GLEANINGS IN BEE CULTURE

JANUARY 1984

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John Root

Lawrence Goltz

Renee Harrison

Mark Bruner

Mark Bruner, Editor
THE A.I. ROOT CO., PUBLISHERS
P.O. BOX 706
MEDINA, OHIO 44258-0706

John Root, Associate Editor
Lawrence Goltz, Western Editor
Dr. Roger A. Morse, Research Editor
Dr. Richard Taylor, Contributing Editor
Renee Harrison, Advertising Mgr.
Rebecca Hall, Sub. Mgr.

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GLEANINGS IN BEE CULTURE

Since 1873

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Created to Help Beekeepers Succeed
111 Years Continuous Publication by the Same Organization

THE WORLD'S
MOST POPULAR ENGLISH LANGUAGE BEE JOURNAL!

CONTENTS

COVER STORY

Digging hives out of the snow for transportation to Florida. Photo of colonies from the original A.I. Root Company apiaries, 1913.

NOTES FROM THE BEEYARD

GLEANINGS IN BEE CULTURE ONCE AGAIN THE WORLD'S LARGEST CIRCULATING ENGLISH LANGUAGE BEE JOURNAL!

In October, 1983, GLEANINGS IN BEE CULTURE reported, to the U.S. Post Office, a paid circulation figure of more than 22,000. We want to thank our many readers for helping us to attain that. We have always tried to serve the needs of *everyone* in beekeeping and, as the world's the most popular English language bee journal, as well as the longest continuous publishing journal under one family ownership, we truly hope we are meeting our objective of giving a helping hand to beekeepers. As always, we welcome and need your comments. Your feedback, positive or negative, is the way through which we grow. Once again, we thank you for getting this year off to such a good start for us. We'll try our best to repay you by publishing the type of beekeeping information you need most.

HOW TO BE HEARD WITHOUT YELLING YOUR HEAD OFF:

Some folks think that a person needs to shriek and turn blue and throw things in order to be noticed. Wrong. Usually, that type of behavior only gets one shunned or punched. Beekeepers, in particular, should know a few basic rules for level-headed communication. This column will be focused on written communication because of the likelihood that, at one time or another, almost every beekeeper will perceive the need to write a letter to a legislator, about a political issue affecting beekeeping; or to a neighbor who has been applying pesticides; or to a town council that is considering anti-bee zoning ordinances following calls about "nuisance" bees. Here are some definite do's for letter writers to remember:

DO write a letter that reflects your individuality and creativity. So often, when a group of folks get together to represent a common cause. someone will write a letter and everyone will make copies of it, sign them and mail them. Such form letters are a waste of time. They are pitched into the wastebasket by almost everyone who receives them. One personal letter, obviously demonstrating individual concern and thought, will carry more weight than a dozen or more form letters showing only that the letter signer didn't care enough to be original.

DO use personal examples in your letter. Statistics and publically reported facts are often good backbone for an argument, but they can, just as often, be overused and become ineffective. Nothing gives muscle to a letter like an example of how you, the letter writer, have been or will be, personally affected by the issue you are discussing.It is difficult for anyone to sympathize or relate to a blast of statistics. On the other hand, a reader given evidence of the fact that the letter writer is a human with very real concerns and needs, is more likely to be responsive to continuing communication. Remember, the goal of communication cannot always be to immediately persuade the other person that you are right and he or she is wrong. Often, the first step is simply to lessen hostility or intolerance -- to cause the reader to listen and then to speak back to you.

DO be as concise as possible. As a general rule of thumb, a letter, especially the first letter of any exchange, should be presented on one page. Long letters, that look more like epic sagas, intimidate readers. Often, they are merely skimmed or completely ignored because they indicate too much involvement of reading time. Your reason for writing should be stated in the first paragraph of the letter. Main points should be brought out in an ordered fashion. Remember, too, that you are seeking a response. Such response will give you the opportunity to further develop your thoughts in subsequent letters. You may wish to pose questions to your reader which will increase the likelihood of reply. Demonstrate your knowledge and individuality, but beware of sounding hostile, sarcastic or condescending. Readers don't want to feel that a letter writer would eat them for breakfast, or thinks that they are, in some way, inferior because they have an opposing opinion. The old cliche says that you can catch more flies with honey than with vinegar. That's true even if it isn't flies you're trying to catch.

DO type if at all possible. If you live in the wilds and don't have such new fangled equipment, print or write neatly. Nothing clamps a reader's mind shut faster than trying to read, let alone understand and appreciate, a letter looking as if it was written in a strange and ancient runic alphabet. Few folks will spend much time trying to figure out if you're talking about "beekeepers" or "bookkeepers." You don't necessarily need linen weave stationery paper to make an impression, but scrawling notes

on cocktail napkins, or sending coffee besmerched stationery probably won't win the heart of your reader.

DO be sure of your facts. When you cite a reference, make sure it exists as you state it. Check names and addresses. Secretary of Agriculture, John Block, probably doesn't give much credence to mail addressed to Secretary of Agriculture, Johm Bluck. While you're checking such things, make sure your own return address is correct. Otherwise, the only folks to see any response to your letter will be the sorters at the "Dead Letter" office.

DO mention if you represent, or are a member, of an organization that has interests akin to your reason for writing the letter. Your individuality is what makes a letter work or flop, but there is also strength in numbers. Your reader will be more likely to listen if you don't appear to be a one person crusade.

DO get yourself a good dictionary. Wrong spellings don't mean much of anything but, unfortunately, some folks think they do. Some readers will think it suggests that you're sloppy. Some will think that a misspelled word invalidates your logic and thoughts. T'aint so, but some readers have been known to thunk so! Also, find a good style book at your library. That will help you craft the physical structure of the letter. While you are at the library, you might make yourself an address directory of legislators or others that you might have need to contact.

DO be an activist. If you think something is wrong -- say it. If you think something is right -- say so. The worst type of person in the world is not one who causes harm, but one who does nothing. The apathetic person -- the one who just doesn't care -- permits harmful things to exist. Everyone reading this now has the ability to project himself or herself through words. That is a power that we as beekeepers have the responsibility to exercise as often as we see a purpose for doing so. A good letter is an excellent way to begin.

OLD PHOTOGRAPHS
NUMBER THREE

E.L. KINKADE STANDS BEHIND HIS BEEHIVE AND A CLUSTER OF BEES GATHER BEFORE HIM ON THE ROOF OF THE HIVE. THE CAPTION READS: " E.L. KINKADE IN THE BACKGROUND"; AS IF THERE WAS SOME CHANCE OF MISTAKING THE BEES, WHICH ARE IN THE FOREGROUND, FOR E.L. KINKADE -- OR MERELY BECOMING CONFUSED AS TO WHICH IS WHICH AND WHOM IS WHOM. BUT, BEEKEEPERS SELDOM RESEMBLE THEIR STOCK, UNLIKE DOG OWNERS WHO, SOME SAY, ASSUME THE CHARACTERISTICS OF THEIR PETS. SO, THERE SEEMS NO REASON FOR ANALOGY OR CONFUSION -- E.L. KINKADE IS DEFINITELY THE CREATURE IN BIBS, SHOWING NO INTENTION TO SWARM OR FORAGE. HIS SLEEVES FLOP AT HIS SIDES LIKE WINGS, BUT THAT IS FAR FROM ENOUGH TO RAISE OUR SUSPICIONS.

COMING UP IN *GLEANINGS:*

BEEKEEPERS AND TAXES, by Eugene, Oregon attorney, Lee D. Kersten. *A guide to what every beekeeper needs to know about taxes.*

BEEKEEPERS AND MICROCOMPUTERS, by Roger Hoopingarner, Michigan State University Department of Entomology. *Home computers are rapidly becoming accessible to the average household. How can they help beekeepers?*

THE BEST HIVE FOR WINTERING. *In their continuing series, T.S.K. and M.P. Johannson discuss the variety of hive types and their relationship to successful wintering of bees.*

PROFILE OF MASTER BEEKEEPER, CHARLES MRAZ, by J. Iannuzzi. *An enjoyable article focused on well known apitherapy proponent and* **GLEANINGS** *columnist, Charles Mraz.*

NUMEROUS ARTICLES EMPHASIZING THE CRAFT OF PRACTICAL BEEKEEPING. *JOIN US AGAIN NEXT MONTH -- WE WORK WELL TOGETHER!*

The Monthly Honey Report

LAWRENCE GOLTZ

December 10, 1983

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

Wholesale Extracted — **Reporting Regions**

Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged	1	2	3	4	5	6	7	8	9
60 lbs. (per can) White	42.00	35.50	34.80		35.50	40.00	32.00	36.00	37.80
60 lbs. (per can) Amber	42.00	30.00	31.20		33.50	37.50		34.50	34.80
55 gal. drum (per lb.) White	.60	.54	.58	.58	.58		.55	.56	.58
55 gal. drum (per lb.) Amber	.58	.43	.52		.56		.47	.54	.54
Case lots — Wholesale									
1 lb. jar (case of 24)	28.50	25.00	25.85	25.90	26.50	24.50	25.50	25.50	27.00
2 lb. jar (case of 12)	27.50	24.00	24.20	23.75	25.50	23.00	25.00	24.50	26.00
5 lb. jar (case of 6)	30.00	27.50	26.25	26.00	28.00	25.50	26.50	27.00	28.50
Retail Honey Prices									
½ lb.	.90	.90	.90	.83		.90	.90	.91	.90
12 oz. Squeeze Bottle	1.50	1.20	1.50	1.17	1.25	1.35	1.30	1.30	1.25
1 lb.	1.50	1.40	1.55	1.43	1.55	1.55	1.47	1.59	1.50
2 lb.	2.70	2.60	2.85	2.59	2.65	2.60	2.75	2.65	2.60
2½ lb.	3.35	3.75				3.25	3.75	2.79	
3 lb.	4.00					3.85	4.00	3.80	3.50
4 lb.	5.00	4.95		4.99		4.90	4.75	4.70	
5 lb.	6.00	6.00	6.25		5.50	5.80		6.00	5.50
1 lb. Creamed		1.55	1.55					1.60	1.50
1 lb. Comb	2.25	2.25	2.25			2.30		1.89	2.25
Round Plastic Comb	1.75	1.75	1.85				1.70	1.75	1.65
Beeswax (Light)	1.25	1.15	1.50	1.40	1.35	1.30	1.15	1.15	1.15
Beeswax (Dark)	1.15	1.00	1.05	1.35	1.25	1.20	1.10	1.10	1.00
Pollination Fee (Ave. Per Colony)	25.00	20.00	27.50		20.00			20.25	25.00

Misc. Comments

Region 1

Honey sales remain slow at both wholesale and retail levels. The cost of operations would warrant a price increase, however, the market seems to be flooded with low priced honey, making an increase impossible at this time. The loan program doesn't help the small beekeeper; the imports only help the middle man.

Region 2

No demand for wholesale honey in New York State. Most commercial beekeepers appear to be giving their honey to the loan program. One chain offering one pound jars at 88 cents. This must be foreign honey, but is not so marked, as I understand it should be. Bees appear to be in good shape in New York. Good fall honeyflow make the season's crop, and bees going into winter with good stores.

Bees went into winter in excellent condition in Pennsylvania. Honey sales off about 20 % from last year. Possible reason may be: Honey is no longer "In" food; poor economy in this area; Poor quality honey on the market; Government give-away. Honeyees in Maryland are going into winter in good condition. A crop of lighter colored honey harvested this year as compared to past seasons. Retail sales of honey are very good. People asking for dark honey. Fine fall honeyflow in West Virginia and bees in good shape going into winter. Prices of local honey holding steady. Some out-of-state honey in stores at higher prices than local honey.

Region 3

Bees went into winter in good condition with generally good stores and large clusters of bees. Moderate winter to date. Honey sales moderate or slightly below average in Indiana. Indiana still has much honey for sale. Bees went into winter in excellent condition in Illinois. All parts of Illinois except, extreme northern zone, had a good fall honeyflow. Some honey still in beekeeper's hands.

Region 4

Large amounts of honey under loan from North Dakota. Fall moisture slightly above average. Bee colonies heavy going into winter. Where late honey flows available from sunflowers, winter came early Minnesota with record snowfall in November.

This should benefit legumes and outdoor-wintered bees. Honey sales are slowest they have been for many years. Small sizes of jars moving best.

Region 5

Bee colonies in Florida are generally strong with plenty of stores, but are at the seasonal low in populations. Some colonies responding to traces of pollen remaining. Plant conditions are generally good with ample moisture. Much rain over entire southeast through November. Honey market strong in North Carolina, many different grades of honey on market.

Region 6

Fall has been warm and wet in Kentucky. Most beekeepers reasonably satisfied with past season's crop. Honey sales could be better. Most beekeepers are not planning to expand number of colonies at present. Generally slow retail sales of honey have persisted since mid-summer. Comb honey sales better.

Region 7

Above average temperatures and below average moisture during late fall in eastern Arkansas. Bees in good condition going into winter. Despite a very dry summer, the 1983 crop was one of the best in years with some colonies making over 100 pounds surplus. Bees in good condition going into winter in east central Oklahoma. Weather about normal. Honey sales average. Was a good production year in 1983. Pollen sales good. Good attendance at bee meetings.

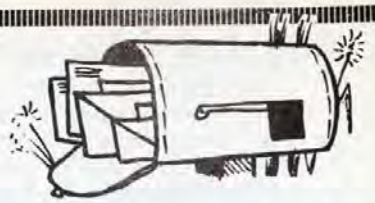
Region 8

Autumn was longer than usual in Colorado allowing extracting to be finished. Bees heavy with stores going into winter. Retail sales of honey good. Prices have remained steady except for a few promotional sales on larger sizes. Most of 1983 crop is still in producer's hands. Few loans have been made so far. Three winter storms have covered hives, but no prolonged cold spells as of the first of December, so bees should be protected under a blanket of snow which is as much as 24 inches in places. Winter storms have confined bees to hives in Montana. Retail sales of honey were good through holidays. The late fall was warmer and weter than normal, particularly in late November, in Utah. Bees wintering well. so far, due to mild temperatures. Honey sales have been steady. Warm fall weather increased fall honeyflows in Arizona. Most colonies are in good condition for the winter.

Region 9

The weather through November in Washington state was warmer than usual with lots of rain and snow. The condition of bees overwintering here is mostly good. Some feeding may be needed by spring. Honey sales are tapering off a little. The price of beeswax is very low. Lots of 12 and 24 ounce jars of honey showing up in Oregon markets. Bulk sales observed in one large store. Much rain in Oregon during November. No frost as of December 1st. Bees are wintering well. Have had spring-like weather on California central coast. Seasonal rains began November 10th. Bees have good supplies of honey, however, some bee feeding has been observed. Warmer weather has caused wax moth problems in California. Bees being given medication, getting ready for next spring. Pollination fees holding steady, trending up for quality bees. Rainfall heavy in northern California has been heavy through end of November.

Gleanings Mail Box



Letter To Thurber

by
Stanley L. Loyer
RFD 2 Box 5690
Winthrop, Maine 04364

Dear Sir:

I just couldn't help responding to the letter of Mr. P.F. Thurber concerning the alleged danger of using Ammonium nitrate to put to sleep the last half dozen b ees in a super of honey before wheeling it in to be extracted. About once every dozen supers some or all of the bees get an overdose of Nitrous oxice and don't recover. I'll even grant Mr. Thurber it may be hydrogen cyanide, because I don't know. However, I do know an overdose of nitrous oxide in a dentists chair or surgical room has terminated human life. Personally my opinion is its better to clear the supers of all bees if possible before taking the supers to the extracting room. Humanitarian reasons may dictate releasing all bees from the extracting room but after each bee returns with a dozen robbers, all infuriated, I'm sure most beekeepers might look for an alternative.

