

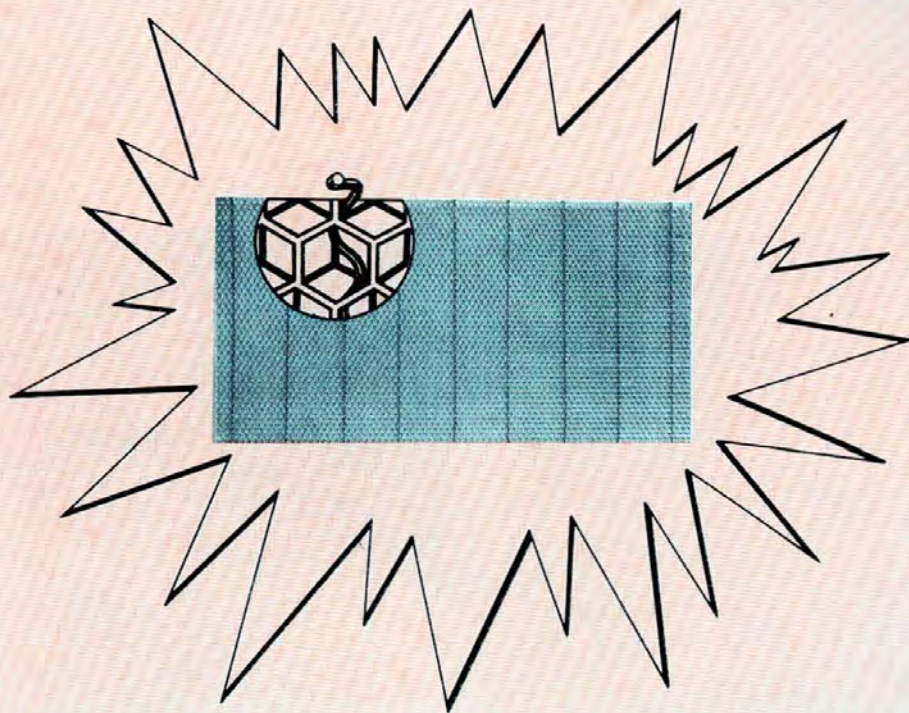
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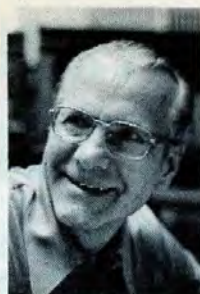
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COVER STORY

The approach of spring brings to mind the prospects of another beekeeping season. After the bees have had a chance to build colony populations on the fruit bloom, dandelions and other early nectar plants they turn to the clovers and the other principal honey crop sources for the main honey flows. Pictured is raspberry (*Rubus*).



Gleanings in Bee Culture

March 1981

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Dimethoate: A Contact-Systemic Insecticide That Is Injurious To Honeybees

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Introduction

We frequently hear or read about bee kills that resulted from insecticide use, and these losses receive considerable research attention in the continuing effort to evaluate the impact of insecticides. However, total destruction with dead bees piled in front of hives may reflect only the more obvious effects. Subtle losses and sublethal effects may go unnoticed though they seriously impair the welfare of the beekeeping industry. For example, beekeepers in Arizona were disturbed when they found much reduced populations in colonies that had been placed near cotton during the summer of 1978. They had seen no significant accumulation of dead bees by the colony entrances, but they suspected that insecticides were involved though it could not be proven.

In fact, today, there is considerable use of systematic insecticides that move throughout the plant and kill plant-feeding insects for weeks after application. Since these materials often enter the nectar, we decided to take a closer look at dimethoate, a contact-systemic insecticide. One question we wanted to answer was whether reduced bee visits to crops treated with dimethoate were the result of repellency or toxicity. We here summarize results that have been reported elsewhere (Waller and Barker, 1979; Waller et al., 1979; Barker et al., 1980).

Study of Nectar Contamination

For the study of nectar contamination, we first sprayed dimethoate on potted plants of onion and alfalfa so we could establish the levels of insecticide in nectar following treatment with a recommended mixture of 1 tsp/gal or 300 parts per million (ppm) active ingredient. Some plants were sprayed before the flowers opened; others were sprayed when they were fully open. Also, blossoms of some plants were covered to prevent direct contamination of the nectar, and others were fully exposed.

Levels of dimethoate in the nectar were



Figure 1. Removal of nectar from an onion flower with a micropipet.

then determined by collecting small quantities from flowers of treated plants (Figure 1). Dimethoate in the nectar ranged from 4 to 7 ppm after 4 days treatment and from 0.2 to 0.8 ppm at 14 days after treatment. Even onion flowers that were completely covered during treatment (only leaves and seed stalks were sprayed)

Figure 2. Training bees to collect sugar syrup from an open dish.



produced nectar containing 2 ppm at one week after treatment, proof that the material was translocated within this plant.

Study of Repellency

For the study of repellency we first removed bees from a colony and placed them in laboratory cages, 40 bees per cage. Then the bees in each cage were provided with a pair of vials containing 50% sugar syrup — one with dimethoate and the other without. At all 5 levels of dimethoate tested (1, 2, 5, 10, 20 ppm), the bees used about equal amounts of syrup from the 2 vials.

Also, small colonies of bees were confined to large outdoor flight cages, and each colony was again given a choice between 50% sugar syrup with or without dimethoate. At all 3 levels of dimethoate tested (0.2, 1.0, and 5.0 ppm), the bees removed about equal amounts of syrup with and without the dimethoate.

Next, free-flying bees from an observation hive were distinctively marked and trained to collect unadulterated 50% sugar syrup from open dishes (Figure 2). These marked bees were provided with dishes of syrup containing one of 3 levels of dimethoate (1, 5, or 25 ppm) and allowed to forage until they were incapacitated by the toxic effects of the insecticide. In no case did foragers reject the syrup with

dimethoate nor did house bees show any reluctance to accept it from foragers. These bees were given no choice but apparently did not find even 25 ppm distasteful enough to prevent them from collecting it.

The only test that produced any indication of rejection of sugar syrup containing dimethoate was made with artificial flower feeders (Figure 3) that contained 6 levels of dimethoate (0, 0.04, 0.2, 1, 5, and 25 ppm). In this test, the bees could choose any one of the 6 levels, and they collected significantly less of the 2 solutions having the highest concentration of dimethoate.

Study of Toxicity

For the study of toxicity, cages of 40 bees were provided with varying levels of dimethoate. Death losses reflected the levels of insecticide; bees getting 2 ppm or less survived for 1 week, 5 or 10 ppm killed the bees in 3 and 2 days, respectively, and 20 ppm killed the bees within the first day.



Figure 3. Artificial flower used to provide honeybees a choice among 6 levels of dimethoate.

In view of the mortality of the caged bees in the laboratory tests, small colonies of bees were provided with somewhat lower levels of dimethoate. Colonies given a choice of syrup with 5 ppm dimethoate and unadulterated sugar syrup were all dead within the first week and produced

no brood. Colonies given a choice between 1.0 ppm dimethoate and pure syrup produced only eggs (no larvae), and all adult bees were dead before the end of the second week. Colonies given a choice of syrup with 0.2 ppm and pure syrup appeared normal for the first 2 weeks; however, during the third week all larval development stopped, and many of the adult bees died as a result of the toxic effects of the treatment.

In another test, individual foraging bees given only one level of dimethoate (1, 5, or 25 ppm) from an open dish at a feeding station continued to collect the insecticide-laced sugar syrup without interruption until a toxic dose had been accumulated. When this occurred the affected bee would begin to shake and run around within the hive as though she had lost control of her body movements.

The table below shows the average number of collection trips made, and the amount of chemical needed to stop foraging.

(Continued on page 137)

Beekeeping In The City

By PAUL K. YOUNG
(As told to MARY K. YOUNG)

A WRITER ONCE humorously observed that it is not that the bee is so busy, it's just that she cannot buzz any slower. The bee indeed flies, defying the laws of aerodynamics, beating her wings sixteen-thousand times per minute; the bee sees not with two lenses, but with eight thousand. The bee detects odors, not with a single nose, but with antennae able to recognize the fragrance of a single apple blossom a half-mile away.

There is no joy to a frustrated farmer as myself that quite equals the exhilaration I feel when I witness the industry of nature's most prolific and benevolent creature: the bees. No industry within the large confines of a bustling city today can equal in force, in beauty, imagination, in proportion or productivity as that contained within that small space occupied by a city of bees.

I own sixteen hives of bees some forty miles distant in the country where my bees have easy access to grazing land. My honey harvest each year is the criterion of the success of my venture.

Grazing land is important to bees. Just as no farmer would think of putting one hundred head of cattle on

thirty acres of land, no beekeeper would deprive his bees of so important a resource. The knowledge I have gleaned in eighteen years of beekeeping has led me to draw another conclusion.

At the expense of sounding like the city mouse expounding on the virtues of urban life, I must state that I have found it is possible for a beekeeper to live and work with bees in close proximity to them in an urban environment.

For me, it is not enough to use these creatures; to take their honey, to produce, to sell. Part of the joy is the witnessing of their lives; the intensity and beauty of their daily ritual; the first show of life at the gates; the elated, faltering, innocent dance of their new-born as they take their first flight; the varying hues of pollen from yellow to purple, the rough, stern guard bees patrolling the landing board, challenging, with a mysterious odor-detecting device, any strange bee, willing with a mindless courage to defend the hives with their lives.

I wanted to observe them storing pollen, moving honey, cleaning and air-conditioning their house, doing

battle with wasps, or with the robber bee penetrating the wax-walled city. I wanted to know that the young were being fed, that the city was safe, that life would go on.

I live very close to downtown Louisville, between a very large park and a three-hundred acre beautifully landscaped cemetery, enough grazing land for the many bees I have observed in the old trees and house of the city.

I frequently get calls from distraught and unknowing people to pick up swarming bees that have gathered on bushes, trees, telephone poles and under eaves outside their homes or near their businesses on busy thoroughfares. The bees are there for me to take.

These bees, as with all of us city mice, must not only deal with a crowded environment, taller buildings, increased traffic, but also with closer competition that the city congestion necessitates. Such bees do not fare well in a city, for they remain small in number and barely exist. The competition for available grazing land is just too keen for productivity.

A short drive through an urban area on a full summer's day reveals a proliferation of white clover, without which, in the country, there would not be that excess of honey for me to rob the hives. White clover, with enough sun and rain, begins to flower in mid-May and continues through July. But city and suburban dwellers give more thought and attention to well-scrubbed lawns than to the care and feeding of bees.

My enthusiasm to have bees close at hand, to come home from a sterile office each day and observe my bees at close quarters, led me to bring a hive into my own back yard.

I was counting on the large expanse of those six-hundred acres close by with those nectar-producing flora to allow my city bees to survive and thus afford me my pleasure. And so I tried the experiment despite the three-story houses, the towering apartment buildings and a massive one-hundred year old elm tree that shaded my yard where nothing but ivy and moss would grow and despite those choice morsels for my bees being at a precarious distance.

My back yard venture failed and I was forced to feed the bees in the cold bleak days of November and December. In checking them in early April, I found the brood pattern very sporadic and I realized that they were just not going to do very well.

I decided that the over-abundance of shade, the distance the bees would have to go for pollen, the obstacles created by the area's architecture — all were not the ideal environment for my bees. I felt that their survival would have to overrule any selfish motive on my part to observe them every day.

What was needed was more immediate grazing land, an open area closer by, a large estate, a high school or college nearby. These places are not mowed so frequently, allowing the clover to mature.

I found a friend who allowed me to use his large yard across the street from Atherton High School, a grassy area of twenty-five acres not too far from my home. I faced the box east where the first rays of morning light strikes the opening, thus getting the bees out early. On a clear day, the sun was on the hive about six hours. The afternoon shade causes the bees to do less work in keeping the hive cool.

Soon after I relocated the hive to the new site, I received a phone call



Paul Young, left, and friend Jim Matheny examining a shallow super of honey out of the top of the "City Bee" hive.

from someone wishing a swarm removed. I added this new swarm, queen and all, to my hive, using the newspaper method of introduction. I observed no fighting, a huge build-up by June first and an excellent brood pattern.

So I had found my perfect sight! This one hive, healthy and productive, has this year yielded about eighty pounds of honey and I see my bees several time a week.

It is not too difficult to find such a site; the gift of a quart of honey and a promise of more to come will almost always get it done, if there is no basic fear or allergy on the part of the host. It is imperative that the hive box is set away from the house; out of the way of traffic. In addition, an offer to mow his grass in the area of the hive makes the owner more receptive to this new idea.

Beekeeping in the city can be rewarding if these few suggestions are observed and if there is, of course, no prohibitive ordinance against it in one's own city.

Like many long-sought, dream-viewed treasures, they just could be in your own back yard. □

CORRECTION

In the January 1981 issue of *Gleanings* we made an error in the article: **Chives as Nectar Sources** (page 32). The last line of the fourth paragraph should read:

"In the case of the onion, the honeybees apparently seek out individual flowers that are producing nectar of less than average concentration, neglecting flowers that have approximately 60% sugar in their nectar and working on flowers that are providing nectar about 12% less concentrated than this."



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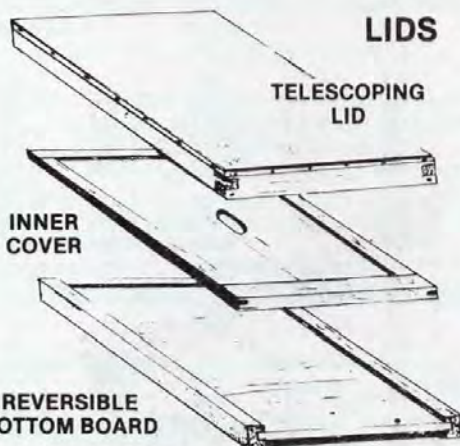
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Monthly HONEY Report

LAWRENCE GOLTZ
February 10, 1981

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. Theretail 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	33.50	35.00			35.50	32.20	34.50	
60 lbs. (per can) Amber	42.00	33.00	33.00	32.20		33.50	29.50	33.75	
55 gal. drum (per lb.) White		.53	.60	.54		.60	.52	.54	
55 gal. drum (per lb.) Amber		.48	.55	.52		.57	.46	.52	
Caselots — Wholesale									
1 lb. jar (case of 24)	25.50	22.10	25.25	22.50		21.75		21.50	24.10
2 lb. jar (case of 12)	25.00	20.35	24.75	21.50		21.50		20.10	22.65
5 lb. jar (case of 6)	29.50	24.35	25.75	23.10		25.00		24.25	25.55
Retail Honey Prices									
½ lb.	.87		.91	.81		.82		.81	.89
12 oz. Squeeze Bottle	1.30	1.25	1.25	1.15		1.20		1.25	1.35
1 lb.	1.32	1.39	1.45	1.25		1.25	1.29	1.30	1.39
2 lb.	2.55	2.50	2.75	2.33		2.25	2.65	2.40	2.05
2½ lb.	3.20	2.65						3.39	
3 lb.	3.80	4.00				3.50	3.95	3.50	3.99
4 lb.	5.00	4.80		4.50		4.45	4.85	4.75	
5 lb.	6.00		4.89			5.00		5.60	6.15
1 lb. Creamed	1.40		1.40					1.45	1.49
1 lb. Comb	1.75		1.89			1.65		1.49	1.39
Round Plastic Comb	1.50		1.50					1.25	
Beeswax (Light)	1.90	1.95	1.95	1.90		1.90	1.90	1.90	1.80
Beeswax (Dark)	1.90	1.85	1.90			1.85	1.85	1.85	1.75
Pollination Fee (Ave. Per Colony)	25.00		22.50					24.00	

Misc. Comments

Region 1

Weather continually cold. Snow depth averaging about 6" in Vermont. Bees were able to make flight in Middle of January in Connecticut. Honey stocks are low and cost of production is up. Sales are fair. Price increase expected. Pollination fees will bring \$30.00 per hive, but should be higher to cover higher costs for feeding and moving.

There seems to be more evidence of adulterated honey on the market in New England. Apparently adulteration is more widespread than realized. This is not going to help the future of the honey market. Vigilance must be increased to stop this.

Package bees should be in big demand to replace winter losses.

Region 2

A break in the extremely cold weather allowed bees a flight in last part of January. Bees and honey supplies seem satisfactory but at least 6



more weeks of below normal temperature is predicted. Bee losses expected in Maryland due to severe winter, and because beekeepers did not leave extra honey on hives. Colony losses expected to be high in Pennsylvania if severe cold continues.

Region 3

Most bulk honey is gone and slightly higher prices at retail and wholesale. Bees had cleansing flights in late January. The return of cold weather in February could mean heavy feeding in the spring in Illinois. Illinois beekeepers looking for cheap feed and already placing orders for bees and queens to replace an-

anticipated losses. Losses in Indiana are light so far and stores still adequate. Same general conditions exist in Ohio. Moisture conditions poor in Indiana and Illinois.

Region 4

Honey sales good in Minnesota and Nebraska. Moisture very short in the states of Minnesota, Nebraska and Iowa. Unusually mild weather from Minnesota to Nebraska during January. Bees wintering well. Concerned about alfalfa and the clovers when snow cover is so poor, but hoping for a good season in 1981.

Region 6

January was very cold in Kentucky until the 4th week when warm days allowed good cleansing flights. Checks show bees to be in excellent condition in most of the region but may be short of stores in Tennessee and Alabama by spring. Very dry throughout this region which may affect spring honey flow. Honey market is reported normal to good, especially

(Continued on page 155)

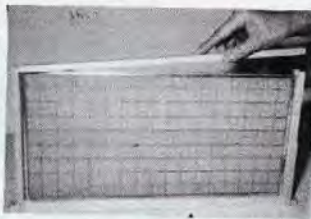
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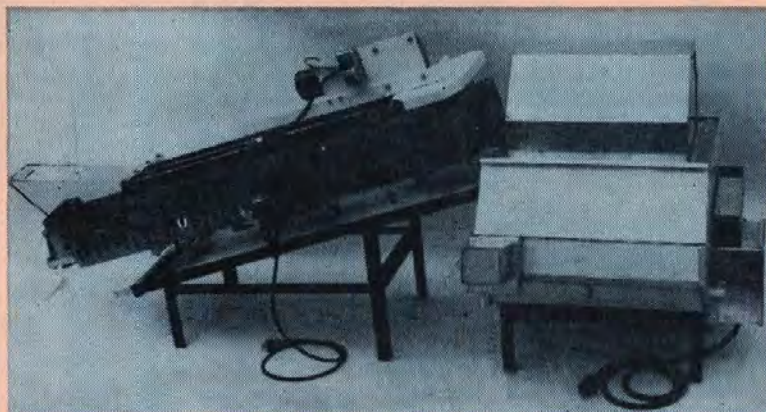
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Siftings

By CHARLES MRAZ
Box 127
Middlebury, VT 05753

RECENTLY, IN SOME of the "health" magazines, there have been quite a few articles on the therapeutic activity of various bee products, mainly pollen and propolis. Many beekeepers may not be aware of this publicity, but it can have a tremendous influence on beekeeping and the price of honey. Some beekeepers may still remember when honey prices were in the "doldrums", at a very low level, a few years ago. Then my friend, Dr. D. C. Jarvis came out with his book, **Folk Medicine**. The book became a best seller for over 2 years and the price of honey shot up dramatically as the demand went up for honey to make the great "medicine", the Jarvis Cocktail, honey and vinegar.

Not only did this boost honey sales greatly in the U.S., but the book was also translated into Japanese about the same time and Japan suddenly became an importing nation of large quantities of honey. The effect of this book is still with us and the book is still selling, over 3 million copies since it first came out about 20 years ago. Many beekeepers do not appreciate and have no idea what Dr. Jarvis did for the honey business with this book. Eventually I am sure it will far outweigh the adverse publicity honey received from this botulism nonsense.

In the December, 1980 issue of **Let's Live** magazine, page 129 is an article by H.C. Mathews, "Tame That Prostate". Mr. Mathews claims that the use of pollen helped his prostate problem at the age of 78. In the January issue of the same magazine, page 16, is an article by Carlson Wade, "Nourish Your Skin For a Younger Complexion". This involves the use of a skin cream that contains pollen. Most interesting in the article is a table that lists the content of the average bee pollen, a total of 96 compounds such as vitamins, minerals, enzymes and co-enzymes, protein/amino acids and other organic compounds, as well as some still "unknowns". What value pollen has for prostate problems and in skin creams, one cannot know until they

try it. Since these materials are perfectly harmless, in fact they are essential to life, there is no harm to try them.

