of the statement is incorrect. (Each question is worth 1 point).

1. ____ Honey bees are valuable in pollinating corn.
2. ____ Foragers searching for nectar and pollen can see ultraviolet light reflected from flower petals.
3. ____ About one half of our total diet in the U.S. is derived directly or indirectly from insect-pollinated plants.
4. ____ Honey bee colonies should be moved into a target crop needing pollination 24 to 48 hours before the flowers open.
5. ____ Foraging honey bees tend to return to the same limited areas of crop on successive trips.
6. ____ Honey bees collecting pollen are considered to be more efficient pollinators than those collecting nectar.

Multiple Choice Questions (1 point each)

7. ____ The value of fruit, vegetables, and seed resulting directly from bee pollination plus the value of crops grown from bee pollinated seed in the United States is currently estimated to be worth:

   A) $20 billion B) $10 billion
   C) $5 billion D) $1 billion E) $20 million

8. ____ The male part of the flower where pollen is produced is known as the:

   A) stigma B) ovule C)style D) anther E) sepal

Specific crops and often varieties of a particular crop differ in their pollination requirements. Listed below are several different categories that are often used in describing a crop's pollination requirements. Please match the following crops with the appropriate description. (Question is worth 10 points).

A. Require cross-varietal pollination (self-unfruitful)
B. Crop is self-fruitful but still requires insect transfer of pollen.
C. Crop is self-fruitful and insects are of limited or no value in pollen transfer.
D. Pollination occurs as the flower opens without the aid of insects.

9. ____ Tart Cherries
10. ____ Grapes
11. ____ Peas
12. ____ Almonds
13. ____ Citrus
14. ____ Peaches
15. ____ Apples
16. ____ Cucumbers
17. ____ Pears
18. ____ Sweet Cherries

19. Please name the two species of wild bees that are actively managed in the western United States for alfalfa pollination? (Question is worth 2 points).

ANSWERS TO TESTING YOUR BEEKEEPING KNOWLEDGE

1. **False** Bees often collect large quantities of pollen from corn when there is a lack of other pollen sources in the area. Since they visit only the male flowers (tassels) for pollen, they do not aid in pollination. Corn is a wind pollinated plant.
2. **True** Honey bees are able to see four different qualities of color: yellow, blue, green, and ultraviolet. Flowers that depend upon bees for pollination reflect colors that the bees are able to see. In addition, many of these flowers exhibit different color patterns near the source of nectar which guides the bee directly to the reward. These color changes that occur within the flowers are called nectar guides.
3. **False** It is estimated that about ⅓ of our diet in the United States is derived directly or indirectly from insect-pollinated plants.
4. **False** Honey bees should not be moved into a crop until some of the blossoms have opened and the flowers are attractive to them. If the bees are in place too early, they will set up flight patterns to other floral sources in the area and may fail to fully revert to the target crop in succeeding days. Honey bees normally exhibit "floral constancy" during foraging. They continue to gather nectar and pollen from the same floral source until they become dissatisfied with it and are recruited to another source.
5. **True** Individual field bees tend to restrict successive visits to a relatively small area of a field or orchard.
6. **True** Foragers collecting pollen from flowers are considered to be the most efficient pollinators since they actively work the anthers for pollen. In doing so, more pollen is deposited on their bodies and there is greater chance of making contact with the stigma. In a few crops, honey bees learn how to extract nectar from the flower without contacting the reproductive structures. This unpollinating behavior is quickly learned and once established, the forager is unlikely to deviate from it.
7. **A**
8. **D**
9. **B**
10. **C**
11. **D**
12. **A**
13. **B or C**
14. **B**

Continued on next page

15. **A**

16. **B**

17. **A**

18. **A**

19. Under certain conditions, the honey bee is not an efficient pollinator of seed alfalfa. As a result, some growers in the western United States depend on the alfalfa leaf-cutter bee and the alkali bee for alfalfa pollination.

There were a possible 20 points in the test today. 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

20-18 excellent

17-15 good

14-12 fair

Editor's Note:

It has been pointed out to us that in the May, 1984 section of "Testing Your Beekeeping Knowledge" the choices that go with questions 12-18 were omitted. Those choices should have read as follows:

A. "Queen Substance" (Primarily 9-oxodecenoic acid + 9-hydroxydecenoic acid)

B. Isopentyl acetate

C. Footprint pheromone

D. 9-oxodecenoic acid

E. 2-Hyptanone

F. 9-hydroxydecenoic acid

G. Nassanoff pheromone

We apologize for the omission and any inconvenience.

Beekeeping Folk Arts

By AMOS ARBEE

HONEY RICE & COCOA DESERT

½ cup rice
1 qt. milk
5 tsbp. mild honey
¼ tsp. salt
4 tsbp. butter
peel of lemon (not grated)
1 tsp. vanilla
3 eggs, separated
½ cup cocoa
fine bread crumbs
confectioners sugar

In a medium saucepan on low heat, cook rice with honey, salt, butter, lemon peel and vanilla extract. Cook for about 30 minutes, or until tender, stirring often. Remove from heat and discard lemon peel. Beat in egg yolks and set aside. In a small saucepan on low heat, place cocoa and small amount of water (enough to dissolve cocoa only). When well blended, remove from heat, add to rice and mix well. In a medium serving bowl, beat egg whites until stiff and fold into the rice. Butter a one quart mold and sprinkle with the fine bread crumbs. Pour rice mixture into the mold. You may serve cool or quite cold. Right before serving sprinkle with some confectioners' sugar. A desert to behold!

Sweeten The Pain

By JERRY L. CLINE 3035 E. Topal Circle Phoenix, AZ 85028

Last week my seven-year-old boy Derek, rounded a corner too fast on his bike. The bike skidded and he fell on his left elbow and right hand. The abrasions were like bad floor burns but gravel and dirt were ground in the flesh. The sting of pain was unbearable and the tears were understandably flowing freely.

I remembered an article I had read by Dr. Roger Morse years ago about the properties of honey and I prepared a shallow tray with honey in which Derek put his injured elbow and hand. Eliminating the air from the wound immediately stopped the pain and Derek stopped crying. The honey got very dirty as the sand and dirt dislodged and the wound started to cleanse. The lymph and blood coming from the wounds pushed the dirt out of the abrasions into the honey and within an hour (and several changes of clean honey), most all of the dirt was gone as well as most of the pain. Derek took a bath and we dressed the wound loosely with honey and a large gauze bandage. In the morning the wound was clean and relatively painless. We kept it dressed with clean bandages for a few days and the wound healed with no further problems.

The article I referred to above by Dr. Roger A. Morse, Professor of Apiculture at Cornell University states: In 1937 German experimenters found that honey was bacterial and they name this property the "inhibine effect". In 1962 Johnathon W. White of the U.S. Department of Agriculture discovered that honey contains the enzyme glucose oxidase, which is added to the honey by worker bees. When honey is diluted there is a chemical reaction which releases hydrogen peroxide which of course is a powerful bacterial agent, this is inhibine effect. (Dr. Morse also notes that it is an interesting fact that honey fed to larvae in the colony is diluted by the nurse bees that do the feeding).

When you have one of those stinging surface wounds where you have ground off the skin it immediately starts to "leak" a nearly colorless fluid called lymph. The lymph will carry away all the foreign matter it can but starts to dry and the wound stings so bad the first thing you want to do is cover it with something. If you wash it with soap and water you immediately get the feeling it wound be much less painful to simply cut off the limb that has this painful affliction. I can remember as a small boy putting Merthiolate on a similar wound on my own elbow and I was afraid I wasn't going to die before the pain quit. That is why the honey works so well. The wound is covered excluding air, the honey 'soaks' up the foreign matter as it is 'pushed out of the wound and as the lymph dilutes the honey, the glucse oxidase in the honey gives off hydrogen peroxide.

There are many other favorable bacterial or bacteristatic factors such as honey is an acid base, the osmotic effect of the high sugar/low moisture content which are also helpful but could be the subject of another whole discussion.

Isn't it interesting how some of those "old wives tales" actually have a scientific basis? I will guarantee that when you tell someone about this they will look at you out of the corner of their eye and say, "mmmm . . . .is that so? . . . . .well . . . . . I really have to be going now."□

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Leland Hawkins
Cedar Rapids Bee Keepin' Bone Man

By MARION J. PATTERSON 1511 30th St. S.E. Cedar Rapids, IA 52403

For Leland Hawkins, installing an observation bee hive at Indian Creek Nature Center is like coming full cycle. For several years this well respected orthopedic surgeon has worked closely with the Nature Center to provide opportunities for children and their families to experience the lure of apiary science.

Indeed, this quiet, trim physician is as much at home in his bee yard as he is in an operating room. He handles emergencies in each field with great aplumb. And, he tends bees as seriously as he does his patients.

Although people are initially surprised to learn about Lee's avocation, it is a natural complement to his professional world, which is one of high pressure, high technology, and precision. He deliberately chooses recreational pursuits that take him back to more basic cycles. "My work confines me to the indoors with a lot of people. Beekeeping allows me to get out — to reach nature," Hawkins explained.

His involvement in beekeeping began years ago as a youngster growing up in downtown Los Angeles. Hawkins recalls being faced with a demonstration bee hive, installed in his grade school.

A seed was planted. But, as so often happens with many adult hobbies, it lay dormant for many years. During his adolescence, interest in honeybees waned, replaced by playing football, baseball, and working summers in the Sierras for the Forest Service.

Later, the budding scholar and physician travelled to the midwest to undergraduate school at Beloit College in Wisconsin. He then completed medical school in Chicago. His internship found him back in Southern California near family. After doing his residency, and an extra year of research, at the University of Iowa, Lee and his wife, Kate, who is a native midwesterner, moved to Colorado. There, Lee headed the orthopedic service of the University of Colorado at Denver General Hospital.

In the early 1970's the Hawkins sought professional change. "We did a lot of praying for direction," reflected Kate. Then, while visiting friends in Cedar Rapids, Iowa, "...things just fell into place," she recalled.

They knew Iowa — the people, the outdoors, and professional climate. So sure were they about this being the right move for them that they even looked at houses — and found one. But, it wasn't for sale. A short time later, however, it did come on the market, and the Hawkins "....grabbed the opportunity" and joined an orthopedic group here. They moved into their handsome two story limestone colonial home in an oak forested residential section.