Cyanide is a deadly poison, but as far back as I can remember which is almost sixty years. Cyno gas has been sold by bee supply houses and local hardware stores. Bee inspectors have always used it to kill American Foulbrood infected colonies. Commercial beekeepers have and still use it to kill bees each fall in the northern states and Canada.

If there is a small amount of hydrogen cyanide generated in the combustion of Ammonium nitrate, it certainly is a minute amount, certainly not enough to be concerned about when we know thousands of colonies are killed each fall and the honey and pollen is not contaminated in the least.

When the concentrated laughing gas generated from Ammonium nitrate in a bee smoker seldom kills a bee but allegedly shortens a bees life I ask you how dangerous is it to the beekeeper using it?

Thurber's Reply:

Dear Sir:

Anyone who writes an article for bee publication has the responsibility to not teach nor advocate any methods, medications or techniques which are even potentially harmful to the beekeeper, his family, the bees or the beekeepers customers. Just because someone has not had a catastrophe because of luck, skill or specialized knowledge does not mean someone who is not lucky or not skilled or not knowledgeable won't. When a competent scientist says don't use Ammonium nitrate in a smoker because of the combustion products is hydrogen cyanide an extemely toxic and lethal gas (and Mr. Loyer says he knows that), he should not be surprised that someone would take exception to his advocacy, especially since he knows better.

Radioactive Honey

Dear Editor:

I am writing with regard to your short article "No, It's Not Glow In the Dark Honey"

I appreciate your concern for the problems involved in marketing honey and the role the press has played in incidents such as the botulism scare. However, to blame the press for frightening consumers away from possibly radioactive honey is to sidestep the issue. You have chosen to believe the "scientists" who see no danger posed by that radiation". These are the same scientists who covered up the danger at Three Mile Island, the same scientists who transport highly radioactive wastes throughout the country and who dump these wastes in measured "safe" quantities in our air, water, and back yards. These expert scientists ignore the fact that bees gather these wastes in nectar and pollen and concentrate them greatly. They do this because their jobs depend on making the nuclear industry appear a safe one, whether it actually is or not. There are a great number of conscientious scientists, many formerly employed by the nuclear industry who know there is **no** safe level of radiation and that each additional exposure represents a serious threat to health.

It is our responsibility to repudiate the claims of safety made by these experts who have only their own professional careers in mind. The presence of any radioactivity in honey is reason for great alarm. It is these scientists and their radioactive litter who are destroying our honey markets, not the newspapers

Jack Kuehn
Amesville, OH

Queen Grafting Tool

Dear Editor:

Back in the August '83 issue of *Gleanings*, in the "First Flights" column on p. 398. you had a write-up of a queen grafting tool put out by Bill Montgomery of Redondo, California.

I ordered one from him this past spring and grafted several batches of queen cells. Bill cites several reasons for using his tool as compared with the standard needle, but to me, the chief benefit with this tool is that you don't have to physically pick out each tiny larva from each individual cell. Instead, by pressing the heated ring of the tool right through the comb, the entire cell contaning the larva and all its food is removed and attached to the cell bar.

I realize there are many people with young yes and nimble fingers who have no problem grafting queen cells with a standard grafting needle, but for people who have trouble seeing the little critters, let alone picking them up, this punch type grafting tool certainly works slick.

Richard Testrake
33 Kellogg Street
Erie, PA 16508

BEEKEEPING IN A SEMI-TRAILER

A REPORT OF INTERESTING BEEKEEPING PRACTICES.

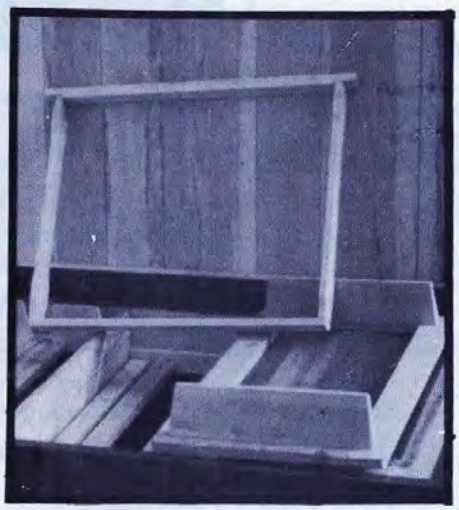
Photos and Commentary by:

JOHN BARLOW
Medina, Ohio

This photo, taken at the 1983 APIMONDIA Conference in Budapest, Hungary, shows a common method of Hungarian beekeeping, using a semi-trailer bee house containing approximately 48 colonies of bees. Exit portals can be observed on the side. These trailers are mobilized to be in place at prime nectar sites during corresponding nectar flows.

PHOTOGRAPH TWO: illustrates the inside of a bee trailer. Hive structures are alligned vertically with swinging doors providing access to the equipment.

PHOTOGRAPH THREE: shows a conventional Hungarian apiary featuring large, rectangular, single-level hive structures.



PHOTOGRAPH FOUR: reveals the horizontal frame system of a hive similar to that shown in photograph three.

PHOTOGRAPH FIVE: a Hungarian beekeeper during a hive demonstration. This frame represents the conventional size of frames used in hives such as those featured in the past two photos. Equipment standardization, in Europe, does not exist to the extent that it does in the U.S.

CHARACTERISTICS OF HONEY

Dr. Mark Headings
AGRICULTURAL TECHNICAL INSTITUTE
Wooster, Ohio

It is common knowledge that honey bees produce honey but the question is—how do they do it? Honey in the comb is not the same as nectar in the flower. Man has sought this sweet delightful food for centuries. A stone painting in Spain shows a person taking honey from a colony of bees in a tree. It is estimated this painting was made around 7000 B.C. (Dadant & Sons, 1975) The honey bee produces honey with a degree of efficiency unmatched by any other living creature.

NECTAR COLLECTION—The first step in honey production is for the honey bee to collect nectar from the floral or extrafloral nectaries of plants. Floral nectaries are located inside of flowers. Extrafloral nectaries are located on plant parts other than inside of flowers. A number of plants have extrafloral nectaries located on the leaves. For example, I have observed honey bees attracted to such nectaries on Catalpa trees near Wooster, Ohio. In some areas, honey bees collect honeydew from aphids which is then made into honey. Honeydew is excess plant sap which passes unused from the plant into the mouth and through the body of the aphid. It is then expelled as sticky sugar material. The honey bee collects nectar or honeydew in its honey stomach (crop) located in the forward part of the abdomen (Figure 1). This figure is a photograph of a Somoso honey bee model. Anyone desiring information on acquiring such a model may contact the author of this article.

The honey bees adds an enzyme (invertase) to the nectar which coverts sucrose into d-glucose (dextrose) and d-fructose (levulose). When field bees return to their hive, they give the ripening honey to house bees which then place it into the cells. They then proceed to fan the ripening honey in order to reduce the moisture content. Once the moisture content is reduced to approximately 17-18 percent, the cells are capped. A person should avoid extracting too much honey which has not yet been capped since the moisture content may still be quite high. You may have noticed already that honey newly placed in a comb can easily be shaken out by striking a frame against an object when the cells (with honey) are facing down. The honey at this stage has a thin water-like consistency. If the beekeeper extracts and stores such honey, there is the possibility that it will ferment. A small amount mixed with honey from capped cells appears to cause no problem.

There is an instrument available called a refractometer which measures the water content in honey. For more information on this device, contact the author of the article.

HONEY COMPOSITION—The three major components of honey are d-glucose (dextrose), d-fructose (levulose) and water. The above two sugars are normally present in quantities of over 30 percent each and water is present in the range of 17-18 percent (ideally). Honey which has a higher than average d-glucose content tends to granulate more quickly. This is especially noted in honey produced from some of the fall flowers in the United States such as aster. Honey also has other trace sugars present such a sucrose and maltose. Other ingredients in honey include acids, minerals, vitamins, pigments, flavors, enzymes, aroma substances, sugar alcohols, tannins and acetycholine (Dadant and Sons, 1975) There is a small amount of protein present in honey but not enough for immature and young bees. The use of pollen as a food source provides the necessary protein requirement.

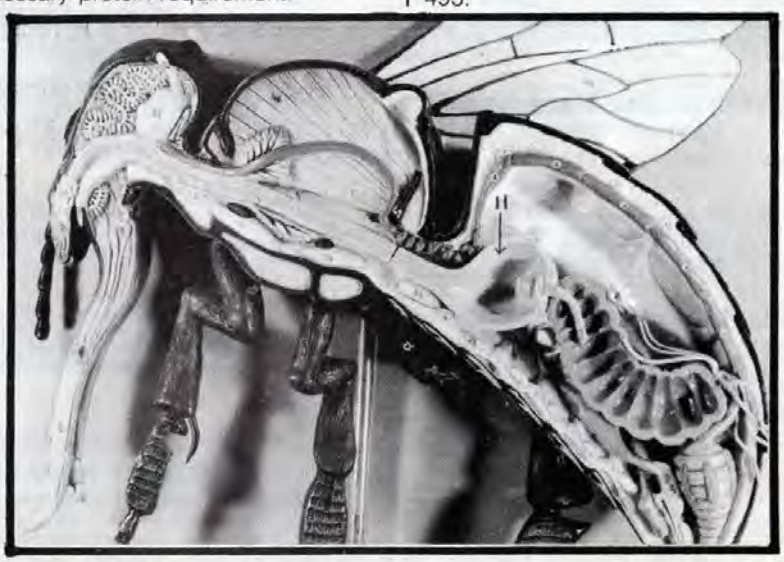
Just as the color of honey can vary with nectar source so the composition of honey varies with nectar source; e.g., it has been reported that dark colored honey generally has a higher mineral content than light honey. Likewise, the flavors of the honey will vary depending upon the nectar source.

HONEY PRESERVATION—Honey has excellent keeping qualities provided the moisture content has been adequately reduced. There are reported incidences where honey has been found in sealed containers in tombs and sunken ships that was estimated to be 2000 years old and still edible. The preservative qualities are due to (1) the high osmotic pressure or high density of honey, (2) the acidity of honey (approximate average pH of 3.9) and (3) the presence of a trace of hydrogen peroxide in honey which imparts antibiotic properties. In fact, historically, honey has been used as a treatment for wounds. A fact which should be noted as that honey which granulates is not spoiled. Heating it at the proper temperature will reliquify it and will likely cause it to granulate less readily a second time.

In summary, honey is a pure, natural high energy food which is well preserved. It does not need to be canned or frozen in order to keep it from spoiling. The plants and honey bees do it all for us.

References

Dadant and Sons (ed. by). 1975. *The Hive and the Honey Bee.* Hamilton, Illinois. pp. 495.



Honey Stomach of Honey Bee.

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Capping The News

THE EDITORS

"Beekeeping Small Talk"

A DANGER WITH THE ARTIFICIAL SWEETENER, ASPARTAME:

A recent wire service report carried a report from Dr. Richard Wurtman, a physician and prof.of neuroendocrine regulation at MIT, who warned that the artificial sweetener, aspartame, might change levels of chemicals in the brain that influence behavior. Wurtman believes that insomniacs, persons affected by Parkinson's disease or other brain disorders, might be especially susceptible. Aspartame is now being used as a soft drink sweetener. The beekeeping industry, which can be affected by any use of artificial sweetening substances should be vigilant in informing others to carefully scrutinize any food additive that cannot be considered a "pure" product of nature.

MORE ON MAGNETISM AND BEES

BEE WORLD reports that earlier studies indicating that swarms build comb oriented toward the horizonal component of the earth's magnetic field, have not, in recent experiments, been successfully duplicated. That was particularly true with swarms that were left 9-10 days before relocation. However, swarms relocated into empty hives within five days of swarming, did demonstrate a tendency to build comb in the same direction as that in the hive they recently left. The suggestion is that bees rely on a memory span that disappears as comb needs are substantially satisfied. The magnetic sensitivity of bees has been studied and documented by several researchers, and is made additionally credible by the magnetic sensitivity of other creatures including sharks, some bacteria, homing pigeons and even humans. British researchers have reported magnetic material in the bones of the human nasal sinus cavities. We've known journalists with a "nose" for news. Now, perhaps, we have beekeepers with a "nose" for directions and bees to help lead the way.

UNBEARABLE

A recent Pennsylvania newspaper article, sent to us by David Noble of Morrisville, PA, carried the story of a young beekeeper, Randy Sickler, who shot and killed a black bear that was approaching him as he worked in his apiary. Mr. Sickler reports that the bear, a bruin of about three years age and 150 pounds, was only 20 feet off when killed. Accounts from Pennsylvania deer hunters mention unusually aggressive black bear behavior. Officially, at least, there has never been an unprovoked attack by a black bear on a human. Unofficially, many will say otherwise. Regardless, the damage to beeyards is undeniable and has been a continuing source of friction, in Pennsylvania, between beekeepers and the State Game Commission.

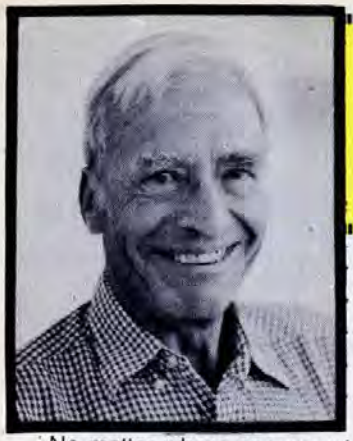
Beekeepers in areas with a significant bear population, should consider fencing measures, although fences have not always kept bears out of bee hives. Some states or counties do provide damage reimbursement, but there are frequently stipulations attached, such as that the beekeeper could not have had "No Hunting" signs posted on the property involved. Beekeepers who are unsure of local programs for bear prevention or damage relief, should contact their closest state forestry, agriculture or natural resources office.

THE HEALING PROPERTIES OF HONEY

Last month, GLEANINGS carried an article about the curative powers of honey. We recently received, from Dick and Barb Miller, of Southfield, Michigan, a copy of SURGICAL PRACTICE NEWS, in which there appeared a news release from Israel where researchers at Tel-Aviv Medical Center and the Hebrew University in Jerusalem, discovered that "wounds treated twice a day with a thin layer of pure unboiled commercial honey healed much faster than those to which saline solution was applied instead." Further experiments, using mice, substantiated the antimicrobial qualities of honey. The article cites other reports by physicians who noted the positive affects of using honey in treatment of radiacl surgery for carcinoma of the vulva, decubitus ulcers, infected wounds and burns. It states that European researchers have discovered a thermolabile component called inhibin, that exists in honey and presumably works with honey's acid pH and hypertonicity to inhibit the growth of certain, potentially harmful organisms.