For several years now some friends across Lake Champlain have been using pollen for high blood pressure. They spoke of one of their friends that was taking the "limit" of blood pressure pills, but blood pressure was still high. He tried some pollen every day in his diet and his blood pressure dropped to normal, without the need of any more pills. This had happened in many cases. Again, there certainly is no danger to take pollen if one has high blood pressure. If the pressure drops, fine. If it doesn't, one can always take pills if you so desire. The problem with blood pressure pills, of course, is that they do sometimes have adverse side effects, whereas, far as we know, pollen has no adverse side effects.

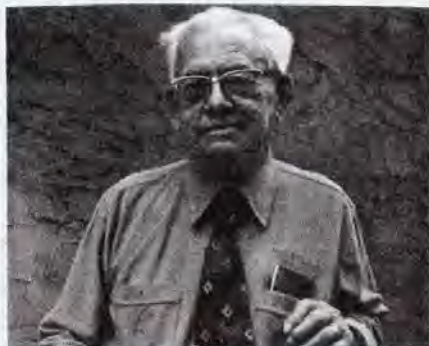
There was an excellent article in the **Journal of The National Cancer Institute**, Vol. 9, No. 2, October 1948, pages 119-123. The title of this article by William Robinson of U.S. Dept. of Agriculture is, "Delay in the appearance of Palpable Mammary Tumors In C3H Mice Following the Ingestion of Pollenized Food." A small amount of pollen added to the diet of these mice significantly delayed the appearance of spontaneous tumors. This proves that normal pollen is not carcinogenic, but anti-carcinogenic. That is, it will delay, and perhaps in some cases prevent the appearance of tumors.

What is puzzling, is why this adverse publicity on honey and pollen in the past few years, when years ago we found much more therapeutic reports on these bee products? In Europe, especially behind the "iron-curtain", we still find many medical reports on the beneficial therapeutic activity of all bee products.

This is a field in which I believe the hobbyist and amateur beekeeper can be of greatest value. They have the interest and enthusiasm in bees and all bee products which commercial beekeepers do not have. Mr. Mathews, the author of "Tame That Prostate", is a hobby beekeeper with

his "medication" right at home. I know there is a lot of objection to this "self medication", but if it is harmless, what harm is there? In contrast, very few drugs can be considered "harmless", especially drugs to reduce high blood pressure. If pollen does not work, other measures can be taken. In fact, they can even be taken together in most cases; but then, it is the question of what takes the credit?

If interest in pollen continues to build up, as its potentials are proven, it can become a valuable product along with a honey crop. In some areas there is lots of pollen, but not much honey. Perhaps the pollen crop may be even more valuable than a honey crop. There are many pollen traps on the market that can be bought, ready made. However, most beekeepers believe they can "invent" a better pollen trap if not a better mouse trap. If you do "invent" a better pollen trap, don't go to the expense to patent it, it is a complete waste of money. It has already been invented and many such pollen traps have already been patented. None, I am sure ever made a dime on it. Have fun, working with pollen but don't get any ideas you can make a fortune with it. It can contribute to your health and perhaps a little extra income. I do believe we should have more respect for our bees and what they can do for us. They are indeed, with the fragrant flowers, the best pharmacists in the world. After all, they have been at it along, long time.



A WINNER

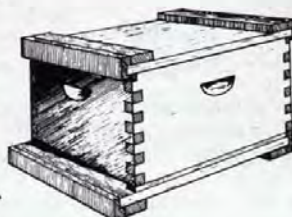
Roy Wiseman of Elk Garden, West Virginia is a big winner in more ways than one. Mr. Wiseman, a beekeeper for nearly eighty years, recently won first premium for first grade honey during the West Virginia Beekeepers Association meeting held in Morgantown. Mr. Wiseman also attended the E.A.S. beekeepers meeting in Burlington, Vermont where he may have been the oldest member present. He may be the oldest, active beekeeper in West Virginia. Mr. Wiseman, a retired railroad telegrapher has traveled extensively and recently won \$60,000 in the Maryland State Lottery. He plans to fly around the world with part of his earnings.

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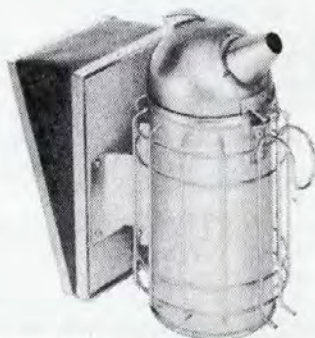
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That First Spring Examination

By GRANT D. MORSE, Ph.D.
121 Ulster Avenue
Saugerties, NY 12477

PART 1 Two Hives

Two hives of bees stand side by side.
Both forage on my pastures wide.
In strength though they are much the same,
One puts the other quite to shame;
The one stores surplus nectar sweet
for self, and me as honey treat.
The other eats all it brings in;
its surplus stores are very thin.
When winter comes it may well die
unless we help its food supply.

Should I take from the industrious
hive to keep the sluggish one alive?
G.D.M.

EXCEPT FOR THE final fall examination that sends your colonies into winter, the first spring examination is probably the most important one of the year. The word examination can be used in two senses here because the quality of your fall preparation and your wintering methods receive their marks at this time. This is especially true if you live in one of the many colder areas in the country.

Wintering your colonies successfully for one, two or three years may not yield the whole truth about your methods. Wait for a final appraisal at the end of that exceptional winter that kills 20-40 percent of the colonies of your beekeeping friends. Then you will find out whether you need upper entrances, whether the quantity and quality of the bees' winter stores were adequate, whether your hive entrances at the bottom were too large, whether your entrance cleats stayed in place, whether you need to pack, and so on.

Your approach to the first spring examination may depend in part on that particular day. Unless a colony is short of food, it's a much better plan to defer taking off the inner cover until a fairly warm day arrives. That way the bees will accept your intrusion with less objection, and you will be less likely to chill any brood that may be present.

Many operators prefer to examine a weaker colony first. They can then determine whether it may need help which can be given immediately from a neighboring stronger colony. Incidentally, I feel that almost every beekeeper should own and operate two or more colonies, not just one. To begin with, two colonies enable the

operator to have some basis for judging the quality of performance of every colony. That's not possible when one owns but one colony. Also, there are many ways in which a stronger colony can help a weaker one.

One of these ways is to exchange locations at a time when the field forces are flying. The exchange is made between a strong colony and a weak one. Many commercial operators follow this practice, not only for the purpose of equalizing the strength, and hence usually the subsequent treatment of all the colonies in a yard, but also quite as much with the intent of discouraging the strongest colonies from swarming. It's much easier to manage even a small yard of bees if all are of approximately the same strength, and at the same degree of advancement.

As I said above, an operator is in a better position to make exchanges between two or more colonies if he is informed first about the qualities of the weaker ones. To begin, of course, are they free from disease? Do they have queens of such quality that strengthening them is not a waste of energy. What do they need? Is it honey, or brood, or young bees, or maybe a new queen? In brief, why are they weak?

Care should be taken not to give brood to a weaker colony unless it has the numerical strength to care for it. Many operators prefer to give a weaker colony a number of young bees. This necessitates making certain where the queen is in the colony from which the young bees are shaken.

Sometimes one can give a weaker colony a whole hivebody of strength comprised of frames of honey and pollen, brood and young bees. But this doesn't occur too often. Nevertheless, it is amazing to observe how stimulating an appropriate small gift of needed items can be to a weak colony whose faults are not traceable to a poor queen, disease, or the like.

If the weather is on the cool side, the operator's chief concerns at the time of a first examination will probably be: Does the colony have adequate stores for a time, and is it queenright? If so, he seldom needs to

open the hive. He merely lifts the back part to check the weight; and he watches the entrance for a few moments to determine if pollen is being brought in. If so, he can usually assume that the queen is present and laying.

Now let us assume that the first spring examination falls on a day warm enough so that one can periodically remove the inner cover without danger of chilling the brood. What shall he look for? His outside examination of the hive has already told him the approximate quantity of the stores, the numerical strength of the colony, and whether the unit is queenright.

First, perhaps, he looks to see if its condition indicates that it wintered well: Is it free of dead bees in clusters? Is dampness present at any point? Is the bottom board clean? Is the unit free from a mouse nest? Does the brood indicate absence of the more usual diseases: AFB, EFB, sacbrood, Nosema, or some other? What is the brood pattern? Is the presence of brood largely confined to the upper hive body? Does the brood nest smell healthy? Where is the surplus honey stored?

At this stage, queen cells are not likely to have been started. But if they found, control methods must be applied promptly. An internal examination of one or two of the stronger colonies give the examiner a more complete idea of the numerical strength of the colonies in the yard. Particularly in terms of the number of frames of capped brood, than can be gathered from an external examination. But an observant examiner learns to correlate the two and thereby becomes less dependent on an internal examination next time, or at the next hive.

Most operators like to clean the bottom board thoroughly at this time. If the lower exit has been open all winter and not greatly reduced in size, there should not usually be too many dead bees on the bottom board. If the entrance has been closed, an accumulation of dead bees is to be expected. If damp or wet, it should be replaced.

(Continued on page 126)

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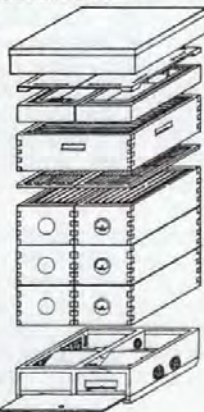
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THAT FIRST SPRING EXAMINATION

(Continued from page 124)

If a mouse nest is found, the operator has probably been taught the value of using homemade entrance closures often consisting of strips of lath, with entrance sizes reduced to fit the individual operator's idea of what is best. But most important of all in this detail, he may have learned how desirable it is to nail his entrance closures securely at both ends so that vandalizing skunks or other animals may not pry them loose and thus provide an entrance route for a mouse seeking a warm haven for winter.

If the operator finds moisture in any part of the hive, or in the packing of a packed hive, he has been given a clear signal that his wintering methods need a drastic revision to prevent a repetition. The dampness itself is not the significant factor, but is an indication that the bees in the colony have been subjected to unnecessary and damaging stress and strain. Such stress and strain not only weaken the colony numerically; they render it susceptible to stress diseases.

Many operators like to keep the tops of the frames free of wax and propolis. Accordingly, many at the time of the earliest spring examination run the sharp blade of the hive tool over the frame tops. Such scrapings should be saved and placed into a container carried with the tool basket that many operators keep with them when opening hives. This material, along with pieces of brace comb, can accumulate into an appreciable volume for foundation making purposes. Such material, particularly any containing larvae, should never be discarded on the ground to attract robber bees, wasps, and skunks.

When removing the first frame from a brood nest, the beginner should select one near the side of the nest, and not from the brood nest itself, else the queen may be crushed or squeezed. It's amazing how often this can occur. At such a time it is a good plan to replace frames in the same locations from which they were removed.

When the examination is over and the covers have been replaced, I regard it as good practice to place an inconspicuous chalk mark on some part of the unit indicating to the operator on subsequent visits any significant findings. Even the fact that the hive has been opened and the date are significant. The most alert operator will often inevitably forget some or all of the details of an earlier inspection.

Ideally, the operator should take with him to the examination a supply of any hivebodies and furniture that may be needed for replacement purposes. This is a time when the presence in the beeyard of a few previously prepared nuclei has a value beyond measure. Often it is profitable to replace a failing queen, and the sooner this is done the better. Using a nucleus is often the most desirable method of requeening. In such cases, the old queen should be removed even if she is weak.

If one is a small scale operator and accordingly has time for performing small but needed operations, it is good practice to carry along a small saw, small hammer and nails, and even some frame parts so that a damaged frame may be repaired. Most colonies are less populous at this time of year than they will be later and so manipulations can often be performed at this time that may become more difficult later. Besides, when an operator sees a detail that needs being cared for, there will seldom be a more advantageous moment in the future.

I always enjoy the early spring examination, particularly if the bees have wintered well. I've learned much at such times that helped me to be a better beekeeper later.

Knowledge about Swarming Customs

In the spring (usually May-June in the northern part of the U.S.), a strong colony of honey bees headed by a queen more than a year old is likely to swarm. It does this after the queen has laid eggs in most of the worker cells available in the brood nest.

By that time the colony has built up its numerical strength, as a rule, to 20-60 thousand workers and drones. Usually enough honey and pollen are present to care for food needs over a short period of cold or rainy weather.

Then the workers build a few queen cells at the bottoms of the frames, or

in open spaces in the combs, or even at the sides of the brood combs. The queen either voluntarily, or under compulsion, lays eggs in the queen cells. About nine days later, the queen cells contain larvae that are mature enough so that they may be capped over.

At such a period, if the weather is favorable, the colony habitually swarms. During the 5-6 day period preceding swarming, many of the workers have largely or wholly discontinued gathering nectar and pollen. For a stretch of about two weeks preceding the prime swarm's leaving the nest, some 5 percent or more of the workers have been busy seeking a desirable new home site, often in the cavity of a hollow tree at or near the edge of a forest growth anywhere from a half mile to several miles away.

About seven days subsequent, the young queens in the newly built cells of the parent colony are ready to emerge. Often the workers do not permit the first hatched queen to destroy her virgin sisters, as is her normal tendency to do.

Now a secondary, or even a tertiary, swarm may issue over a period of a few days—often before the young queens have had an opportunity to mate. If one of them does mate before a secondary swarm issues, swarming for that colony for the season is usually over. But great strength in numbers is not necessary to permit a secondary swarm to venture establishing a new home.

From the point of view of the human operator of the hive, swarming means a rather lengthy period of greatly reduced honey production, as well as loss of numbers in the working force of the parent colony—to the point where it may not succeed in storing a surplus of stores adequate for winter use.

(Part II will cover Swarm Prevention, Hive Placement, and Feeding.)



NEXT E.A.S. PLANNED

Jack Matthenius (left), chairman of the board of the Eastern Apicultural Society discusses this year's conference plans with newly elected

president Dr. Radcliffe Roberts. The meeting will be held on the campus of Rutgers University New Brunswick New Jersey where Rad is professor of apiculture.

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Research Review

By DR. ROGER A. MORSE
Research Editor of Gleanings
Professor of Apiculture
Cornell University
Ithaca, NY 14853



Varroa Disease in Brazil

I HAVE JUST returned from Brazil where I have spent three weeks with Dr. David De Jong (from Cornell) and Dr. Lionel S. Goncalves, who are studying *Varroa* disease in a laboratory of the University of Sao Paulo. This may prove to be the most serious honeybee disease.

In South America the mites that cause this disease were first reported from Paraguay in 1974. Since that time they have spread to the south of Argentina, to the east to Uruguay, to the west to Bolivia, and north into five states of Brazil. Four of the states where it is found are in the south of Brazil; however, the fifth, Parana, is in the northeastern area of Brazil. The mites were carried there by migratory beekeepers.

How Serious is Varroa?

It is still too early to determine how *varroa* will affect honey production in Brazil. I visited two beekeepers and two apiaries in the primary citrus area in Sao Paulo State, an area where citrus is planted as heavily as in any area I have seen in Florida or California. In each apiary 20 colonies were examined. A count was made of the number of mites on bees and the number in 100 brood cells. There is no question that the infestation is growing worse. We counted 21 mites in one drone cell.

The beekeepers make as good citrus honey crops in Brazil as they do in the United States. One of these men owned about 50 colonies and the other had about 1000. The bees were Africanized and we managed to pick up a fair number of stings in the process of examining colonies and taking samples. This is the second year of a long-range study to determine the *varroa* infestation rate.

Both beekeepers complained that honey production has declined in the past two years. However, they are aware that many things can affect honey yields and they were not ready to blame *Varroa* disease alone. The beekeeper with 1000 colonies did

think that Africanized bees could cope with *varroa* better than European bees, but he had no data.

Another beekeeper I visited produces queens and royal jelly from about 500 colonies using an intense management system. I have visited him several times in the past; the last time I was in his home apiary was 26 months ago and at that time the mite infestation was severe. I expected to find that the situation had gotten much worse since then. It was raining when we visited this time, so the bees were nasty and we checked only a few colonies at random. As far as I could tell, the mite infestation was no more severe than it was two years ago. He told me the problem had stabilized, although he had used no chemicals. I have no explanation but I emphasize that this beekeeper is a good manager of bees.

At the bee research laboratory in Ribeirao Preto, in the State of Sao Paulo, there had been no mites in the hives when I was there two years ago, though we had found them easily in apiaries 100 miles away. Today inspecting the laboratory hives, it is not difficult to find five, ten and sometimes more mites in a cell with a developing bee. It is difficult for me to believe a colony can withstand pressures of this sort for very long.

Varroa Biology

We now have a fair understanding of the life history of the mite. Adult, mated females move into brood cells with mature honeybee larvae just before the cells are capped. The mites seem to prefer drone brood over worker brood but I have seen some very heavy infestations in worker brood. The mite lays her eggs, usually only a few to about eight, on the sides of the cell after the bee has spun her cocoon. The eggs hatch in a few days and the young mites attach to the developing pupa, living on the bee's blood, called hemolymph.

The young mites mate in the cells. The males die there but the mated females move out of the cells where they grow to maturity. They attach to an adult worker bee and burrow under the abdominal segments on either

side of the wax glands where they feed directly on the hemolymph of the bee. Sometime later they detach and enter a cell to start the life cycle all over again.

Dr. De Jong has data that show that several mites feeding on a pupa can kill the bee or stunt its growth. Some bees emerge with deformed wings and legs.

How the Mites Kill Colonies

I first saw *Varroa* disease in the Philippines in the late 1960's. There were at least a thousand colonies of European honeybees in Batangas Province there, and they all became infested. As the mites multiplied, the colonies slowly weakened over a period of two to four years. Gradually, fewer drones were produced. The importance of this became clear to me when one of our six colonies at the University of the Philippines College of Agriculture became queenless. The colony produced two fine virgin queens, but they could find no drones with which to mate and the colony perished. Some Philippine beekeepers survived for a short while by importing queens from the United States. Eventually, however, all the colonies died. Since that time people have imported more packages into the Philippines, but, since the mites remain, I believe these, too, will perish.

World Distribution of Varroa Disease

Varroa mites were originally found in Asia only, though they are widely distributed there. Russian beekeepers brought the mites to Europe by bringing bees to European Russia from the region of Siberia east of China and north of the port city of Vladivostok. This occurred around 1950, but we in the West did not learn about it until many years later. A second European infestation was started near the area of Frankfurt, Germany, as a result of importing some Asian bees there. In addition, the mites were carried into Western North Africa on colonies of bees which were given by Rumania in foreign aid. As indicated above, the South American infestation resulted from a beekeeper's carrying some queens from Japan, where the mite is native, to Paraguay sometime in the 1960's.

Today the only continents free of these mites are North America and Australia. There is no known control for the disease. It is difficult to know how long it will take before it reaches our shores in the pocket of some foolish beekeeper. We must emphasize that an infestation can be started from a single mite clinging to one queen; the mites are extremely difficult to spot by anyone who hasn't seen them before.

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Bee Talk

By DR. RICHARD TAYLOR
Trumansburg, NY 14886

I DISLIKE TRAVEL, but I dislike cold even more, so when it began to look as though it was never going to warm up again in New York I took off to settle down for a few weeks in one of the Florida keys. I'll be back in plenty of time to get my comb honey supers ready for the coming season.

Whenever I find myself in a strange land I look around for beekeepers. There doesn't seem to be many here, and it doesn't look like very good bee country — just a long string of tiny islands and mangrove clumps. But I did find a beekeeper, Mr Baldwin, who has been at it for sixty years, and we had a good talk. He has thirty hives in his yard, and does pretty well with them. He doesn't have to worry about winter, of course, so he harvests honey at various times through the year. His system is to keep all his colonies three stories high. When the top story is nearly full, then he harvests the **middle** one, getting fifty or sixty pounds, moves the top one down, then puts the empty story back on top. He does that three times a year, so to my amazement, gets about a hundred and fifty pounds per colony. It all gets bought up by tourists, right at his house.

Every afternoon, near where I'm staying, the fishing boats come in with the tourists who have paid twenty dollars a day to go fishing. Some of the fish are enormous. They are heaved out onto the dock, the biggest ones hoisted up with a winch, and the smaller ones slammed against a row of spikes overhead, for picture taking. Some of the fishermen just give their catch to the boat captain, who sells them to the hotels.

I suppose there's nothing wrong with that, in a moral sense, but I think I won't go sea fishing. Some of the fish are very beautiful, and sometimes they are unmistakably still alive. That can't be what they were meant for, especially when they end up in some hotel kitchen, and are just hooked for "sport".

Which brings me to something I've never talked about in my bee talks, and that is the matter of how bees should be treated. At first that

sounds like a silly topic, but I never-the less know that it is something a lot of beekeepers feel strongly about, particularly those who have more than the usual love for nature.