Leland Hawkins

All the while, the seed sown so long ago was germinating. An occasional article on the nature of honeybees, and a trip to Egypt, where they saw emblems of bees etched on tombs, whetted Lee's appetite to learn more about these industrious pollinators.

Then, one spring while musing over his daughter's upcoming twelfth birthday, he hit upon an idea: a colony of honeybees! That summer Lee and Sarah tended the hive on their wooded acre as the bees happily foraged on nearby wildflowers, basswood blossoms, and neighboring cultivated blooms.

They so enjoyed the beekeeping that they soon expanded their hives. "It's just a fun thing. If you give them a nice home, they reward you with honey," Hawkins explained simply. "They are biologically interesting, and clean," he added.

Honeybees fascinate Lee. He wonders at "....the drive in those little insects to work so unselfishly, compared to those in our species." Pausing as I stirred my honey-laced tea, he fixed clear blue eyes on the emerging spring day, and queried, "They do so much in such a short life. What makes them go?"

The sandy haired doctor is a lot like his charges. He is industrious, steadfast, and compresses a lot into a small amount of time.

Because his profession places high demands on him, his recreational activities are those which can be done at his own pace over time. Restoring Early American furniture, homes, and antique automobiles, and tending bees are pastimes that get the Hawkins outside, allowing them time to be together, do physical work, and dream.

Perhaps it was through dreaming that he came to install a hive at Iowa's foremost private Nature Center.

Scores of school, scout, and a civic groups visit the Nature Center each season, and all are drawn like magnets to the observation hive. Some are fortunate enough to attend on days when Lee is conducting an apiary program or making a "bee run".

The excitement on youngsters' faces is refreshing to see. Kids who are so computer wise, still respond to the miracle of watching a skilled apiarist uncap a comb of glistening honey. Pre-teens, reared on artificial sugars, delight in something that is naturally sweet. And these same media-sophisticated juveniles revel in his tales, related in a soft, matter-of-fact voice.

Wide eyed adolescents, sucking on sticky, ambrosial fingers, gather around a hollow stump of a "bee tree". A sudden dawning lights their eyes as they realize that the honey they've tasted came from a swarm that Lee captured, which is now reproducing domestically.

Relocating and nuturing a wild colony of honeybees is characteristic of Lee. He aptly demonstrates what a difference one in-

Continued on page 448

Nectar Collecting Part II

by J. IANNUZZI RFD 4, Ellicott City, MD 21043

Famous names among my labels, the Steed connection, and the world's finest honey

Famous and Not-so-Famous Labels

In my mellifluous multi-month odyssey of hunting down 50 United States nectars, I have come across some interesting bottle markings. Many Garden state readers would have no difficulty recognizing the source of several of my labels. Just as the name BOB HARVEY is a bell-ringer in the New Jersey State Beekeepers Association, as pointed out in the previous article, CRIMBING will toll a cowbell in Penna. Anybody paying dues to that state group and reading its monthly newsletter will instantly recognize the editor's name. My mixed clover bears her husband's marker: "R.J. Crimbring, South Mountain Honey, Canton."

Also from the same state comes by Dutch Gold (RALPH GAMBER, Lancaster) safflower and Yucatan *miels* as well as buckwheat, goldenrod, and wildflower sold by DRAPER'S, Millerton, the Eastern seaboard outlet for Walla Walla Strauser's bee equipment.

Three of Pennsylvania's neighbors have also furnished samples. From the ROOT Company store in Medina, Ohio, I purchased a pound of buckwheat for $1.55 in August 1978 from BRAD ROOT, the boss's son; from Delaware came a jar of clover supplied by DEWEY MAURICE CARON, a star of the first magnitude in the Maryland apian firmament until his sudden departure for more mellifluous pastures; and buckwheat, clover and wildflower, bearing the label "Preston County Honey," the owner of which is none other than JAMES H. JOHNSON whose' honey of a beard' can be admired on the *ABJ* October 1981 cover and whose first step in fashioning such a wiggly "growth" is featured on the *Gleanings* cover for February 1983. It is this same beeman who can proudly claim, despite *Guinness,* having sculpted the largest insect beard in the universe (for proof, read *Gleanings,* December 1982, page 669).

Bay Staters will easily recognize the name of ALBERT N. DELICATA, Newtownville, Massachusetts, who gladly parted with his first-place linden that had just copped a blue at EAS, Vermont, 1980 (since it came minus a label—forbidden in honey shows—I had to fabricate one). My own custom label also appears on the tupelo, palmetto and mixed citrus blossom nectars (Tobago-Trinidad) gotten in exchange or as a gift from RALPH WADLOW, Ft. Myers, Florida from whom ROGER MORSE, Cornell, and DEWEY M. CARON received *Apis-mellifera* pointers early on (RALPH cut is apian eye teeth in 1928).

Another bottle is marked 'Miel DeChimayo/Centinela Ranch/Chimayo, New Mexico" supplied on request by "the Bee Specialist" whom many nationwide will identify as author and professor ELBERT R. JAYCOX, lately of Illinois but now of the Land of Enchantment. And the flavor is an alfalfa-cotton-tamarisk mixture.

The author's September 1979 domestic/international honey display at the Timonium State Fair, Maryland, showing four countries and eight United States.

Likewise I possess STOLLER honey (of STOLLER frame-spacer fame) from Latty, Ohio (thanks again to JAMES M. STEED, Lexington, KY); and hope to trap some from the same state, as promised by the man responsible for ROSS ROUNDS (he describes it as "awful tasting redbud"). Writer, Lecturer and round-comb specialist RICHARD TAYLOR, Trumansburg, New York, has pledged some New Zealand nectar— a country missing from my 33 nations.

Finally, my most famous label of all probably is Champlain Valley Apiaries: clover "packed by CHARLES MRAZ, Middlebury, VT 05753," the apostle of apiculture known across the beekeeping world as the Bee Venom King of America and author of the monthly "Siftings" in *Gleanings,* a pick-up made in connection with EAS, Vermont, 1980, which meeting he helped host.

"The Finest Honey Money Can Buy"

Most of the markings on my containers are paper labels. Very, very few have the pertinent data printed on the container itself. But my "world's finest honey" does: black print on a cloudy plastic bottle. On the front it reads: "KODIAK GOURMET HONEY/PURE — NATURAL/ Net wt. 24 oz. (1½ lbs.) 675 gm/KODIAK HONEY CO./ Box 427, Edison, CA 93220." On the back is this message for the unbeliever:

Like fine wines, there are fine honeys. This honey is made from select flower sources from selected climates

It is handled and processed in a manner to retain the original high quality and distinctive character

We believe this honey to be the finest honey that money can buy. [Emphasis added.]

(Am intrigued. I wonder if the owner and operator, of Kodiak, JOE TRAYNOR, whose name does not appear on the bottle, has ever been in a position to sample many nectar flavors from 50 states and 33 countries? And just who is this beeman? What is the nature of this mysterious sweet which he does not identify in the printing? Is it also the world's most expensive???)

Thanks to JAMES M. STEED, the expansive honeypot collector from Richmond, Kentucky, who graciously supplied the honey, I have some of the answers from an article reprint accompanying his gift

The "finest" is "a combination of clover and alfalfa" from the Treasure state and not from the seller's. True, other areas produce these same viscous fluids, such as my own Maryland, but the difference is in the locale and climate, as the article notes:

Alfalfa honey from California is dark and rather ordinary tasting, according to Traynor. The cooler the climate where the

Continued on next page

honey was made imparted the distinctive character to the Montana honey. Traynor was struck by the analogy to wine—the same variety of grape will produce a superior wine when it is grown in the San Joaquin Valley in California, but an ordinary wine when it is grown in the San Joaquin Valley; the cooler nights in the Napa Valley make the difference. [And as a Frenchman would exclaim, "*Vive la difference*!"

Root Company store, Medina, Ohio, from where author first purchased his Ohio nectars in 1978. From left: Donald P. Kolpack and wife Patricia, Columbia, Md.; author's wife Irene, Ellicott City, Md.

According to the same reprint, TRAYNOR has been with bees and honey for more than 20 years since graduation from colege in 1959, during which time he has "tasted hundreds of different kinds of honey but it has only been recently that he 'discovered' what he feels is the world's finest honey." After another four years of sampling and comparing did he conclude that he had found the "finest" which he has been selling, largely by mail, through the Golden State company established in 1982.

As for his price list, frankly I do not know; however, my guess would be that the 24 ounces in my possession probably was around $10 including postage.

A final question naturally arises: What does the author think of "the finest honey money can buy"? The answer is decisively alluded to in the forthcoming part of "the best and the worst sticky substances" in my house.

The Steed Connection

One of the smallest labels and containers on my shelves was another gift of JIM

Charles Mraz, Middlebury, VT discussing bee benom therapy, EAS 1980 Burlington, VT. From left: Bill Maxant, bee equipment manufacturer, Massachusetts, and anonymous man in middle.

STEED, Richmond, Kentucky, the bee farmer contributing the largest numbers to my assembly of sweets (at least 38 by last count) as well as a gargantuan amount of other items (pollen, honey jellies, tons of bee equipment, foundation, a famous name pollen trap, *et cetera*—am actually too timid to cite them all, some very expensive). This retired country gentleman, who has not yet sweated through 45 summers, is a major collector in his own right, as anybody who has perused the *American Bee Journal* (October 1983 — March 1984) will be quick to confirm from the series of excellently photographed articles. What is so magnanimous about him is that his own honey collection, as of January 6, 1984, consisted of **a smaller number of bottles** than he had mailed to his fellow hobbyist in the Free State!

It was this same Blue Grasser who authored the following spontaneous appeal that appeared nationwide in all three bee publications between November 1983 and the following January:

Dear Editor:

My friend Dr. Jack Iannuzzi, RFD 4, Ellicott City, Md. 21043 needs only a few states to complete his one pound queenline jars of honey. He is missing Idaho, Louisiana, Nebraska, Nevada, Oklahoma, S. Dakota, Kansas and Wisconsin. Would your readers help him?

So far, that generous advertising has enticed mellifluous mailings from FLOYD HILBIG, the Nevada state apiarist; PRAIRIE APIARIES, South Dakota (the anonymous owner deserves my thanks again); and JIM STEWART, the Canadian from Naramata, British Columbia.