A LONGER NECTAR FLOW ? FIGHTING FROST WITH VIRUSES

Recent reports in SCIENCE DIGEST, BUSINESSWEEK and other publications, have noted the possibility that, within the foreseeable future, viruses will be used to keep crops frost free. According to these reports, many plants would survive extremely subzero temperatures, except for the fact that two strains of bacteria on their leaves act as nucleating agents for ice crystals. By introducing certain viruses, these bacteria can be attacked and selectively eliminated. There remains, of course, a great deal of speculation and numerous questions. How plant manipulation of this type might someday affect beekeeping is, as yet, just guesswork; but clearly, the possibilities for positive results with honey plants exists. Now, if someone can figure out how to get a bee to fly and survive in subzero weather!



Siftings

By CHARLES MRAZ
Box 127
Middlebury, VT 05753

No matter where one goes to visit beekeepers, one is certain to pick up some interesting information. Recently I spent a week with beekeeping friends in Yucatan Mexico. Last March in Israel at the Apitherapy meeting, you may remember, I remarked that in Romania that they were using drone brood for certain theraputic uses. Visiting with a man that lives in Yucatan, he told me that many people in his area often eat fresh bee brood. With a little salt and lemon juice he said it was, "muy sobroso", very delicious.

I asked if they ate the drone brood. He said no, the worker brood taste better. I then asked if the brood was removed from the comb. He said no, they ate it with the comb, as it taste better that way. To create a sensation at a beekeepers banquet, sometime, how about serving fresh slabs of worker brood for desert! With a bit of salt and lemon juice, of course. Anyone game enough to try it? The man that told me this was not a poor compensino, but an agricultural engineer, and well educated.

Years ago a beekeeper in Texas told me he regained his health eating brood and that even his grey hair turned red again. On many occasions I've sucked out queen cells and ate the larvae and the royal jelly. One of these days I might even get up enough nerve to eat a slab of worker brood. With a bit of salt and lemon juice, of course. I belive I would prefer new comb rather than an old tough brood comb.

Another story about the use of honey I found most interesting. It is a basic fact that a high level of glycogen in the liver helps to protect the body against poisons. Levulose, the dominant sugar in honey, when eaten, immediately goes into the liver and is converted to Glycogen. Some years ago a doctor in Boston and the New York State Agricultural Experiment Station recommended honey to sober up when intoxicated. It appears that the glycogen and the natural sugars in honey break down the alcohol quickly. It also seems to protect the body from other drugs as well.

When I was in Mexico recently I heard of another use for honey that may produce mixed feelings. But then again, this may lead to the use of honey in other valuable applications in treatments where drugs and toxins are involved such as in cancer.

Many people may have heard of the place in Mexico where for centuries a hallucinating mushroom was used in religious ceremonies by the native Indians. When it became known in the U.S. that these mushrooms were effective to "intoxicate" a person to make a "trip", it didn't take long for certain people such as "hippies" to give these mushrooms a try. They would buy these mushrooms and consume them. Apparently they were very effective as the trippers were usually knocked out for four or five days after a "trip to fairy land".

A friend who is in the Department of Agriculture for beekeeping in Mexico, told me that somehow it was found out that taking a quantity of honey after a "trip", the "tripper" could avoid being knocked out.

To Sober Up, Try Honey—Says State

GENEVA, N.Y.— March 4. The New York State Agriculture Experiment Station says that a tablespoon or two of honey will make a drunken person sober. The same treatment may be helpful in routing a hangover, the station reports. The agriculture unit's current news bulletin said the sugars in the honey would cause a chemical breakdown of the alcohol in the system.

They could then take a "trip" every day for five days in a row. This official told me that they used about a liter, (3 lbs.) of honey per week, which made the beekeepers in the area very happy to have such devoted users of honey. Can you imagine the consumption of 3 pounds of honey per week by one person! What a honey market that would make!

However, all good things must come to an end. The police stepped in, and stopped the mushroom business and the local beekeepers went into a slump.

This naturally leads up to some further interesting questions. What is the effect of honey on other drugs besides alcohol and hallucination mushrooms; such as Marijuana, cocaine, heroin and a host of others commonly used by those that belive they need these drugs to "enjoy" life?

There are also many toxic drugs used in the treatment of various diseases, such as cancer that can also cause serious damage to the kidney, liver, bone marrow stem cells and many other functions of the immune systems of the body. Would the use of honey in such cases help to prevent damage to these organs and the immune system? I have seen cases where it apparently does indeed give such protection.

It would be easy to try it and find out by those under such drug therapy to eat a quantity of good, natural, unprocessed honey with all its enzymes and other natural biotic agents intact. It can do no harm and it is cheap for anyone willing to try it. Often, with these drug treatments, the patients find it difficult to hold any food in their stomach. Honey can often be used in such cases when other foods cannot be tolerated by the digestive system. If it can be further demonstrated that the use of honey will indeed protect the body from the damage by drugs and toxins, then honey certainly deserves a well earned increase in its use for this purpose. We must first prove that good, natural honey is beneficial to the health of persons of any age, before we can expect to see an increase in honey consumption.

At the same time might it not be possible that honey could also protect us against the many poisons that are now getting into our environment, such as insecticides and herbicides on our food, chemicals seeping into our water and air from chemical dumps to name but a few? We just cannot escape these poisons if we drink, eat and breathe.The use of natural honey may indeed help to protect us against these unavoidable poisons and is well worth trying.

Some beekeepers may still remember Dr. D.C. Jarvis, author of the book, "Folk Medicine" that was a best seller for 2½ years in the 1960's. It resulted in a tremendous increase in honey consumption not only in the U.S. but in Japan as well when the book was translated into Japanese.

I knew and worked with Dr. Jarvis for many years and since that time, Honey and natural vinegar mixed half and half, has been in use in our house. I belive there is no finer "medicine" in the world. I have taken many trips in different countries,

Continued on next page

especially Mexico. Any of you ever take such trips to foreign countries may often have a problem with "Tourista Enferma", or "Montezuma's Revenge". On my first trip to Mexico, I did get some of the 'enferma". After that, I always took along a bottole of natural honey and vinegar. Every morning and evening I take a couple of tablespoons or more in a glass of water, and I have no trouble. Most of the time I have meals with my Mexican friends and I eat everything, fresh fruits, vegetables, sea food, both raw and cooked, etc. and so far, never had any more trouble. It appears to be superior to medications such as "Viaforma" that can cause liver damage.

Recently at a beekeepers meeting of the Southern States Beekeeping Federation, I held a Bee Venom Therapy work shop. A beekeeper told us there of his experience on the healing properties of honey that I believe, takes the prize, it sounds so incredible. He told us that a part of his finger was accidentally amputated. He took the finger to the hospital to have it reattached, but the doctors there refused to do it. He returned home, put the amputated finger back in place and held it there with a gauze bandage. He then applied honey to the gauze bandage every day for two months. He did not remove the bandage at anytime, just let the daily application of honey soak through the bandage to the cut of the finger. In two months he removed the bandage and the finger was healed together perfectly. We looked at his finger and it looks perfectly normal. He even has some feeling to it and apparently it has good circulation since it looks a healthy pink like the rest of the finger.

Instead of advertising honey, it might be much better to spend money to promote this research to prove that honey cannot cause any health problems, but instead could cure and prevent many of them. If such research could be started by a reputable person, such as Jonathan White, who has done so much in honey research in the past while with the U.S.D.A., it would very well put honey back into its proper place as an effective and important health food. Only then can we ever expect to see an increase in honey consumption. If we don't do this, and let these stories about honey keep spreading by nutritionists and others, the honey business will soon die. Honey must be restored to the respect it has had for many thousands of years. We must not let these "honey assasins" murder the good name of HONEY.□

Nuisance Bees

by Dr. Roger Morse

Department of Entomology Cornell University Ithaca, NY 14853

Every year I receive a few letters and phone calls concerning nuisance honey bees. Complaints about bees are often, but not always, legitimate; it is a many-sided problem. People someitmes urge the passage of a town or village ordinance to prevent or limit beekeeping in their area; others may attempt to force a beekeeper to move his apiary. Beekeepers must accept the fact that some people dislike bees and others are afraid of them. I believe beekeepers must do their best to ensure that their bees do not disturb neighbors. Non-beekeepers, on the other hand, must understand that bees are free-flying creatures, and that they play an important role in our everyday lives.

What Can Non-beekeepers Do?

It is relatively easy for non-beekeepers to greatly reduce, or eliminate, the bees around their houses. First, a homeowner can avoid landscaping with nectar and pollen-producing plants that attract bees and wasps. These same plants require bees for cross pollination and reproduction. Many flowering plants, including roses, petunias, hydrangias, etc., are not at all attractive to bees. Honey bees see red as black, and are not attracted to red flowers; odorless flowers usually do not lure nectar and pollen-feeding insects. If homeowners would grow these kinds of plants and avoid crabapples, clover and certain other bee-attractive flowers, they could reduce or eliminate stinging insects from the vicinity of their homes.

Second, people can plant trees and hedges around their houses to force bees higher into the air. Worker honey bees normally fly two to eight feet above the ground; queens and drones fly higher, usually 20 to 50 feet in the air, well above the heads of walking people. Bees will fly above a hedge or forest rather than through it, to avoid predators such as spiders, and because few attractive flowers grow in shaded places.

A small percentage of people are allergic to stinging insects, more often to yellow jackets and wasps than to honey bees. They must avoid stinging insects, not only around their homes, but wherever they go. Proper clothing can provide good protection, since stinging insects are much less inclined to attack and sting smooth-finished, light-colored clothes. Covering the hair, arms, and legs as much as reasonable is also helpful. Allergic persons should avoid wearing pomades, hair oils, and perfumes, which can convince bees that the person is a flower and cause them to be investigated.

One problem the homeowner can do little about is honey bees' need for large quantities of water at certain times of the year. Bees also need water when brood is being reared and when the weather is very hot. When collecting water, bees can be a nuisance around swimming pools and bird baths. However, a beekeeper can and should provide water for his bees, and since bees usually take water from the nearest source, this should eliminate the problem.

The Problems Of Modern Agriculture

The problems faced by commercial beekeepers and those who live in rural areas are different from those who keep only a few colonies of bees in urban areas. People must realize that modern agriculture often creates difficult problems because large numbers of plants or animals are kept in a small area. Odors from farms that keep many pigs, cows, chickens, or horses are often unpleasant; plants that process sauerkraut and other fermented items are also a nuisance. Noise from farm machinery, and sometimes the animals themselves, can be irritating, and traffic is often increased in rural areas because of large trucks and tractors that are used. However, this concentration of commercial agriculture in a small space makes it more efficient and explains partly why food is cheaper in the United States than in any other country.

Commercial beekeepers often consolidate many colonies in a small space for a variety of reasons. Those who migrate with their bees may assemble several hundred colonies to facilitate loading or unloading. Beekepers who grow queens place a large number of nucleus colonies in a small area where mating takes place Some beekeepers concentrate colonies . fected with certain bee diseases to speec up the treatment process.

The Beekeeper's Obligation

The commercial beekeeper can do much to reduce the problem of nuisance bees. He too can use trees and bushes as a hedge to force bees higher in the air as they forage on land around his property. When a worker bee rises up to fly over an obstruction or forest, she does not descend as rapidly on the opposite side as one might expect. Rather, she appears to glide down slowly. Fortunately, some poplars and other fast-growing trees can be used to give protection in this manner. We have maintained a large apiary on the edge of the Cornell University campus since 1924. It is surrounded by a hedge about 15 feet thick and just as tall. Most people do not realize that the bees are there, and we have never received complaints from people walking by the apiary.

The commercial beekeeper must also ensure that honey is not exposed in the vicinity of his honey house if it is near a settled area. This will keep robbing to a minimum. It can be a problem, since many beekeepers rob out supers to dry them in the fall or rob out cappings before rendering them.

Keeping A Few Colonies In Cities

It has been interesting to observe that some bee colonies are kept in every major city on earth from London and New York to Tokyo. This is possible only because beekeepers in these heavily populated areas pay close attention to certain important details.

City beekepeers inspect their colonies only on days when the weather is ideal. When they remove honey, they use the "gentler" techniques such as bee escapes. Water is always provided using a nearby feeder. Most important, colonies showing any signs of aggressviness are requeened rapidly. Needless to say, city beekeepers must practice good swarm control measures, since a free-flying swarm in a city could create great furor.

Summary

The number of honey bees and other stinging insects living naturally in an area is controlled by the amount of food available to them. If the amount of food is reduced, their numbers will decline. Commercial beekeepers also affect the number of honey bees in the area, since a management practice may result in keeping many colonies in a small space. This is unavoidable unless the beekeeper chooses to isolate himself or lives in an area where cheap land makes isolation of bees possible and practical.

Continued on page 31

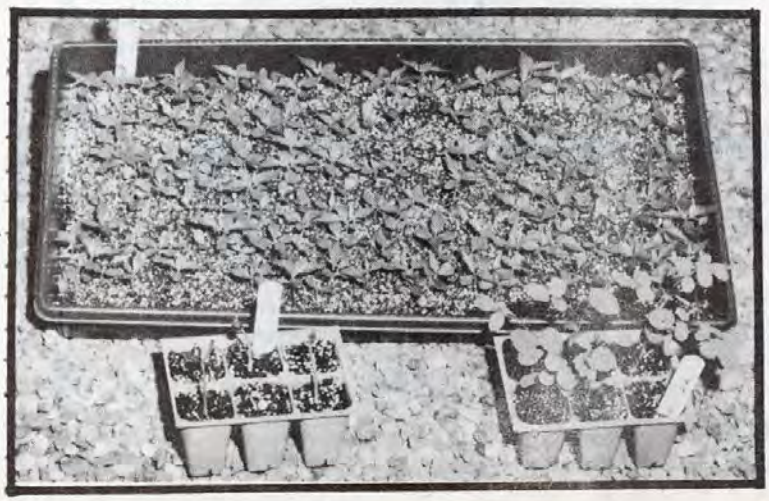
MORE ABOUT THE BEE-BEE TREE

PHOTOS AND NOTES BY
James Fodor

The Bee-Bee Tree *(Evodia Daniellii)*, **is a moderate-sized tree with pinnately compound leaves resembling those of the ash, and great compound clusters of small, white flowers, followed by pods containing small black seeds. Seeds are enclosed in hard outer seed coats which should be subjected to stratification before planting. First blooms, in the Ohio area, occur between July 20 and July 28. Trees have come through weather as cold as 19 below zero, farenheit, but did not bloom the next year. Bees work the blossom in a seeming frenzy; often, more than a dozen can be seen on a single flower cluster.**

The above photo is of a 10 year old Bee- Bee Tree (*Evodia Daniellii***).** *About 60 clusters of seeds are on the tree at this time.*

This is a close-up of one of the clusters. Each has about 3,000 seeds. When in bloom the flowers look very much like a flower of a milkweed.



The large flat contains Bee-Bee Tree seeds. When Mr. Fodor sends out seeds he encloses a slip saying: " I suggest you let a greenhouse or nursery person start your seeds for you. After you get them started, treat them the same as you would any other tree."

Plenty of seeds are available. Mr. Fodor will send approximately 100 seeds for a self-addressed, stamped envelope plus 50 cents in coins or stamps. James Fodor: 77 Carlton Ave., Trenton, N.J. 08618. Arleth's Apiaries, 395 Carolina St., Lindhurst, NY 11757 sells 2 year seedlings, $4.00 postpaid.