I believe that a genuinely thoughtful beekeeper will be sensitive to suffering, and try to avoid inflicting it anywhere, even upon insects. Of course this can be no fixed rule, or it becomes totally absurd. No one is going to show compassion for a mosquito, a wax worm, or roaches, and I do not suggest anything so silly. But there is no reason why we cannot treat our bees with gentleness, trying never to crush one, and the best beekeepers I have known are gentle ones. Of course we do not always succeed. A bee gets crushed from time to time, even when you are careful, and if one of them stings, then she is apt to be murdered on the spot. That is a natural response. But the wanton and careless destruction of bees, or of any living thing cannot be excused. Suffering is an evil, wherever it falls. Human beings are not unique in their capacity for it, nor should we take only human suffering into account in working out our approach to life.

Last spring, when I was giving an apiary demonstration to my beekeeping class, taking a colony all apart, one of the students remarked in amazement, "You never kill a single one, do you?" Actually, I wasn't giving it a thought. I was just trying to find the queen for them. And of course it is not true that I never kill a single one. But I try not to, and I feel badly when I do. It's the same if I find a nest of baby mice where they're not hurting anything — under an unused hive cover, or someplace like that — or similarly, snakes, hiding under boards or warming themselves in the sun. These things did not come into being just to have us come along and kill them, and they have the very same deep urge to live and flourish that we have.

Sometimes I'm asked how often I requeen my colonies, and I have to admit that I have never requeened one in my life, if by that is meant

destroying the old queen and replacing her with another. I know that one is "supposed" to do that, and maybe some of my colonies would do better if I did (and maybe not), but my way works all right too, and I guess I get a certain intangible reward. I haven't thought much about it, but I cannot see destroying a perfectly healthy and beautiful queen bee.

Once driving home from my bee yards I came upon a woman who had found an immense turtle in the road and was trying to get it into the trunk of her car. It was so large she couldn't lift it. I had never seen a fresh water turtle so huge. She asked me to give her a hand. I hoisted the turtle, ran as best I could to a pond a couple hundred feet away and shoved it into the water, the woman's curses raining down on me as I returned to my truck and drove on. I'm not sure what moralists and clergymen might say about that. It was her turtle, wasn't it? And turtles are not a protected species in New York. I don't know what I was thinking. Perhaps it seemed to me that an animal who had made it that far in life deserved better than to end up in a soup pot.

You can't make any fast rules about this sort of thing. If you try to, it becomes ridiculous. Maybe that's why clergymen don't talk much about our duties to animals. I've heard hundreds of sermons, and lots about love and charity, but I can't remember a single one in which the pastor meant that love to extend seriously beyond the human race. The Buddhists have a somewhat larger conception. When they say "Abstain from killing," they are not just talking about people. But of course they can't make a fixed rule of it, either.

You can have love and compassion for bees. Lots of beekeepers do, there may be no good reason why you should. I would never get into an argument about it. You won't get any more honey for you gentleness, probably, and even if millions of bees are destroyed, there will always be more millions to take their place. But love for all living things, even the least of them, is something precious to the human spirit. I know not why.

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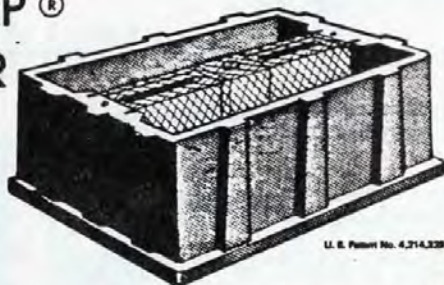
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Strictly Backlot

By CARL CALLENBACH
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LAST NIGHT THE panel of backlot beekeepers which had been sequestered in the Colebrook Tavern for two days and almost three nights emerged into full moon light and announced its decision.

"We have a tie," the foreman shouted. "The winners of the **Second Annual How I heroically Caught a Swarm Contest** are:

Derek G. Brand
Abbey Farm House
Waltham Abbey
Essex, EN 91QX England

Bob Seger
1250 Victoria Lane
West Chester, PA 19380

"But," a face in the crowd, screamed. "This is going to cost me two cans of baby talcum powder and who knows what it costs to send a can of that stuff to England." I continued muttering that West Chester is not that bad, that I could probably be tempted into sending a can of baby talcum to Philadelphia, not to mention North Jersey. But please, could we draw the line somewhere west of Greenland?

I was ready to order the jury back into the tavern to reconsider its decision when I noticed I was standing alone. The jury had dispersed, some returning to the tavern to consider the National League East pennant race, some driving home to the sobering eleven o'clock news.

In a note accompanying his contest entry, our British beekeeper winner wrote: "I could not resist the challenge put-up in your magazine. I therefore enclose my version of 'How I Heroically Caught a Swarm.' If you take a wheelbarrow of salt with it, my tale is more or less true. He continues: 'You Yankee Beekeepers think you can lie! How about this from a Limey Beekeeper, and I have only been keeping them since April 1980. You wait until I've been at it a year or two. Beekeeping, I mean, not lying. My bees may not have produced much honey during this typical English monsoon summer, but how's this for candy floss:

It had become a standing joke in my family that ONE DAY DAD WILL KEEP BEES! When on that one sunny day we had in April this year, my daughter Zoe came and woke me

after Sunday dinner and said, "Dad, there's bees in the garden, '---well, after a little when I had finished cracking on about blasted kids waking and worrying hard working bread-and-sometimes-butter winning fathers, I heard this roar like a low-flying Boeing 707, only louder. If I hadn't been shouting so loud at my daughter, I might have noticed that the sun appeared to have eclipsed. The windows were rattling and it seemed like a thunder storm was about to break.

Zoe is a persistent little lass and said again---"There's a lot of bees in the garden, Dad," so I went to look and there were BEES, millions and millions of them. They were flying from ground level up to 60 feet high; the sky was dark with them and so thick that if you breathed hard, you breathed in bees. Now my garden totals about 3000 acres and over

"You Yankee Beekeepers think you can lie..."

most of it flew bees. Acres of young trees were blown down flat by the blast of their myriad wings and a tidal wave caused by the gale they made swept up over our river lea, flooding many acres. Most of the inhabitants of Waltham Abbey Town thought the end of the world had come and climbed to the highest land, which on our fens amounted to some rather tall mole hills.

But they need not have feared. Had not Derek Brand taken a beekeeping course at Agricultural College? Had he not helped a beekeeper in his youth and had he not said: "ONE DAY I SHALL KEEP BEES"?

Eventually this huge cumulus of bees settled on a nearby cypress tree. Now without a word a lie, this tree is 70 feet high and 3 feet through the trunk if it is an inch, and the swarm resting on the tip of this tree nigh bent it on the ground. It looked like a furry blimp floating at its tower.

What could I do? I had no bee gear, not even a veil, but what with the sobbing women and grown men on their knees, somebody had to do something, if only run. So Jean, my wife, draped an old net curtain over my head, clapped on top a bowler hat (derby to you); I put on her rubber kitchen gloves and on my own, quite personally and without any assistance whatsoever, boxed that gigantic swarm into 200 (or was it 300?) tea chests. With not a single sting! You should have heard the crowds cheer as they realized that their mortal danger had been tamed.

The Town Council of Waltham Abbey were so overjoyed that they swore they would let me continue to pay their rates and taxes. In my modesty I declined, but they insisted.

Now I am the proud owner of two colonies and when people ask me, "Do you keep bees?" I reply, "By gosh, do I keep bees! What with the price of sugar what it is and this wet summer....I DO KEEP BEES!"

In all modesty I will refrain from telling you how I got my second swarm, but I am looking forward to the New Year's honour list when Knighthoods are presented by our Majesty the Queen.

Earlier, our British friend asked: "How about this from a Limey Beekeeper, and I have only been keeping them since April 1980." I believe I can speak for most backlotters, world over, and I say: It was well done! Congratulations! The talcum powder will be in the mail---sooner or later.

Most backlotters, world over, after reading Mr. Brand's contest entry, would agree, too, that for a rookie beekeeper and tall-taler, he shows a great deal of class, a great deal of potential. Of course there is the possibility he may have been an overachiever in this his first year...And there's the infamous sophomore jinx....

(Next column: Bob Seger, our other winner, criss-crosses his heart and promises not to fib...)

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Notes From The Straw Skep

By BESS CLARKE
50 Lycoming Street
Canton, PA 17724

ONE OF OUR friends, and a fellow beekeeper, had a horrendous experience while he was on a hiking trip in Ecuador in January. He was arrested and held in prison for six days. His release was arranged by the American Consul who escorted him and another American from the prison to the airport and put them on a plane bound for the United States.

His name is Chip Hollister and he lives a backwoods style on a farmstead in the mountains of northern Pennsylvania. He is a vegetarian and grows most of his own food as well as cutting the wood for his stove. We became acquainted with him when he bought a couple hives of bees.

Chip and 32 other young international tourists were waiting for a rainy spell to end so they could explore a volcano when the police raided their camp after searching them under the threat of machine gun fire. Chip was pleased to report that no drugs were discovered in the raid, and when I expressed disbelief, admitted that he, too, was surprised. No formal charges were made against the group although local newspapers and television broadcasts announced that they were being held for immoral conduct.

The raid took place on a Thursday. The British Consul was able to have the two British subjects released the following Monday. Hollister and the other American were freed on Wednesday. As far as he knows the rest may still be there, although some other Consuls were in touch with their citizens. According to Chip the Argentinians were in the greatest jeopardy. Most of them were draft dodgers and if they were sent home they would probably face firing squads.

Conditions in the prison were terrible. The twenty men in the group were crowded into a concrete cell so small that they couldn't all lie down at the same time. The toilet facility was a partitioned space where the floor was slightly indented. A hose was used daily to wash it out. And to make matters worse, most of the prisoners become sick with dysentery. They had no blankets or mats, although the

temperature dropped to about 40°F. at night. The British Consul was able to collect all the prisoners' gear, including their sleeping bags, on Saturday; and he persuaded the authorities to let them sleep in the courtyard rather than the cell.

Food and bottled mineral water were available at a price. Local youth served as couriers, taking orders and bringing food to the captives.

On Monday the whole group was moved from the jail at Esperanza to the central prison in the capitol city of Quito where conditions were even worse.

An Italian woman who suffered an apparent heart attack was left unattended for several hours until finally the top official accepted a bribe and called a local doctor. The woman was still in prison when Chip left.

Chip feels that the group was penalized for attempting to travel on a low income. He has traveled extensively through Asia, Africa, Europe, and the Middle East without ever before encountering any problems with the authorities. He said the officials assumed the prisoners were

guilty and there was no due process by which they could plead their innocence. His feeling ranged from surprise, to confidence of quick release, to annoyance, to anger, and finally to despair.

Since his return to Pennsylvania Chip has been staying close to home, reading and thinking about his ordeal. He says future trips will probably be confined to the United States, where his casual style of travel is not contested.

RECIPE

I have a recipe for a pretty party dessert. It's called **Cherry Rice Cream** and it looks beautiful on a buffet table.

Cherry Rice Cream

3 cups of cooked rice, 3 cups of milk, $\frac{3}{4}$ cup honey, 2 tablespoons grated orange peel, 1 tablespoon unflavored gelatin, 2 tablespoons cold water, 1 teaspoon vanilla, 1 can (16 ozs.) pitted red cherries drained, 2 stiffly beaten egg whites.

Combine rice, milk, honey, and orange peel in a large pan and cook over medium heat for about 20 minutes or until the mixture becomes thick and creamy, stirring occasionally. Soften gelatin in cold water. Stir into pudding mixture. Add vanilla and drained cherries. Chill until partially set. Fold in beaten egg whites. Turn into a 2 quart mold and chill until set. Unmold onto a pretty plate and serve with cherry sauce drizzled over the top. To make the sauce combine the cherry liquid with a tablespoon of cornstarch and cook, stirring constantly until the sauce thickens. You may add $\frac{1}{4}$ cup honey if you want a sweeter sauce. Cool before pouring over the mold.

Left to right, Dr. James E. Tew, Cynthia Manuel, Dr. Al Barta, (Pres. Beekeepers Assoc.), Dr. Dan Garrison, Mr. Charles Stock.



ASSOCIATION AWARDS BEEKEEPING SCHOLARSHIP

CYNTHIA MANUEL, a beekeeping student at the Agricultural Technical Institute was recently awarded a \$200.00 scholarship by the Tri-County Beekeeper's Association, Wooster, Ohio. The Scholarship is to be used to defray Ms. Manuel's educational expenses this quarter. The scholarship funds were generated from proceeds of the Tri-County Association's Beekeeping school held in Wooster

during a March weekend of each year.

The Institute also has other scholarships that are available to incoming U.S. students. For more information on enrollment and financial aid write:

Dr. James E. Tew
Technical Coordinator, Beekeeping
The Agricultural Technical Institute
Wooster, Ohio 44691

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Weaver Apiaries, Rt. 1, Box 256, Navasota, Texas 77868.
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WRITE FOR FREE BROCHURE



**American Bee
Breeders Association**

P.O. Box 905 -- Moultrie, GA 31768

California Students Learn The Honey Business

By PAT WOY
Claremont, CA 91711

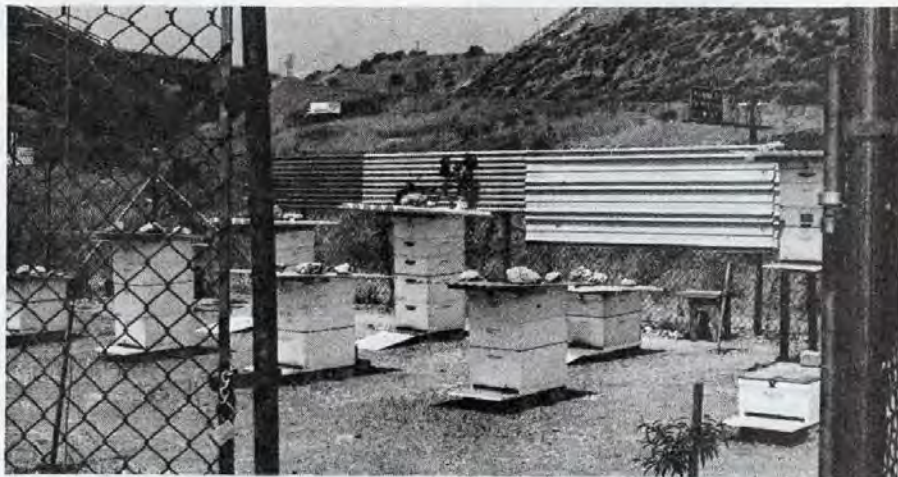
AFTER RETIRING FROM the post office a few years ago, Frank Twyman renewed his long lost love — beekeeping. Not only does he have a personal interest in bees, but he's volunteering his beekeeping knowledge and services to Pomona (Calif.) Youth Services. Mr. Twyman, aware of the youth services farm program, presented plans for a beekeeping project that were quickly approved by city council members.

The beekeeping program, approved by the Pomona City Council in February, 1980, added an additional facet to local youth programs. Pomona Youth Services, originally set up as a drug counseling center, now offers employment for the youth of Pomona Valley. Employment Programs are organized by PYS, but wages for the students are from CETA (Comprehensive Employment Training Act).

Students in a woodworking class constructed the hives using specifications provided by Mr. Twyman. At the end of the school term in June the four-month-old project had a total of six hives. Additional hives are planned for construction in the fall semester.

The hives, located alongside a freeway, have been placed on city-owned property. Surrounded by fields of sage in a fenced-in corner of the

Student beekeepers, Demitri Cox and Jesus Quesada, don bee observing attire before tending to the hives. Picture by Pat Woy.



Pomona Youth Service hives sit alongside a Los Angeles freeway on city-owned property. Picture by Pat Woy.

Youth Service's latest truck farm site, the hives recently produced their first honey much to the delight of the student workers. Honey will be a welcomed addition to sales at their roadside produce stand.

Bee-observing clothes are kept in a nearby shed. One visitor was slightly reluctant to don the attire, but wisely followed the sage advice of Mr. Twyman, "Tis better to have clothed and need not than to need and have not."

An observation hive, partially constructed with glass, allows visitors and students a peek at bee activity as well as construction of the hive itself. After observing hive activity, student workers are better equipped to care for the hives.

Jesus Quesada, a senior at Pomona High School, has appointed himself right-hand man to Mr. Twyman. He's anxious to learn all he

(Continued on page 154)

Frank Twyman, beekeeper, and student worker, Jesus Quesada, study the observation hive. Picture by Pat Woy.





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Dimethoate: A Contact-Systemic Insecticide that is Injurious to Honeybees.

(Continued from page 115)

Toxicity of dimethoate to foraging bees.

Levels Given (ppm)	Trips Made (Avg.no.)	Foraging Duration (Hours)	Toxic Dose (ug/bee)
1	44.7	2-3	2.9
5	11.0	1	3.6
25	2.4	1	3.9

Thus, even 1 ppm dimethoate did not allow continued foraging.

Study of Cholinesterase Inhibition

Examination of cholinesterase inhibition is commonly used to determine sublethal effects of insecticides. (Most insecticides interrupt nerve impulse transmission by anticholinesterase activity.) When caged bees fed dimethoate in sugar syrup at the rate of 1 ppm and 2 ppm were analyzed for cholinesterase activity, they were found to have cholinesterase levels that were 56 and 38% that of normal bees, respectively. Foraging bees that had made 10 to 12 trips collecting sugar syrup containing 5 ppm dimethoate were unable to continue foraging and had cholinesterase levels reduced to 50% of normal. Moreover, in another test, only 11 trips (on the average) were made by honeybees collecting syrup containing 5 ppm dimethoate. We, therefore, concluded that bees are not able to forage normally when cholinesterase activity is 50% of normal or less.

Conclusion

As a result of our studies, we propose that honeybee foragers are not repelled by

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dimethoate in nectar; rather they will collect doses sufficient to debilitate them within one or two days. Once the foragers are eliminated from the treated field, the colony safety is somewhat increased because little or no contaminated nectar will come into the hive. However, insecticide collected before foraging has stopped might affect brood rearing.

The detection of 0.2 and 0.8 ppm dimethoate in nectar of onion and alfalfa, respectively, 2 weeks after treatment may seem unimportant until one realizes that 1 ppm dimethoate in syrup is sufficient to stop foraging within 2 to 3 hours. Also, colonies of bees given only 0.2 ppm in half of their syrup were unable to rear brood during the third week of treatment and had only half as many adult bees remaining as similar colonies given syrup without dimethoate. Another disconcerting fact is that there was no evidence that bees rejected sugar syrup contaminated with such low levels (0.2 ppm to 1.0 ppm) of the material.

Dimethoate influenced the number of foraging bees because of its toxic effect. There was little evidence that the repellency of dimethoate was sufficient to deter foraging bees from visiting a crop. □

1/ Dimethoate is no longer registered for use on seed onions.

Acknowledgement

We thank Joseph Martin, Yolanda Lehner, Mike Kunzman, and Bob Schmalzel of this laboratory for their technical assistance.

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Can Beekeepers Live With Pesticides? Can We Live With Microencapsulated Insecticides?

By E. LAURENCE ATKINS, R.P.E.
Specialist in Entomology & Apiology
Riverside, CA

WE HAVE TURNED the title around from that listed in the program so that we can give you the positive aspects first.

Yes, we can live with conventional formulations of pesticides. No, at the present time we cannot live with microencapsulated insecticides. We will now attempt to explain our current opinion. We say current opinion, because we are optimistic that eventually ways will be determined to enable us to utilize microencapsulated insecticides without causing a higher hazard to honeybees. Hopefully, we will be able to actually lower the hazard to honeybees.

Integrated pest management strategies have been developed and have been utilized for more than 10 years generally resulting in pesticide use which is approximately 75% less hazardous to bees. Strategies which can be used on agricultural crops to reduce pesticidal kills of honeybees to protect pollinators are: 1) using **night applications** instead of morning and all-day applications; 2) using **lower dosages** and/or **less toxic** and/or **less persistent** formulations of pesticides where possible; 3) using **combinations of pesticides** which are less hazardous to bees than are the pesticides applied separately; 4) testing **repellents** added to pesticides have indicated the feasibility of reducing honeybee pesticide kills by using a repellent to lower the hazard of a toxic pesticide spray; 5) utilizing the **distance** bee colonies are located from a treated crop to protect bees in honey-producing colonies; 6) using the new class of **synthetic pyrethrins** called pyrethroids, even though most of them are highly toxic to bees, which can be applied safely, if the applications are properly timed; 7) applying pesticides to the crop according to **bee foraging patterns** at times when crops are not attractive to bees; and, 8) using methods which are available to **predict the honeybee hazard** of toxic pesticides so that, if a

high bee hazard exists, one can use alternative pesticides, dosages, formulations and/or timing of applications.