Apart from duplications, JAMES M. STEED was **directly** responsible for **two** new states (Kentucky and Texas) and **five** new nations (West Germany, France, South Korea, Honduras and Puerto Rico) and **seven** original floral sources (Kentucky wild cherry, Texas Chinese tallow, Massachusetts cranberry, French lavendar, Puerto Rican coffee, cactus [sold by Hickory Farms, Maumee, Ohio] and South Korean lespedeza in my collection and **indirectly** for one additional new state: the clover/basswood sent in by the wife of ROBERT R. HOFFMAN, Holmen, Wisconsin.

So great has been the oh-so-generous contributions from the Richmond, Kentucky resident that I am almost tempted to dub my assemblage the IANNUZZI—STEED NECTAR COLLECTION.□

[Next month — The secrets of collecting distilled into seven commandments.]

QUESTIONS & ANSWERS

Q. I have always wanted to produce the kind of comb honey I enjoyed as a boy, so I sent off for the wood sections, carefully assembled a super with the foundation and put it on my best two-story hive, then put a standard shallow extracting super with frames of foundation above that. The bees have ignored the sections, passing right through that super to draw out the foundation in the standard frames above and fill that super with honey. Do the bees always prefer standard frames, so that to get honey in wood sections you must have no other supers on the hive? **Donald M. Brown, Sedona, AZ**

A. There is no doubt that, given the choice, bees prefer drawn combs to foundation and full sheets of foundation to section boxes. Your experience confirms the latter preference. Thus, if you want section honey, you should not give them the choice. It is also true, however, that bees will readily fill section boxes if there is a honey flow on, and they have no place else to store the honey. Comb honey beekeeping therefore requires (1) strong colonies, (2) in relatively small hives in which there is not much room to store surplus honey, and (3) section supers only.

—Richard Taylor

Continued on page 448

Beekeeping In Chiapas, Southern Mexico

By JIM CONRAD
Route 1, Calhoun, KY 42327 SS #407-62-4500

Chiapis is Mexico's southernmost state. Its captial is the bustling town of Tuxtla Gutierrez (pop. about 175,000), located on the Pan American Highway some 100 air-miles west of the Guatemalan border. The vegetation is scrubby and monotonous.

Every three to five miles one sees apiaries along the road. Fifteen to thirty hives will be placed thirty to sixty feet off the highway. In some areas each hive has one or two supers on top — elsewhere they have three, four or more. Each super is painted some bright color so that typically a hive sports at least three colors; the whole apiary presents itself as quite a gaudy affair.

If you travel the fifty or so miles between Cintalapa and Tuxtla, the hives you'll see most likely will belong to a hardworking and very friendly gentleman named Aurelio Tirado Perez. In Mexico the second name is the main family name so here we shall refer to him as Senor Tirado; he speaks no English so it must be understood that his remarks have filtered through the translating ability of the author.

Now, Tirado lives in Tuxtla and he is Chiapas' main bee man. It was he who a quarter of a century ago introduced modern beekeeping into the state. And although today he exports a lot of honey, he did begin small!

"At first, all I knew was that bees make honey and that honey is good," he laughs. "So I went all over the Mexican republic asking people to teach me beekeeping. Finally I did learn the very basics. In 1959 I started out with ten hives and in my first year of production I got one barrel of honey. Over the years I've kept at it so that today I have about 3000 colonies and yearly I produce between 180 and 200 tons of honey. I have fourteen people working for me. I'm averaging between 130 and 150 pounds per hive per year.

"At first I sold my honey to an enterprise in cuernavaca," he continues, "but they paid so little that it was like giving my honey away. So back in the early '70s I started writing to different consulates of various countries, asking them if their country would be interested in importing honey. Well, it turned out that a honey-importer in Germany replied to one of my letters, so since then I've been exporting my honey to Germany. Of course I'd like to sell to the U.S. but it seems impossible without English. The president of the German company speaks Spanish very well because he's lived in Argentina. He has visited me and has eaten in my house. We have a good relationship."

PHOTO 1. Tirado's new extracting plant overlooks Tuxtla in the Grijalva Valley below. The Chiapas Highlands rise beyond. The plant is in two levels, with extraction taking place on the uper, and loading of barrels of honey occuring below.

Tirado has a new extracting factory perched on a mountainside overlooking Tuxtla. His trucks bring honey-filled supers to the factory where three large extractors send the honey into pipes that run beneath the floor of the factory's upper level, and then the honey drains through more pipes into barrels on the factory's lower level. During the author's visit. Barrels that had come from Europe filled with butter from the Nestle Company now were being refilled with honey to be sent to Germany. Once the honey is ready for shipment, large trucks capable of hauling fifteen tons carry the barrels to the shipping port specified by the importer. Last year, most of Tirado's shipments left from the Gulf port of Tuxpan other times he may ship from Coatzacoalcos or Veracruz, also on the Gulf.

One fly in the exporting ointment is that the German importer's payment in *deutsche marks* does not go directly to Tirado but rather to the Mexican government. The Mexican government then pays pesos to Tirado at a "fixed" rate of exchange. The fixed rate always is something less than the free market rate. Thus Tirado earns fixed-rate pesos but must buy his equipment with free-market pesos this way he loses about thirteen cents on the dollar.

One of Tirado's business strategies has been to help others in Chiapas become established as beekeepers. For instance, in most villages of Chiapas people are native American and usually speak the Mayan languages of Tzotzil or Zoque in their homes. Five years ago Tirado helped one group of Indians start-up by giving them bees and teaching them how to handle the hives. Last year, these Indians became peso-millionaires, earning 8.5 million pesos (over $50,000). Sometimes these and other producers combine their harvests with Tirado, or sell to him, thus taking advantage of his exporting license. This gives Tirado more bargaining power when he is wheeling and dealing with the Germans.

Tirado experiences certain conditions that most of us don't have to worry about. For instance, a couple of years ago the volcano called El Chichon eruped in Chiapas. It was much larger than Mt. St. Helen. Tirado lost about ten percent of his hives through ash suffocation. The year after Chichon's eruption Chiapan beekeepers experienced a superb honey harvest. Some Indian beekeepers are convinced that this happened because the volcano's ashes replenished the soil with nutrients and that encouraged the appearance of more flowers. They also say that their harvest of corn and beans was

Continued on next page

the best they'd seen in years. However, Tirado insists that the reason for the bounty was that the March-before-last, the rains came a month early so that the honey producing season simply was extended.

Tirado also worries a little about the approach of the "killer bees." At least one beekeeper in Chiapas swears that a few months back he encountered a colony of these aggresive critters swarmed on a tree, but Tirado says he is sure that so far they haven't arrived in Mexico. He is confident in the scientists who are trying to cut off the northward advance in Costa Rica, where the Central American Isthmus is narrow.

"The worst enemy I must deal with is man," says Tirado, shaking his head. "Every year I lose between 400 and 500 hives. We're trying to catch the thieves but it's hard when you have so many boxes scattered all along the road. They just take the whole hives. Sometimes people destroy my hives for no apparent reason."

The hives are particularly vulnerable because they are mostly left in places where there is no one to look after them.

"The highway right-of-way extends twenty meters (65.6 feet) from the highway so we just put our colonies there. We don't ask anyone's permission and no one complains."

Another problem is with fire. In Chiapas a conspicuous dry season occurs from November through April. During those months the average precipitation is about six-tenths of an inch. (From May through October, it averages over seven inches, peaking near ten inches in June and September. Temperatures don't change much throughout the year; it's always warm or hot.) During the dry season the Indians feel compelled to burn their fields to dispose of weeds and insects. Often the fires get out of hand.

"When they're burning," says Tirado, "sometimes at night you see fires from horizon to horizon. The temperature of the whole valley rises and the sky is dark with smoke. When the area around my hives is burned, the next two or three years the honey production drops because of the disappearance of flowers."

In general, Tirado's colonies produce six months out of the year. They start producing in November and end in April or May. The main honey-producing months are those during the dry season, even though there may be many flowers during the wet season.

"The rains we have here are hard ones," he explains. "They come almost every day

PHOTO 2. Sr. Aurelio Tirado Perez. Standing here on the plant's upper level he can watch loading activities in the plant's lower level.

PHOTO 3. General view of the extracting area showing in the plant's lower level.

and they are so heavy that they wash the nectar from the flowers."

This year all of Mexico, even the southmost part, experienced remarkably cold weather. In the north, frost killed crops and damaged native vegetation tell the story. Although Tirado's bees did not have to deal with the frost, this year they will probably produce only about 30% of what they normally do. Because last year such a bumper crop was produced, Tirado's German market is flooded with Mexican honey and prices are low. This will be a dismal year for Tirado.

Tirado's honey is colored clear amber and averages between 17 and 18% moisture content. Although Tuxtla is in a coffee-growing region, no "coffee-flavored" honey is produced.

"Coffee flowers pass quickly and they don't have much of a specific odor anyway, Tirado said, "Among the important honey-producing plants here are *campanita* (a species of *Ipomoea*), which is a vine with purple flowers, and the large tree called **canelo** *(Melia azedarache?)* Also there's a tree called *brasil,* which covers itself magnificently with yellow flowers, and another called in the Zoque language **kanduck,**" he added.

What's the future of beekeeping in Mexico? Tirado thinks that it's a good one. He has confidence in the new president's economic policies. Unfortunately, the political and social rumblings from Central America reach even to Tuxtla. Many Guatemalan refugees have fled into chiapas. Even in Chiapas itself you hear of Indian invasions onto lands of large

Continued on next page

Highly Productive Nectar Plants

By FRANCIS O. HOLMES

Bird-pollinated plants have a lesson to teach that we, as beekeepers, tend to disregard because our minds are fixed primarily on the enormously larger number of bee pollinated plants. The lesson is this. In order to attract birds, and in order to give these pollinators enough nectar to supply their needs, bird-pollinated flowers in general produce relatively large volumes of nectar in each blossom.

A good example is the national flower of the Union of South Africa, *Protea mellifera* Thun., which is reputed to supply nectar in such volume that the natives use a spoon to extract from the flower head. Honeybees are not well adapted to using such a flower as a nectar source, but they are said to garner some of the nectar occasionally when it is exposed by accident *(Amercian Bee Journal* 103(6):216-217. 1963.)