THE EXACTING CRAFT OF PROCESSING SUPERIOR QUALITY HONEY IN SMALL QUANTITIES FOR COMPETITION OR HOME USE

Margaret S. Cooke
731 Miami Avenue
Terrace Park, Ohio 45174

I WANT TO POINT OUT THAT THE METHOD OF PROCESSING HONEY I WILL TELL YOU ABOUT WAS DEVELOPED OVER A PERIOD OF ABOUT 35 YEARS AND REQUIRES ONLY MY KITCHEN AND STANDARD KITCHEN UTENSILS. AS WITH ALL OF BEEKEEPING, THERE ARE VERY FEW ABSOLUTES, SO ANY OF MY METHODS CAN BE ACCOMODATED TO SUIT YOUR NEEDS. THERE IS, HOWEVER, THE STRICT NECESSITY OF KEEPING EQUIPMENT AND SURROUNDINGS CLEAN. THE BETTER, CLEANER PACK IS NOT ONLY MORE ATTRACTIVE, WINS MORE RIBBONS AND SELLS BETTER, BUT GIVES THE BEEKEEPER A SENSE OF PRIDE THAT CANNOT BE BOUGHT.

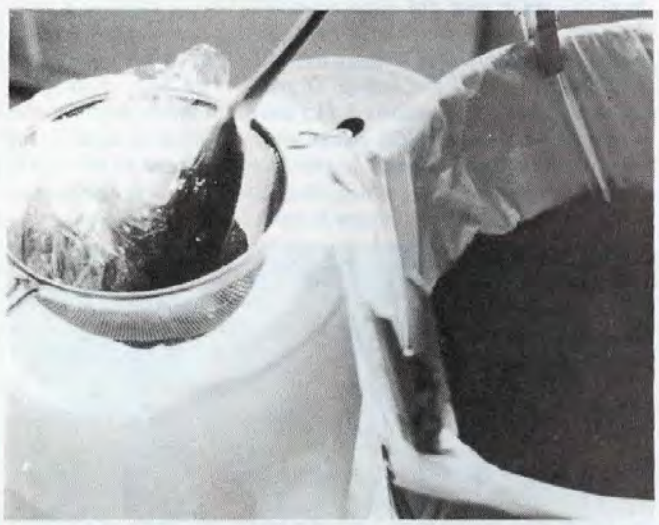
Chose a kettle large enough to accomodate the size pail you have. I use one about seven inches high by eleven inches across. To allow for good circulation of water and to avoid too much heat on the bottom of the pail, I use a trivet. If you haven't a trivet, cover the bottom with glass marbles or stone chips.

It is said that necessity is the mother of invention. I say it is laziness. So, after mopping up water spills a few times I devised a gimmick of fastening a folded paper towel or cloth to the brim of the kettle with a pincer clothes pin, and have a pan to catch any water that syphons off. This is most useful in case too much water has been put into the kettle and the heat expands it to overflowing.

Prepare a container to catch all odds and ends of honey. Anything will do, but I use a five pound plastic container which once held whipped butter. I find it best not to tie up kitchen utensils for this, as it is likely you'll save this particular honey to feed back to the bees. Using a plastic bag as a lining serves two purposes: it makes cleaning the container easier,then serves as a way to protect the container from absorbing odor from various flavors of honey. It is best to use bags marked leakproof and suitable for food storage.

The honey is first extracted by centrifugal force and drained into a lined pail, then covered on top with sheet plastic and the bag then closed. That way the aroma has been preserved, plus light and air-borne particles, have been kept out. It is also very important in keeping honey from absorbing moisture. Honey, at 17.4 percent moisture is in equilibrium with air at 58 percent realative humidity. If the air is more humid honey will take on moisture and fermentation becomes a threat.

A strainer can be placed over the opening of the pail so that when the plastic, spoon or whatever is put there to drain, it is less messy to retrieve than when dropped to the bottom.



Open plastic liner bag and pin rim to the pail. Gather up the plastic bag that was placed directly on top of the honey. With a twisting motion, slide it to the edge of the pail and lift off. Place plastic in the strainer. If large bits of foam or cappings do not come with the plastic, a spoon can be used to skim off that excess.

Be sure to have a bag- lined waste container handy. These bags can be drained later by cutting a small hole in the bottom and suspending the bag. That honey can be fed back to the bees. I use a separate container for unstrained vs strained discards.

The pail of honey is now ready to be put into the heating kettle. Use a candy thermometer emersed into the honey. I clip a pincer clothes pin to the handle and hang it over the pail handle, which is raised by one of the pins holding the liner to the rim – this helps keep the thermometer from sliding down into the honey.

Cover the top so dust will not enter the honey. Aluminum foil works well. Cloth will not do because of lint. Shape the foil convexly, completely overhanging the honey pail. This shape keeps any condensed moisture from the hot water bath from falling into the honey. Add sufficient water to fill the kettle

to within about 1½ inch from the rim. I use soft water so there will not be a lime deposit to be scoured from the kettle or outside the honey pail.

If you have a thermostatically controlled burner, set to 145°. If not, turn to medium low or whatever will sustain a temperature no hotter than 145° water. After about the first 30 minutes stir the honey with the thermometer – sooner if the pail is less than ¾ full. Stir periodically until the temperature of honey reaches 145°.

To prepare the pail into which you will strain the heated honey, choose a clean white cloth of long staple cotton and dacron blend. Something of which fine soft wash-and-wear shirts are made of. A fine handkerchief will do. Never use cheese cloth. It does not strain very well and is too loosely woven. It can also shed some lint into the honey.

Fasten the straining cloth on the rim of the pail using clothes pins. It should not be drum tight, but tight enough to hold a couple dippers of honey. Lay a piece of plastic wrap over the top and fasten with the two pins where it will be close to the pail of honey.

Draw plastic wrap up over the pins and down over the rim of the honey pail. This will make a gutter-like bridge from pail to pail so that drips will not spill.

Start with a small amount of heated honey. Pour into the straining cloth and press the bowl of the dipper into the cloth to dampen enough to start the honey running through.

Fill the cloth to about 1½ inches from the pins. If possible, never allow the honey to completely drain out until all honey has been moved from the heated pail.

Keep adding honey so that any wax or foam floats.

If you are interrupted for any reason, remove whatever has collected with a spatula before adding more. Otherwise, the cloth will not strain well because the weave is clogged with debris.

It is wise to have an old tin can handy to put the waxy discards into. It can be thrown away, can and all. Never pour this down the drain, because it will eventually clog it.

When you have dipped out as much of the honey as you can, remove the plastic bridge and roll up toward the straining cloth. Lay it on the rim. Remove the pins from the heated honey pail, gather up the bag and hold over the straining cloth. Snip a small hole in the bag and drain off the remaining honey. Dispose of the bag.

When the honey has drained sufficiently, tighten the cloth so it will drain faster and scraping is made easier.

When all has gone through, clean off utensils and store in an old can.

Remove the cloth from the pail. Turn the pail upside down on a rack over the sink or other conatiner. As soon as possible cover the honey pail with foil, allowing enough room for heat to escape and not allow condensation to form and drop into the honey. Set aside to cool. Spray the straining cloth with cold water first to remove wax pieces; then with hot water to remove most of the honey. If you do not have a sprayer, more rinsing will be required. Put the cloth into a pan of warm water (NEVER use soap). Rinse several times to remove all the tiny bits that still may be stuck to the weave of the cloth. If desired to remove this stain, bleach can be used, but be sure to rinse thoroughly afterwards and hang out to dry.

Place your hand in the center of the wrap and lightly force the wrap into the center of the honey. Then work it out to the sides of the pail. Try not to leave any air bubbles. Now

Continued on page 29

WINTER

George Venn's poem in the September GLEANINGS made me cry. Mr. Venn, I understand. This poem's for you.

I wonder
As I watch the bees
Drop heavy laden onto their landing board,
Or waddle
Swiftly to their entrance
Carrying their treasures of red and orange, green and gold,
As their keeper
Readies them for winter,
Steadying, tightening, making cozy their hive;

I wonder
If they are aware
That they will never see another spring or summer
Or taste
The sweetness of nectar and honey
Or feel the warm sunshine on their wings.

Their work is a labor
for the future --
For their queen and her progeny yet unborn.

The colony will live,
And a new generation will emerge
To savor the goodness of spring
And the sweetness of summer honey.

The earth will turn again with seasons,
And greet nature's young wonders
With beauty and bounty
And promise.

M.C. Tucker
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PROCESSING HONEY
CONTINUED FROM PAGE 24

set aside for 24 hours. This will allow time for any foam to rise and any heavy debris, which has escaped the straining cloth, to settle.

The next step is bottling.

Set up another container with a strainer. Remove the plastic wrap using the same technique discussed when preparing to heat. This time all the foam should come with it. If not, it will rise to the top in the bottle and can be skimmed then.

Put the wrap in the strainer. If you are working alone, fasten the bail handle down to the pail with clothes pins. That way you can hold the pail with one hand and arm, tucked between the arm and body and using the other hand to steady.

As always, whenever not directly pouring or straining, cover the pail.

Have bottles placed in rows if possible. When preparing honey to be sold or shown in competition, always use bottles designed for honey. These are available at beekeeper supply companies. For home use, any bottle with a screw top lid may be used. However, do not use a bottle in which aromatic products, such as pickles, have been stored. The odor will contaminate the honey no matter how many times the bottle is washed. Be sure bottles are lint free. Pay attention to the lids, too. One cannot wash paper lined lids, but the can be dusted with a piece of plastic wrap that causes static electricity to pick up specks of dust.

Research Review

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

Some Misleading Information On Pesticides

Two pesticide advertisements, one promoting Sevin XLR, a new formulation of Sevin, and the other Penncap M, have appeared recently. These deserve close scrutiny. Both are 12 pages long, with excellent colored cover photographs. The formats are so similar as to suggest they were prepared by the same agency.

The presentations themselves contain a mixture of information, correct and misleading. In the Penncap advertisement beekeepers are accused of being emotional over "the issue of insecticides and bee kills". I, myself, have become upset upon seeing bees needlessly killed and realizing that these deaths may mean thousands of dollars in lost income to a beekeeper. Succumbing to one's emotions at such a time is not an unmanly act. The same paper states that the answers to the honey bee-pesticide problem lie in "hard science', then repeats these two words so many times as to make one nauseous.

There is no question that the newer formulations of Sevin are usually less toxic to honey bees than the original product. What is disturbing is that in the Union Carbide propaganda the circumstances under which the new formulation is of benefit are emphasized and those under which there may be problems are buried or not mentioned.

I am most critical of these publications because they do not emphasize enough that strict adherence to the labels would eliminate almost all honey bee losses. Only in the very last words, as if in afterthought, are we told "be sure to read and heed the label" and "always follow instructions on the label", respectively. The label on Pennwalt Corporation's Penncap-M gives beekeepers more protection than does that on Union Carbide's Sevin sprayable labels. I have not yet seen Union Carbide's label for the XLR formulation, which may be even less satisfactory from the point of view of some beekeepers.

Also disturbing is the failure of the writers to acknowledge that honey bees are free-flying creatures invaluable in modern agriculture. The Union Carbide publication advises moving bees, covering colonies and using pollen traps to avoid losses from pesticides. The Pennwalt advertisement puts less stress on such practices, but says "some beekeepers will want to move bees" and "others may wish to cover hives," as if these are reasonable alternatives to not following label advice. Moving colonies sometimes makes sense for migratory beekeepers who are equipped to do so; beekeepers with permanent apiaries or hobby beekeepers are rarely prepared to move their bees. Confining bees, covering colonies, and/or using pollen traps are practices that may endanger the health of the colony even when closely supervised. They are not methods I have recommended.

My personal view is that we have made some progress in recent years in cutting back on the use of pesticides and lessening the adverse effects they might have on non-target organisms and the rest of the environment. However, the two papers cited below are smokescreens—designed, I suggest, to show interest and good faith on the part of the companies without any substantial help to the beekeeper. A superficial reading of these, with their excellent photography that has little to do with the problem, would make one think the problems had been solved. One of the persons interviewed in one of the two papers compliments the company on supporting research on the honey bee-pesticide problem. The truth is that both companies have done little themselves and could have done much more to support research in the area.

I urge beekeepers to obtain these two items, read them carefully and let their conscience be their guide in their reaction. The problem of honey bees and pesticides is not new, nor will it go away. Beekeepers must continue to work for what is right and to emphasize the importance of honey bees in modern agriculture.□

Pennwalt Corporation
The Professional's Guide to Managing the Insecticide-Honey Bee Problem. Centerfold in Ag Consultant and Fieldman 39(9):A 1-12. 1983. Copies may be obtained from Dr. Ivan Gard, Agchem Division, Pennwalt, Three Parkway, Philadelphia, PA 19102.

Union Carbide Corporation
Sevin XLR, Carbaryl Insecticide, Reducing Hazard to Honey Bees. 12 pages. 1983. Copies may be obtained from Union Carbide Agricultural Products Company, Inc. P.O. Box 12014, T.W., Alexander Drive, Research Triangle Park, NC 27709.

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****

Nuisance Bees

Continued from page 18

The best methods of reducing nuisance bees involve the use of trees and bushes, the removal of attractive flowers, provision of water for bees near their hives, and management practices by the beekeeper to reduce the numbers of search robber bees.□

Bees's Wax "Has Many Helpful Uses In Home, Shop And Sports"

A smoother-gliding flatiron moving freely even over starched articles, will result by simply rubbing beeswax over heated face of iron and wiping on cloth, once or twice per ironing. To remedy sticky waffle irons and frying pans, heat them, rub with beeswax and wipe with cloth. Beeswax dissolved in cleaning fluid to the consistency of a thin paste makes the finest floor wax. Beeswax makes needles easier to sew with; toughens and preserves thread; keeps sewing machine, vacuum cleaner and other power belts from slipping; waterproofs fishlines, clotheslines, shoes and all leather articles; eases sticking doors and windows; lubricates and rustproofs tools, particularly saws and wood bits; makes screws easy to drive into hard or green wood: polishes and waxes skis, toboggans and archer's bow strings; perfectly seals tree wounds, grafts and buddings; stops plumbing leaks; is indispensible to woodgrainers, auto-body and fender men, yachtmen, cobblers and sailmakers; and has many other practical uses.

Sent in by Ed Rittershausen.

Bee Talk

by DR. RICHARD TAYLOR

Route 3
Trumansburg, N.Y. 14886

There is no better tonic for the spirit than to step into the bee yard. If it's spring, and the first blooms are out, then the bee yard is a pocket of heaven. Coming and going by the thousands, their wings turning the warm air to a gentle roar, the bees tumble over each other in their haste to unload their bounty of nectar and pollen then rush forth for more. Or if it is June or July, and the nectar is flowing, then you feel yourself prospering along with the bees. Then if you go back in the warm evening you find the hives murmuring with life as the nectar is being reduced to honey.

This lifting of the spirits in the bee yard never fails. The other day I went to the apiary to put the bees to bed for the winter, somewhat belatedly. The sky was grey, the trees bleak against it, and an early snowfall covered the ground and hives. The dreary day perfectly matched my dispirited mood. Still, as I set foot in the bee yard, all was suddenly well again, even in that seemingly lifeless setting. The same exhilaration that has for decades overwhelmed me in the presence of my bees was revived again, and for awhile at least the great world of people, and of worries and frustrations, sort of ceased to exist. Perhaps it is a kind of escapism, but certainly my life would be lacking in fullness without it. I have here, in my love for my bees, and my joy of being among them, a treasure I will never have to surrender, no matter what.