Yes, we are confident that we can live with pesticides.

My philosophy is that we can determine a safe way to apply any pesticides to an area being foraged by honeybees without having a serious hazard for bees. Presently, our one exception to this philosophy is microencapsulated insecticides.

Can beekeepers live with microencapsulated insecticides? No, at the present time we cannot live with microencapsulated insecticides.

Since 1976, we have conducted 19 large-scale commercial type field tests, 992 laboratory tests, 160 microcapsule identification tests; and 34 chemical analyses for residues treated with microencapsulated pesticide formulations, mostly of PennCap-M®, microencapsulated methyl parathion.

Many of the tests have concentrated on **additives which will stick the capsules to the plant** so that bees are prevented from gathering the methyl parathion-containing capsules and carrying them back to the hive where they are stored with pollen and subsequently fed to brood. No promising progress has been made up to this time.

There are several other insecticides which have been microencapsulated. It is our belief that they will present the same increased hazards to bees that are caused by PennCap-M®, if and when they are applied to agricultural crops attracting honeybees.

It is our opinion that the microencapsulated insecticides are too hazardous to be applied to any area at any time when honeybees are pre-

sent in the field or within one mile of the area to be treated. Therefore, the answer to the second question, "Can we live with microencapsulated insecticides" is no, beekeepers cannot live with microencapsulated insecticides at the present time.

On the other hand, with some of our other pesticides, there is optimism that significant progress has been made to find nonhazardous chemicals and special formulations of highly toxic pesticides which reduce the bee hazard to safe levels. Some of these developments will be presented as time remaining permits.

Summary of the invitational talk presented to members attending the American Bee Federation, 37th Annual Convention, 18-24 January 1981, Seattle, Washington.

URGENT!

At the Apiary Inspectors of America Annual Conference and at the American Honey Producers Convention, both held in January in Las Vegas, Nevada, Phillip Gray of the Environmental Protection Agency announced that the Pennwalt Corporation had been permitted to add corn, barley and oats to the label of PennCap-M®.

It is up to individual beekeepers, local associations and state associations to convince State Department of Agriculture not to allow these additional uses in your states!

Letters and protests should be directed to individuals and agencies in your state who has the responsibility of administering control of the use of chemicals.

Don't forget, a one-hive beekeeper has as many votes as a thousand hive beekeeper!

P.F. Thurber
Kirkland, WA

Beekeeping Technology

By DR. JAMES TEW
The Ohio State University
Agricultural Technical Institute
Wooster, Ohio 44691

Insect Intruders Observed In Bee Hives

ONE DOES NOT have to manage bees for very long without realizing that many other insects are commonly found in the hive co-existing with honeybees. These relationships may not always be cordial. For instance, strong colonies in the southern U.S. restrict cockroaches mainly to the recessed area of the inner cover, just beneath the top of the hive (outer cover). The general consensus is that cockroaches are more of a concern to beekeepers than to bees. However even if damage is slight, they may impart an unpleasant odor to honey or possibly their fecal waste could contaminate stored honey.

Another common visitor found in hives, especially during warmer months are wax moths. Generally, the Greater Wax Moth (*Galleria mellonella* (L.)) and the Lesser Wax Moth (*Achroia grisella* Fabricius) cause most of the damage to stored comb or weakened colonies. In warmer climates of the U.S. these two moths are cause for concern in that given a short period of time their exploding populations (with a voracious appetite) can destroy great numbers of wax combs. In such cases, not only has the beekeeper lost valuable comb, but must also invest time and labor in cleaning and installing new, expensive foundation back in damaged frames. Somehow, rebuilding a damaged frame never gives the sense of accomplishment that assembling a new frame offers. It has more of the air of a "mistake corrected". Ironically, in the natural scheme of things, wax moths may be considered good guys. As feral colonies become weakened from diseases or other ailments, the wax moth movers in and destroy comb. In doing so, the chances of another colony becoming infested with AFB; either by re-establishment of the hive site or by robbing activities, are greatly decreased.

Ants are notorious hive pests and are usually found in and around the hive. DeJong (1978) reported that most species of ants pose few economic problems for beekeepers in the U.S. However, ant damage has been reported by a few southern

beekeepers. Many beekeepers in the south have had to learn to live with the Imported Fire Ant (*Solenopsis geminata* Fabricius). I have observed fire ant mounds against bee hives with no obvious disruption of the bees inside the hive. All my observations were made on hive bodies that were well maintained and decay free. Such colonies that were positioned on or near ant mounds may have benefitted from the incessant foraging activity of fire ants. Few dead or dying bees were observed near the hive entrance as is quite common with most hives. No definitive conclusions should be drawn from these few observations.

Hives that are surrounded by mounds can be quite difficult for the beekeeper to inspect or manipulate. A beekeeper that unconsciously places his feet in a fire ant mound, even if only for a short length of time, will not make that mistake again.

As with cockroaches, some species of ant colonies may be found on the inner cover but are not considered to be significant pests of honeybees. On occasion they may rob honey, but generally they seem to be more of an uninvited guest.

The three insects just discussed are ubiquitous and most beekeepers have observed these insects in their hive at one time or another. By no means are these the only hive visitors (or intruders) to expect. In parts of the southern states and other areas of the U.S. as well, earwigs (*Dermaptera*) may be a pest. The earwigs are insects whose bodies are flattened, slender and have prominent pincer-like tails. Earwigs do not seem to cause significant problems in hives since they are mainly scavengers. Problems that some beekeepers have reported is the occasional occurrence of earwigs in the extracted crop. Earwigs often lie in empty cells and are not readily dislodged. They are subsequently thrown out in the extractor and if not caught by the filter may end up in extracted honey.

Termites and silverfish are commonly known insects that may be observed at times in and around hives. The damage termites inflict on wooden parts of a hive is obvious, but as with so many other hive

visitors, silverfish (and fire-brats) are not serious enemies of honeybees.

Beetles comprise about 40% of all described species of insects. As one would expect, many different beetle specimens can be seen in hives. However, most beetle groups are not serious pests and are usually found in weak colonies. As a group, the sap beetles (Nitidulidae) are of particular interest to Dr. Roger Williams (1) and me. We became interested in the populations and representatives of non-honeybee insect found in hives after observing significant numbers of beetle and other insects in the bottom board residue and, later in the year, in pollen trap trays. We are requesting that beekeepers interested in participating in a survey of non-honeybee insects found in beehives send us bottom board residue (we will remove the insects from the residue), individual insect specimens or insects found in pollen traps (including spiders). The bottom board scrapings will be examined microscopically for small insects or mites not readily visible. We are interested mainly in the eastern and southern states but will gladly accept samples from any state. The survey will run throughout the upcoming year. We probably will not be able to respond to individual samples, but we will keep contributors abreast of the total numbers and representatives of insects that have come in. Individuals contributing materials should include:

1. Contributor name
2. Date collected
3. Location or address

(Continued on page 154)



Agricultural Technical Institute
Wooster, Ohio 44691

Leading Honey Packers Expect Honey Use to Increase

A survey by *Gleanings* of leading honey packers across the United States revealed that the majority of those replying to our survey expect honey consumption to increase during the coming decade. Most expect honey imports (including Canadian) will increase during the next ten years. Several however, expect imports to stay about the same or decrease. Most respondents credited a price advantage in buying imported honey rather than a shortfall of domestic honey as the reason for forecasting an increase in honey imports. Most feel that honey being offered to packers by American producers is of about the same quality as ten years ago.

The majority of packers named the natural food movement as being the single most important factor in increased honey sales during the past ten years. Unfavorable factors mentioned were almost equally divided between high prices of honey, the botulism scare and the improper labeling and poor quality (adulteration) of honey.

Good marks were given to the small, local producer-packer. The large packers said the small, local producer-packers were good for the industry. One thought more regulation may be needed.

We asked honey packers which size of glass container they found carried the

greatest volume of honey. Most answered, the one pound jar. Out of the nine that have tried the plastic retail pack, six found them unsatisfactory. Some found that there is a tendency for the honey to darken rapidly in the plastic jars. Others found that the plastic container leaks, the honey absorbs moisture or the lip of the jar becomes loose. Shipping damage is as great, or greater than with glass according to one producer-packer we talked to about this subject.

In the opinion of some of the packers surveyed, a substantial reduction in honey sales has been due to honey adulteration. Estimates averaged out to a volume loss of 23% for those who answered in the affirmative while four of the respondents were not certain if adulteration was a cause of a loss in volume of honey sales. At the time of the survey a proposal by a consumer activist group was pushing for a label law which would require honey labels to bear the following "honey should not be fed to an infant under one year of age". Most packers thought this proposal, had it been adopted, would reduce honey sales on the average of 28%.

Most of the packers surveyed favored leaving honey import duties at their present levels. They were about equally divided on the questions of whether honey from overseas should be labeled with the

country of origin, predominant floral source and carry a certificate of purity along with the name of the producer-packer. This question stirred up some sharp comments. Those who reacted unfavorably thought the such a labeling requirement was unfair, discriminatory against imported honey, particularly if they interpreted the question to mean that such a requirement applied to retail package label package labels rather than large lots, to which the question was meant to apply.

Other questions concerned past and future improvements in honey processing technology. The greatest advance in the past ten years were heating-cooling controls, although three answered that there have been no advances. Packers envision such future advances as time-temperature reduction in melt rooms, better labeling, more automation and changes in packaging. Two could foresee no improvements during the coming decade.

The final question was "Would you be in favor of joining a voluntary marketing agreement if a majority of producer-packers (or packers) favored a plan which provided benefits such as nationwide advertising paid for from an equitable assessment?". Only one answered "yes". The rest were equally divided between "No" and "Not Certain".

Gleanings Mail Box

Dear Editor:

We were pleased to record the speakers on the 1981 American Beekeeping Federation Convention program and offer 90 minute cassettes to your readers for 5.25 each including sales tax and postage.

There are 22 individual tapes available. A request for a list of the tapes contents, or orders, should be sent to Lackey Sound and Light Company, 218 South Mead, Seattle, WA 98108

Dear Editor:

May I personally and in behalf of the 1981 American Beekeeping Federation Convention Host Committee and the American Beekeeping Federation thank you for your free

generous publicity. Without it, despite the coverage in the American Beekeeping Federation Newsletter and the considerable locally generated publicity, we would have had I am sure a substantially smaller attendance and less successful convention.

I include thanks to the hobbyists who turned out in force to attend the Short Course. They had an excellent learning experience and their registration fees shouldered a significant part of the convention and short course expenses. Your publicity of the Short Course was a big help too.

I would also be remiss not to mention that much appreciation should be extended to the 43 firms and individuals who rented commercial display space. Their displays

generated much interest, and we hope sales. Equally thanks to those who advertised in the convention program. We trust that too will be profitable; certainly their paid advertisements largely financed the printed program and buyers guide.

Members of the host committee were told that the 1981 convention was outstanding and possibly the best planned convention of the Federation, but without a lot of help including yours it could not have been.

I should also draw your attention to the Washington State University's help. Their Dr. Carl A Johansen and others put on the Sport Course, assembled the Short Course Syllabus and the printed proceedings of the

(Continued on page 153)

Questions and Answers

Q. Could you please help me with some technical advice. My five hives of bees in Huntingdon County, Pennsylvania came through with over three hundred pounds of delicious honey in the summer of 1980. In the fall they went into winter with good stores and good queens.

Now, this sustained cold has me worried. They seem to be in such tight cluster that they are not even coming out of cluster to get food. Normal rapping on the box with a hive tool does not produce any response. Of course, opening the hives in this weather would be suicide. All the brood would be ruined.

Is there anything that can be done under these conditions to assure their survival, or is the only alternative to wait until warmer weather and hope for the best? You have no doubt been hearing from other beekeepers about this matter. Any help you can give me would be most sincerely appreciated. R.L. Pennsylvania

A. There is very little that can be done for bees at this stage of the winter. You may receive very little response by wrapping on the box at this time of year especially if it is very cold. I would not be too concerned, as despite this, they may be in excellent condition.

Q. Do legumes grown on organically managed soil produce more nectar than those grown on chemically treated soil? Does spraying for weeds on this soil cause a shortage of nectar?

I am an organic farmer and had a very good crop of honey last year. I have two friends (experienced in beekeeping) living 10 to 20 miles away who claim their alfalfa and clovers produced a very light crop of honey. Both are heavy chemical users. M.A. Iowa

A. In answer to your question, we can only express an opinion because there is no research data to prove the legumes grown on organic soils are more productive of nectar than land which is cared for using fertilizers and various sprays. We would hope that this is a true fact but of course we cannot prove it and it would be

foolish to make the statement under the circumstances. There are many factors involved in nectar secretion of plants and it would be nearly impossible to make a judgement without observing the conditions and keeping records. Perhaps conditions other than the two soil management systems caused the difference in honey crops between yours and your friends' bees.

The U.S.D.A. has only recently recognized the need to advise people in regard to organic farming and gardening methods. While organic growing, in principle, is no doubt sound the application on the scale necessary to maintain our current rate of agricultural productivity may be difficult to achieve, at least in the immediate future. Honey, to be correctly labeled as organically produced, in our opinion, should come from land farmed organically within the nectar-gathering range of the bees. This means within a 2-3 mile radius of the apiary.

Spraying to kill weeds certainly can deplete nectar supplies as many so-called weeds are good nectar plants. Whether the nectar-secreting capacity of crops which are sprayed, or receive soil (ie pre-emergence) treatments with chemicals, is affected we do not know. We are not aware of any tests and results published.

Q. Could you tell me if living at 8,000 feet elevation will produce any problems for keeping bees. We generally have mild winters but short growing seasons. T.M. Colorado

A. Eight thousand feet is perhaps the upper limits at which bees will find sufficient forage to gather a surplus of honey. Much depends upon the vegetation occurring at your altitude which the bees can gather nectar. There should be no problem in keeping bees the year round at this altitude if the forage is sufficient.

Q. I have some honey which has fermented slightly--evidently there was some raw nectar in the frames when the honey was extracted. It is just a slight fermentation at this point.

Would there be any harm in feeding

this honey back to the bees during the Spring buildup? G.T. North Carolina.

A. Slight fermentation does not harm honey when fed to bees providing they have regular flights from the hive. This, of course, is most likely in the spring and summer so I would suggest waiting until spring before feeding the honey.

Q. I would like more information on whether there should be more than one brood super throughout the honey season. One beekeeper in California used just one below an excluder then placed supers on top. He produced a record crop. Hasn't the queen got enough room to lay without 2 or 3 brood bodies? Wouldn't there be more brood produced, especially in early spring, if the queen was confined to one brood chamber because she could keep this one super of combs warm? I wonder if I'm delaying buildup in the spring by giving too much room. B.A. Michigan

A. The question of whether it is necessary to use two deep brood chambers is often discussed but the consensus of opinion is that they are necessary in our Northern states. In Southern states where the winters are mild, they usually confine the queen to a deep and a shallow and get good results in wintering. If the queen is young and good egg laying capability, he will utilize both brood chambers, in the spring. After the population has reached a peak of brood rearing, many beekeepers will confine the queen to the lower unit which does not decrease the number of bees available for the honey flow and will assure that the second hive body, or food chamber will be filled with honey for the winter.

In the far north, three deep hive bodies may be used in place of two because of the large food supply needed during the long, severe winters and late spring.

We would suggest trying a system of keeping bees in one brood chamber year around on a limited scale before trying it on all of your colonies.

Q. We have seen in your book ABC & XYZ of Bee Culture on page 332 about the plant Guajillo. Kindly give

us more information about growing it in our area and if seeds of this plant is available. We would like to have it. Sultan Ben Easa Sons Ltd., Al-Essa Bldg., Fahad Al-Salem Str., P.O. Box 4098, Safat Kuwait.

A. The plant Guajillo (huajilla) *Acacia belandiera* is found principally in our state of Texas and grows wild rather than domesticated. We do not know of a source of seeds but we will print this portion of your letter in our Questions & Answers section in our *Gleanings in Bee Culture* and perhaps you will receive some seed and information by mail.

Guajillo (or huajilla) is found in southwest Texas. It is a shrub grow-

ing 2 to 10 ft. tall and has small cream colored flowers in globular heads. It blooms from the last of March to the middle of May. The honey is very light in color and is of excellent quality, according to Lovell.

Q. I would like to go to all comb honey this summer and am thinking of converting over an old freezer to store my comb honey in until I sell it.

My question is, what temperature would I need to hold the inside of the freezer to keep the comb honey from granulating?

I have some comb honey that is now granulated. Is there any way I can bring that back to liquid so that I

can sell that as comb honey — or is there a market for granulated comb honey? M.G. New York

A. It will be necessary to hold comb honey at approximately 0°F., or, in other words, if you are going to utilize a freezer, it must be the deep freezer which actually keeps the lower temperature for frozen food. Comb honey placed in the normal household refrigerator will granulate quicker than if left at room temperature. Aside from the deep freeze, there are few other methods from keeping comb honey from granulating. Very few people will buy granulated comb honey. There is no certain way to return comb honey to liquid since any temperature applied to the honey will be sufficient to melt the wax as well.

American Beekeeping Federation Highlights... Seattle, Wash., January 1981



American Beekeeping Federation officers were elected at the annual convention in Seattle. Shown, left to right, are Federation secretary/treasurer Frank Robinson of Gainesville, Florida; president Binford Weaver of Navasota, Texas; and vice president Phillip Rossman of Moultrie, Georgia.



Phyllis Taylor, right, receives the president's gavel of the American Beekeeping Federation Auxiliary from outgoing president Ruby Kuehl of Loup City, NB. Taylor, from Stratford, SD, previously served as vice president of the organization. Other officers for 1981 include vice president Vi Walker of Pasadena, CA; secretary/treasurer Shirley Miller of Salt Lake City, UT; and historian Jane Gunter of Towner, ND.



Dr. Norbert Kauffeld keyed the American Beekeeping Federation convention in Seattle, Washington. Kauffeld spoke on the value of the honeybee in crop pollination and said that the United States doesn't have enough honeybees to adequately pollinate all crops. He said that honey bees are better pollinators than wild bees and emphasized that certain crops require insect pollination to set seeds or fruits.

Kauffeld explained that color and aroma influence a bee's attraction to blossoms and that soil, wind and moisture conditions affect the nectar production of a plant.

Kauffeld is currently researching honeybee nutrition and cucumber and cotton pollination at the Carl Hayden Bee Research Center in Tucson, Arizona.



Strauser Bee Supply of Walla Walla, Washington took the best of show award for commerical exhibits at the American Beekeeping Federation convention in Seattle.



Mark Kohn of Medford, Wisconsin took two first place awards at the American Beekeeping Federation convention Honey Show in Seattle. Kohn won top honors for his extra light amber honey entry and his natural beeswax exhibit. Mark, right, is shown with his father, Rae, who is a Wisconsin representative on the ABF board of directors.



The American Beekeeping Federation Honey Show attracted 27 individuals with 45 separate entries at the Seattle convention. The display case with rosettes and silver is shown in the foreground.



Author Joe Parkhill autographs cookbooks for state honey queens at the American Beekeeping Federation convention in Seattle. Shown with Parkhill are Glennnda Musgrave of Indiana, Diann McCallum of Kansas and Becky Fisher of Pennsylvania.



The National Honey Packers and Dealers Association elected officers for 1981 when meeting at the American Beekeeping Federation convention. David McGinnis, left, of Tropical Blossom Honey Company of Edgewater, Florida, was elected secretary/treasurer. Chuck Adams of Superior Honey Company of South Gate, California, right, was elected president. Not pictured was Bob Steel of Sioux Honey Association, Sioux City, Iowa, who was elected vice president.



"The varroa mite is a potentially serious problem to American beekeepers" Roger Morse told American Beekeeping Federation convention-goers in Seattle. Morse, from Cornell University at Ithaca, New York, said Russian Scientists "say Varroa mites are the most serious problem in beekeeping, even worse than American foulbrood".

Morse explained that adult female mites crawl into brood cells just before they're capped and deposit eggs. The young developing mites feed on the bee pupa in the cell, either deforming or killing it. He said the bees are stunted from 5 to 10% and the puncture wounds from the mite leave the bee open to other debilitating infections.

Morse said the pinhead sized Varroa mites were originally found in the Middle East and the Orient, but have spread to Russia, eastern Europe, Germany North Africa and South America. The United States, Canada, Mexico and Australia are currently free from the Varroa mite. Morse warned that illegal smuggling of bees into the United States could accidentally introduce the pest to this country.



Kimberly Ganey was crowned American Honey Queen and Glennda Musgrave American Honey Princess at the American Beekeeping Federation convention in Seattle.