Chumpamiel, *combretum farniosum* H.B.K., is another plant that is said to secrete enough nectar to permit its collection by hand, although its sugar content is at times too low to attract honeybees *(Ordetxy Espina, La Apicultura en los Tropicos,* page 62. 1966).

Orchid flowers of the genus *Coryanthes* are said to produce more than an ounce of nectar a piece *(U.S.D.A. Agriculture Handbook 496,* p. 10. 1976).

The balsa tree, *Ochroma lagopus* Sw., was reported in 1965 (Revista Univ. auton. G.R. Moreno 21/22) to produce one cubic centimeter of nectar per flower, far less than an ounce a piece but still a large volume in comparison with the tiny amounts that accumulate in many bee-pollinated flowers.

Cucurbita maxima Duchesne, our winter squash, was cited in the *Honey Plants of Iowa,* 1930, page 656, as having nearly a teaspoonful of nectar in the pistillate flower; moreover it was stated that "no other of our plants produced as much honey as the squash".

Nectar from *Agave parryi* Engelm. was gathered by Indians in the Southwest and used as syrup (Nichol, A.A., Arizona Agr. Exp. Sta., Technical Bulletin 127. 1952).

Reports of bird-pollinated flowers and of other abundant producers of nectar should teach us that it is not beyond the capacity of many flowering plants to produce nectar in rather large quantities if an adequate selection pressure is supplied. Obviously plants that have already adjusted themselves successfully to honeybee pollination are not likely to be forced by Mother Nature to produce any greater amount of nectar on the average than will be just enough to attract the required number of pollinating insects. Just enough for this purpose may be very little indeed, as in the case of the pear, *Pyrus communis* L., which may have as little as 4 to 25% of sugar in its nectar, but which adds a highly attractive supply of pollen to its bid for effective honeybee pollination *(U.S. Agriculture Handbook* No. 496, p. 290). If, however, persistent selection by man supplements the selection for adequate seed production in nature, nectar production can probably be increased in almost any desired plant species in the same measure as sucrose in highly bred sugarcane (*Saccharum officinarum* L.) has been increased over the low level that was natural to the ancestral species in the wild.

Grant, V., and Grant, K.A., have indicated that phlox plants are largely bird-pollinated (*Flower Pollination in the Phlox Family,* 180 pages, Columbia University Press, New York). Such plants could conceivably be selected for spontaneious or induced mutations that might allow honeybees to share the nectar originally intended for bird pollinators.

The saguaro cactus (*Carnegiea gigantea* (Englm.) Britt. & Rose) is said to attract numerous species of birds to act as its pollinators (Alcorn, S.M., McGregor, S.E. and Olin, G. *Science* 133:1594-1595. 1961). Breeding and selection of desert plants, however, would do little for beekeepers in much of the world.

A study made in Poland to determine how the national honey production could be increased concluded that by balancing the honeybee population with the uneven distribution of effective nectar sources, the honey production of the country could be approximately doubled (*Bee World* 38(6):146. 1957) The most effective nectar plants considered in this study were *Robinia pseudoacacia* L. *Acer campestre* L., *Tilia cordata* Mill., and *Phacelia tanacetifolia* Benth., followed on a substantially lower level of productivity by *Asclepias cornuti* Decne., *Salvia verticillata* L., *Chamaenerion angustifolium* (L.) Scop., *Onobrychis transcaucasica* Grossheim, *Coriandrum sativum* L., *Echium vulgare* L., and *Caragana arborescens* Lam.

Should some of these species that already furnish abundant nectar be chosen for improvement by breeding and intensive selection? Or should some species be chosen not for its record in the matter of honey yield for each unit of land surface but for its convenience of study and convenience in breeding, and for the likelihood of long term establishment in nature after perfection?

Efforts to produce high yielding nectar plants will probably prove most productive if they are expended on plants that blossom when young to facilitate breeding in successive generations, produce large seed crops to facilitate selection, are inclined to be dominant in grassy or weedy roadsides, and are not tall enough to interfere with visibility along highways. Hardiness in winter and tolerance of warm climates would, of course, be added virtues.□

SOUTHERN MEXICO

Continued from previous page

landowners and in Tuxtla you see revolutionary graffiti on the walls. Tirado ends his discussion about beekeeping with a little philosphy:

"The important thing is that in the future we'll still be able to work and live in peace," he says with a serious look. "Without peace, of what good is having fine bees and a great merchandising system? I hope that always we shall all remember that we are brothers. . . . ."□

Parting Thoughts From A Retiring Beekeeper

By K.W. TAYLOR 16510 - 83 Avenue Edmonton, Alberta T5R 3W1

1983 marked my last year in beekeeping, as I am giving up the hobby, partly for health reasons, partly because I expect to retire to Vancouver Island in 1985 and partly due to dissatisfaction with the equipment and bees that we've been getting in recent years.

Before breaking off all contact with the industry, I would like to pass along a few thoughts which I hope may contribute to the success of other beekeepers, primarily hobbyists.

My first experience with apiculture came on May 1st, 1937, when we acquired two colonies on my parents' 25 acre nursery and orchard. I was assigned the task of caring for them and quickly became keenly interested in beekeeping. Within two years, I developed an interest in the competitive exhibition of honey and I have never been content to be a follower in apiary management, always looking for innovative ways to increase production. This apiary was built up to 10 colonies by 1940 and entered the winter of 1940-41 packed for wintering on their permanent locations.

March 27th, 1941 saw me donning an Army uniform and, by the time that I returned from across the puddle in December, 1945, having seen combat service as a tank gunner in Italy and Holland with the Calgary Regiment, I had decided to make apiculture my life's work. To that end, I worked on commercial apiaries for three seasons, but was obliged to abandon my ideal, never having enjoyed especially robust health.

In the fall of 1956 I picked up four hives cheaply at an auction sale in Red Deer and the next six years were to prove to be the most successful of my beekeeping career, in terms of yields per colony. This was due to lack of competition for available pasturage, good sheltered locations and superior quality pure Italian bees. Calculated to the nearest five pounds, production ranged from a low of 250 pounds per colony in 1957 to a high of 345 in 1960, with colony #4 producing 455 pounds. The six year average was 280 pounds. I mention this by way of establishing my credentials for writing this article.

In two of the six years the colonies were wintered over outdoors, in the other four they were started from two pound packages, as I was obliged to change jobs four times in those six years, living at Red Deer, Wetaskiwin and Edmonton. The principle key to my success under both systems was the use of insulation. Three thicknesses of R8 fiberglass in a top insulation box and one each in a box built into the combination hive stand and bottom board and around the sides. The side wrapping is protected by a wrapping of tarpaper. Each of these are held in place by three nylon cords, kept under tension by 12″ of 1″ elastic tape. A hook made of heavy gauge wire is attached to the tape and hooks into a loop at the other end of the cord. This is faster than tying and untying cords each time you open the hives. The side insulation is kept on until the first super is added, the bottom insulation is permanent and the top box is kept on until the hive becomes so high that it becomes a nuisance, as it also serves to keep the hive cooler.

Another key was the practice of adding the second brood chamber under the first, which reduces the danger of brood in the outer combs of the first chamber being chilled if the cluster contracted during a cold night, in package management. With the second chamber under the first, it will not be occupied until it is needed and the existing brood is in the warmer upper part of the hive. Also, that's the way it works in nature with wintered-over colonies.

When the first super is added, you reverse the brood chambers, which eliminates the barriers of honey between the brood nest and the queen excluder, forces the bees to carry it up into the super in order to join up the brood nest, creates more egg laying space, stimulating egg laying, gets the bees to accept the super more readily and reduces the swarming impulse.

Regarding the hive stand, this is made of 2″ x 6″ lumber and the insulation box — bottom board is set in so that the floor slopes toward the front for drainage of rain water. The floor is flush with the top of the stand at the back and drops to provide a ¾″ depth entrance. The hive body rests on the 2″ x 6″, with the inner walls flush with the inner walls of the stand, allowing a ¾″ rim at the sides for the side insulation to rest on. I use two entrance blocks of 2″ x 2″ with two notches cut into each, at 90 degree angles to each other. The notches are 3/8″ deep and 1″, 2″, 4″ and 8″ wide, enabling you to progressively increase the size of the entrance as the colony becomes stronger. The hive stand, on a permanent location, should be dead level, to facilitate the use of a two gallon top tray feeder; — the only worthwhile kind. Too expensive, you say? There is an old adage in the business world which goes "You have to spend money to make money". Nowhere is this more true than in beekeeping, provided that it is tempered with common sense.

In wintering, there was an important, discovery made when I was keeping 15 colonies at Grande Prairie, in the Peace River District, from 1949 through 1952. This was that colonies that had their entrances on the east side of the hive came through stronger than those facing south. Why? Because on sunny days when the temperature on the shaded side of the hive may be barely above freezing, in early afternoon, it may be well above 7°C (44°F) on the south side. So the bees conclude that it is warm enough to fly to cleanse themselves. But, as soon as they get clear of the hive front they hit the cold air, become chilled and are lost. If the entrance is on the shaded east side, they won't attempt to fly until it is actually safe to do so.

The top insulation box, either an old super or a box made of ¾″ lumber has a bottom of plywood thoroughly treated with Rez, to which is nailed a rim of 1 3/8″ lumber, cut ¾″ wide. To this is nailed a bracket of plywood and a block of 1 3/8″ material, 2″ wide nailed to that. You then bore a ¾″ hole through this block and the rim. This hole is kept plugged with a cork until after the first lasting snowfall. The cork is then removed and the bottom entrance, 3/8″ x 2″, is covered with 2″ of loose new snow. Enough air filters through this snow to provide a gentle circulation through the hive. If this snow becomes crusted or melts, it should be replaced with more loose snow. You close the top entrance when the first brief examination is made in the spring and the dead bees cleaned off the bottom board. Should the top entrance become plugged with hoar frost, you gently bore it out with a hand brace and bit. The top entrance block extends through the insulation, which is notched out, and the tarpaper wrapped over it. After trying it on, a hole is cut in the tarpaper for the entrance, thumb tacks inserted on both sides of the entrance to hold the tarpaper taut at the entrance and the cork inserted.