The putting-to-bed didn't take long. A wedge of hardware cloth tucked into each entrance, to keep out mice, and a scrap of tar paper over that, to keep out wind, both secured with a couple of staples, and that was about it. I also like to slip a brick or scrap of wood under the rear end of each hive, to give it a good slope. The hives look a little queer, all tilting forward that way, but that ensures that the bottom boards will all be dry and free of dead bees in the spring. It is amazing what a difference it makes.

Every hive, as I hefted it from behind to slip the brick or scrap of wood underneath, was heavy as lead. I knew they would be like that, because I had left all the fall honey for the bees. That's the "Taylor Principle," as I am fond of calling it — to get all the honey supers off by the first of August, and let the bees have all the honey they get after that for themselves. I don't do that because I am generous with the bees, but because I have my eye on next year's crop.

Come spring, those hives will be not only alive and well, but overwhelmingly powerful, and that means a big crop of early, prime quality honey for me.

Which brings up a point which beekeepers frequently ask me about when I go around talking to bee meetings. How, they ask, do you get the bees to work in the comb honey supers? I have even had beekeepers tell me that, in their experience, the bees seem to hate comb honey supers. The reason for thinking this is that the bees go up into the extracting supers right away, but sometimes wait a week or two before going up into the comb honey supers. So it certainly looks as if they don't "like" the comb honey supers.

There is a lot of misunderstanding here, I think. What we are talking about has nothing to do with what the bees do or do not "like". It has rather to do with biology and colony life.

Colony life centers around the brood nest. That's where the bees are concentrated. If the colony is very weak, then all the bees are there; they do not even occupy the outside combs of the same story. If you put an extracting super on a hive that is only moderately strong, then some of the bees will overflow into it from the brood nest below, and in that sense "occupy" it, but that doesn't mean they are doing anything up there. They do not so readily overflow into a comb honey super, but there is little significance in that. If, on the other hand , you put either kind of super on a very strong colony, then the bees overflow into it—into a comb honey super just about as readily as into an extracting super. But again, there is not much significance to the fact that the bees are occupying the supers. They are not storing honey in the supers unless there is a nectar flow in progress. All the bees in the world are not going to be able to make honey from thin air; They need a nectar flow. And now here is the point: **If** a colony is very strong, that is, populous, or just boiling over with bees, and **if** a nectar flow is in progress, then the bees will enter and go to work in whatever supers are on the hive, whether they be comb honey supers or extracting supers. But you have to to have both; that is, very strong colonies, and, a nectar flow. It does no good to have supers on a hive if there is no good nectar flow, and, even if there is a nectar flow, it is of little use to have supers on weak or middling colonies.

So once again, we see the value of the Taylor principle. Really heavy hives in the fall mean powerful colonies in the spring, and those are colonies that will start storing honey in comb honey supers just as soon as they get a nectar flow, no doubt about it. No need to worry about what kinds of supers they "like" or don't "like." They just want to store honey in whatever supers they've got—provided those colonies are strong ones. And there's no need to worry, either, about reducing the comb honey colonies down to single stories, or other Herculean measures. If they are heavy in the fall, they will be storng in the spring, and that, to my mind, is the secret of honey production.□

Obituary

Carl 'Cap' Moen, beekeeper for the University of Washington Arboretum's outdoor apiary, died recently at the age of 91. Born in Seattle, Mr. Moen logged more than 200 crossings of the Pacific Ocean as a seaman. He became a beekeeper in 1919 when a 90 year old man gave him a hive. He was active in the Puget Sound Beekeepers Association and, in 1958, was hired by the arboretum to assist in pollination efforts, by bees, of flowers used to produce seeds to be exchanged with foreign countries.

IT PAYS TO KNOW

How to . . .

By P.F. THURBER
5522 127th Ave. N.E.
Kirkland, WA 98033

By now you are probably only moderately overjoyed to see another of my gadgets which I use when I extract, — or I guess I should say if I extract because what with miserable weather, pesticide kills, and the fireweed beetle, my buddies and I are about to take up another hobby — maybe tatting or hooking rugs. On the other hand we have had good crops in the past, and you know there is no optomist alive like a person who keeps bees. So I thought to make one, hopefully, last gadget to run into the extracting process.

I start out to refresh your memory with the very effective honey dryer if needed. Then the supers are moved onto a honey heating dolly then uncapped in a homemade uncapping table with removable

1. The web in the cavity is drilled; the rope heater threaded thru drilled holes, and a couple of nails pushed thru added holes so rope heater held in place.

legs. I use a Rosedale electric (200 Watt) uncapping plane which has a homemade but effective temperature controller. From the uncapping table the frames go into a four frame Woodman swinging basket extractor which I motorized and wrapped with ten turns of 7 Watts per foot electric heating cable. The honey, as it goes out the gate is further heated by two 150 W reflector infra red light bulbs which heat not only the stream of honey but also the surface of the honey as it fills a 4 gallon white plastic wash bucket. Then it goes into a settling tank or tanks if the miracle repeats and we get a crop, and then it is strained through a 5 gallon nylon bolting cloth paint strainer sack which is equivalent to 100 mesh/inch. Honey is then stored in 5 gallon pails till sold or bottled.

Now if you are interested, you can look up all these gadgets except the honey dryer in past issues of *Gleanings*. (The honey dryer article ran in another publication.) Let me assure you all the gadgets including the electric drive of the extractor work and work very well. They are not Mickey Mouse, — thrown together

2. Cement added to add mass for more uniform heat and is to hold rope heater is place — the pilot light hole has not been drilled and pilot light installed.

gadgets. They have been used in some cases for over ten years and surprising number of people have wandered in, helped me extract for a while, and then have gone out and duplicated some or all of the gadgets because they are worthwhile.

The newest gadget which I have made is photographed as I built it. It is a heater to go under the container into which the extractor drains. I run too small an outfit to economically justify a heated sump and a honey pump. When you try to strain honey through 100 mesh nylon which is merely 5 gallon size nylon bolting cloth paint strainers, if the honey is not warm, it will not strain. That of course is why I used the honey heating dolly to warm the honey in the combs, and why I have the heating tapes on the extractor. None-the-less although warmed a little the honey still would not strain well, so for years I used two reflector heat bulbs shining on the stream of honey coming out the gate and shining on the honey. Does this work? You bet. On the other hand heat bulbs are getting expensive and paddle footed people, me included, from time to time kick over the yoke holding the bulbs so I have been thinking for a long time for a new solution. Finally I got the makings of a simple gadget..a real simple gadget for that purpose.

Now how did I make this final gadget? I took an aluminum casting one side of which is flat and covered with formica, and the other has ridges cast in it to provide strength. It was the top of a cabinet on which a computer component sat. . .maybe it was the tape deck which held the transactions posted by tellers of a bank. . .anyway it is 18 inches square and the cost I liked because it was a gift. Now to convert it to a warming unit I rummaged around and found I still had several Hotwatt, Inc. rope heaters. The 250 watt element I had had aluminum tube sheath. I could not feed the sheathed heater through the holes I had drilled in the webs so I carefully, and I mean very carefully removed the sheath with a knife. That took some time because the fiberglass roving which covers the nichrome coil is easy to nick and the wire in the coil is extremely fine. With the aluminum sheath removed I had in my hands a very limp rope about three sixteenths of an inch diameter. The 250 Watt heater ran to two feet in length and could be bent into very tight turns. I fed it through the drilled holes and checked to see the heater still worked. It did. Then I thought I probably needed some mass to carry the heat from the heater to the aluminum plate. . .air transmission probably would not be as effective as something solid so I bought a quart of Furnace and Retort Cement (Manufacturer: Grant Wilson, Chicago) which cost $5. The product is normally used to cement fire brick into furnaces and stoves. With some nails to hold the cement in position after it hardened. I left the material to harden for a week. When the week was over, I plugged it in with test clips to 110 volts. The heating element still worked OK so I connected a power cord to it. After turning the heater right side up, and after setting it on a piece of cement asbestos board, I let it run. In about two hours the whole plate was hot, but it felt a little hotter in the center as

3. Honey warmer in operation. The pilot light just to right of power cord is on. Honey falling from extractor honey gate forms reflecting surface which makes it look like there are two gates in the pan. Sorry about that.

Continued on page 55

Beekeeping Technology

By DR. JAMES E. TEW
The Agricultural Technical Institute
Wooster, Ohio

WHAT IS A SLATTED RACK ANYWAY?

Over a year ago during one of those intense personal conversations that beekeepers often have among themselves, I was informed (for what semed to be about the tenth time) of the values of the deep bottom board. As far as we can tell, the deep bottom board was devised by Dr. C.C. Miller. The comment was made during this conversation that the slatted rack bottom was probably the most useful piece of equipment to be routinely "unused"

As always, I am trying to develop topics for this column. I realized instantly that this was a topic worthy of note. After all the deep bottom board is simple to build (or manufacture) and is reputed to offer great benefits in the form of better wintering biology and increased honey production. Upon quick, but reasonably thorough examination of the bee literature, I found scant, undocumented testimonials to the slatted rack concept. I was surprised at this development as I was sure that some professional would have been eager to assign statistical evaluations to such a promising piece of equipment. As the publication deadline approached (as it always does), I was forced to review other topics and left the slatted rack discussion on the proverbial "backburner". It is with a certain amount of reluctance that I've returned the slatted rack topic directly to the front burner where I fully expect to get burned if recent discussion on this topic can be used as an indicator.

My initial persual of the readily available bee literature did seem to indicate that Dr. C.C. Miller first described the slatted rack as a deep bottom board. Miller (1915) used a bottom board two inches deep. He described it as a "plain box that was open at one end. The main thing the Miller bottom board did was allow a space two inches deep under the bottom bars—" a very nice thing in winter". Obviously, during times of nectar secretion, bees would build down from the frame bottoms. Millller's bottom board was reversible and would be used with the shallow side up durng warmer months when nectar flows were in progress. In Miller's method of comb honey production, swarming was often a problem. In order to leave the deep side down year-round, the Doctor devised a rack consisting of 21 wood strips attached to two runners resulting in a ladder-fashion appearance. Since Dr. Miller used 8-frame equipment, his specific measurements seem inappropriate here. Dr. Miller said he valued this rack highly. It prevented the bees from building down and prevented over-heating, which appeared to cause swarming in his hives. In addition the rack could be pulled out during cold weather to give the colony the deep bottom that Dr. Miller felt was important.

Many years later, Carl Killion (1960) suggested placing a four inch board at the front of the rack to prevent bees from rounding off the lower front corners of the comb. Killion was a strong supporter of the deep bottom with a false bottom (slatted rack) positioned inside. Killion reported that improved ventilation, both on the hive stand and during transit was beneficial to the hive. Secondly, he felt that he got much better comb, and finally, dead bees did not plug the winter entrance resulting in the remainder of the hive being smothered. The Killion rack had a bee space all the way around and was centered in the deep bottom board by means of staples in a few of the slat ends.

Fig. 1. A Killion type bottom board.

Koover (1968) discussed the Bovard Rack. This rack (Figure 2) which is currently available from some bee supply manufacturers eliminated the problems of (a) special equipment, (b) rack fragility, and (c) spacer elimination. The Bovard Rack modified a standard bottom board to give it (according to Koover) all the advantages of the Killion bottom board.

Fig. 2. A board type slatted rack.

Continued on next page

Hieftje (1968) responded that the Bovard Rack's front four inch board collected water that condensed in the hive. The Killion bottom did not have the problem. Hieftje also reported that the rack could be removed from the bottom board and spring cleaning functions performed without breaking the hive apart. He also reported successful feeding of colonies fitted with the Killion bottom by simply pushing a pan of sugar syrup inside the bottom board and closing down the entrance. He felt that the versatility of the Killion board outweighed the advantages of the Bovard Rack.

most styles allow for a bee space between slats and bottom board rails.

The situation that seems to develop here is a piece of equipment that is widely accepted but essentially untested by critical observers. There is certainly nothing unique about this characteristic. Many common pieces of beekeeping equipment are in this category. If readers have an opinion on the value of the slatted rack, I'll consent to being a "vote counter" and report in a future column the results if there is enough interest.

We hope to place a number of these devices, both the Killion and Bovard styles, on colonies next spring to develop our own opinion on these devices.□

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Supplemental Feeding Of Honey Bees

by G.W. HAYES, JR. The Agricultural Technical Institute Wooster, Ohio

Honey bees like any other animal, have their own unique nutritional requirements. These requirements are met by proteins, carbohydrates, fats, vitamins and minerals.

Pollen supplies the colony's total protein needs which are essential for body growth, tissue repair and ther normal body functions. The curde protein of pollen varies from 8 percent to 40 percent depending on the floral source. Total protein in the honey bee diet should range between 23 percent and 30 percent[1].Honey bees maintained on a diet of less protein failed to rear brood.[2].

Fat requirements of honey bees are also supplied by pollen. Like many insects, honey bees cannot synthesize steriles so some types must be contained in the diet.[3].

Honey bees require vitamins and minerals for proper growth and development. Pollen is exceptionally high in water soluable vitamins. Only proteins are needed for the brood food glands of the nurse bees to properly develop. The addition of vitamins to the food fed to the developing larvae is essential for their continued growth. Pollen contains the vitamins A,C,D,E,B1,B2, Niacin, B6, Biotin, Inosital and Folic acid in measureable quantities. The minerals pollen contains consist of calcium, phosphorous, potassium, magnesium, iron, manganese, silicon, sulphur, chlorine, copper and zinc.[4]. Analysis has shown that pollen and bee larvae contain up to 27 trace elements.[5].

As can be seen pollen is a highly nutritious food of utmost importance for the honey bee colony. Most honey bee colonies try to maintain reserves of pollen. This pollen is used for brood rearing from spring through fall. Many times in early spring, as brood rearing begins, pollen reserves may be totaly consumed. If the beekeeper hasn't assessed the colonies' pollen reserve requirements during fall management and made adjustments to provide it, brood rearing may outstrip pollen sources available to the bees which, because of weather they are unable to gather sufficient quantities or there are no pollen sources available at this particular time in spring.

Therefore for maximum brood rearing in spring which will translate into more foragers later and possibly more nectar stored, it behooves the beekeeper to monitor the colonies' pollen reserves closely. If the beekeeper notices low reserves of pollen in the fall he can add frames from another colony or rearrange the pollen frames in that particular colony for better access by the bees in the brood chamber. Again in early spring the beekeeper should re-evaluate the quantity of pollen reserves as it relates to brood rearing at this time. As a general rule of thumb the brood rearing area should have immediately adjacent to it a miminum of four six deep frames filled mostly with pollen. If this condition is not met and brood rearing has started vigorously then some type of feeding should be considered.

There are two terms which should be understood before going any further, Pollen Substitute, and Pollen Supplement. A pollen substitute is prepared food which uses **no** pollen whatsoever as an ingredient. A polllen supplement is a food that **uses** pollen as an ingredient.[6].

In order to make a pollen supplement the beekeeper should have access to a quantity of pollen that he knows is pure. Pure, meaning that it does not contain any foreign impurities, notably pesticides that may have been absorbed before the pollen grains were collected by the foragers. You can imagine the affect of using such a tainted pollen in feeding a small colony in spring. Collecting pollen can be accomplished using any of a variety of pollen traps that are now on the market. The formulation for a pollen supplement is relatively simple. The individual ingredients may be purchased separately or in lots from any number of suppliers that advertise in the various journals.