Ganey, left, is the 20-year-old daughter of Rev. and Mrs. Curtis Ganey of Jacksonville, Florida. She works as a legal secretary for the State Attorney in Jacksonville and is a sophomore at Florida Junior College. She's a straight "A" student and plans a career in law after graduating from the University of Florida Law School. She graduated valedictorian from Trinity Christain Academy before entering college and has been chosen for recognition in the National Dean's List. She's also been chosen for representation for the International Youth Achievement Award from Cambridge, England.

Musgrave, right, is the daughter of Boyd and Madonna Musgrave of Bargsville, Indiana and is a 19-year-old freshman at Indiana University in Bloomington, majoring in Special Education. She traveled extensively in several states during 1980 as Indiana Honey Queen. Her appearances included over 30 county fairs, the Indiana State Fair, the Ohio Honey Festival and the Honey Bee commemorative envelop ceremony and celebration in Paris, Illinois.



The American Beekeeping Federation hosted twelve state honey queens in the American Beekeeping Federation Honey Queen contest at the Seattle convention. Pictured, left to right, first row are Becky Fisher of Granville, Pennsylvania; Melissa Holcombe of Shelbyville, Tennessee; and Irene Walby of West Bloomfield, Michigan. Row two, Mary Rumppe of Bloomington, Minnesota; Margaret Davidson of Payette, Idaho and Brenda Bydalek of Franklin, Nebraska. Third row, Sherry Furr of McKinney, Texas; and Karen Kippes of Parker, South Dakota. Fourth row, Glennda Musgrave of Bargsville, Indiana and Amy Swanson of Towner, North Dakota. Fifth row, Kimberly Ganey of Jacksonville, Florida and Diann McCallum of Mission, Kansas.



Michael Burgett, left, and Doug McCutcheon, right judged beeswax entries in the ABF Honey Show in Seattle. Burgett is an associate professor of entomology at Oregon State University in Corvallis and McCutcheon is with the Ministry of Agriculture in British Columbia. The Honey Show attracted 45 entries from 27 individuals from throughout the country.



Bill Ruhl of Portland, Oregon swept the Honey Show at the American Beekeeping Federation convention in Seattle. Bill and his wife, Wilma, are shown with the Best of Show silver tray presented at the concluding banquet of the convention. Ruhl won first place rosettes and silver for his extra white, white, amber, dark and creamed honey and bleached beeswax. He also took a second place award for his natural beeswax.

The Care Of Package Bees

By ROGER A. MORSE
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THE IDEAL TIME to receive a package of bees in the North is when the pussy willows are in full bloom. In our area in central New York State that is about April 15 to 20. One may install packages as late as June, but such colonies will need greater care and may need extra feeding in the fall to survive the winter.

Size Package to Buy

We advise the purchase of a three-pound package and an Italian queen for the Northeast. A three-pound package will contain 10,000 to 12,000 bees. Many commercial beekeepers, especially in the prairie provinces of Canada, use only two-pound packages, but their area is quite different from our own. The days are longer and the nectar and pollen flows more intense.

At least one-third of the bees in a package will die after they are hived and before the bees have time to grow replacement bees. The life span

of worker bees is short in the active season, usually only five to seven weeks. It takes three weeks to grow a worker bee from egg to adult. Often the queen in a package will not start to lay for a day or two after the package is installed, and even then it will take her several days to a week to reach her full egg-laying capacity.

Many beekeepers hive package bees with a frame partially filled with brood in all stages. This is a good practice and will affect the growth of the package markedly. A package given brood may produce some surplus honey the first year in the northeastern states; without the addition of brood a package will rarely do so.

After feeding the bees in the package, the wood block that holds the feeder can in place is removed.





The feeder can is lifted from the package. The queen is caged separately and her cage attached to the package by a wire screen (sometimes with a wire).



The queen is caged separately so the beekeeper may make certain she is alive. Some of the sugar candy is removed so the queen will be released rapidly.



Four frames are temporarily removed to provide a space into which one may shake the bees from the package.

One should never give a colony more brood than it can keep warm. A standard full-depth frame half full of brood holds the equivalent of nearly a pound of bees; this is ample brood for the bees to feed and protect.

First Step — Feed the Package

Packages are shipped with a tinned can filled with sugar syrup. It contains enough food to keep the bees alive during shipment **BUT** the bees should be fed more syrup immediately upon arrival. A three-pound package will usually consume a pint in an hour or two. For spring feeding the syrup should be made with equal parts cane sugar and water by weight or measure. If the syrup is warm (80 to 90°F.) the bees will consume it more rapidly. The best way to feed the bees is to paint the syrup on the wire screen with a small paint brush, as rapidly as the bees consume it.

Not only does feeding the bees heavily aid them in building new comb but it also makes them gentle. In addition, bees heavily laden with sugar syrup are probably less inclined to fly and this can reduce drifting.

Time of Day to Install Packages

The best time to put a package of bees into a hive is in the late evening

or during a light rain. The reason for this is that the bees have no notion where their hive is. If theirs is the only hive in the area, they cannot drift into a colony not their own. Still, even in this case, some of the bees may circle widely and be a nuisance before they settle into their new home. If one is installing several packages, it can be disastrous to have them during a warm, sunny day. Almost inevitably many of the bees will abandon their own hive and queen, and drift (fly) to another hive.

How to Install Bees

The first step in placing the bees in their new colony is to remove the wooden cover over the feeder can in the package. The can is removed and discarded if it is empty; if syrup remains in the can it may be used to feed the bees in their new home.

The queen in a package is caged separately, primarily so the beekeeper may make certain she is alive. The queen cage is usually held in place alongside the feeder can by a piece of wire stapled to the top of the package. One removes the queen cage by pulling on the wire and shaking off the bees that cling to it.

Smoking bees in a package does no good, as the bees have nothing to defend at this stage and will not sting if well engorged. Smoking causes bees to gorge on honey, and since a package of bees has no comb, and no reserve honey, there is nothing further for the bees to consume.

The next step is to place a super with four drawn combs or four combs of foundation on a bottom board. The bottom board should be on a hive-stand, bricks, or some object(s) that will keep it off the damp ground. The package is now turned upside down and the bees shaken into the empty space in the new hive. The package must be shaken quite hard to dislodge most of the bees, and even then some bees will remain in the package. The almost-empty package is placed right side up at the colony entrance. If the hole in the package is not on the top side the remaining bees will not find their way out.

Shaking the bees from the package should be done firmly and rapidly. Sixty seconds is plenty of time to open the package, remove the feeder pail, check the queen, remove some sugar from the queen cage, put the cage into the hive, shake out the bees, replace the remaining frames in the hive, put the feeder jar(s) in place and close the hive. If one takes any more time than this there will be excessive drifting and perhaps some lost bees.

It is important that the queen be

released in the new hive as soon as possible so that she can start to lay eggs. Some beekeepers release her immediately into the pile of bees dumped into the new home, but it is probably preferable that she be released slowly, but soon. Anytime a queen cage with a queen is put into a hive it is best to remove some of the candy and to put the cage in the hive so that the candy end is up, preferably squeezed between two combs with the screened face exposed to the bees. If one is using foundation it is not possible to put the cage in the colony in this manner. Under these circumstances the cage is put face-up on the bottomboard but some distance back from the entrance.

A second point is that if one moves rapidly there will be a pile of live bees on the bottomboard and when the remaining combs are put into place they will not rest on the hive rabbets immediately. The weight of the frames on the pile of bees will do no harm, but one must wait three or four seconds while the bees disperse and the frames settle into place.

Entrance Cleats

The entrances of package colonies should always be reduced for several days to several weeks. The cleat may be a factory-made item or a stick of wood. The entrance for a three-pound package should be large enough for five or six bees to exit or enter at one time. How long the entrance cleat remains in place is controlled by the weather and congestion within the hive. If the package is hived in April the entrance cleat is usually left in place for three to four weeks.

Feeding Packages

A three-pound package of bees in the northern states will need at least 30 pounds of cane sugar, in the form of syrup, in the first month after installation; feeding less will slow colony growth. Bees that have syrup or honey in reserve can spend more time gathering the pollen vital for the growing young bees.

Entrance-type feeders are worthless for feeding packages. They provide too little food too far from the brood nest. Often the bees cannot take food from them from dark to mid-morning the following day because of cool weather. Miller feeders, which contain trays filled with syrup placed over the frames, are good, but the bees may be slow to take honey from them in cool weather. Division-board feeders that fit into a hive in place of one or two frames are also good, but the best method is feeder jars or cans placed over the tops of the frames. It is difficult to get good tinned pails, but one-gallon, wide-mouth glass jars, such as are used in restaurants,



An alternate to shaking is to place the package in the hive and allow the bees to crawl out. Note the queen cage is placed outside the package between two frames, candy end up. The empty package must be removed after a day or two and before the bees have an opportunity to build comb in it.

make good feeders. A special box in which to carry them will prevent breakage.

Commercial beekeepers often save frames of honey to feed their package bees. An alternative is to put sugar syrup into drawn combs, but this is a messy job that one hesitates to recommend.

Colony Growth

A package should be checked a few days after it is installed to make certain the queen is alive. It is only necessary to see eggs, not to find the queen. In fact, it may be dangerous to inspect a colony with a young queen for too long a time, as the bees may ball the queen. The package should be checked for food every four or five days. If one cannot check the colony this frequently it should be left with at least three one-gallon feeder jars.

Most packages will not need a second super for at least two months. However, the growth of a colony is controlled by the fertility of the queen and the food, pollen and honey, available to the colony, so the beekeeper must adjust his timing accordingly.

Foundation or Drawn Comb?

Many beekeeping books state that one should put package bees on foundation only. The reason for this is



Package bees must be well-fed to survive. This package is being given two five-pound pails of sugar syrup in the first feeding.

that the bees are forced to use any honey they are carrying in constructing new comb. If drawn comb is used, the bees might, instead, deposit such honey in cells, and if the honey contained disease spores this could be a way in which disease, especially American foulbrood, might be spread. Most people feel there is little danger of this today. Most package bee producers guard their reputations with great care and do not ship packages from diseased colonies. The states from which package bees are shipped today have excellent disease inspection programs. One may feed terramycin as a precaution against disease, but this is probably rarely done. If one uses drawn comb the bees are saved the energy required to build new comb. However, it is remarkable how rapidly bees in a newly installed package will draw comb when they are well fed.

Bulletin on Package Bees

An illustrated eight-page bulletin, **Package Bees: Their Installation and Immediate Care**, which gives greater detail, is available postpaid from Mailing Room, Research Park, Cornell University, Ithaca, NY 14853, for 35 cents.

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Ligustrum, A Honey Plant

WILLIAM G. LORD
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Department of Entomology
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LIGUSTRUM, OR PRIVET is an up and coming honey plant that needs to be understood to be fully appreciated. Increasing awareness of the usefulness and benefit of beekeeping has led to an upsurge of beekeeping in the suburbs in recent years. In addition, many formerly rural beekeepers have themselves been surrounded by suburbia, with resulting destruction of native trees and shrubs, and replacement with ornamentals.

Ligustrum is a widely planted ornamental that was originally imported from Europe. Three species commonly occur in the southeast, all being in the Oleacea Family. *Ligustrum sinense* Lour is frequently encountered growing in dense thickets in the wild, and is commonly called hedge. *L. sinense* is the first of the ligustrums to bloom, usually in early May. *L. sinense* does attract bees, but it does not appear to produce any significant amounts of nectar or pollen. *Ligustrum amurense* blooms in mid to late May, and fills the air with an effusion of its perfumed scent. *L. amurense* is the most commonly encountered form of ligustrum. It is frequently maintained as a foundation planting around houses by pruning, or grown in a similar fashion as a hedge. *L. amurense* is also used as a screening hedge around tennis courts and similar facilities, then being allowed to reach its full height of 5 meters. This species of ligustrum can produce a surplus of honey if abundant, but a surplus of ligustrum honey can be a mixed blessing. Ligustrum produces a dark, bitter honey. The color has been likened to tar and the flavor to rotten fruit. In North Carolina the ideal sequence is to have early tulip poplar and blackberry flows, strip the light spring honey from the bees, and let them dine on ligustrum to build towards their winter stores. If this sequence does not follow, ligustrum can ruin the flavor and color of spring honey.

The final species of ligustrum to bloom is *Ligustrum japonicum* Thunberg. *L. japonicum* blooms in mid June, and provides a welcome respite between the spring and fall flows. However, *L. japonicum* bloom can coincide with sourwood bloom and spoil the color and flavor of this

Ligustrum amurense shown as hedge around tennis courts. Bees work it heavily.



Leaves and foliage of *Ligustrum amurense* the most widely planted and most visited by bees.



prized honey, though sourwood surpluses are rare.

From the discussion thus far, privet appears to be an imported despoiler of pure native honey, but this is not entirely the case. Ornamentals have long been overlooked, or dismissed as honey plants. But as suburbia increases and native plants decrease, ornamentals increase. Prolific and productive hobby beekeeping is possible in suburbia if proper apiary sites are chosen. Ideally, sites on the periphery of suburban areas are preferred, in which the bees can fully exploit the native flora in the rural outskirts, and at the same time gain from the masses of ornamentals en-

(Continued on page 153)



Closeup of *Ligustrum amurense*.

Improving Propagation of Flowering Plants

By BERNIE HAYES

121 Miller St.
Wellsville, NY

NATURE HAS HER own way of doing things and often a growing method that will work with one seed is not suitable for another though the seed is from a similar species of plant.

For instance, the black locust has hard coated seeds that require softening before germination which is done by pouring boiling water over the seeds and letting it stand overnight with the result that the inner portion pops through the softened coating. On the other hand, the very similar Pagoda (*Sophora Japonica*) seed should not be treated this way with high temperature hot water since it is harmful for germination.

There are, though, alternative methods that do reach the sprouting stimulus of seeds and are worth trying. Scientists have recently discovered that degassing tap water before applying does provide some extra stimulus for better germination as well as improved root and stem growth. Degassing frees water of such chemicals as chlorine and other gasses. It is done by simply heating water for five minutes boiling then cooling to room temperature before using for seeds or plants.

I find that it increases the germination of Bee Bee (*Evodia Hupehensis*) seed, doubling it in fact. Many growers have found *Evodia* seed difficult to germinate though I have been advised lately to start it at 60 or 65 degrees.

I should add on this subject of seed germination that different results often happen with the very similar growing medium and technique. I am still concerned with Pagoda germination, a species which many beekeepers have tried during one of my "Johnny Appleseed" giveaways. It is a seed with low germination and I believe it is primarily due to poor dormancy storage. Seed houses usually obtain their stock of this seed, a foreign Asiatic, in the spring, and, if it is stored dry above 35 degrees the germination will be inhibited.

It is best stored by being slightly dampened and put in a non-freezing ground storage or the vegetable drawer of a refrigerator until spring. A

beekeeper-nurseryman wrote me that they have best luck storing *Sophora* seed over winter in a cold non-freezing storage and in the spring (April) the seed is soaked in warm tepid water and sown in one inch deep rows covering the seed with fine sand to make easier germination.

Due to the usual low germination of *Sophora* any beekeeper that intends to start this variety should order adequate seed since it is not expensive, currently selling from seed houses for \$9.50 per pound. Interestingly, tree seed of varieties suited for northern states, and which is dormant stored at 35 degrees, if planted in some southern states where soil temperature is above 76 degrees, will revert to a blocked condition instead of germinating.

Some known chemicals alter dormancy, the best known is the gibberellins. This Japanese developed product, when sprayed on potato seed, will stimulate early rooting and better growth.

Incidentally, in the 1961 Yearbook of Agriculture, on page 53, is an account of successfully increasing the growth of black walnut trees, growing in a green house, from an average height of 1.5 feet (untreated) to 8.5 foot treated. The treatment was by placing a narrow band of lanolin paste containing a one percent of gibberellic acid around the stems one-half inch from the terminal bud. This paste was applied three times during the summer and spaced the treatments so that the terminal buds never ceased growing until the short days of fall. (Note: Lanolin is a fat, obtained from the processing of sheeps wool and the writer believes other fats, such as culinary shortening, may work just as well.)

Further, on this subject, some trees, including black walnut produce a flush of spring growth often less than a foot long. Then the buds become dormant. Treating with gibberellic acid overcomes the summer dormancy and causes the plant to produce the equivalent of several years growth in one season. I would suggest extra winter protection when this method is used since the wood

may not harden properly and only dieback will result.

Early flowering is also induced with chemical treatments though the writer believes that the nurseryman's "ringing", a bark treatment, is the best in the long run. This method was outlined in the *Gleanings* March 1979 issue under the title, "How to Flower Young Trees for Nectar". However, anyone can experiment and the common weed-killer, 2, 4-D, in ppm (parts per million), a tiny amount, as well as the gibberellin, will often throw the plant into early blooming and sometimes alter the blossoms from single to double. Most woody plants have dormant buds that are never used only when the circumstances require. My best apricot tree was accidentally broken at the top when a large maple tree was cut nearby for wood. A great number of new June sprouts soon appeared to save the tree, all surrounding the area where the broken limb was. This is an interesting field of research, especially during May and June in the Northern states, when flower buds are susceptible to treatment.

Continuing my "Johnny Appleseed" activity I will mail anyone in USA a small packet of flowering shrub seed providing a SASE is enclosed and also an extra seven cents postage for hand cancelling which will be returned if not used. Use Zip 14895.

BEE INTERESTED

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CORRECTION

In the February issue the news item under "Florida" should have been under the "West Virginia. The Marian County Beekeepers' Association is in West Virginia and Mr. DeGarmo is the president as indicated in the article, but his home address is Worthington, W. VA. 26591.



NEBRASKA
Nebraska Honey Producers

The Nebraska Honey Producers met November 14th and 15th, 1980 in Norfolk, Nebraska for their fall meeting. Miss Shauna Kuhl, a Kearney State College sophomore, was crowned Nebraska Honey Queen. Shauna is the youngest of six children of Mr. and Mrs. Don Kuhl, a beekeeper of Randolph, Nebraska. An elementary education major, she is active in Alpha Phi.

While in high school Shauna maintained an A average. She has been active in band, chorus, was head cheerleader and feature twirler. Shauna teaches swimming and baton. Miss Kuhl says her hobbies are: dancing, swimming, bike riding and meeting new people.

DELAWARE
Delaware Beekeepers' Association

The Annual Meeting of the Delaware Beekeepers Association will be held Saturday, March 28, 1981, at Delaware State College, Dover, Delaware. Talks will be given by Dr. Dewey Caron of the University of Maryland on queen replacement and by Dr. Charles Mason of the University of Delaware on preparing honey for show. Also, there will be a question and answer panel. Each member is encouraged to submit a question on beekeeping to the panel. A prize will be awarded to the person with the best question. The panel will address the questions submitted. The business meeting will include election of officers.

News and Events



KANSAS
Central Kansas Beekeepers' Association

Julianne Reynolds, sixteen year old daughter of Mr. and Mrs. Gary J. Reynolds, Concordia, has been chosen the 1981 Central Kansas Honey Queen representing the newly organized Central Kansas Beekeepers Association. Julianne is a sophomore at Concordia High School.

Her duties as Central Kansas Honey Queen will consist of the promotion of Kansas honey on television and radio and will include appearances at area fairs and parades. Julianne is not a newcomer to the beekeeping industry, having been born into a beekeeping family. She has grown up around bees and honey and for the past eight years has helped her father at Rainbow Honey Farm in different aspects of the business from queen rearing and shipping to honey production. Julianne's hobbies include art, singing, needlepoint, latchhook, reading and swimming.

OHIO
Beekeeper Workshop

The Tri-County Beekeepers' Association of Wayne, Holmes and Ashland counties of Ohio and the Wayne County Cooperative Extension Service will sponsor a beekeepers workshop on March 7,

1981 from 9:00 a.m. to 3:30 p.m. Location is the Fisher Auditorium, Ohio Agricultural Research and Development Center, Wooster, Ohio. The Center is just south of Wooster on State Route 83 and U.S. 250. The program will feature subjects for beginning and advanced beekeepers, including feeding and overwintering, harvesting honey, handling wax, increasing the apiary, bee behavior, keeping healthy bees, cooking with honey and other topics. Pre-registration fee is \$6.50 and includes lunch. Registration at the door (\$3.50) does not include lunch. For pre-registration and more information contact the Wayne County Cooperative Extension Office, 428 W. Liberty Street, Wooster, Ohio 44691, Ph. (216)264-8722.



INDIANA
1981 Indiana Honey Queen

Christie Griffin of Dyer, IN was chosen to be the 1981 Indiana Honey Queen. Christie, 20, daughter of Mr. & Mrs. George Giffin, is a freshman at I.U. Northwest College in Gary. She is presently working as a surgical dental assistant, having graduated from Elkhart Institute of Technology. She is also active in her church. She is very eager to promote Honey in Indiana.