Two bugbears afflict the wintering system. One is the tendency of colonies to run short of pollen in early spring. The other

Continued on next page

is the inclination of today's mongrel strains of bees to swarm. I have recently thought up the following plan, so have not had a chance to put it into practice. If it works, it should solve both problems with one fell swoop. So I am passing it along for other hobbyists and, possibly, Government experimental farm research people to try it out.

For the past four years, I have been using a combination of one standard brood chamber and two 6½" ones. The standard chamber, on the bottom, is rarely touched and most of the manipulations performed with the other two. When the first super is required, you reverse these two and reverse them again every two weeks. Swarm cells will always be built on the lower edges of these combs, practically never in the deep chamber, which renders their destruction easy, just by tipping them up. Due to a bad back, I have been using 6½" supers.

My proposal is that, at the beginning of the main flow, you locate the queen, kill all queen cells and place the top brood chamber, containing the queen on a deep chamber, preferably filled with brood combs, containing some honey and pollen. The whole is then set on a seperate stand with entrance reduced and top insulation box placed on it. Since the older bees will return to the parent colony, this division will be fairly weak for awhile, so should be checked periodically for stores supply. Being so weak, they will not swarm, nor should the parent colony to which you will introduce a young queen.

About August 1st, you cage the old queen, using the type of cage, made of brass, apparently in Germany and available from the Walter T. Kelley Co. It's advantages are that getting the queen into it is a cinch and the workers are able to enter it through the queen excluder — spaced slots, which I suspect will improve colony working morale. A week later, you check for emergency supersedure cells, just in case. The cage is suspended in the lower chamber. With no brood to feed, this unit should store a lot of surplus pollen in the lower chamber and honey in the upper one, plus possibly a super or two. At the end of the honey flow or four weeks after caging, at the latest, you gas off the division and exchange combs heavy with pollen for those having little of it from the parent colony and add the second brood chamber from the division as a food chamber, feeding heavy syrup if necessary, to fill it up.

In the past season, I have been using our Filter Queen household vacuum cleaner, with the filter removed, the hose attached to the exhaust outlet and the narrow plastic nozzle to it as a very effective bee blower to clear supers. Source of power is our 1500W Honda portable generator, kept as an emergency power plant, primarily.

I have some serious reservations about this new comb foundation, having larger than natural cells. The theory is that it produces larger bees, with a greater carrying capacity, but, I have noticed a considerable increase in drone comb, so would suggest the plan is self-defeating.

I would also like to see bee breeders concentrate on developing a good, hardy strain of pure three-banded Italians and forget about crossing them with Carniolans and Caucasians. The latter strains may be okay if you can maintain tight control over their mating, in isolated locations, but as soon as you lose that control, you end up with mongrels which exhibit all the undesirable traits of both races and much worse tempers than pure Italians. Due to this, I was obliged to gas off one of my colonies on August 8th, 1981, as they were stinging the people on whose property I was keeping them. Out of curiosity, I swept them into a large carton and took them home to weigh them. they weighed 27 pounds and the other colony was considerably stronger, having a better queen. I estimated that I lost a good 100 pounds of production, not counting probably lower production of the package started next year. I still averaged 268 pounds per colony.

Also, I have found, in recent years, that bee supply manufacturers and distributers seem to have gotten greedy and are not catering to the hobbyists the way they used to. You can no longer obtain steam coil capping melters, that sit on top of a 70 pound steel drum, nor the drum, nor a two gallon copper steam generator. I had to have the melter and generator fabricated by a tinsmith at considerable expense. I use a steam-heated knife, in series with the melter. Good luck.□

LELAND HAWKINS

Continued from page 441

dividual can make in promoting apiary science. He tends his bees carefully, overwintering them, providing early sugar supplies, and good summer forage. He personally checks the bees at the Center and on his farm in Mt. Vernon, working to improve their health and productivity. "An observation hive at the Nature Center is good to have," he stated with quiet pleasure. "And, when I'm checking the hives, it's easy to make a bee line, so to speak, between the farm and the Center and home," he added, winking.

Obviously, beekeeping has been fun for Lee, and is now an integral part of his life. He harvests about thee hundred pounds from his eight hives. Each fall, friends receive gifts of comb and extracted honey. Lee has enough left to sell and for family needs.

Although Sarah's interest in honeybees has been replaced by studies, dating with friends, and work, she proves to be quite knowledgeable about bees and helps her father. The Hawkins older son, Foster, and Lee's dad, both have taken up interest in beekeeping. The older Dr. Hawkins houses open combed bees which adapt well to the warm California climate.

Lee enjoys the challenge of beekeeping, stating "It's like a lot of hobbies — once you get into it, there are many related side interests."

Along with the challenge have come some uncomfortable "awareness raising" experiences, and Lee ruefully admits to some folly in his earlier apiary days. He once attempted to contain a swarm of bees that had come to rest high in a tree. Ascending confidently, bag in hand, he missed a step, shaking the tree. And, the bees came tumbling down! "It's rather disconcerting to have 10,000 bees fly up your pants," the unflappable surgeon drawled laconically.□

QUESTIONS & ANSWERS

Continued from page 443

Q. One beekeeper I know tells me I should have nine frames in the hive body and another says I should have ten. Which is best? **Bryan W. Miller, 1300 E. Heritage Rd., Normal, IL 61761**

A. My personal rule is nine combs in the brood chambers and eight in the extracting supers. When starting with foundation, however, it is better to begin with ten in the brood chambers and nine in the supers, until the foundation is drawn, then remove one comb and re-space the rest. It is much easier to examine combs with the lesser number, and very much easier to extract them. But whenever fewer than ten frames are used, they must be spaced with care, leaving a bit of extra space at the sides. Otherwise, you can get two combs on one of the frames— a real headache.

—Richard Taylor

Continued on page 452

NEWS and EVENTS

WISCONSIN

4-H'rs Receive Awards in Bee Essay Contest

Three Wisconsin 4-H youth have won cash awards in the state competition for the American Beekeeping Federation's 4-H Bee Essay Contest, according to Jack Heller, 4-H youth development specialist with the University of Wisconsin Cooperative Extension Service.

Rebecca Pufahl, Juneau County, won first place and $25. Her prize winning essay will compete for national recognition.

Second place state winner was Wendy L. Kummer, Sheboygan County, who received $15. Dan Neff, Dodge County, won third place and $10.

The two state organizations responsible for the cash prices are the Outagamie County Beekeepers Association and the Northwestern District Wisconsin Honey Producers Association.

MINNESOTA

The 1984 Minnesota Honey Queen is Lori Brekke, daughter of Mr. and Mrs. Loren Brekke of Hanska, Minn. Lori was crowned last December at the winter meeting of the Minnesota Honey Producers Association.

Lori attends the University of Minnesota at Waseca, majoring in retail horticulture and merchandising.

ILLINOIS

On March 1, 1984, Roy Baxley, Christopher, IL completed his "50th Year" as Bee Inspector, District 16, Illinois Department of Agriculture.

Roy started beekeeping in 1928 when he purchased five-two pound packages of honey bees from Texas. Honey plants of sweet clover and spanish needle were abundant in Southern Illinois in those days. In the succeeding years he increased to 750 colonies in three counties. Every four years he would hire ten high school boys to scrape and clean the hives and then paint the whole outfit. He has supplied stores with his liquid honey the year round for the past 56 years. Every year Roy scraped his shallow supers and would have over 300 pounds of propolis that he hauled to the landfill. One year he received a letter from England, offering to buy propolis. With only 40 pounds available at that time, he shipped air-freight, not knowing the price he would receive. Within three weeks he received a bank draft from Lloyds of London fro over $1000.00.

Left to right: Roy Baxley, Larry Werries.

Roy was presented with a Letter of Recognition from Larry A. Werries, Director, Illinois Department of Agriculture, during the Award's Ceremony in Springfield, Illinois. We are enclosing a copy of this letter for your information. As Roy stated when receiving the letter, "I am now 79 years old and feel like going another fifty". Roy is still inspecting honey bees.

MANITOBA

Three years ago Robert Heath switched from the quiet life of dairy farming in Britain to beekeeping in Manitoba, Canada.

Now he spends part of his time watching out for hungry bears as he looks after his 400 hives.

At first glance the change from dairy cattle to bees seems an odd one, but Heath says not so.

"I had kept bees as a hobby and I knew something about them," he said.

"The interest rates here (in Canada) were so high it was difficult to get into a dairy operation."

Heath lives on a five-acre farm with his wife and three children in Virden in southwestern Manitoba.

His honey-making operation is called Shropshire Gate Honey, a remembrance of the area about 150 miles from London, England, where he was farming when he made the decision to move to Canada.

Only about 70 of Heath's hives are on his farm. The rest are scattered around 20 locations on neighboring farms. "Most farmers are glad to accept the colonies in return for a pail of honey and help with the pollination," he said. But Heath says one problem is trying to keep the bees away from the bears. "Twelve months ago a bear did $1,000 damage," he said. "He was big — when he was on his rear legs he must have been eight feet high."

A companion took a shot but missed and the bear is still at large — much to Heath's disappointment.

"He would have looked great mounted on my wall," he said. More recently another, smaller, bear raided Heath's hives. "It only rolled one hive," Heath said.

Don Dixon, apiarist for the Manitoba Department of Agriculture, says bears can smash a wooden hive to matchsticks within minutes. The honey and the larval bees are a treat for the bears.

"It's a perfectly balanced meal," Dixon said. "The grubs are a fabulous source of protein and the honey is a good source of carbohydrates."

The province has agreed to pay up to 75 percent for damage inflicted by bears

Continued on next page

and also gives $100 (about $78 U.S.) towards the cost of constructing an electric fence. A number of honey-addicted bears are shot annually.

There are about 1,700 apiarists operating in Manitoba. Heath is one of 250 with commercial operations of 100 or more hives.

Heath plans to expand to 450 hives this year and eventually to 500 hives.

"That would give me a marketable quantity of honey and provide a reasonable living," he said. "It's about as much as one family can handle." Despite his expansion plans Heath says the amount of work involved will not noticably expand the eight-to-12 hour days he already puts into his business.

Heath says the switch to beekeeping has been a satisfying one. "The more I learn, the more interested I become," he said. He has noticed a difference in honey-buying habits between England and Canada.

"In Canada people come to the gate and buy in bulk — 30 pounds at a time — and get a year's supply," he said. "In Britain people go to an apiary and buy one or two pound pots. They buy honey as they need it."