POLLEN SUPPLEMENT

3 Parts Soyflour
1 Part Pollen
2 Parts Sugar
1 Part Water

These ingredients are mixed together thoroughly. When the consistency has reached a stage where a patty can be formed without breaking or crumbling, then the rest of the mixture can be readied for feeding. Shape all of the pollen supplement dough into ¾" thick by 4" to 5" diameter discs. Sandwich the patty between sheets of wax paper. This will allow for easier storage and transportation. The pollen supplement patties are then placed on the top bars of the frames over the brood nest. Remove one sheet of wax paper from the pollen supplement patty placing that side on the top bars. The side with the wax paper still adhering will be on the upper side and will prevent the inner cover or top from sticking to the pollen supplement and allow for easier hive entrance by the beekeeper.

As was mentioned a pollen substitute is a feed used for stimulating and maintaining brood rearing under less than optimum conditions, generally in spring, that does not contain pollen as an ingredient. One of the reasons pollen is used in a pollen supplement is because of its vitamin and mineral content. Without the necessary vitamins and minerals brood cannot be raised. As a substitute for pollen a good quality brewer's yeast must be used. Brewers yeast contains many of the vitamins and minerals needed by the developing brood, in quantities that make it a valuable ingredient in a pollen substitute[7]. The formulation for the pollen substitute is exactly the same as listed for the pollen supplement except of course, that one part of Brewers yeast is used in place of the one part of pollen. The pollen substitute is then mixed, shaped and fed in the same manner as pollen supplement.

There is one product on the market that is a ready mixed preformed and prepackaged pollen substitute. It is called the "Beltsville Bee Diet". The name is derived from the U.S.D.A. Laboratory in Beltsville Maryland where this material was originally formulated and tested. The private company which now manufactures and markets the "Beltsville Bee Diet" would not release the formulation that they are now using, therefore I am at a loss to comment on the specific suitability of this product.

Efficiency of doing business and economics are as important now as ever in the past, especially for beekeepers. I have taken the liberty to compare the cost of these feed formulations. All costs of ingredients are the retail prices of items now available through the various bee periodicals. **Con't next page**

As can be readily seen the cost difference is substantial. Obviously if you have enough money the cost difference may not be important. Assuming that both types of pollen substitutes are of equal nutritive value and both are beneficial to the bees, the economy of making your own pollen substitute are clear.

This is all to say that nothing works perfectly all the time and that bees do have a preference for bee gathered pollen. Conditions sometimes present themselves that require the use of some type of feeding in order to have healthy vigorous colonies. Every beekeeper should be prepared for these times with the most appropriate action. In the fall, the beekeeper should move frames of pollen to the brood area for easy access by the nurse bees in feeding the brood. The following spring some of the time and expense necessary for pollen substitute feeding can be eliminated.

Pollen Substitute

Ingredients	*Weight*	*Total Cost*
Generic Tortula Yeast	**5 lbs.**	**6.95 Delivered**
Toasted Soyflour	**5 lbs.**	**4.95 Delivered**
Granulated White Sugar	**5 lbs.**	**1.69**
Water		**Cost insignificant**

Formulation For Pollen Substitute By Weight

Soyflour	**5 lbs.**	**4.95**
Sugar	**3 lbs.**	**1.02**
Yeast	**1 lb.**	**1.39**
Water		
	Dry Weight 9 lbs.	**7.36 or $.82 per lb. dry weight**
Labor		
Mixing & Forming	**30 min.**	**2.50**
		9.86 or Total Cost per lb. $1.10

II. "Beltsville Bee Diet"

1.5 lbs. per package	**4.95 $ postage**

Here at ATI this past spring we had an opportuntiy to feed both types of pollen substitutes. Feeding these substitutes on a large scale makes the strengths and weaknesses of both products stand out quickly. Each colony of bees is different. Some colonies were very reluctant to touch either the "homemade" or the retail pollen substitute. In many cases the bees would eat (I am using this term loosely) the "homemade" pollen substitute seemingly only to reopen the pathway between frames leaving the substitute on the top bars untouched. I don't know whether they were truly consuming the product or merely removing it to be disposed of with the other hive debris. The retail pollen substitute was not entirely removed by the bees either. It comes prepackaged in a plastic tray filled with the substitute, that is inverted on the top bars. There could somtimes be seen stripes in the clear plastic feeding tray where the bees had tried to clear the space between the frames and left the material over the top bars untouched.

Some other colonies were totally different and would consume both types of substitute in a few days, seeming to need more. Finally some colonies would take either the "homemade" formula or the retail product but not vice versa.

PART II

We have discussed the very important protein, vitamin and mineral aspects of feeding bees. As vitally important as this is, bees will only be able to survive for a limited period of time if the demands for an energy fuel are not met. Carbohydrates, (sugars) supply energy for all muscle movements used in walking, flight, temperature regulation, etc. Without carbohydrates, loss of the colony will also occur.

Supplemental feeding for some type of carbohydrates is done for different reasons, queen and package bee production, brood stimulation, splits and divides to name a few. We will address ourselves here however, to bringing a colony of bees through a winter successfully. It is my opinion that supplemental feeding is generally necessary in early spring because 99.9 percent of the time the beekeeper was responsible for letting the colony go into winter without enough stored honey. The colony start consuming more honey as energy demands increase in spring, primarily because of brood rearing. The colony runs out of stores and starves to death. Not a very pretty picture, but it happens at times. If the beekeeper is conscientious he will notice the light (in weight) hive in fall and head off disaster, if the beekeeper does not notice a light hive then, he may on one of his early spring visits. If he does, then there are two choices that he has to make. Should several sealed frames of honey be taken from storage or from an overly supplied colony, or should feeding the colony some type of sugar solution be attempted? For argument's sake let's say no frames of capped honey are available— that leaves the feeding of a sugar solution.

The two types of carbohydrate sources available to most all beekeepers are Pure Granulated White Sugar (sucrose) and High Fructose Corn Syrup (HFCS). The use of anything other than the above is inviting trouble, in the form of dysentary at the least. Using any sugar with impurities such as brown sugar or cane syrup etc. causes the problem. These sugars are dark, generally, because they contain extraneous material which is indigestible by the bees. The feeding of this type of sugar with the indigestible material under conditions where voiding flights are not readily available may cause a worse dysentary or nosema problem than the colony can tolerate at this time[8].

Pure granulated white sugar is available at every beekeeper's grocery store. It is usually mixed at a ration of two parts sugar to one part water, and then fed to the bees in a variety of feeder types. The bees consume this solution and add enzymes to the sucrose which inverts or hydrolyzes the sucrose into approximately equal parts of dextrose and fructose.[9] This can now be digested by the bees directly or if enough is available, stored in empty cells. For the hobbyist beekeper the feeding of sugar syrup made from granulated white sugar is relatively easy, the only time consuming part being the mixing. Cost is moderate, considering the cost if you don't feed in certain situations.

In the last several years a product has appeared in large enough quantities and at a low price to make its use by large scale beekeepers a regular occurence. This is High Fructose Corn Syrup, HFCS.

HFCS is a light carbohydrate **liquid** that is made by an enzyme process which changes the starch found in corn into fruc-

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tose and dextrose. Exactly the same major sugars as the bees produced in inverting sucrose. There are two main types of HFCS concentrations. HFCS 42 which is 42 percent fructose, 52 percent dextrose and 6 percent higher saccharrides, and HFCS 55 which is 55 percent fructose, 40 percent dextrose and 5 percent higher saccharrides. Because HFCS is a liquid it is not economical or practical to ship less than truck load quantities. For the large bee operation, especially queen and package producers in the South who can be made because no mixing is involved, the other savings is because HFCS is less expensive than sugar. A savings over the cost of granulated sugar of as much as 30-35 percent is possible with HFCS 42 and 10-15 percent on HFCS 55. When you are talking about thousands of gallons used in a season the savings are immense.[10].

In summary, there are several courses of action that can be taken when circumstances beyond the beekeeper's control present themselves and threaten a colony's existence. Except for the commercial queen and package producers already mentioned, the use of supplemental carbohydrate feeding should be limited as much as possible. It is much easier for the beekeeper and much healthier, and more natural for the honey bee colony if bee collected and stored pollen and honey is available. This is where the inefficient beekeper and conscientious beekeeper part ways. The prudent beekeeper will manage his hive properly in the fall in anticipation of the coming spring, keeping extra frames of pollen and honey in store for insurance. If in fall management, distributing frames of pollen and honey is successful, nothing else needs to be done on those early spring visits to the beeyard. If circumstances change and extra pollen or honey frames need to be added, perhaps one or two extra trips to the yard may be necessary. Contrast this with the inefficient beekeper who does little after extracting except maybe to close down the entrance. He doesn't take the time to fully check his colonies or anticipate next year's needs. This is the beekeeper who will have colonies starve to death, have slow build up on the surviving colonies, and such colonies may have a higher susceptibility to disease. He will spend frantic hours trying to diminish the effect of his mistakes. Mixing sugar syrup, preparing pollen substitute, filling feeders will be his reward. Then if he manages to revive some of his neglected colonies he will brag that only his Herculean efforts saved the bees!

Take a minute and reflect on the idea that we all should work a little closer with Mother Nature's millions of years of experience. All of us get into the habit of imposing too many man-made, temporary, stop gap measures that many times are not necessary and always expensive. Let's truly manage our bees efficiently, for our benefit and theirs.□

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A GLEANINGS INTERVIEW

RETIRING EDITOR OF *GLEANINGS IN BEE CULTURE,* LAWRENCE GOLTZ

Larry Goltz became editor of *GLEANINGS IN BEE CULTURE* in 1972. He had recently graduated from Ohio State University as a naturalist with a degree in Environmental Education. Prior to that he had worked, for a number of years, in the Columbus, Ohio Sales Division for Oliver Farm Equipment. Larry begin keeping bees a year after high school. His brother owned an orchard and kept bees, but hated the insects. He tried to get Larry interested in working colonies. He succeeded – up to a point. Larry became very interested, but decided he'd rather get his own bees than work his brother's. Larry kept 14 colonies up until the time of World War 11. When he returned from active duty in the service, the colonies were gone -- no doubt appropriated by someone wanting honey in those sugar-scarce years. Larry didn't stay out of beekeping long, however and, in addition to his full-time jobs, has kept as many as 85 colonies. Those of us who have been fortunate enough to work with Larry, have grown to sincerely respect the man and the beekeeper. Larry's knowledge of bees, his patience with bees and people and his great willingness to share with others, makes him a man who deserves to be listened to. We believe that Larry's contributions to the beekeeping world are significant and a reflection of the man himself. We're proud of Larry, appreciative of having had an opportunity to learn from him, and pleased to share the following interview with you.

Question: In your experience as a beekeeper, and as an editor who received many questions from beekeepers, are you able to point to any "absolutes" in beekeeping—anything that always holds true?

Answer: Certain constants in beekeeping may be regarded as being nearly "absolutes"; such as the importance of having a good colony queen, a need for ample forage to produce a crop of floral honey and the need of a strong colony population with plenty of stores to survive the northern winter. Note, however, that these statements tend to be generalities, rather than "absolutes'. Every experienced apiarist soon learns to avoid making unequivocal statments about bees and beekeeping (and beekeepers).

On the less serious side, I must confess to having learned from experience that the "management" of bees may mean more to the beekeeper than it does to the bees. Success in beekeeping may depend less upon the beekeeper than circumstance of the season and locale in which the bees are kept. "Minimum managment" is sometimes better than "mis-management" or "over management." The professionals soon learn this if they wish to stay in business. Of course, certain manipulations must be performed at the proper time; spring examinations of the brood nest, supering and honey harvest are examples of critcial needs. Beyond certain needed manipulations by the beekeeper, the environment holds the key to successful beekeeping.

I hope I have avoided answering your question!

Question: What is your personal vision of the future of American beekeeping? In that regard, what general or specific advice would you have for persons getting into beekeeping, either as a hobby or for commercial profit?

Answer: The future of beekeeping is as secure as any other agricultural pursuit, if for no other reason than that for the present, at least, agriculture has no other viable substitute for pollination. What I think we should look for, however, are some changes in the status of commercial beekeeping. Specifically, we may see more dependence on "controlled" apiary management such as "feedlot" maintenance of colonies by means of supplementary feeding. The ultimate object may be less to produce honey but rather to build bee populations rapidly to meet pollination requirements rising from the increased use of bes in such applications as producing hybrid cotton, soybeans, etc. We can also look for increasing use of "genetic engineering" in bee breeding and certainly for better marketing methods for

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honey. We may eventually find a better balance between domestic production and exports and imports of honey, all of which will help to stabilize the beekeeping industry. If we don't, we may find ourselves with many more "hobby" commercial beekeepers.

If you are a beginning beekeeper, build slowly until you have attained several years of beekeeping experience. Not only will you learn whether you like beekeeping or not by then, you will also know more about your capabilities as a business person, as a handler of bees, your mechanical aptitudes and your physical endurance, all of which have a bearing on how well you are likely to fare as a side-line or full-time commerical beekeeper. In addition, the monetary investment in beekeeping is something which must be handled wisely. Going into extensive beekeeping too quickly on borrowed capital is a very great handicap unless you are very fortunate to be in an exceptionally productive area, have a string of good crop years, or, inherit a going operation. Build a basis for your intended start in commerical beekeeping by getting as much formal education as possible; and/or take some specialized training in general apiculture. All of this training must be supplemented by practical bee management experience, preferably, on your own, with a limited number of colonies.

Question: During your years in beekeeping, what changes have been most noticeable to you? Have these changes been generally more positive or negative?

Answer: When I began beekeeping over 40 years ago most beekeepers were packing bees for winter in our area with heavy insulation. This is no longer done. "Bottom" supering was still practiced, under the assumption that bees worked in the supers better than if "top" supered. Swarm control recommendations included emphasis on cell cutting rather than the early and ample supering and the provision of good, young queens, as recommended today. Obviously, the cost of equipment and bees has increased noticeably, as has the price of honey. In general, I would say, in looking back over the yars, that the availability of equipment has improved and bees are somewhat better producers, though not universally. Products of the hive are processed more efficiently and effectively than during earlier years but I have some doubt as to whether modern technology has improved the product—due primarily to the nature of honey. Honey is in the best condition for consumption when unprocessed, as many will agree, but there is some disagreement as to whether modern processing methods affect the quality of the product. Certainly, processing is necessary under present marketing arrangements.

I would say that, in general, most of the changes in beekeeping have been positive, but there a few exceptions. One exception which concerns me is the apparent changing attitudes by non-beekeepers, who no longer want bees located in urban, suburbs or even rural ares. Everyone now wants "security" from the often-imagined "risks" of having some contact with natural things. We tend to regard with impunity the very much greater threats to health and life of driving the freeways daily, threatened nuclear accidents, environmental contamination and conditions leading to social degradation of the individual.

Question: What are some of the assets of a truly good beekeeper?

Answer: The assests of a truly good beekeeper are rather easy to define, but difficult to detect in their human embodiment until you get to know a person; and, he or she has had a chance to demonstrate his or her capabilities. A beekeper, above all, must be a patient, tolerant individual, typically good at working with animals and comfortable in the outdoors. A person good at beekeeping may come from any environment, urban or rural, but most demonstrate the ability to cope with such adversities as will be encountered in handling sometimes uncooperative honeybees under what are often trying conditions If this individual then demonstrates a tenacity by continuing beekeeping while at least giving the outward appearance of enjoying it, then the chances are good that this person will be that exceptional person known as a beekeeper who truly enjoys and understands bees and beekeeping.