TENNESSEE
Tennessee State Beekeepers' Association

Tennessee State Beekeepers' Association will hold the spring meeting of the Board of Directors in Nashville at Ellington Center on Saturday March 7th beginning at 10:00 a.m. All members welcome and all Directors are necessary.

OHIO

The Spring Meeting of the Ohio State Beekeepers' Association will be on Saturday, March 21st. The meeting will begin at 9:00 a.m.

The Meeting will be held at Wagnall's Memorial in Lithopolis, Ohio. Lithopolis is 8 miles southeast of Columbus.

MASSACHUSETTS Middlesex County Beekeepers' Association

The regular monthly meeting of the Middlesex County Beekeepers' Association will be held Saturday, March 28, 1981, at 8:00 p.m. at the Waltham Field Station, 240 Beaver Street, Waltham, Mass.

PENNSYLVANIA Delaware Valley College Beekeeping Short Courses

Spring: Saturday, April 4, 11, and 25, 1981
Summer: Friday, Saturday, Sunday, June 26, 27, and 28, 1981

Delaware Valley College will again be offering its Spring and Summer Beekeeping Short Courses. The Courses are offered under the direction of Dr. Robert Berthold (Associate Professor, Biology) in co-operation with Mr. Jack Mattenius (New Jersey Supervisor of Bee Culture).

Over 200 persons attended the 1980 courses. Included in this group were experienced beekeepers, novices, and those considering taking up beekeeping as a hobby. There were also quite a few educators who were planning to use the information presented in their own classroom situation. Also, a number of people incorporated the course in their vacations.

Total cost for the three days of instruction is \$25.00. For those persons 62 years or older, there is no charge. Further information may be obtained by writing to Dr. Berthold, Delaware Valley College, Doylestown, PA 18901, or by calling him at Area Code 215-345-1500. Registration deadline for the Spring Course is March 26th and the Summer Course June 15th. Send application for registration and check to: Continuing Education, Delaware Valley College, Rt. 202, Doylestown, PA 18901

The classes will be in Room 114, Mandell Science Building, Delaware Valley College of Science and Agriculture, Route 202, about 1 mile south of Doylestown, PA 18901. The college apiary and honey house will be utilized.

Registration first day is at 8:30 to

9:10 a.m. Other days course starts at 9:00 a.m. and ends at 4:00 p.m.

All those having their own bee veils should bring them. It is also suggested that you bring a 3-ring looseleaf binder to hold various prepared materials which will be distributed.

Participants must be 13 years of age or older, unless accompanied by an adult.

Though there are restaurants nearby, it is suggested that you bring you lunch.

For those wanting overnight accommodations, we suggest the Court House Motor Inn, 625 N. Main Street, Doylestown, PA 18901, (215)348-9222.



Diann McCallum, 1981 Kansas Honey Queen.

KANSAS Spring Meeting

The Kansas State Beekeepers Association will hold their Spring Meeting at the Douglas County Fairgrounds, Lawrence, Kansas, on Friday and Saturday, April 3 and 4, 1981. Friday's activities will begin with registration at 9:30 a.m. and will include speakers, a beekeeping field trip, the Auxiliary meeting, and the Executive Board Meeting. Saturday's activities include registration at 8:30 a.m. with the Business Meeting, convening at 9:30 a.m. Various bee and honey reports will be given and a panel will discuss pertinent commercial beekeeping issues. A smoker lighting contest is also scheduled for Saturday. Adjournment is set for 4:30 p.m.

The members of the Kansas State Beekeepers Association invite all beekeepers and their families from Kansas and the surrounding area to attend.



Dr. Landis Donner

PENNSYLVANIA Bucks County Beekeepers' Association

Dr. Landis Donner of the United States Department of Agriculture's Eastern Regional Laboratory will be the featured speaker at the spring meeting of the Bucks County Beekeepers' Association. Dr. Donner is a Food Chemist, and he will be speaking on the work he and the members of his team have been doing dealing with the adulteration of honey and the means which they have developed to detect it.

Dr. Donner's talk is being jointly sponsored by the Bucks County Beekeepers', the Delaware Valley College Apiary Society, and Delaware Valley College. The talk is scheduled for 8:00 p.m. on Thursday, March 26, 1981 and it is open to the public.

The talk will be given at Delaware Valley College in Mandell Hall Auditorium, Room 114. Delaware Valley College is located on Route 202, one mile west of Doylestown, PA.

VERMONT Vermont Beekeepers' Association

Approximately 100 beekeepers attended the annual Vermont Farm Show in Barre, Vermont on January 27, 1981.

Charles Mraz summed up some of the highlights of the EAS, 1980 conference held in Burlington, Vermont. A resolution of appreciation of John Tardie, outgoing president of EAS and chairman of the 1980 EAS conference was approved by the association. Rick Drutchas, Apiculturist with the Vermont Dept. of Agr. gave details of the 1980 inspection program in Vermont.

The first prize for the baking contest, a nuc donated by Rick Drutchas,

was awarded to Josie Stephens of Island Pond for her honey carrot cake. Kermit Mayo won the award of merit for the honey exhibited at the Vermont Farm Show Honey Contest.

The afternoon session featured a talk by John Chamberlin on beekeeping and taxes. The highlight of the meeting was a lecture by Dr. Lawrence Connor on queen bee management.

OHIO **Richland Area Beekeepers' Association**

The Richland Area Beekeepers' Association is planning a Bee School for Saturday, April 18, 1981 at Kingwood Center, 900 Park Avenue West, Mansfield, Ohio.

Dr. Malcolm T. Sanford, Ohio State University Entomologist, will be our guest speaker. He will present a program for the beginner beekeeper, as well as the experienced beekeeper.

Registration will be at 8:30 a.m., there will be a registration fee which will include a lunch. (The fee has not yet been decided upon.)

The beekeepers are planning to have a panel discussion in the afternoon as well as live bee demonstrations. We will also have bee equipment on display.

PENNSYLVANIA **Beekeeping Course**

There will be a course on beekeeping at Mansfield State College, Mansfield, PA 16933 on May 6, 7, & 8, 1981. Instructors will be W. W. Clarke, and H. Lee Hoar. The fee is \$36.00. Course content: The honeybee (history, duties, diseases), beekeeping equipment, making a start in beekeeping, spring and fall management, swarming, and marketing honey. For more information write Continuing Education, Mansfield State College, Mansfield, PA 16933.

VIRGINIA

It was late September at the Virginia State Fair in Richmond, Virginia. Two honey booths was set up promoting beekeeping. The Tri-Cities and the Richmond Beekeepers Association's booths was much in evidence. Observation hives was set up, extractors and other equipment was on display. The eleven day Fair was a teaching process in educating the public on honeybees, beekeeping and types of honeys produced in the Central Virginia area. The booths were maintained by beekeepers who we salute, putting in long, hard hours and selling nearly 3000 pounds of honey.

The Fair goers were treated with the crowning of the 1981 Richmond Beekeepers' Honey Queen, Miss Johanna Sowder. Miss Sowder was chosen at the September club meeting which is held every second Friday at 7:45 P.M. of each month at the Science Museum in Richmond, Virginia. Johanna was crowned by Miss Lisa Davis the 1980 Honey Queen. The new Honey Queen has made personal appearances on local television and has participated in the Tobacco Bowl Parade.

To complete the festivities Governor John N. Dalton of Virginia stopped by the Richmond Beekeepers booth and received a jar of excellent Virginia Thistle comb honey. The presentation was made by Mr. Paul B. Davis Jr. President of the Richmond Beekeepers Association.

MICHIGAN **Michigan Beekeepers Farmers' Week Program** **March 24-25, 1981** **(See program in February Issue)**

Dr. Eric Erickson will be the main speaker at the annual beekeeping program. He will be presenting talks on winter conditions within the hive, and a slide presentation on the close-up view of the bee. These pictures are made with the scanning electron microscope and give a view that few of us have seen.

Other talks will include discussions of bee diseases, pollination, and loans for the beekeeper. The meetings will be held in Kellogg Center and Wells Hall on the campus of Michigan State University. If you would like a copy of the program, write to Dr. Roger Hoopingarner, Department of Entomology, MSU, East Lansing, MI 48824, or phone (517)353-3890.

CONNECTICUT **Connecticut Beekeepers' Association**

The Winter Meeting of the Connecticut Beekeeper Association will be held on Saturday February 28, 1981 at the Connecticut Agricultural Experiment Station, 123 Huntington St., New Haven, Connecticut at 10:00 a.m. in the Donald F. Jones Auditorium.

The program will consist of four morning workshops and one special afternoon workshop.

The morning workshops will be:
1. How to Hive Package Bees — Al Avitabile, University of Connecticut
2. Queen Bees and Their Management — Larry Connor, Beekeeping Consultant
3. How To Render Wax Safely and Inexpensively — Diana Sammataro, Author

4. Strong Colonies Need Pollen — Ed Weiss, Beekeeper and Bee dealer

The feature afternoon workshop will be:
Bait Hives: The Attraction of Wild Honeybee Swarms — Tom Seeley, Yale University

The noon break will feature the ever-popular potluck luncheon. Bring something you like for the buffet table. We will furnish the coffee. All beekeepers and friends are cordially welcome to attend. The meeting usually adjourns between two and three o'clock.

MARYLAND **Maryland State Beekeepers' Association**

The Maryland State Beekeepers Association will have its Spring Meeting on Saturday, March 28, 1981, at the Harford County Public Library, Bel Air, Maryland. The mosquito control program of Maryland will be just one of the topics discussed. The meeting opens at 9:30 and adjourns at 3:00, and is open to all interested in beekeeping activities. For further information contact the Program Chairperson: Ann Harman, 6511 Griffith Road, Laytonsville, MD 20760

Obituary



R. W. Craighead

R.W. Craighead, President of F. W. Jones & Son Ltd., of Bedford, Que., died very suddenly Dec. 26, 1980 at age 56. Mr Craighead was first introduced to the beekeeping industry at age 2 when his family moved from

(Continued on page 156)

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Queens and Packages
2-lb. pkg. w/q — \$18.50 ea.
3-lb. pkg. w/q — \$24.50 ea.
Queens
\$6.50 ea.

20-up \$6.00 ea. — 100-up \$5.50 ea.

We pay air mail charges on queens.
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by customers.

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We appreciate your business

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Italian & Caucasian Bees Available at Competitive Prices (U.S.\$)

	1-5	6-24	25-99	100 +	+ Transport
Queens	\$ 7.15	\$ 6.90	\$ 6.65	\$ 6.20	—
2 lb. Pkg.	22.55	21.70	20.85	19.50	2.75
3 lb. Pkg.	28.90	27.80	26.70	25.05	3.20
4 lb. Pkg.	35.80	34.45	33.05	31.00	3.30

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"North Country" from established stock of
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maximum honey crops year after year.

	1-9	10-99	100&up
Mated:	\$5.95	\$5.50	\$4.95
Virgins:	2.95	2.50	1.95

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Queens	1-24	25-99	100-up
May	\$7.00	\$6.00	\$5.50
June 1st on	7.00	6.00	5.00

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For Breeder Queens — Write: Hastings, Box 604, Birch Hills, Sask., Canada S0J 060

GLEANNING MAIL BOX

(Continued from page 140)

Convention for which we are both ap-
preciative and grateful. Incidentally
we do have a few copies of both the
syllabus and the convention pro-
ceedings which we will sell for \$1.00
each. These might be useful for local
association program chairmen.
Tapes of the talks are available too if
someone is interested. Please write
for details.

Again our thanks. Without the
generous support of the bee press no
convention can be a success so I
think it is not only us but the industry
which is in your debt. Roy Thurber,
5522 127th Ave., N.E., Kirkland, WA
98033

Dear Editor:

I am directing this letter to your
readers with the hope that you will
print it for me.

I am an inmate in the Louisiana
State Prison at Angola, LA. My reason
for writing is to ask your readers to
join me in an effort to help Jerry's
Kids by donating any dead Italian
Queens to me to be encased in
plastic and made into such items as
belt buckles, pendants, etc. Once
these items are made up they would
be sold back to the members of the
Bee Industry. My profits after cost
would be donated to the Jerry Lewis
Telethon Fund Drive. I may be locked
up but I'm not inhuman. So rather
than throwin' those bees away when

you change queens send 'em to me
for Jerry's Kids.

Please contact me on just how to
send the dead queens. Richard L. Jen-
drian, PMB #85561, Camp C Bear #3,
Angola, LA 70712, U.S.A.

LIGUSTRUM, A HONEY PLANT

(Continued from page 148)

countered in suburban lawns and
gardens.

Ligustrum fits just such a cycle in
the southeast, as the three species
provide almost continual bloom from
early May to late June. Granted,
ligustrum does not produce a prized
honey, but in lean years any honey is

BETTER BRED QUEENS THREE BANDED ITALIANS

Let's be optimistic and hope for better times. Keep
our chin up and keep on keeping on. Book early.
We will give the same good queens and service as
ever.

PRICES

QUEENS	PACKAGES
	2 lb. w/q 3 lb. w/q
1 thru 24	\$6.50 \$23.50 pp \$28.50 pp
25 thru 99	6.25
100 or more	5.90
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Prices subject to change without notice

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Jessie S. Knox, Secretary 205-829-6074

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good honey. In good years the early
(*L. sinense*) and late (*L. japonicum*)
ligustrum provide much needed
stores for the bees, and the mid
blooming species can prove a test of
the beekeeper's skill in avoiding get-
ting it mixed with earlier honey, or
simply by adding the extra pounds to
the total surplus.

Ligustrum sp seed propagation is
easily done. Cleaned seed should be
stratified for two to three months @
32° to 50°F. before planting. Hard-
wood cuttings of most species
planted in the spring root easily as do
softwood cuttings in summer under
glass. Plants should be available at
any nursery.

THE STOVER APIARIES, INC. MAYHEW, MS 39753 PHONE 601-327-7223

1981 PRICE LIST PACKAGE BEES & QUEENS

ITALIANS

STARLINE

IN LOTS OF	QUEENS	2-POUND & QUEEN	3-POUND & QUEEN	4-POUND & QUEEN	5-POUND & QUEEN
1-9	\$6.60	\$20.00	\$25.50	\$31.00	\$34.50
10-99	\$6.40	\$18.75	\$24.50	\$29.25	\$33.50
100-up	\$6.00	\$18.00	\$23.50	\$27.50	\$32.50

STARLINE QUEENS ARE 75¢ EXTRA.

PARCEL POST SHIPPING CHARGES

	1 Pkg.	2 Pkg.	3 Pkg.
2 Lbs. W/Queen	\$4.50	\$6.50	\$8.00
3 Lbs. W/Queen	5.00	7.00	8.75
4 Lbs. W/Queen	5.75	8.50	
5 Lbs. W/Queen	6.25	9.25	

SHIPPING CHARGES INCLUDE POSTAGE, SPECIAL HANDLING AND INSURANCE.

PLEASE ADD THESE CHARGES TO YOUR PARCEL POST ORDERS.

QUEENS ARE SHIPPED POST PAID.

Packages can only be shipped parcel post. To book parcel post orders, check or money order must accompany order. Prices are subject to change.

Live delivery on package bees can only be guaranteed until May 20th.

Marking and/or clipping of queens is 50¢ extra per queen.

CALIFORNIA STUDENTS LEARN THE HONEY BUSINESS

(Continued from page 136)

can about beekeeping in anticipation of having his own hives. After the first extraction of honey, Jesus said, "I've helped care for the hives and watched the honey forming. I couldn't believe we got 2½ gallons. I've never seen so much honey."

Another student, Demetri Cox, the project's only bee sting casualty, explained his accident. "My eye started itching so I asked my friend to scratch it for me. Neither of us saw the bee on his glove!"

The students involved in the beekeeping project are not only getting samples of "their" honey, but they're also gaining an appreciation of nature at work. Ultimately PYS hopes the students will be able to offer a service to their community by being able to help with swarming problems and as advisors to others interested in beekeeping.

Bruce Hanford, Pomona Youth Services employee has aided Mr. Twyman, sums up the beekeeping program, "Having worked in Pomona's youth program for seven

years, I have seen positive forces at work. The beekeeping project along with other programs has taught our youth self-discipline as well as an appreciation of farming, a basic American value. □

BEEKEEPING TECHNOLOGY

(Continued from page 139)

Material may be sent to us in plastic bags or the most convenient way. Material sent in plastic bags should be frozen overnight before mailing.

Ultimately, we hope to develop an idea of the diversity of specimens and their occurrence in beehives from various parts of the U.S. Any beekeeper support will be sincerely appreciated. Please send materials to:

Dr. James E. Tew
Coordinator-Beekeeping Technology
Agricultural Technical Institute
Wooster, Ohio 44691
216-264-3811 Ext 263

or

(1) Dr. Roger Williams
Department of Entomology
The Ohio Agriculture Research and
Development Center
Wooster, Ohio 44691

I would like to say thank you to all the beekeepers who wrote requesting

a copy of the introductory class syllabus offered in "Beekeeping Technology", *Gleanings in Bee Culture*, December 1980. To date we have responded to seventy people, which is considerably more than anticipated. We will most happily assist beekeeping instructors in any way possible. Thank you.

DeJong, David 1978. Insects: Hymenoptera (Ants, Wasps and Bees), Chapter 9. In *Honey Bee Pests, Predators and Diseases*. Roger Morse, Editor. Cornell University Press, Ithaca, NY

PARCEL POST PACKAGE BEES 3-lbs. with queen, \$29.50

ITALIAN QUEENS

1-4 \$6.75; 5-25 \$6.25; 26-99 \$5.85; 100 up \$5.35

CARNIOLAN QUEENS

1-4 \$8.00; 5-25 \$7.45; 26-99 \$6.75; 100 up \$6.25

Prices include shipping, insurance and special handling. 20% books order. Tested queen — add \$1.00 per package or queen.

Queens clipped or marked 50¢ each.

HIGH SHOALS APIARIES

Box 665 B High Shoals, Ga. 30645
(404) 769-6638

MONTHLY HONEY REPORT

(Continued from page 118)

for bakery grade honey. Use of high fructose syrup is widespread for build-up food in Alabama, but availability limited for the small beekeeper.

Region 7

Very mild winter in Arkansas through January but lack of rainfall is causing concern. Bees have wintered well to date. Some pollen coming in at beginning of February. Forecast is for continued drought. Warm and extremely dry conditions in East Central Oklahoma. Bees active and using winter stores. Lower temperatures could cause heavy losses as bees went into winter with small clusters and no fall honey flow. Less than 10% of local honey left on hand with some producers.

Region 8

Above average temperatures in Montana, Idaho and Colorado in January has kept bees actively flying but snow and colder reported in Idaho at beginning of February. The drought continues with little snow in mountains to furnish water for irrigation in summer. Bees wintering well with early pollen available because of warm temperatures. Retail honey sales normal even with somewhat higher prices due to increased handling and packing costs. Very little honey in hands of producers.

Region 9

Most local honey is sold in Oregon. Much bulk honey offered for sale by beekeepers in California at end of December. Trading in bottled honey little below seasonal normal in Southern California. A sizable number of almond pollination contracts have been signed at \$24.00 per colony.

Year-end Report

Honey production totaled 200 million pounds in 1980, 16% less than 1979 crop of 238 million pounds. The number of colonies was down slightly and average yield per colony was down from 57.2 lbs. in 1979 to 48.2 lbs. in 1980.

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Italian Queens

Breeder stock selected in Canada and Northern California for Honey Production and Overwintering.

EVERYTHING FED FUMIDIL-B
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25-249-----	5.00	500-up -----	4.50

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In Lots of	Queens	2-lb. w/q	3-lb. w/q
1-10	\$7.25	\$23.00	\$29.00
11-39	6.70	21.50	28.25
40-99	6.25	20.25	27.50
100-up	6.00	19.75	25.75
Queens are shipped postpaid—Please add postage on packages			
	1-Pkg.	2-Pkg.	3-Pkg.
2-lb. w/q	\$4.00	\$5.75	\$7.00
3-lb. w/q	4.25	6.00	\$7.25
Quality, Satisfaction & Dependability with personalized Service			
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High Quality Package Bees and Queens

THREE BANDED ITALIANS

2 lbs. w/q				
1-24	\$17.50	25-99	\$17.00	100-up \$16.50
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1-24	22.50	25-99	22.00	100-up
			21.50	
Queens				
1-24	6.00	25-99	5.75	100-up 5.50

Fumidil-B fed to all package colonies and queen nuclei. For postage and insurance add 2.75 per package for 2-lb and \$3.00 per package for 3-lb.