Dixon said the beekeeping industry has doubled in Manitoba in the last 10 years. The increase has been attributed to larger areas of special crops and oilseeds, such as canola (rapseed), being grown. They provide a good feeding ground for the bees.

Manitoba bees produced about 38 million pounds of honey last year and 238,000 pounds of beeswax, worth a total of $9.9 million ($7.8 million U.S.)

Manitoba has traditionally ranked second behind Alberta in annual output. But production was down last year and Saskatchewan dropped Manitoba into third place.

Of increasing concern to Canadian apiarists is a continued supply of fresh stock imported from southern suppliers. In the past, many beekeepers killed off their stock in the fall and imported packages of live bees from the southern United States each spring.

But with the aggressive African killer bees steadily moving north, apiarists in Canada are wondering how long they will be able to continue importing.

Heath thinks the African bee is not as big a threat as once was believed. "Once they get into colder climates they are less of a threat," he said. "They are less competitive with European bees."

Of more concern to Heath are parasitic mites, which now are threatening beekeeping operations in Asia. "Our beekeepers are very dependent on imported packages right now, and they are vulnerable to any disruption in supply," Heath said.

Heath and a number of other beekeepers have reacted by keeping their bees over the winter.

Some move their colonies indoors but Heath has managed to achieve an 85% survival rate outdoors by wrapping his colonies in insulating blankets.

Most Canadian honey is shipped to world markets because Canadians are not big consumers — average annual consumption is less than two pounds per capita.

by ALAN HARMAN

NEW YORK

The above photo was taken in the fall of 1983 of Boy Scouts who just completed their beekeeping merit badge. They complete the merit badge in three visits.

The first visit is orientation and building up skill level for manipulating frames in a hive.

The second visit lasts for four hours of which two hours is spent in the hives. They must identify workers, drones, and identify the queen (which I point out to them). They must also indentify eggs, larva, capped brood, nectar, pollen and capped honey. The merit badge counselor (me) handles the hive bodies and the scouts handle the frames (after a demonstration).

The third visit involves extracting and processing honey.

An essay on how to winter successfully is required as a final test for their merit badge. These scouts are 10 and 11 years old. They belong to the Mohawk Council of Central New York.

Harry Morris,
Rt. 1, Box 106
Barnevild, N.Y. 13304

1984 Eastern Apicultural Society Honey Show

"Honey Show Of The Decade"

The 1984 Eastern Apicultural Society Honey Show Committee is well prepared for the Honey Show of the Decade. In four years the total number of contest entries has nearly doubled from 235 entries in 1980 to 414 in 1983. The EAS Honey Show is one of the largest, if not the largest, in North America.

To ensure that the quality of the entries, judging and awards remain consistent with the high standards of the EAS, the Board of Directors, at their fall meeting, appointed a committee of three well-known and nationally recognized honey show award winners, organizers and judges to serve on a standing committee to be known as the "Honey Show Committee." The committee is charged with the responsibility for establishing standards for selection of judges, judging criteria, show rules and all other facets of a first-class honey show.

The 30th annual EAS conference will be held at the University of Rhode Island Aug. 8-11, 1984 and will host the conferences annual Honey Show being dubbed by some as the "Honey Show of the Decade." Many fine judges have been selected for Honey, Mead, Honey Cookery, Gadgets, Beeswax and Crafts. As in the past, conference goers who enter the show can expect stiff competition from the states of Mass., Conn., Maryland, New York, Pennsylvania, our Canadian neighbors, and, of course, Rhode Island.

In addition to the coveted EAS show ribbons which are awarded to the top winners of each class, a number of other awards are awarded by various commercial donors. A cash prize, equal to the cost of the conference, is awarded (by drawing) to one of the blue ribbon winners. Four additional $25 prizes are drawn and awarded to other winners.

Beyond ribbons, trophies and cash prizes, there are several reasons why beekeepers should enter the EAS (and other) honey shows. First, it serves as a reward for work well done. It is only the beekeeper who knows the work that went into producing a fine jar of local honey. Preparation for the entering of honey into a show acknowledges the work

Continued on next page

doneproviding a deep sense of self-satisfaction. The honey is a product of the beekeeper's hands. BELIEVE IN IT. The belief that an individual produces a premium product is attested to by submitting it for judging by the beekeeper's peers.

A special benefit afforded the beekeepers is the opportuntiy to sample honey from throughout the nation. There are few beekeepers who can pass up an opportunity to see, and I hope taste, honey from the many locales represented at a show.

The EAS-84 Committee extends a welcome hand to all and urges all beekeepers to submit their entries. Bring your honey to Rhode Island in 1984 for the "Honey Show of the Decade."

MISSOURI

News Release

The Missouri State Beekeepers Association will hold their annual fall meeting on Saturday, Oct. 20th from 8:30 a.m. to 4:00 p.m. at the Campus-Union Building in Southwest Missouri State University at Springfield, Missouri.

The featured speaker will be Dr. Norman Gary, professor of entomology at the University of California, Davis. Since 1962 Dr. Gary has spent most of his time specializing in research on the behavior of honeybees in order to develop new information that would enhance the utilization of honey bees for pollination, honey production and as a recreational resource.

In addition to research activities, Dr. Gary teaches courses, seminars and workshops in apiculture, both on and off campus. He has also served as photographer, producer, consultant, and technical advisor for several 16mm and 35mm films on honey bees that have been shown on network television programs to national audiences. We plan to show a couple of these films at our meeting.

Dr. Gary will teach a 3-hour beekeeping workshop Friday evening preceding the main meeting. The workshop will cover practical beekeeping problems and the special topics will be: 1. Prevention of bee stings; 2. Queens and requeening; 3. Special problems. There will be a $10 fee for the workshop.

Any questions regarding the workshop or the meeting can be answered by calling Larry Hensley at (314) 355-6935 or writing to 13520 Old Jamestown Road, Florissant, Mo. 63033.

Michigan Honey Queen

Michigan Honey Queen Julianne Whan is the daughter of Mr. and Mrs. Jon Whan of Edmore. She is attending Montcalm School of Nursing. Julianne comes from a family of Honey Queens. Her aunt was the first Michigan Honey Queen and her mother was a Michigan Honey Queen who went on to be the first American Honey Queen. How about that!

FLORIDA

Anybody with an interest in the unique craft of beekeeping honey bees should plan to attend the Annual Beekeepers Institute at 4-H Camp Ocala, north of Umatilla, Florida on Highway 19, in the ocala National Forest, August 24, 25 and 26, 1984. The focus is on beginning beekeeping and a post-institute tour is tentatively scheduled to visit apiaries and beekeepers in the area.

The program includes a 3-hour video tape series on beginning beekeeping, a course in honey judging, and presentations on financial management related to beekeeping, the basics of getting started, the biological basis for bee management, and what national and state beekeeping associations can do for the beekeeper. A whole afternoon is set aside for hands-on experience with bee colonies.

For registration information, those in Florida are urged to contact the Couny Cooperative Extension Office. Out-of-state residents should write or call Ms. Glinda Benson, 202 Newell Hall, University of Florida, Gainesville, FL 32611, ph: 904/392-1801. The package price for two nights, which includes lodging and six meals is $40.00 per person. Preregistration is strongly recommended in order to reserve space for this unique event.

PENNSYLVANIA

Commonwealth Of Pennsylvania Dept. Of Environmental Resources Harrisburg, Pennsylvania

HOOKSTOWN - The Pennsylvania Department of Environmental Resources' Raccoon Creek State Park, in cooperation with the Beaver Valley Beekeepers Association, will hold its 6th Annual Honey Bee Festival on Sunday, Sept. 16, 1984 from 1-4 p.m. at the park's U.S. Route 30 Wildflower Reserve, 25 miles west of Pittsburgh.

The festival will feature numerous ongoing programs, demonstrations, contests and displays dealing with all phases of bees and beekeeping.

Presentations, given by state park staff and local beekeepers' will include: natural history and folklore of bees, working a live hive, bee products and benefits, beginning beekeeping, pesticides and bees, capturing swarms, beekeeping equipment and stinging insects. Also included will be displays of beekeeping supplies, children's contests and honey products.

A honey competition, open to all area beekeepers, will also take place. Honey will be judged in two catagories: extracted and comb honey. Extracted honey must be presented in one pound containers. Comb honey may be entered either as cut comb, full frame or round sections. One entry in each category is permitted to be presented at judging area between 2 and 2:30 p.m. Awards will be presented at 3 p.m.

A complete listing of the day's program can be obtained from the park office. The program is free of charge and suitable for all ages and interests. In case of rain, the festival will be rescheduled for the following Sunday, September 23, 1984.

Founding Of The Canadian Honey Marketing Co-operative Incorporated

Mr. Ross Hopkins, a veteran commercial beekeeper of North Gower, Ontario announced today the incorporation of the Canadian Honey Marketing Co-operative (CHMC). "There has been a long-felt need for a national marketing organization operated and controlled by the honey producers of this country," he said.

He went on to say that Canada has the potential of becoming the world's largest producer and exporter of honey. The Canadian yield per colony doubles that of the competing countries — the Soviet Union, the Republic of China, the United States, Mexico and Argentina. Further, our marginal agricultural lands — even the Arc-

Continued on next page

tic tundras — produce an abundance of excellent honey. Despite this advantage, however, Canada accounts for only 3.9% of the world's honey production. This low national production is due to our poor sales performance in the export markets, combined with inadequate control over the importing of low-cost foreign honey by commercial honey packers.

The founding directors of CHMC elected Ernie R. McEwen of Nepen president, and Vance McDougall, also of Nepen, vice-president and secretary-treasurer.

Ernie McEwen for many years has been a beekeeper in Manitoba and Ontario. He has also had extensive experience in organizational work, both in industry and in the voluntary field. Vance McDougall, recently retired from the Canadian Armed Forces, has an established honey production business near Kemptville, Ontario.

"To be effective in developing new policies and sales programs, CHMC will need the full and sustained support of the honey producers and their marketing agents," McDougall said. "We beekeepers have a lot to learn about marketing from the other branches of agriculture," he added.

Director Brian Silversides said that the immediate concern of CHMC is to find markets for the present honey surplus at a fair price.