Question: Are there some subject areas that you feel most, or many beekeepers, need to know much more about? What are some areas in which mistakes seems to be repeatedly made?

Answer: Everyone has areas of weakness and strength I have found from having taught basic beekeeping courses for several years and having associated with beekeepers for a number of years. Some individuals are excellent technicians and business managers but weak in the realm of understanding of the ecological relationships between bees and nature and getting, or not getting, a honey crop. This does not demonstrate a lack of talent but rather a reflection of the backgrounds of many individuals raised in towns or cities, without a rural background. I hope readers do not regard this opinion as being critical of anyone engaged in beekeeping but simply a personal observation of what I, personally, regard as some of my own weaknesses.

Essentially, I think all beekeepers need to know more about what non-beekeepers think about bees, beekeeping, and some of the marketed products such as honey. We, as beekeepers, tend to become insular in our thinking, disregarding the other estimated 99¾% of the population who will perhaps have a larger and larger say in the future of beekeeping as the years pass.

Question: Have there been, from time to time, ideas or management techniques that never really caught on, but that you think might deserve a second look?

Answer: I am not much of an innovator or inventor, but I do have a great deal of respect for those who seem to continuously come up with better ideas in management of bees or invent better equipment. Relatively few "new" ideas are adapted in commercial beekeeping but those which are, are of a nature which sometimes go unrecognized as being revolutionary or even unique. While new hive styles, for example, are frequently introduced as being vastly improved over the standard Langstroth, we have seen few changes over the years. In contrast, there has been a virtual revolution in the economics of marketing honey as a result of the introduction of some "new" ideas, all not necessarily good, as some would say.

Perhaps, rather than concentrating on new management techniques exclusively, as an industry, it may be better to devote more thought and effort in developmental programs which stress intra and inter-industry cooperation, particularly with other agricultural industries. We need to visualize and begin working on such problems as pollination ecology, improving bee forage, honey marketing and bee hazards such as chemical sprays. Of course, the participation by hobbyists in such industry-wide problems is usually limited at present. Ideas that can be put into practice in a small apiary or innovative equipment that can be constructed in the home workshop receive the greatest atten-

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tion from most beekeepers. These projects are naturally the most interesting and useful to we hobbyists.

I could not begin to list or evaluate the many ideas with which I have come into contact with as an editor and beekeeper. Most have some value to an individual but a limited commercial application. A number of "inventions" are not really new but simply represent the reworking of an old idea. This may not detract from usefulness since the new version often represents better materials, better fabrication and improved design. My experience is that anyone with a new idea or piece of equipment should first submit it to an experienced beekeeper for an impersonal evaluation and also do a cost-sales potential evaluation before marketing or patenting the idea. Otherwise, simply enjoy working out new ideas in your own apiary and build whatever is of value or interest to you for your own use. That is one of the pleasures of being a beekeeper with a limited investment.

Question: A last, personal question; what do you plan to do now that you are retiring from the editorship of *Gleanings In Bee Culture*?

Answer: I thought you would never ask! We plan to relocate on the West Coast. I will probably continue beekeeping in a small way and hopefully continue to gather information on the honey and nectar plants for possible publication of a comprehensive survey on the subject. I hope to call on as many beekeepers and others with information on the subject as possible and will be photographing more of the Northwest. I will attempt to forward information periodically to *Gleanings* for possible publication, particularly in respect to activity in the western states and provinces of Canada, areas in which I feel *Gleanings* has not had adequate coverage in past years. Being near many commercial honey producing and queen rearing operations may allow me to report on these, as well as the many hobbyists and their organizations active in the West.

I wish to express my appreciation for the fine cooperation from the many beekeepers and other associates during my term of editor of *Gleanings In Bee Culture*. We will be saying goodbye to many friends in the East but are looking forward to again seeing many of the fine acquaintences we have had the pleasure of meeting during our western trips.□

LARRY – FROM YOUR FRIENDS AT THE A.I. ROOT COMPANY and ***GLEANINGS IN BEE CULTURE:*** OUR THANKS TO YOU FOR YOUR HELP, YOUR WORDS AND, MOST OF ALL, YOUR THOROUGH HUMANITY AND REGARD FOR LIFE'S GOOD THINGS. WE WISH YOU THE BEST OF EVERYTHING!

Wintering The Honey Bee Colony: Hives Part I

By T.S.K. Johansson and M.P. Johansson
Queens College of CUNY, Flushing, NY 11367
and Queensborough Communtiy College of CUNY
Bayside, NY 11364

It has been suggested that the ancestors of honey bees used cavities as nesting sites. The change to building combs in the open under tropical conditions by the giant *(Apis dorsate)* and dwarf *(A. florea)* honey bees was advantageous, since the number of locations for nests was not then limited by the availability of cavities. That the European *(A. mellifera)* and Asiatic *(A. cerana)* bee retained the ancestral behavior made it possible for them to spread to colder climates where cavity nesting is essential for survival.[1]

When the scouts from a swarm are unable to locate a suitable cavity, or cannot agree on a choice, then *A. mellifera* also builds combs out in the open. That such clusters survive in southern United States may not be so surprising, but a colony in Austria lived for several years protected only by a roof with a large rough box net over the whole in winter. In Wisconsin Farrar wintered two colonies in hives with the sides and ends covered only with window screening. One colony died as the result of Nosema, but the other used 64.5 pounds of honey and produced a surplus of 44 pounds in a poor season when the average yield for Wisconsin was only 40 pounds[2].

Although colonies can survive winters with a miniumum of protection, they normally build a nest in a dark cavity such as a hollow tree, a crevice in a rock, or a hole in the ground where there is an upper surface to attach combs and an entrance small enough to defend. Humans and other predators, such as bears, collected combs from such natural holes in trees. After 1200, beekeepers in the forest regions of eastern Europe and Russia began excavating additional cavities in live trees to attract swarms. Log hives were also hung in the trees, and by the end of the 1300's some of these hives were kept near dwellings where they were safe from both human and animal robbers. But such apiaries were not common even in the 1600's.[3]

In 1568 two books were published on the care and knowledge of honey bees, the first of many that by 1845 provided the basis for "rational" beekeeping as practiced today. When L.L. Langstroth patented his hive in 1852, a flood of imitators followed suit. It is unlikely that the bees have an inherent capacity to modify the microenvironment of their nest. It was rather for the convenience and profit of the beekeepers that these new hives were promoted.

Although a log cut up into boards provided a larger number of hives of a more convenient kind, the insulative value of the log was perceived as a loss. Various strategies for wintering the colonies were considered and tried. By 1900, the two methods recommended as feasible were to place them in a cellar, or in a chaff hive.

Chaff hives. The promotion of chaff hives may have begun in 1875 with an advertisement in *Gleanings* advocating "Finn's porous double walled be hive, a success in wintering bees on their summer stand". A free circular contained testimonials that Root felt uneasy about because they were not by owners of large apiaries, nor by persons known through bee journals. He offered to cheerrfully return the $1 for the single insertion of the advertisement, if Keyes & Finn objected to his editorial comments. The editorial included three letters from other beekeepers with similar hives.[4]

The 1875 issue of *Gleanings* also contained a letter by T. Smith of Point Pelee Island, Ontario reporting his extensive experiments to improve wintering of bees: 1) the "New Idea" long (horizontal) hive; 2) an outside case packed with straw or leaves; 3) a double board hive with dead air space; 4) a hive of ½" boards (as recommended by Quinby); 5) an empty space underneath the frames; and 6) an empty space above the frames. His question whether bees on the outside of the winter cluster really do exchange places with those on the inside is apparently still not settled. These efforts exemplify the admonition by G. Mendel that "it is important

for every beekeeper to experiment, for only in this way is it possible to achieve successful results".[5]

While touring through Michigan in 1874, Root saw a hive designed by J. Butler and made of pine lath packed with wheat chaff; inspired on learning that colonies in Dutch straw hives (skeps) had survived a severe Michigan winter while those in "Yankee" hives did not[6]. Root and J.H. Townley packed hives "*a la* Butler" in 1876. Root published directions for constructing such a chaff hive, and listed it in his catalog from 1878 onward[7]. Ironically, Root assigned credit for inventing the chaff hive to Townley rather than Butler[8]. In the 1890 edition of the catalog, Root siad he had used the hive successfully for 10 winters with an average loss of not more than 3%. The two-story hive was available in the flat (unassembled) with 100 pieces of 28 different sizes, and the catalog advised the purchase of an assembled hive to avoid mistakes in putting it together! A single-story hive was also available that did permit tiering up with addtional hive bodies (supers)[9].

It is surprising that in 1890, Root still listed a 1½ story hive with a permanent (attached) bottom "similar to the old-fashioned Langstroth hive" which could not be tiered up. In subsequent catalogs new customers were advised to purchase the cheaper dove-tailed hives, and in 1895 the portico hive was no longer listed.

By 1895 the two-story and one-story chaff hives were also dropped from the catalog in favor of the separate dovetailed winter case (first in 1892) that could be placed around the single-walled hives already in use. A. Hill's device was placed over the frames to provide space for the bees to pass from one comb to another, and to support a burlap sack or tray or chaff, sawdust, planer-shavings, etc. Woodman suggested laying a frame or two of honey over the frames to serve both as A. Hill's device and insurance against starvation.

From 1910 (or earlier?) to 1922, Root's listed a telescope cover or cap the depth of a single hive body; providing the option of wrapping the hive with newspaper for insulation in climates where the colony could be wintered outdoors. From 1911 through 1942, the Buckeye or Root double-walled packed hive with a deep telescopic cover was promoted as the top of the line.

The hive sold by Dadant & Sons (Hamilton, Illinois) until 1919 used the Quinby sized frame and had a double back for wintering. A straw-mat was placed over the frames, and a telescope cap covered the hive body to prevent "too much upward ventilation in winter". In 1916 mats were not included, and directions called for filling the cover with dry leaves or straw as an absorbent during cold weather. The less expensive modified Dadant hive was substituted in 1920.

Dadants listed a Champion chaff hive between 1916 and 1923 of "one inch lumber" as superior to others "which have the outside wall made of lumber only ¾" thick.[10]. The 1924 reference catalog stated it would be furnished while stocks lasted, and thereafter only on special order. The 30 % advance in lumber prices during the fall of 1921 may have precipitated this decision? The Dadant hives were manufactured by the G.B Lewis Company in Watertown, Wisconsin, who issued their own catalogs and supplied other dealers as well. The plant was purchased by the Dadants in 1957.

The W.T. Falconer Manufacturing Co. (Jamestown, NY) listed the portico hive, and a two-story and one-story chaff hive until 1907.

The "Falcon" chaff hive was withdrawn in 1907 in favor of the double walled Chautauqua Dead Air-space Hive, a cheaper alternative to the "Falcon". It was lined with rosin sized building paper, and had a trap or burlap bag for chaff; similar to the Root Buckeye and the Dadant Champion chaff hive. The firm is no longer active in manufacturing bee supplies.

The A.G. Woodman Co. (Grand Rapids, Michigan) was distributor for Lewis Beeware, and in 1914 offered the Protection Bee Hive manufactured to their specifications as a dead air space or packed hive. From 1917 until 1939, Woodman Co. promoted a hive with a cardboard "inner overcoat" plus a tray of chaff. A winter case and super protector for single hives was listed in 1914 for 50 cents.

The Leahy Manufacturing Co. (Higginsville, Missouri) made a super with thinner sides of which one was furnished with glass for observing the progress of the colony. A telescope cover fitted over the super to make it a "double walled hive". The 1922 catalog also listed a winter case which was deleted in 1959.

It might be useful to indicate that where chaff-trays were the same size as a regular super, they could be stored on top of an inner cover during the summer.

Canada. W.A. Chrysler (Chatham, Ontario) listed a double walled, insulated hive in catalogs from 1893 (earlier?) through 1972 (later?). In 1891 E.L. Goold & Co. (Brantford, Ontario) listed a hive desgined by D.A. Jones for out-door wintering with a removable casing for easy storage, but did not recommend it.

The Alpaugh wintering case deep enough for a honey super on top of the hive, and collapsible for storage was listed in 1925 by the Ruddy Manufacturing Co. Ltd. (Brantford, Ontario). Their Ideal hive cover was packed with leaves, cork-dust or dry wood ashes. F.W. Jones & Son (Bedford, Quebec) also sold such a cover (Simplicity), as well as the Jones winter case for single and four hives (or made to order).

Great Britain and Europe. The editors of *The Academic American Encyclopedia* cannot be blamed for choosing to use the British W.B.C. (Carr), the aristocrat of all beehives, to illustrate their article on beekeeping. But they erred in labeling it the type used by commercial beekeepers, since even in England they use some variety of the single-wall hives available. On the other hand, the engraving of Colvin's "Ornamental" hive in the third edition of Langstroth's book does look very much like the W.B.C. with sectional outer cases (lifts) and legs. Many amateurs in districts where the annual rainfall exceeds 30" believe the double-walled W.B.C. keeps bees drier, and combs freer from mold during the winter months[11].

The R. Steele & Brodie catalog for 1920 listed other variations not available now, including a Claustral Hive with two ventilating chimneys in which the colony could be confined. Etablissments Mont-Jovet in France reported that bees in their "Perfecta" claustral hive flew only one afternoon during 124 days of confinement in "parfaite tranquillite!!!!!". The French hive provided ventilation in the double side walls from the hive bodies; and the bottom which did not admit any light. The Kerhof ventilated bee hive (U.S. Patent No. 4, 135,265) has similar features. Haddemo described his experiment with colonies confined in a hive with an air intake at the top underneath a layer of insulation; the exit vents at the sides permitted warm air from the hive interior to mix with some of the colder fresh air[12].

Some hives are restricted to two-stories such as those in Germany that are kept in bee houses. Mendel placed shutters in front of the opening in which the hives were stacked to protect them from cold winds. Swedish and Norwegian hives were once large stationary cases in which brood chambers and honey supers were added as the colony needed them[13]. Newer double-walled, insulated migratory hives are now available, but single-walled hives are not listed in catalogs. The French use stationary and migratory varieties of the modified Dadant (Quinby frame) hive.

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Brother Adam's Buckfast Abbey

by Jack Kuehn
Amesville, Ohio

Buckfast Abbey is best known for the bees which have been developed there. Of less reknown is the system of management worked out over the years by Brother Adam. In fact, the Buckfast bee and the management system have evolved side by side. The system was developed to produce honey efficiently, but of equal importance has been the implementation of management techniques which facilitate the selection and breeding of the very best bees possible. The intent of this article to describe Brother Adam's management system as I saw it in 1980.

Buckfast Abbey is a Benedictine Monastary. The monks themselves restored it from an old ruin between 1900 and 1930. Other activities undertaken by the monks include a school for boys, a tourist shop (where much of the honey crop is sold), a winery and a sheep farm. At present Brother Adam is, in fact, the only monk involved full time with beekeeping at the Abbey, and he is entirely responsible for the achievements in management and breeding. Brother Adam is assisted full time by Mr. Peter Donovan, himself a skilled beekeeper.

1. The isolated mating station on Dartmoor. Brother Adam, immersed in his work, oblivious to the bees clinging to his left shoulder.