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OBITUARY

(Continued from page 152)

Springfield, Mass. and his father (son-in-law of F. W. Jones) became plant manager of the company. This interest continued to grow and at age 16 after receiving training at Shawinigan Technical Institute he joined F. W. Jones & Son Ltd. as head of the sheet metal shop.

Mr. Craighead steadily assumed more responsibility in the company and in 1946 at age 22 became plant manager when his own father passed away suddenly at age 57. Ten years later he succeeded Harry W. Jones (son of the founder) as President. During the 24 years Mr. Craighead served as president, the company grew from a small family business with a staff of less than 20 employees to a modern business employing double that number and supplying over 500 products to the beekeepers in several countries. Mr. Craighead also expanded the company's export business and developed a liquid bee feed which overcame the problems of toxicity and crystallization. Always an active member of the beekeeping industry, Richard served on the Canadian Honey Council for several years and was a familiar figure at beekeeping meetings.

He is survived by his wife Audrey, sister Isabella, and children Bill, John and Jane. Mrs. Craighead, formerly vice-president, will become President. Bill, a ten year veteran of Jones, will continue to oversee production as well as take on other responsibilities and John will handle the finances and sales. Daughter Jane is also a director of the company and is presently training as a chartered accountant. With the help of their employees and customers, the family looks forward to serving the beekeeping industry in the years ahead. Richard Craighead will be sorely missed by his family, his community, and the beekeeping industry.

Acarine Mite In Mexico

Agricultural Regulatory Officials of the U.S.D.A. have been alerted that the Acarine Mite, *Acarapis Woodi* has been found in six states in Mexico, some less than 200 miles below the border. Up until the alert there was no real barrier to prevent its drifting up into the United States according to one commercial beekeeper who operates bees in Arizona.

Canada no longer imports bees from Mexico and all PPQ permits issued for intransit movement of Mexican honeybees through the United States are now revoked.

More information will follow.



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100 & up ... \$6.00
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Live delivery Guaranteed
10% to book, balance due before shipment.

QUALITY BRED ITALIAN QUEENS

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Quantity discount on queens and Nucs.

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Booking orders for 1981 Queens from about April 5, depending on weather.

1-24 \$7.25 25-99 \$6.50 100-up \$6.00

Price good through October 1981

Clip or mark 25¢

1-10 Cash with orders.

11 & up 15% to book, balance due 15 days before shipment

LIVE DELIVERY GUARANTEED TO U.S. & CANADA. Queen yard manager is Page Simpson, who has been working bees since 1928 and producing good Queens since 1949.

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QUALITY BRED CAUCASIAN & ITALIAN BEES & QUEENS

2 lb. w/q — \$20.00 3 lb. w/q — \$25.00

QUEENS 1-49 — \$5.50 50-up — \$5.00

The above prices include postage, special handling, and insurance fee.

Packages to be picked up at our Apiary

2 lb. w/q — 16.00 3 lb. w/q — \$21.50

10% books order. Balance two weeks prior to shipment. Health certificate furnished.

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2½-lb. pkg.	20.85	20.50	20.00
3-lb. pkg.	23.15	22.50	22.00

WRITE OR CALL FOR LARGER ORDER PRICES
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PACKAGE PRICES \$2.00 LESS PER PACKAGE

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Packages shipped F.O.B. — Baxley, Georgia

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No. of Queens and Price			
1-10	\$5.75	11-99	\$5.50
100-up	\$5.25		

Marked: \$.30 ea. Clipped: \$.30 ea. Tested: \$.75 ea.
TERMS: Orders \$100 or more, 10% deposit and
balance due 2 weeks before shipment—others,
cash with order.

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Add \$2.75 per 2-lb. package and \$3.25 per
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In Lots Of	Queens	2-Pound & Queen	3-Pound & Queen	4-Pound & Queen	5-Pound & Queen
1-10	\$6.00	\$19.00	\$23.15	\$29.25	\$35.25
11-99	5.50	18.50	22.50	28.75	34.90
100-up	5.25	17.75	22.00	28.25	34.35

Mark Queens — 25¢

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1-2 # \$4.35 1-3 # \$4.65 1-4 # \$5.25 1-5 # 5.50

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Before March 1st
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\$7.25
7.75
7.7511-39
\$6.70
7.20
7.2040-99
\$6.25
6.75
6.75100-499
\$5.90
6.40
6.40500-up
\$5.75
6.25
6.25**"DOUBLE HYBRIDS"** same price as regular hybrids. For clipping and/or marking add 50¢ per queen.2-lb. pkg. w/Cau. Q.
3-lb. pkg. w/Cau. Q.
2-lb. pkg. w/Hybrid Q.
3-lb. pkg. w/Hybrid Q.1-10
\$22.75
28.75
23.25
29.2511-39
\$21.60
27.60
22.10
28.1040-99
\$20.40
26.40
20.90
26.90100-up
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25.25
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2 lb. pkg. w/q	\$17.50	\$17.00	\$16.50
3 lb. pkg. w/q	22.50	22.00	21.50
Queens	5.75	5.50	5.25

Add \$2.00 per 2 lb. package for postage, insurance, and special handling. Add 2.50 for 3 lb. package.

Fumidil—B fed to all package colonies and queen nuclei

Write or Call for special prices on truck load lots.
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3-lb. pkg. with young laying queen	24.00	23.75	23.25	22.75
4-lb. pkg. with young laying queen	30.00	29.25	28.50	27.75
5-lb. pkg. with young laying queen	36.00	35.25	34.50	33.75
Extra Queens	6.50	6.25	6.00	5.75



Queens clipped 25¢ each Queens marked 25¢ each

Queens are Postpaid and Shipped Air Mail.

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2-lb. pkg. w/q	\$19.50	\$18.50	\$18.00
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Nice large queens	6.40	5.75	5.25
Mark 50¢ each	Clip 50¢ each		
Fumidil B fed to nuclei			
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\$7.75

25-99

6.50

7.00

100-up

6.00

6.50

Clip and Mark 50¢ each
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\$6.25 any number

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	Queens	2-lb.w/q	3-lb.w/q	4-lb.w/q
1-9	\$6.25	\$18.50	\$23.50	\$29.50
10-24	6.00	17.75	22.75	29.00
25-99	5.75	17.25	22.25	28.50
100-up	5.50	16.75	21.75	28.00

Write or call for prices on TRUCK load lots.

QUEENS POSTPAID AIR MAIL

For PARCEL POST, add \$3.25 pr. 2-lb. pkg. Add \$3.75 pr. 3-lb. pkg. ea.

This includes Postage, Insurance,
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QUEENS AIR-MAIL

1-25	\$5.00	25-100	4.75
100-up	4.50		

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Ph. 504-873-8186

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\$6.00 lb.

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1-10	\$7.00
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100-	5.00

Full Colonies-\$50.00

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5-Frame Nucs

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5-Frame Nucs exchange
assembled Frames &
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Queens are sent postpaid, airmail.

Phone order in for early arrival, April & May—Loading Trucks 500-1000 Ask for price

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Double-grafted Italians
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- *All Queens Insured & postpaid airmail
- *Full payment required before shipment
- *Shipping date March 15 through May 15
- *Minimum 25 Queens per shipment \$5.50 Per Queen
- *Clipping and/or marking 50¢ extra

Italian Queens



Production dedicated to the advancement of Apiculture, for as claimed by Elisha Gallup, "... around the Queen centers all there is in Apiculture."



1-24 \$6.50 25-up \$6.00
Clipped & Marked — 50¢ each

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1981 Prices

Hastings Carniolans & Italians
3-fr. nucs — Sealed brood on every frame. \$37.00 postpaid.

Write for pickup prices. All cell builders & mating hives fed Fumidil-B
QUEENS

Hastings Carniolans
1-24 \$7.00 25-99 \$6.75 100-up \$6.50
Italians
1-24 \$6.00 25-99 \$5.75 100-up \$5.50

Perrin's Apiaries
P.O. Box 70
Ponchartraine, LA 70454
Phone: (504) 386-2238

ITALIAN PACKAGE BEES AND QUEENS NO DRONES

We ship pure worker bees by your truck, car, trailer or by parcel post. Prices are F.O.B. Funston, Ga. With

Queens	2 lbs.	3lbs.	4lbs.	5lbs.	Queens
1- 24	\$18.50	\$23.25	\$28.25	\$33.50	\$6.25
25-100	\$17.85	\$22.60	\$27.60	\$32.85	\$6.00
101-499	\$17.35	\$22.10	\$27.10	\$32.35	\$5.75
500-up	\$17.00	\$21.75	\$26.75	\$32.00	\$5.50

Clipping Queens 40¢ each — Marking 40¢ each
For queenless packages deduct \$3.00 from above prices
Get worker bees only, don't pay for up to 20% Drones you usually get in your package bees.

Packages can be shipped only by parcel post or your transportation. Get away for a few days, pool your order with your neighbor, pick your bees up here and save the postage. Deduct \$1.00 each if you bring your own usable cages. \$3.00 deposit per package required to book your order — balance due 15 days prior to shipping date. For most desirable shipping dates book your order early.

We feed Fumidil-B in the fall and early spring
Prices subject to change without notice.
Thank you!

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P.O. Box 905 Moultrie, Georgia 31768



1981 PRICE LIST

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	1-9	10-99	100-699	700-up
2 lbs. w/queen	20.17	18.86	17.83	17.59
3 lbs. w/queen	25.15	23.84	22.81	22.40
4 lbs. w/queen	30.12	28.81	27.78	27.39

\$1.00 allowed for useable cage with cover block. Queenless packages \$4.00 less than above. \$5.00 per package deposit to book order. Balance due 10 days prior to shipping date.

PARCEL POST

Shipping Charges:	1 Pkg.	2 Pkg.	3 Pkg.
2 lbs. w/queen	\$4.28	\$6.41	\$7.94
3 lbs. w/queen	4.78	6.95	8.81

Use above price schedule and add appropriate shipping charges. WRITE FOR FREE FURTHER INFORMATION BY RETURN MAIL
Shipping charges include postage, postal special handling fees, and charges. Insurance for full value of bees only...DOES NOT cover shipping charges.

If shipping loss occurs, have postal official sign statement of loss/postal form #5257 and mail to us with your invoice number.

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(\$2.00 Delivery Charge)

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Let us stock your
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(You deliver & pickup)

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Nac., TX 75961

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Alto, TX 75925

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25-up 5.00

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— Proven Honey Producers —

(Postage Paid, includes Insurance & Special Handling)

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1	\$6.75	\$25.50	\$29.50
2-25	6.25	22.50	27.50
25-99	6.00	21.50	26.50

Truck Orders

1-99	6.00	18.50	23.00
100-up	5.50	17.00	21.50

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Italian Bees & Queens

2 lb. pkg. w/q — \$17.00

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Young laying queens

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25-up \$5.00

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colonies. We would appreciate an
order from you. Health certificate
furnished.**NORMAN BEE CO.**

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Telephone: 205-562-3542

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1 - 4	\$7.50	\$8.10	For clipping add 25¢
5 - 31	6.90	7.50	For marking add 35¢
32 - 99	6.40	7.00	For both C/M add 60¢
100 - 999	5.90	6.50	
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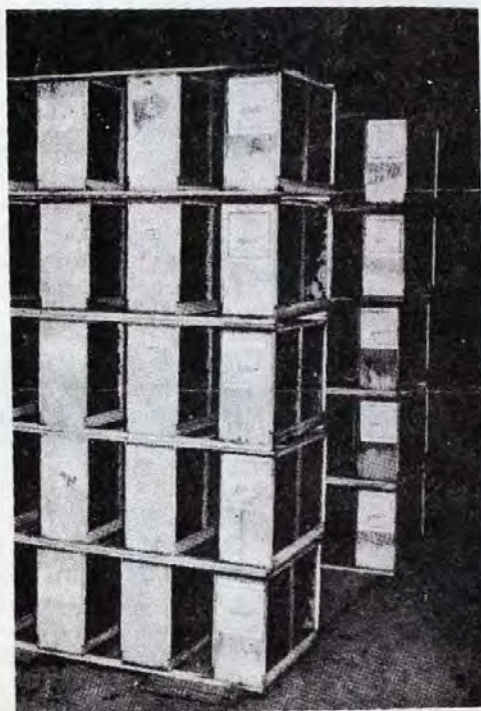
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9 MIDNITES
8 ITALIANS
1

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For Hobbyist — Honey Producer — Pollinator

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3-lb. pkg.	w/q	26.00	24.90	24.25	23.75	
5-lb. pkg.	w/q	38.90	38.00	37.00	36.00	
Queens		6.50	6.20	6.00	5.80	

STARLINE OR MIDNITE

			1-3	4-25	26-99	100-up
2-lb. pkg.	w/q	\$21.00	\$20.25	\$19.50	\$19.00	
3-lb. pkg.	w/q	26.50	25.50	24.75	24.25	
5-lb. pkg.	w/q	39.40	38.50	37.50	36.50	
Queens		7.00	6.70	6.50	6.30	

Prices F.O.B. Jesup

Queenless packages — deduct \$3.00 per pkg.
Tested Queens — add \$1.50 per pkg. or queen.

Clipped and Marked 50¢ each.

Terms: Small orders cash, larger orders \$2.00 deposit per package and balance three weeks prior to shipping date. Allow three weeks for personal checks to clear.

WRITE FOR FREE COPY OF SHIPPING RATES AND INFORMATION

Shipments start first of April depending upon spring weather conditions.

APRIL 1981						
S	M	T	W	T	F	S
				1	2	3
				4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

MAY 1981						
S	M	T	W	T	F	S
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

JUNE 1981						
S	M	T	W	T	F	S
						1
						2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

PLAN NOW on your shipping dates for the coming spring. Present indications are that shipments will have to be planned now for more difficult delivery schedules by parcel post. Now booking orders.

Particularly plan to use hybrids for the coming season. Our rate of production of hybrids continues to rise as modern, commercial beekeepers learn of increased benefits to them. **BEE WISE — HYBRIDIZE.**

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RENDERING every day in our all new plant. All honey saved from cappings. Rendering slumgum and old combs. Write for **FREE** shipping tags

and rates. **HUBBARD APIARIES**, Onsted, Mich.

Meads, Melomels, Metheglins. Your honey, our knowhow. Free recipes and catalogue. **Bacchanalia**, Box 51BC, Central Village, MA 02790.

BEEKEEPERS PLANNING Guide & Record Book helps keep track of income, expenses, inventory, production, beeyard information. Includes year-round management planner \$3.25 post paid. M. Chatelain, P. O. Box 1373, Baton Rouge, Louisiana 70821.

EMBLEMS CUSTOM EMBROIDERED: for club or business. Minimum ten. Write: TLM28, 1929 East 52nd, Indianapolis, 46205.

Put honeybees to work for you with a **HARDY FIBERGLASS HIVE**. Send \$1 for illustrated brochure. **APICO**, Box 573, South Lancaster, MA 01561.

HONEY STRAINER, fine mesh fabric bag, approx. 18" x 20", Instructions, Practical, Convenient, reusable. Ppd. \$3.00 each, 2 up \$2.50 each, Beckman G12, Box 633, Stuart, FL 33495.

THE A. I. ROOT CO. is temporarily out of sugar. Please call us at 216-725-6677 for future availability. Thank You.

CUT-COMB PACKAGE THAT SELLS! Also baked goods, etc. Uses household materials, less than 4¢. Details \$1.00 SASE packet, Dept C2, 820 Kinsman, N. Bloomfield, Ohio 44450.

INSEMINATION DEVICES. For prices write **Otto Mackensen**, Box 1557, Buena Vista, CO 81211.

OHIO BEEKEEPERS — I will again be trucking bees to Ohio from Alabama. If you are interested in package bees call (513) 653-5727 or

GLEANINGS IN BEE CULTURE

write 800 Miami St., Urbana, Ohio 43078 — J.L. Rockhold.

IMMEDIATE CASH — Bees and Equipment — Minnesota to Texas — 612-645-1433 or eves. 778-8084.

AUSTRALIAN BEEKEEPER hiking Appalachian Trail GA to W. VA. May and July 1981 would like to meet beekeepers before leaving U.S. Norman Hoyle, Perth, Tasmania, Australia.

PECAN PIE tastes even better with no sugar — just honey. My own recipe \$2.00. Try it. Then reprint my recipe for your customers. Beekeeper Fuscollo, 429 Preakness Ave., Paterson, NJ 07502.

WANTED

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

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

ALMOND POLLINATION NEEDS YOU. Build your colonies while making money. **POLLINATION CONTRACTING.** A brokerage firm now arranging contracts and offering reliable service in Central Calif. Hicken 209-823-1386.

ROYAL JELLY

SUPER STRENGTH Royal Jelly capsules, 100 milligrams per bottle of 100, \$12.50; five bottles, \$60. Prairie View Honey, 12303 12th St., Detroit, MI 48206.

PURE FRESH Royal Jelly, 2 oz. bottle, \$19 pp.; 1 lb. \$120. Prairie View Honey, 12303 12th St., Detroit, MI 48206

POLLEN

BEEFEED POLLEN — No minimum order. \$2.50 to \$3.50 per pound, plus shipping. Inquire: TETON BEE CO., Box 176, Victor, Idaho, 83455.

FRESH, PURE, Bee Pollen available in 1 pound lots, \$6.50 per pound; 10 pound lots, \$5.90 per pound. Large lots, ask for price. Hubbard Apiaries, Inc., Onsted, Mich. 49265.

BOOKS

FIFTY YEARS AMONG THE BEES, Dr. Miller's classic now reprinted. \$7.95 softcover, \$12.50 hardcover. \$1.00 postage. Molly Yes Press, RD 3, New Berlin, NY 13411.

WANTED TO buy Honey and Your Health and/or Bee Venom Therapy By Bodog Beck. Name your price, write: Robert Kessler, 6901 Ardelle Dr., Reynoldsburg, OH 43968.

HELP WANTED

WANTED: Experienced beekeeper for Texas — North Dakota migratory operation. Year-around employment. Send resume and salary requirements to Gleanings in Bee Culture, Box EA, P.O. Box 706, Medina, Ohio 44256.

SINGLE MAN with a little experience, to work raising queens in south and producing honey in north. Howland Apiaries, Berkshire, NY 13736, 607-657-2517.

A BEEKEEPER with at least 3-5 years experience in all aspects of queen rearing; to work in Texas in spring and N. Dak. the rest of the year. The annual salary will be \$10,000 plus a bonus based on honey production, which could be up to \$18,000; also paid vacation and holidays, health ins., and retirement program with housing available in ND. Reliability and honesty a must. Dick Ruby, Milnor, N.Dak. 58060; 701-427-5263 or 713-423-5143.

BEESWAX

BEESWAX WANTED — Highest prices paid in cash or trade for bee supplies. The A.I. Root Co., Medina, OH 44256; Council Bluffs, IA 51501; San Antonio, TX 78204. Box 9153.

BEESWAX WANTED — Small lots to truck loads. Write or call. **DONALD SCHMIDT**, 859 W. 9th Street, Winner, SD 57580. PH: 605-842-0350.

PROPOLIS

PROPOLIS U.S.A. has stopped buying propolis until further notice. Sorry, it's moving as slow as the rest of the economy. Will notify when market picks up again.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. Hubbard Apiaries, Onsted, Mich.

CLOVER, ALFLALFA, Buckwheat, Tulip Poplar, Wild Flower, or Orange in 60's. Dutch Gold Honey, Inc., 2220 Dutch Gold Dr., Lancaster, PA

HONEY IN 60's FOR SALE. Bedford Food Products Co., 209 Hewes St., Brooklyn, New York 11211. Telephone: 212-EV4-5165.

CLOVER, ORANGE, U.S. and Yucatan Wildflower, in sixties. Other flavors and bakery grade available. **MOORLAND APIARIES**, 5 Airport Dr., Hopedale, MA 01747.

NORTHERN MICHIGAN light clover honey in drums. C. W. Scott, 616-947-2524.

HONEY WANTED

BEEKEEPERS TAKE NOTICE — We cannot guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for CASH only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED — HONEY, all grades, Send samples and price. M. R. Cary Corp., Box 818, Syracuse, N. Y. 13201.

HONEY WANTED—Any quantity in cans or drums. Walker & Sons Apiaries, Box 415, Milford, Mich. 48042. Phone: 313-684-2935.

HONEY WANTED: All varieties, any quantity, also comb honey. Office 612-464-4633. Residence 612-464-7476 — 612-462-4774. Nature's Treat, 6764 W. Bdwy., Forest Lake, MN 55025.

WANTED—All grades of extracted honey. Send sample and price. Deer Creek Honey Farms, London, OH.

BUCKWHEAT, light and light amber honey. Bedford Food Products, Inc., 209 Hewes St., Brooklyn, N. Y.