"The purpose of CHMC is three-fold," said McEwen:

(a) To provide a vehicle through which Canadian honey producers and their agents can promote marketing of honey in Canada and abroad;

(b)To provide an instrument for systematic and continuing dialogue among Canadian honey producers and others concerned with marketing, leading to new policies and services required in fluctuating world marketing conditions;

(c) To foster such other activities as may be deemed necessary to promote growth and development of the honey production industry.

CHMC will, in general avoid duplication of the marketing activities of existing agencies and instead direct attention to finding ways and means of selling Canada's surplus honey at a fair price.

For further information, phone Ernie McEwen at 829-7900, Vance McDougall at 820-0381, Ross Hopkins at (613) 489-3775 or Ted Margetss at (613) 258-2075 after 5 p.m.

NEW JERSEY

TOP NEW JERSEY WINNER — J.D. Ditson of Asbury, N.J. (center) receives congratulations from New Jersey Honey Queen Suzanne Nordman (left) and New Jersey Secretary of Agriculture, Arthur R. Brown. Ditson won $50 in prizes for first places in amber and dark honey beeswax and novelty beeswax in the New Jersey honey show recently.

QUESTIONS & ANSWERS

Continued from page 448

Q. What is the best design and layout of a honey house for producing comb honey? **Billy D. Hoskins, Route 4, Box 139N, Batesville, Ark. 72501**

A. The only honey house equipment needed for comb honey production is a large table, a pocket knife and a deep freezer, hence the honey house needs to be no more than necessary for these. It is an advantage of comb honey production that no special honey house is needed, since a large kitchen will usually do. The freezer is necessary for preventing wax worm damage. If you go in for cut comb honey, then you will need racks, easily made up, to hold the pieces of comb for a day or so to allow the excess honey at the edges to drip off.

—Richard Taylor

Q. Seven weeks ago I installed two three-pound packages in two hives. Each hive has a lower deep super with frames of foundation and an empty deep super above that with a one-gallon feed jar. One hive is doing well, but in the other the bees are building the combs from the inner cover in the top super, where the feed jar is, and haven't drawn any of the foundation below. Is there something wrong with the foundation? And what is the remedy? **Novice Beekeeper, Haskell, N.J.**

A. Bees normally build their combs from the ceiling down, so what surprises me is that you didn't have this problem with both hives. There should have been inner covers under those feed jars, so the bees would not have access to the space in the upper chamber. Rule: Never make available to the bees in the hive any space wider than $^3/_8$" of an inch thick, which is the so-called "bee space." Their instinct is to fill any empty space in the hive with comb.

I'm afraid the only remedy will be to start over, that is, scrape off all those combs, brush the bees from them into a hive fitted with frames of foundation, and put a feeder jar over the inner cover hole. A messy job, but the sooner the better.

—Richard Taylor

BUY & SELL

Classified rates: 49 cents per word, each insertion, payable in cash in advance. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it) count as one word. Not less than 10 words accepted. Copy or cancellation orders MUST be in by the 1st of the month preceding publication. Send classified ads to the A.I. Root Company, Advertising Dept., GLEANINGS IN BEE CULTURE, Box 706, Medina, Ohio 44258-0706 **Note: BLIND ADS: Any ad sent in that does not contain the seller's Name and Address within the ad, will be charged an additional $6.50 per month.**

MAGAZINES

THE AMERICAN BEEKEEPING FEDERATION needs your support! Join in supporting efforts to stop adulteration, to improve marketing conditions and to encourage the continued research on African Bees and Varroa and Acarine Mites. Send for information, membership application and sample copy of bi-monthly News Letter! Write To: **THE AMERICAN BEEKEEPING FEDERATION, INC., 13637 N.W. 39th Avenue, Gainesville, FL 32606.** TF

THE SCOTTISH BEEKEEPER — Magazine of The Scottish Beekeepers' Association. International in appeal. Scottish in character. Membership terms from A. J. Davidson, 19 Drumblair Crescent, Inverness, Scotland. Sample copy sent, price 20 pence or equivalent. TF

The INTERNATIONAL BEE RESEARCH ASSOCIATION urgently needs your membership and support to continue its work of publishing informatin on bees, beekeeping and hive products. Write for details about publications and the benefits of membership to USA Representative, H. Kolb, P.O. Box 183, 737 West Main, Edmond, OK 73034 (phone (405) 341-0984), or to IBRA, Hill House, Gerrards Cross, Bucks SL9 ONR, UK, regularly publishes new information on bees, beekeeping, and hive products, for beekeepers and scientists all over the world. Mail inquiries from USA: H. Kolb, P.O. Box 183, 737 West Main, Edmond, OK 73034, Phone: (405) 314-0984. IBRA PUBLISHES: **Bee World,** a quarterly journal for the progressive beekeeper. **Apicultural Abstracts,** a survey of scientific literature from all languages. **Journal of Apiculture Research,** for original bee research papers. Books and pamphlets on all beekeeping topics. Catalogues of publications and details of journals and membership $1. Specimen copies of **Bee World**, **Journal of Apicultural Research** or **Apicultural Abstracts** from INTERNATIONAL BEE RESEARCH ASSOCIATION, Hill House, Gerrards Cross, Bucks, SL9 ONR, England. TF

DAIRY GOATS—for milk, pleasure and profit. Excellent for children, women and family! Monthly magazine $11.00 per year ($13.50 outside U.S.A.). DAIRY GOAT JOURNAL, Box 1808 T-3, Scottsdale, Arizona 85252. TF

BEEKEEPING, A West Country Journal—written by beekeepers—for beekeepers. 1.50p inland or 1.80p ($4.00 Overseas). 10 issues yearly. Editor, R. H. Brown, 20 Parkhurst Rd., Torquay, Devon, U.K. Advertising Secretary, C. J. T. Willoughby, Henderbarrow House, Halwill, Beaworthy, Devon, U.K. TF

SCOTTISH BEE JOURNAL. Packed with practical beekeeping. Sample copy from Robert NH Skilling, FRSA, 34 Rennie St., Kilmarnock, Scotland. Published Monthly. $4.00 per annum. TF

BEE CRAFT — Official (monthly) magazine of the British Beekeepers Association. Contains interesting and informative articles. Annual Subscription $5.10 (Surface mail) and $7.10 (Airmail). The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex RH10 3DS TF

INDIAN BEE JOURNAL Official organ of the All India Beekeepers' Association, 817, Sadashiv Peth, Poona 411030. The only bee journal of India Published in English, issued quarterly. Furnishes information on Indian bees and articles of interest to beekeepers and bee scientists.

Annual subscription postpaid in foreign countries: For individuals US $7.00 for institutions, companies and corporate bodies US $10.00 or it's equivilent, to be received in advance by IMO or bank draft, payable in Poona (India). TF

WANTED

WANTED—All varieties bee gathered pollen. Must be clean and dry. Pollen traps available. Hubbard Apiaries, Onsted, Mich. 49265. Phone: 517-467-2151. TF

WANTED — Old Beekeeping Books and Bee Journals. James Johnson, 107 State Ave., Terra Alta, W.V. 26764. TF

Wanted: Hardworking Full-time professional queen breeder. Must have many years experience in all phases of queen production as well as other general apiary work. South Atlantic state location. Salary negotiable. Contact: Huck Babcock, P.O. Box 2685, West Columbia, SC 29171. Phone: 803-256-2046.TF

WANTED: Honey and Wax exchanged for bee supplies and cash or workeys. Hubbard Honey 904-245-1106. 9/84

Wanted To Buy — 400 colonies in Sept.-Oct., Midwest or South-central U.S. Allen Seilheimer, Rt. 3, New Auburn, WI 54757. 715-967-2622. 8/84

FOR SALE

Protective Clothing for Beekeepers. Write now for brochure. B. J. Sherriff, Dept. GBC P.O. Box 416, Nacoochee, GA 30571 TF

INSEMINATION DEVICES. For prices write Otto Mackenson, Box 1557, Buena Vista, CO 81211 TF

FOR SALE — STRONG 2-STORY COLONIES WITH HONEY SUPERS. PH. 517-862-4640. LARRY HOWELL, ELISE MICH. 8/84

TROPHIES: Stainless Smokers, Chrome Hive Tools. Send embossing details for prices. SOUTHWESTERN OHIO HIVE PARTS COMPANY, Monroe, OH 45050. PH: 513-539-7258. 8/84

FOR SALE — Small beekeeping business for sale. Southeastern Pennsylvania. Includes equipment at location. Call (215) 968-2921 (evenings only) WC 8/84

FOR SALE — 9 7/8" supers with 10 frames, wired and ready for foundation. Painted and in good condition. Kevin Vincke 1-517-845-7750. 8/84

For Sale: Approximately 200 super deep, half size, etc. Also top and bottom boards and misc. Call or write: Donald Miller, R.1, Box 659D, Leesburg, IN 46538. 1-219-453-3291 8/84

For Sale: Complete hive manufacturing business. Hives, parts & equipment and wood supplies. Ray Miller, Redding, Ca. 916-275-8066. 8/84

For Sale — Complete 400 colony operation western Michigan. Everything goes — all hives (three high) — all supers — 100 extra tops and bottoms (new) — extractor—melter— 14" tandem axle flat bed trailer— Priced to sell! T. Speerstra, Lowell, Mich. Ph: 616-897-5534. 8/84

For Sale: clean, fresh, dry, Bee Pollen. $6.50/pound. You pay shipping. Honeycomb Apiaries, R.R. 3, Box 74, Wrightstown (Kaukauna), Wi. 54130. Ph. (414) 532-4314. TF

For Sale: 100+ 2-story 10-frame colonies, supers, 8-frame equipment, extracting equipment, truck w/boom and more. Best Offer all or part. L. Orella, P.O. Box 742, Eagle Point, Oregon 503-826-7160 8/84

FOR SALE: Bee Operation on 15 acres. 14' x 60' wood frame building on cement. Also 20' x 30' storage shed. Excellent line of equipment plus 500 hives. 25 yard sites available mostly on Sweet Clover. Call 873-5900, Renaud Realty, Box 416, Tisdale, Sask. SOE ITOTF

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Beekeepers I have 2 semi-loads of 2½lb. and 1½ lb. glass jars left to sell. These are excellent for honey. These jars look like quart jars and pint jars in shape. Local Amish are using them to can with. They are a heavy-duty jar. They all have plastic lids with them.