IF YOUR honey is better, I'll pay you more. U.S. or Foreign. Cans, drums. Sample: Allan Hardman, Kawana Honey Company, 2100 Kawana Springs Road, Santa Rosa, CA 95404. (707) 528-4377.

WANTED: All grades of honey in 60's or drums, truck or rail, car load lots. Send sample and price to DUTCH GOLD HONEY, INC., 2220 Dutch Gold Dr., Lancaster, PA 17601

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

WANTED—All grades of extracted honey. Send sample and price to MacDonald Honey Co., Sauquoit, New York 13456. Area Code 315-737-5662.

WANTED: comb and all grades of extracted in 60's or drums. Send sample and price to MOORLAND APIARIES INC., 5 Airport Drive, Hopedale, MA 01747.

SEEDS

SEEDS OF HONEY PLANTS. 15¢ postage brings descriptive price list catalog; \$3.25 for one packet seed each 5 annual bee flowers and catalog. Pellett Gardens, Atlantic, Iowa 50022.

BUCKWHEAT! WHITE BLOSSOM SWEET CLOVER! We have both of these to offer in any size bag that you need. Call or Write: CAUDILL SEED COMPANY; 1201 Story Avenue; Louisville, KY 40206. Call us Toll Free: Inside Kentucky: 1-800-722-5011; Outside Kentucky 1-800-626-5357.

BEES & QUEENS FOR SALE

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.

MARYLAND BEEKEEPERS and adjacent states: Package Italian bees for pickup April 11-12 near Frederick, MD (queens fed Fumidil-B). 2lb. pkg. \$21.00; 3lb. \$25.50. \$4.00 per pkg. books order. Ernie's Apiaries, 9933 Kelly Rd., Walkersville, MD 21793. 301-898-9746.

NORTHERN CALIFORNIA ITALIAN QUEENS. April 1-May 15. 1-5 \$6.00, 6-25 \$5.50, 26-99 \$5.25, 100 up \$5.00. After May 15: 1-5 \$5.50, 6-25 \$5.00, 26-99 \$4.75, 100 up \$4.50. Ship air mail post paid and insured. Live delivery guaranteed. Backman Apiaries, 1801

Calin Lane, Anderson, CA 96007. Phone 916-365-4029.

NUCS — 81 Starlines. Your equipment — you haul. \$18.00 — 5-6 frames brood by May 1st. Homestead Apiaries, RR 1, Box 119, Cannon Falls, MN 55009.

NUCS or SINGLE COLONIES-OUR BEST NORTHERN STOCK- 1981 QUEENS. Now taking orders for May. We are located in South Central NYS. HOWLAND APIARIES, Berkshire, NY 13736. (607) 657-2517.

ITALIAN QUEENS — APRIL 1-MAY 5: 1-5 \$6.50, 6-24 \$6.25, 25-99 \$6.00, 100-499 \$5.50, 500 up \$5.00. AFTER MAY 5 20% off RICKARD APIARIES, Rt 1, Box 2241, Anderson, CA 96007. 916-365-5551; 916-365-6556.

THREE HUNDRED SINGLE STORIES — Available May 21. Waubay, S.Dakota or Hastings, N.Dakota. 20% to book balance 15 days before pickup. \$48.00 each. Richard Walters, Waubay, S.Dakota 57273. 605-947-4532 After 6:00 p.m.

Three hundred seventy six 1½ story hives, 25 locations near Whiteville, NC. 113 hives, 3 locations near Conway, SC \$55.00 hive, all or part. 4000 gallon tank, 500 feeding buckets etc. Call 813-474-9423. Norman Sharp, 500 Sandlor Drive, Englewood, FL.

May 1st. 200 standard hives with new queens. \$45.00 20% booking. 813-635-3381.

MICHIGAN BEEKEEPERS: I will be hauling package bees from Georgia again this Spring. For prices, dates and information call Don Reimer (517) 695-9031.

NUCS — \$25.00. Three frames with young laying queen. Hybrid stock. Call for quantity discount F.O.B. Dixie Honey Company, E.A. Cannady, RT 3 Box 2068, Shallotte, NC 28459. PH: 919-579-6036.

PACKAGE BEES delivered to Wisconsin near Green Bay, Eau Claire and at my home. Ronald Hazard, RT 2, Poynette, Wis 53955. Phone: 414-992-3217.

2-lb. packages. Italians with queen. Order early. Pick up Owatonna mid-April 507-451-7713. Gene Karaus, R2, Owatonna, MN 55060.

WILL SELL 500 hives of bees your pick out of 600. Mostly 2 hive bodys some 1½. \$60.00 each. Extra supers available. Phone 419-568-7472 or write Donald Dotson, Rt. 6, Wapakoneta, Ohio 45895.

SINGLE STORY beehives for sale in excellent condition. Must sell all. Other equipment available. Please call 701-746-9723 or call John Marshall 1-800-231-3252.

ITALIAN BEE — 4-frame nucs in your equipment, frames exchanged Pick up April. G.M.C. truck, Kelley loader good condition. D.M. Brister, Rt. 1, Caddo, OK 74729, (405) 367-2570.

FIFTY STORY & half hives, fair to good condition, lots of 20 or more. \$60.00 Northeastern W. VA, B. Montgomery, Route 2, Kirby, WV 26729.

NUCS — four frame Italian. Shipped postpaid \$32.00. Small orders only. Johnny Pennington, 194 Cooper-Hurst Rd., Pearl, Mississippi 39208, Phone (601) 939-5994.

STRONG ONE STORY hives available May 1st for pick up at Whiteville, NC. \$55.00 each. Call 813-474-9423, Norman Sharp, 500 Sandlor Dr., Englewood, FL 33533.

PACKAGE BEES — pick up in St. Paul, MN April 18. Now booking orders. Please book early, limited supply. Write J.B. Apiaries, P.O. Box 6626, St. Paul, MN 55106.

FIVE HUNDRED COLONY operation in Colorado. Write Gleanings, Box JH, P.O. Box 706, Medina, Ohio 44256.

ONE HUNDRED 2-story, 8-frame colonies bees with excluder, 3-6% supers with 7 drawn combs. \$65.00 each. Hiltner's Apiaries, Continental, Ohio 45831, Phone 419-398-2393.

FIFTY COLONIES, disease free without antibiotics. D.L. Lewis, Route 1, Corry, PA, 814-664-2506.

FIVE HUNDRED to 1000 hives — Share crop or Share crop purchase. Salary advances available. Call or Write Hamilton 612-645-2221 or eve. 488-3339. 1570 W. Van Buren, St. Paul, MN 55104.

TWENTY FIVE TO 28 strong two story 9% ten-frame colonies. Also 60 honey supers, 6% ten-frame drone combs. Everything in excellent condition call (805) 484-3418 in Camarillo, California.

FIFTEEN HIVES of bees, two pair Peacocks. Phone: 644-9594.

GLEANINGS IN BEE CULTURE

TWO POUND PACKAGE bees end of April. Large Wisconsin orders delivered. Larry Bergmann, Mellen WI 54546, 715-274-7501.

QUEENS — 1-24 \$5.50 — 25-99 \$5.25 — 100-up \$5.00. Cameron Apiary, Rt. 1, Box 133, Barnwell, SC 29812, Ph. 803-259-2290.

ONE HUNDRED COLONIES 8-frame, two-story colonies. All new covers some new bottoms. Port Austin, Michigan, Phone: 517-738-7662.

FOUR HUNDRED 3-frame nuclei, all or part. Package bees and queens, queenless bees, and brooding bees. Walker Apiaries, Rt. 1, Box 34B, Rogers, Texas 76569, Phone: 817-983-2891.

BEE SUPPLIES FOR SALE

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

RADIAL HONEY EXTRACTORS-5 frames, 6 $\frac{3}{8}$ " or 5 $\frac{1}{2}$ ". Patented. Wholesale and retail sales. GAMBLE'S HONEY EXTRACTOR CO., P.O. BOX 7997, Greensboro, N.C. 27407, Ph. 919-299-3973 Day or Night.

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.

BEE EQUIPMENT manufacturers—Oregon pine woodenware, super ends rabbit-joint and beekeeping supplies, smokers, excluders, etc. Write or Call for commercial prices: MONCRIEF BEE SUPPLIES, Post Office Box 625, 1105 Lakewood, Lakeland, FL 33802. (813) 858-6754.

WAXMASTER CAPPING SEPARATOR...melts cappings fast with temperature controlled, circulated hot water, electrically heated. Pack fine quality honey with the PAC-KING HONEY BOTTLING SYSTEM. All equipment stainless. Free brochure. HONEY SALES COMPANY, Mfrs., 2817 No. 2nd Street, MINNEAPOLIS, MINN. 55411.

WE CARRY A COMPLETE LINE OF BEE SUPPLIES and containers. Write

for price list. E & T GROWERS. R. 1, Spencerville, Ind. 46788. (A suburb of Ft. Wayne). Phone 657-5136.

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.

OUR OBSERVATION HIVES, are furniture crafted of beautiful oak and are reasonably priced. Be ready for spring! Write now for free brochure or send \$5.00 for our complete plans and instructions packet. Kawana Honey, 2100 Kawana Springs Rd., Box G, Santa Rosa, CA 95404, Phone (707) 528-4377.

FOR SALE: 5 Frame Nucs. Placed in your equipment. Italian bees. Available May 1. \$35.00. \$5.00 per Nuc Deposit to Book. Dick's Bees, Belmont, NY 14813. Ph: 716-268-7684 or if no answer 716-268-7850.

For Sale: Radial Honey Extractors-5 frames, 6 $\frac{3}{8}$ " or 5 $\frac{1}{2}$ ". Patented. Wholesale-Retail. Factory made. Gamble's Honey Extractor Co. P.O. Box 7997, Greensboro, N.C. 27407 Phone 919-299-3973 Day or Night.

"CONICAL BEE ESCAPES AND TEMPERATURE CONTROLLED VENTILATORS is our specialty. For free information write to: Trafalgar B. Equipment, 3371 Trafalgar Road, RR 1, Oakville, Ontario, Canada L6J 4Z2."

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

BEE SUPPLIES & BOTTLES. Telephone Evenings 934-6676. Lewis Smith, 43 Puritan Way, Duxbury, MA. 02332.

PINE BEE SUPPLIES

*Beehives dovetailed — \$3.50 each
*Super 5 $\frac{3}{4}$ " or 6 $\frac{1}{2}$ " — \$2.50 each
*Frames heavy duty per 100 — \$28.80
*Frames heavy duty per 1000 — \$250.00
*Lids or bottoms (migratory) — \$1.75 each or \$3.50 per set

Allow manufacturing time on large orders. Marvin Smith Apiaries, Rt. 1, Parma, Idaho 83660, Phone 208-722-5278 days.

BEESWAX, old combs and scrapings collecting? Process it easily and

economically with the BEESWAX PROCESSOR. Write Shots Inc., 4418 Josephine Lane, Robbinsdale, MN 55422.

HONEY SUMP and pump also bee bookd. Wayman Wilson, 3426 Harrison Pike, Chattanooga, TN 37416

COMMERCIAL SUPERS: 100 or more (one size) 9 $\frac{1}{8}$ " supers \$3.59, 7 $\frac{1}{8}$ " supers \$3.00, 6 $\frac{1}{8}$ " supers \$2.40, 5 $\frac{1}{8}$ " supers \$2.20. Economy Frames — lots of 500 (all sizes: 500 frames \$110.00 or 22¢ each, 100 frames \$205.00 or 20 $\frac{1}{2}$ ¢ each, 5000 frames \$987.50 or 19 $\frac{3}{4}$ ¢ each. Free Catalog. Glorybee Honey, 1006 Arrowsmith, Eugene, OK 97402, Phone: 503-485-16649.

USED JUNIOR BRAND MELTER (galvanized); Used 20 frame Root Radial Extractor (galvanized tank) with motor; Used 30 gal. stainless steel steam jacketed kettle; power uncapping knife. Marvin Parker, Parma, MO 63870, (314)357-4861.

USED BEE SUPPLIES CHEAP. PHONE:(213)663-3745.

"LAGRANT'S", New England's Largest Manufacturer of Bee Supplies, send for our catalog! Northern bred 3 frame nucs with 1981 queens, (limited number). Lagrant's, Ware, Mass. 01082.

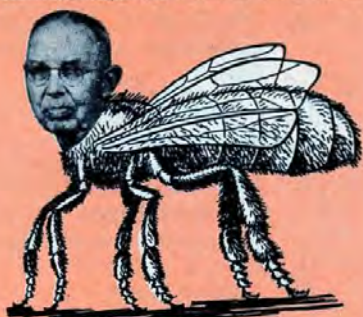
USED EXTRACTORS, melter, boiler, uncappers, pump. Haynes Apiaries, Alba, MI, 616-584-2982.

FOR SALE

HONEY HOUSE with adjacent hard surface lot, super warehouse, home and over 75 prime locations in West Central Minnesota. Over 11,000 sq. ft. storage area in 3 separate buildings for 5,000 colonies. Honey house has inside loading dock and 2 separate heat rooms. Also 1 myers E-Z loader with or without ramps. Never used. And 1 Cowen Uncapper. Large model with auger. Like new. Call or Write: Overbey Apiaries, Inc., P.O. Box 656, Bunkie, LA 71322, Ph: 318-346-6433 or 346-6888.

1978 Chev ton truck with 20' three axle 5th wheel trailer. \$7500.00. DRAKE, Snoqualmie, WA 98065.

COMPLETE TWO THOUSAND hives operation on pallets, all super standard 10-frame deeps. Two Chev. truck, two fork lifts all stainless steel extracting equipment. Locations in ND, NB, and TX. Write Gleanings, Box HL, P.O. Box 706, Medina, Ohio 44256.



Reg. U.S. Pat. Off.

Italian Bees and Queens

Swarms shipped only from our Louisiana bee farm. Queens from Louisiana and Kentucky via Prepaid Air Mail. Clipping or painting queens 40¢ each extra. Due to slow parcel post delivery we are shipping swarms only to the following states:

LOUISIANA	TENNESSEE	INDIANA
MISSISSIPPI	KENTUCKY	ILLINOIS
ALABAMA	OHIO	MISSOURI
ARKANSAS		

Queens	2-lb. w/q	3-lb. w/q
\$6.25	\$19.00 ea.	\$24.00 ea.
6.00	18.50 ea.	23.50 ea.
5.75	18.25 ea.	23.25 ea.

THE WALTER T. KELLEY CO.
Clarkson, Kentucky 42726

POLLEN SUBSTITUTE

Feed your bees pollen substitute early in the spring to stimulate brood rearing so as to divide them later on. Much cheaper than buying package bees, — however, be sure that they have plenty of honey or they may starve before a honey flow comes on. Especially valuable for early package bees received before natural pollen is available. This one item replaces the previous mixture containing **EXPELLAR PROCESS SOY FLOUR** which is not longer available. This is a **HI-NUTRIENT, HEAT TREATED SOY FLOUR, HIGH PROTEIN, LOW IN FAT, MOISTURE AND FIBER, WITH AMPLASH, CARBOHYDRATES AND NITROGEN SOLUBILITY**, — and the best part about this is that the price is **50% LESS** than last years mixture.

This is a fluffy flour and can be easily blown by a light wind so it is far better to mix it with sugar syrup into a patty form which should be placed on treated paper, or thin sheets of plastic, directly over the cluster on the top bars. This **POLLEN SUBSTITUTE** will greatly stimulate brood rearing but care should be taken that the colonies do not run out of stores and starve before the honey flow.

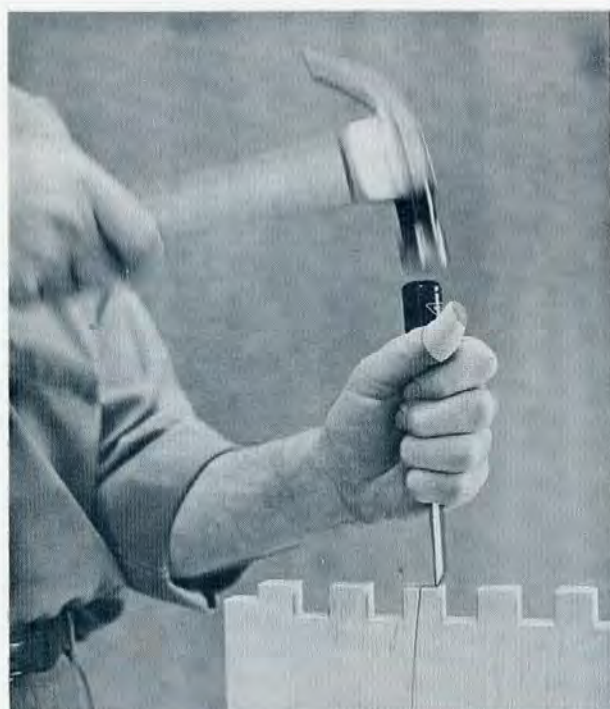
Cat. No. 72	5 Pounds Pollen Substitute	7lbs.	\$2.50
Cat. No. 73	25 Pounds Pollen Substitute	27 lbs.	\$8.50
Cat. No. 74	100 Pounds Pollen Substitute	101 lbs	\$27.50

THE WALTER T. KELLEY CO.
CLARKSON, KENTUCKY 42726

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The time you waste is worth more than the money you save!



If you've ever bought "bargain-priced" hive bodies you know the story behind the picture. They don't fit, so you have to make them fit with a chisel or saw.

When you're done "the time you waste is worth more than the money you save".

All of our hive parts come complete with nails and instructions. Our deep supers come with metal frame rests and all our supers have predrilled lock corners.

As the oldest manufacturer of beekeeping supplies in the United States, we can't boast perfection but if it isn't right we'll replace it — no questions asked.

For supplies that work and fit properly visit your nearest Root Dealer. He's a good man for sound advice too. Send for free Bee Supply Catalog.

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Council Bluffs, IA 51501 — Medina, OH 44256
San Antonio, TX 78204 — Elizabeth, NJ 07201

M. C. BERRY & SON

"OLD RELIABLE" PACKAGE BEES AND QUEENS

262-0668 — 269-9998 — Area Code 205

P. O. BOX 684

MONTGOMERY, ALABAMA 36101

1981 PRICE LIST

In Lots of	Parcel Post Package Bees & Queens				
	Queens	2-Pound & Queen	3-Pound & Queen	4-Pound & Queen	5-Pound & Queen
1-24	\$6.50	\$25.75	\$31.50	\$37.00	\$42.75
25-99	\$6.20	\$23.75	\$29.25	\$35.00	\$40.75
100&up	\$5.90	\$22.50	\$28.25	\$34.00	\$39.75

WRITE FOR PRICES ON PACKAGES 100 AND UP

PRICES INCLUDE POSTAGE, SPECIAL HANDLING, AND INSURANCE FEES.

If Shipment arrives in poor condition place Claim immediately with Post Office for damages.

Packages can only be shipped parcel post.

To book parcel post orders, check or money order must accompany order.

Prices are subject to change.

We may run late on shipping, but will come as near to your desired shipping date as possible.

Tested Queens are available at \$2.00 extra. Marking and/or clipping of queens is 50¢ extra per queen.

Packages and Queens to Be Picked Up at Montgomery, Alabama

In Lots of	Queens				
	Queens	2-Pound & Queen	3-Pound & Queen	4-Pound & Queen	5-Pound & Queen
1-24	\$6.50	\$19.50	\$25.50	\$31.50	\$35.00
25-99	\$6.20	\$18.75	\$24.50	\$30.50	\$34.75
100 & up	\$5.90	\$18.00	\$23.50	\$29.25	\$33.50

**If you're looking for veils that are bee tight—
Here they are!**



**INDESTRUCTIBLE
BEE VEIL**
CAT. NO. N10



DELPHOS FOLDING VEIL
CAT. NO. N12



SLIP-ON NET BEE VEIL
CAT. NO. N13



ALEXANDER BEE VEIL
CAT. NO. N11

Root quality bee veils are made with the finest materials. The wire screening along with our fine—mesh netting, will provide you with maximum visibility.

All our veils are designed to be serviceable and provide you with plenty of room, comfort and strength so they wear well and most of all last.

For more information write one of the outlets listed below and ask for our free Bee Supply Catalog or contact your nearest Root dealer.



**COLLAPSIBLE HAT WITH
ROOT NET BEE VEIL**
VEIL-CAT. NO. N15
HAT-CAT. NO. N18

The A. I. Root Company

P.O. Box 706, 623 W. Liberty, Medina, Ohio 44256 — 1028 3rd Street, Council Bluffs, Iowa 51501

P.O. Box 9153, 537 South Flores Street, San Antonio, Texas 78204

Branch at 1106 East Grand St., Elizabeth, New Jersey 07201

Send for a free catalog for the listing of your nearest Root Dealer.