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1-50 Cases	Truck Prices
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9/84

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WE USE ALL POSSIBLE CARE in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for a certificate of inspection as a matter of precaution.

ITALIAN QUEENS, 3-Frame NUC and hives. Dixie Honey Co., Rt. 5, Box 38, Shallotte, N.C. 28459. Phone 919-579-6036. TF

3-Frame Italian Nucs. 84 Queens. $35.00 each Postpaid or 3 for $100.00. Extra Queens $4.75. 50 & up $3.75. Box's Better Bees. 410 N. Lide. Mt. Pleasant, Texas 75455. Phone: 214-572-0428 8/84

GENTLE NORTHERN QUEENS. $5.00 each plus $.50 shipping. Rob Miller's Apiary. 1728 Webster. Jefferson. Ohio 44047. 216/858-2846 or 216/224-1454. Live Delivery Guaranteed. 9/84

275+ two-story colonies heavy for winter. Good equipment. Young Queens. State inspected. $50 each hive. Can palletize and/or deliver. Quantity Discount Available. 501-741-2020. SBB 10/84

WINTER BEES — Tucson. $10 — guaranteed, full super. April 30th. Gary Brown 602-385-9374. 9/84

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HONEYSTRAINER — Really Works! Guaranteed. Ppd. $3.50 each. 2-up $3.00 each. Try Your Dealer. Beckman, Box 633-G, Stuart, Florida 33495. TF

WRITE FOR CATALOG—Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. Hubbard Apiaries, Manufacturers of Beekeepers' Supplies and Comb Foundation, Onsted, Mich. TF

FOR TOP QUALITY BEE SUPPLIES and advice on beekeeping problems, visit your nearest Root dealer and send for your FREE Root catalog. Satisfaction guaranteed. The A.I. Root Co., P.O. Box 706, Medina, OH 44256. TF

BEE EQUIPMENT MANUFACTURERS. Supers ends rabbet-jointed for added strength and durability. Our frames are one of the best on the market. All beekeeping supplies at commercial prices. Write or call for price list.MONCRIEF BEE SUPPLIES, Post Office Box 625, 1105 Lakewood,Lakeland, FL 33802. (813) 858-6754. TF

ALL WESTERN BEEKEEPERS: Lock-corner supers — tops — bottoms — frames. Complete stock — supplies & equipment. Phone or write for quantity prices. UNITED BEE CRAFT COMPANY, 600 Harbor Blvd., West Sacramento, CA 95691. (916) 371-9340. TF

QUALITY CYPRESS BEEKEEPING SUPPLIES — dovetailed hives and hive parts, beginner's kits, complete supplies. Write: BEE-JAY FARM, Dacula, GA. 30211 TF

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Temperature controlled ventilators, uniting boards, ventilating inner covers, pollen traps with 200 square inches of screen area. (My conical bee escapes/boards are now available in U.S.A. at all Root dealers). Free information. V. Shaparew, 3371 Trafalgar Road, R.R. #1, Oakville, Ontario, Canada. L6J 4Z2. 9/85

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FRESH, PURE, Bee Pollen available in 1 pound containers at $8.50 per pound postpaid. 10 pound bulk pack at $7.90 per pound. Large lots, ask for price. Hubbard Apiaries, Inc., Onsted, Mich. 49265 TF

BEE HEALTHY & ENJOY Canada's Best Bee Pollen. Air dried at 110 degrees F. from the pure north of British Columbia. Excellent flavor, superior quality, & guaranteed pesticide free. 3 lbs. $25.00, 6 lbs. $46.00, 10 lbs. $65.00, 20 lbs. $120.00. Prices subject to change. Free UPS shipping. BLOSSOMTIME, P.O.B. 1015, Tempe, AZ 85281. TF

SPANISH POLLEN. Excellent taste and quality. 3 lbs. $22.00, 6 lbs. $39.00, 10 lbs. $54.00, 20 lbs. $100.00. Prices subject to change. Free UPS shipping. BLOSSOMTIME, P.O.B. 1015, Tempe, AZ 85281. TF

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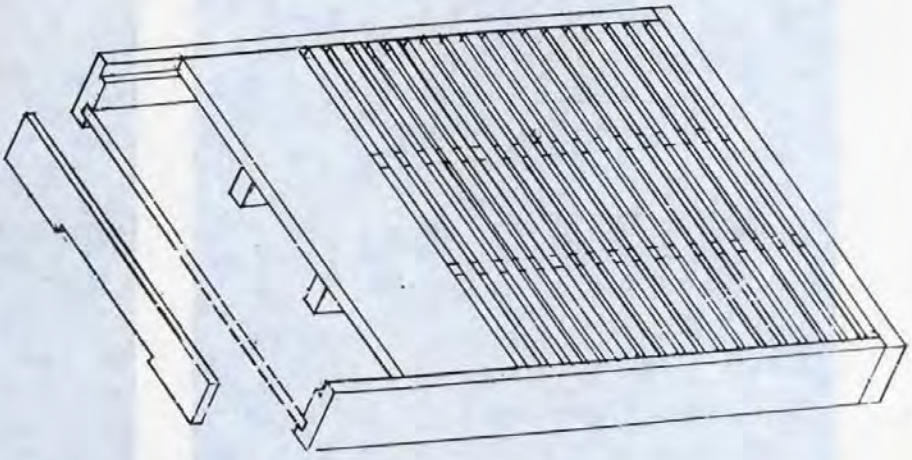
All Grades of Honey. Any quantity drums or cans. Call Toll Free 800-248-0334. Hubbard Apiaries, Inc. Box 160, Onsted, Michigan 49265 TF

SLATTED RACKS

Donald Cox
1623 W. Wayne
Lima, Ohio 35805



I have read the comments regarding the use of slatted racks in the *Gleanings* issues of Jan. '82, page 41; June '82, page 330; Sept. '82, page 520; March '83, page 138; May '83, page 232; July '83; and October '83, page 512.

Yes, I have been using slatted racks in some of my seven colonies for the past two summers, and must agree with the many beneficial results from using the slatted rack as set forth in the above articles. I also know of other beekeepers here in Northwest Ohio who are using the slatted rack and feel that they are a necessary piece of equipment.

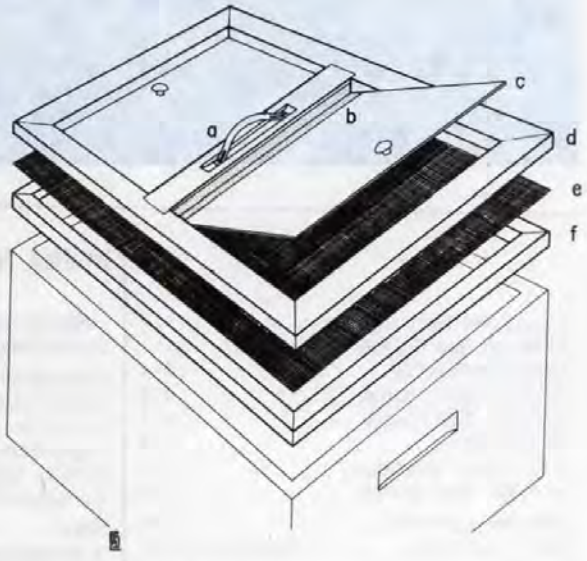
My slatted racks are integrated in the bottom board. Using a 1" x 3" (¾" x 2½") for the side and back strips of the bottom board. These are routed ¼" deep x **7/16"** wide slot from one edge. This slot is for receiving the **7/16"** thick "Aspenite" bottom panel. Also rabbited on the top edge to receive either **7/16"** "Aspenite" slats or **1/8"** thick hardboard slats, whichever

The bottom board is divided into three areas using two runners front to back. The slats are nailed at each end and also to the two runners. The two runners provide four additional vertical surfaces for the bees to use for access to the brood chamber.

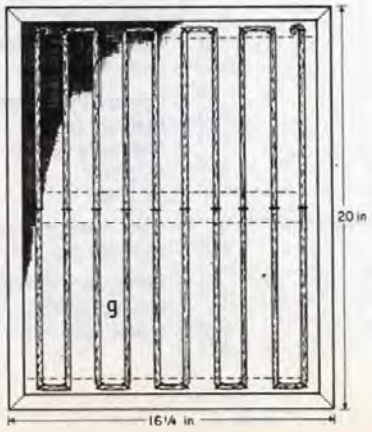
An entrance panel is used for fall winter and spring. The full opening is used June, July and August. This entrance panel can have one wide opening or three **3/8"** x 3" openings.

I set two hives on a double "H" frame hive stand using the rack bottom on one hive and a standard bottom board on the other hive. I have had only one winter's test so far however, the racked colonies came through stronger than the one on the standard bottom board. This is true of my colonies here in North-west Ohio and my colonies in Southwestern Michigan.

The colonies on the racked bottoms also out- produced the ones on the standard bottoms. Do I have poor queens in the hives on the standard bottoms? I don't know but I am looking forward to the '84 season to see if the results are the same or different for both the wintering and the honeyflow.



TOP VIEW - EXPLODED



BOTTOM VIEW

a) flexible handle in countersunk groove
b) hinge (tape or metal)
c) hatch cover (cardboard or wood panel)
d) 1½ X ¾ in. wood stock
e) aluminum fly screen
f) ¾ X ¾ in. wood stock
g) absorbent cord (cotton clothesline)

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QUEENS

HASTINGS—World renowned CARNIOLANS **BABCOCK—Golden Yellow ITALIANS**

BABCOCK — Golden Yellow Italians are large yellow bees that are easy to handle and produce very large colones. They are good honey producers developed from my TOP producing hives — "Most Beautiful Bees in the World."

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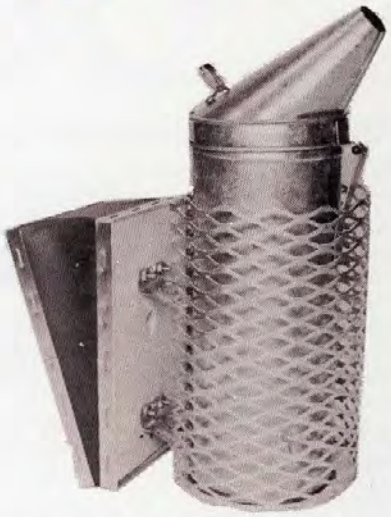

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