These two men maintain 12 bee yards, each with 30 to 40 colonies (for a total of 320 honey producing colonies) and 500 mating nuclei at the isolated mating station on the Dartmoor. Colonies are arranged in groups of four, with the entrance of each facing in a different direction. This arrangement is extremely valuable and important in two respects; first it practically eliminates drifting and therefore prevents the spread of disease, and second it reduces the labor involved in inspections. Hive covers are stackable and can be piled up on a neighboring hive.

All hves consist of a single brood chamber 19 5/8 x 19 7/8" by 11 7/8" deep (Modified Dadant). Each is fitted with a queen excluder, 6 5/8" super and an Adam top feeder with accesss to the syrup via a single hole through a square feeding block. The bottom boards are slanted toward the entrance, facilitating house cleaning, and tongued rails on these bottoms fit grooves on the hive bodies for tight fit and no sliding.

The important thing here is the single brood chamber. With brood confined to 10 or 12 combs in one box, the labor involved in checking each of the 320 is manageable. Two men can check each comb, if necessary, of all colonies, in two 8 hour days. This means that really intenhive swarm control and prevention can be implemented. Simultaneously the all important job of selecting the best queens for breeding can occur.

Another unusual practice is the replacement each year of one quarter of all brood combs. Inferior combs are moved to the outside of the broodnest during the summer, and removed in spring when unoccupied. This seems wasteful to us, because surely many of these combs contain valuable honey, but the main reason for such drastic comb renewal is again to facilitate the comparison of queens for breeding purposes. After the spring equalization of all hives are on the same number of very uniform combs. Given this uniformity, as the season progresses, difference in fecundity laying patterns, rates of colony growth and other criteria become visible. This extensive comb renewal relates directly to the breeding program by minimizing the variables involved in choosing the best queens. Records on each queen are kept and "natural" queens (that is, queens not mated at the isolated mating station) are replaced. Queens are identifified by a clipped wing.

2. A 1910 44 frame Root extractor (right) and a steam heated 10 ton heather honey press (left). Note also a carrousel and motorized uncapping knife behind the extractor.

The spring build-up period is much different that what we in North America are used to. Feeding is a must throughout the spring, and feed they do, liberally! During spring equalization all colonies are reduced to 5 or 6 combs, then given combs of foundation as the broodnest expands. A tightly fitting partition board endures so that no wild comb is built in the remaining open space. Combs of honey are sometimes placed in this space as feed combs, which works out well since the queen has no access. These M.D. boxes can hold 12 frames but it is seldom that more than 9 or 10 are used, leaving a space two combs wide. Even so, many colonies were so crowded by early July, that, even with a super in place, this space was full of idle field bees hanging from the excluder when we checked them on cool mornings. Imagine picking up an excluder with 5 or 6 pounds of bees attached! These bees were quickly dealt with by dumping them on the alighting board in front of the hive.

Swarms are controlled by clipping one wing of each queen. In conjunction with this during the swarming season which peaks during the white clover flow in early August, each colony is checked weekly for queen cells. This is not as laborious as might be expected, mainly because Buckfast queens are very light swarmers, and it is only the odd colony that starts queen cells. A quick look at 3 or 4 combs is usually all that's necessary, especially since all brood is in one chamber. If any swarms do leave they quickly find themselves queenless and return to the hive. In addition there is a good chance the queen will find her way back into the hive via the alighting board, in which case the colony will continue normally, as long at the next check ALL queen cells are destroyed. Most beekeepers dismiss the systematic cutting of queen cells as too time consuming. But for Brother Adam the searching out of queen cells is a job that fits in well with the search for the best breeder queens. I think it is quite possible that the weekly check would take place anyway at this time of year even if swarming were not a problem.

Brother Adams' goals are Honey production and excellent queens. He has developed an intensive system the major points of which are; a single large brood chamber, top feeders on every colony, ex

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Wintering: Hives

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Editors Note: In next month's continuation, the subjects of double-walled hives, hive size, materials and "the best hive" will be discussed.

BEEKEEPING FOLK ARTS

Honey & Hive Products For Cooking & Other Home Uses

by Amos Arbee

The remark was made quite some time back from one of my fellow workers that we all possess or acquire some sort of vice or obsession. As most people have come to realize, by now, my obsession lies with cliches. With this in mind I would like to share a cliche which happened to be a favorite of my aunt's.

It seems that many of us (including yours truly) are a bit gullible. Especially when it comes to give aways or extra bonuses thrown in for quick response to some ad, or that new job offer with everything to gain and absolutely nothing to lose, and on and on. My aunt's cliche, which I consider appropriate here was, "Everything which glitters is not gold." Of course, the above is just exactly on a 180 degree right angle from the truth about cooking and baking with honey. This "Gold" nectar of the gods not only glitters, but also adds a glitter to all your favorite recipes that it's used with. So by all means try it.

"Honey Baked Apples"

6 large baking appples (*Northern Spy if available)
6 tbs. butter
6 tbs. honey (mild flavor)
1 tsp. cinnamon
grated rind of lemon
1 cup sweet Marsala

Wash apples and dry. Core apples. Let butter soften at room temperature. In a small bowl, mix butter, honey, cinnamon, and lemon rind. Fill apple cavities with mixture. Pour Marsala in bottom of a 7" x 11" baking pan. Place apples in pan. Drizzle honey on top of each. Bake in a preheated oven at 375 degrees for 30 minutes or until tender. Do not overcook. Serve with light cream. May be served hot or cool. "Scrumptious"

As most of us go on about our everyday activities, almost everything goes according to our expectations. But, every now and then, the best laid plans of mice and men go astray, thus causing some inconvenience and general problems for us to cope with. One thought which comes to mind at the moment is the use of gossip by some of us to gain the spotlight (if you will) momentarily. Most often it comes as a result of seeing or hearing something and then jumping to conclusions. Regardless of how it may begin this practice is most devastating and harmful; more often than not usually for the innocent victim whose reputation may be greatly at stake through it all.

With this in mind, a cliche which fits like a glove goes, "Do Not Believe Anything You Hear, And Only Half Of What You See." Fortunately for honey's sake in cooking and baking, both what you see and hear about its outstanding qualities are well proven with past results.

"Corn Honey Muffins"

1½ cups four
1 tbsp. baking powder
1 tsp. salt
¼ cup honey
¾ cup yellow corn meal
2 eggs, well beaten
1 cup milk
¼ cup melted shortening

Sift together flour, baking powder, salt, and corn meal; and add eggs, honey, milk, and shortening. Stir just enough to moisten dry ingredients; place in greased muffin pans. Bake in hot oven (425 degrees) for about 20 minutes.

Brother Adam

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tensive comb renewal and swarm control, and the arrangement of colonies in groups of four. It is interesting to note that none of these practices are in general use here in North America. Though there are surely good reasons for this (for example, and thank goodness, we don't NEED to feed extensively) we would do well to note that Brother Adam has been very successful and draw from his experience where we can.

Personally Brother Adam is a nuts and bolts beekeeper who devotes literally all his time to his craft. He is in fact so concerned with day to day management that I suspect some of what he has accomplished has gone unrecorded. One example of this is a method actually discovered by his assistant Mr. Peter Donovan for controling bee louse (*Brauli). The story as told to me* by Peter Donovan, goes like this; Several years ago there was quite a problem with bee louse infesting many of the colonies at Buckfast. One queen was found covered with more than 15 louse. Brother Adam said "Kill her", but being reluctant tokill what he knew to be an excellent queen he caged and took her home after work. On impulse he wrapped the cage in a handkerchief with a small piece of paradichlorobenzene (PDB) for about a half an hour. To his surprise he found an apparently healthy queen surrounded by dead bee lice! To rid colonies of the pest, three pieces of PDB "about the size of a pea" were placed on the bottom board of each colony, under the cluster. This was done in early spring before the adult Brauli who have over wintered have layed their first eggs. The reason; The PDB won't kill larval Brauli as they burrow in the cappings. Colonies were treated twice each spring for two consecutive years, since it *appears that some louse survive in the* cluster. Bee louse have been eradicated at Buckfast Abbey in this manner though *I doubt this method has evern been published. Sureley this whole process should be repeated to see if similar results can be obtained.*

Queen Rearing

Brother Adams' method of rearing is very well described in his book. His hall mark is attention to detail . . . queen cups are warmed, then primed with fresh royal jelly, and only the youngest larvae, in practice those only 6 hours old are used. Larvae this young are actually smaller than the egg from which they hatched. Brother Adam has found that queens from larvae grafted at 6 to 10 hours live longer, years longer. He is really very certain of this, as a result of very careful record keeping. He does not pretend to know why this should be, nor does he really care to find out. He will declare adamantly that he is a practical beekeeper seeking better bees and better honey crops, no esoteric research. He has continually sought for methods that work, ignoring tradition and relying on good records and logic.

He told me when showing me his library that he learned most of his beekeeping from early (pre 1910) *Gleanings* and other periodicals of the time. Commercial beekeeping was still new and many articles contained information never before published. He feels the best beekeeping book available is *Manual of Beekeeping For English Speaking Beekeepers,* by E.B. Wedmore. I have since purchased this

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NEWS AND EVENTS

Maryland State Apiarist Celebrate Diamond Jubilee

Duplicating in numbers what occurred three-quarters of a century ago at the Fifth Regiment Armory in Baltimore, more than 100 enthusiastic beekeepers and friends of *the Maryland State Beekeepers Association (MSBA) closed out the 75th year of their* group on Friday and Saturday, November, 4-5, 1983 at Baltimore's 200-year-old Lexington Market, the oldest such in the nation under the able guidance of their 34th prexy, Gordon L. Davis, Hagerstown.

Inadmirabile dictu, a good time was enjoyed by all.

Sixteenth MSBA President Enters Eternity

The 1929 chief of the Maryland State Beekeepers Association (founded in Baltimore, December 4, 1908) has slipped into bee heaven. Death came quietly at Wimauma, Florida on November 3, 1983—the day before the start of the two-day 75th MSBA anniversary celebration at historic Lexington Market, Baltimore—with interment on November 8th in Glen Arm, MD, his native town and the resting site of his own progenitors. In failing health for several years, he was residing with son Lloyd Jr. ("Bill"). Survivors include wife Frances, their only two children Ann and Bill—all of Wimauma—and seven grandchildren (one of whom—Bill's daughter Sally O'Hara—lives in Glen Arm).

The son of a house decorator, he stumbled into bees as a hobby in 1921, two decades later becoming perhaps the first commercial beeman in the Old Line State, operating the Glen Arm Apiaries (still owned by his son but leased to Roy Abel). In the early 50's *he helped Ralph Gamber of Lancaster, PA (Dutch Gold) get started, buying glass together* with him. Wintering his angels of agriculture in Florida began in 1951, followed by full-time operation there in 1965, while the only son remained behind with his own sweet insects. It was not until 1979 that the entire apian business became settled in the Sun-*shine state. His name? It was Lloyd Billingsley Shereman to whom MSBA awarded a plaque of appreciation via treasurer Ernest H. Miner, jr. Walkersvile, Md. on November 20, 1980.*

Arizona Beekeeping Seminar

An Intermediate Beekeeping Seminar will be presented on February 25th and 26th, 1984 starting at 9 AM, in Phoenix, Arizona. The program will be conducted by Dr. Elbert R. Jaycox, The Bee Specialist. The fee for the seminar is $35.00 which will include lunch both days. Limited seating is available; therefore, registration before February 1, 1984, is recommended.

The tentative program is as follows:

Simple, Useful Beekeeping Equipment and Techniques
Small-scale Queen Rearing — 100 Queens or Less
Getting the Most Bees and Stores from Feeding
Diseases and Pests of Honey Bees
Honey Labels plain and fancy
Bee Behavior
Development of the Worker Bee
Beekeeping Advertising may be dangerous to your Bank Account
Using the Kenya Top Bar Hive
The Three Most Important Manipulations in Beekeeping

Topics are not necessarily in order in which they will be given and are subject to change. Field demonstrations and motion pictures may be included depending on weather, time and schedule.

There will be time for questions and discussion.

For further information contact: Brett E. Cameron, 6849 West Lewis Avenue, Phoenix, Arizona 85035, Telephone: 602-245-1391.

Jack Iannuzzi, blue ribbon winner at the MSBA's 25th Annual Honey Show.

Melissa Hart, 1983 American Honey Queen, is one of the many commodity queens competing for the title of Miss Agriculture in Chicago, March 16-17, 1984. The young lady chosen will serve as a spokeswoman for America's farmers and ranchers. We wish Melissa the best of luck in this endeavor.

Apiary Inspectors Of America ANNUAL CONFERENCE

January 23-27, 1984
Hilton Inn
1601 Miracle Mile
Tucson, Arizona 85705

Highlights
Monday, January 23

10:30—11:15 a.m.	**"Export of American Bees"—Dr. Elbert Jaycox.**
11:15—12:00 noon	**"Review of African Bee and Varroa Mite Action Plan; — Dr. Glen Lee**
1:30 —2:15 p.m.	**"National Extension Apiculture Program" — Dr. Basal Furgal**
2:15—3:00 p.m.	**"Current Status of Acarine Mite"—Dr. Phil Lima**
33:30—4:14 p.m.	**"Overall View of Carl-Hayden Bee Research Center"—Dr. Levin.**

Wednesday, January 25

8:30—12:30 p.m.	**Tour of Carl-Hayden Bee Research Center**
8:45—9:30 a.m.	**"Regulatory Problem with Pollen"—Mr. Pat Powers**
10:00—10:45 a.m.	**"Collecting Pollen"—Mr. Royden Brown**
10:45—11:30 a.m.	**"Processing of Pollen"—Mr. Charles Robson**
1:00—1:45 p.m.	**"Disease and Pest Associated with Pollen"—Dr. H. Shimanuki**
1:45—3:00 p.m.	**"Pollen Discussion Regarding to Disease, Regulatory, etc."**

Friday, January 27

8:30—10:00 a.m.	**Business Meeting**

The American Beekeeping Federation, Inc. PUBLIC BRIEFING OF HONEY PROMOTION & RESEARCH BILL SET

Chairman Binford Weaver recently announced that the A.B.F. Promotion Committee would hold an open meeting at the 1984 A.B.F Convention in Minneapolis, MN.

This meeting follows the close of the General Session, Monday, Jan. 16, 1984. Scheduled from 5:00 to 6:30 P.M. this will provide an opportunity for anyone interested to find out exactly what the provisions of the proposed bill really are and to ask questions so they can give the "folks back home" correct information.

It is particularly important that the representatives from as many organizations as possible attend this session so they can knowledgeably discuss the proposal with their members.

1984 Texas Honey Queen

The Texas Beekeepers Association crowned Deon Zumwalt as their 1984 Honey Queen November 4. The coronation took place during the annual convention held at the Sheraton Crest Hotel in Sustin. Miss Zumwalt will represent Texas in the American Honey Queen competition this January in Minneapolis, Minnesota.

Deon is the 19 year old daughter of beekeepers, Mr. and *Mrs. Perry Zumwalt, of Floydada, Texas. She is a junior Public Relations/Mass Communications major at the Abiline Christian University.*

Eastern Apicultural Society 1984 Conference Rhode Island

A moonlight cruise, ladies luncheon at an exclusive private club and a banquet overlooking picturesque Newport Harbor are among the highlights included inthe 30th annual Eastern Apicultural Society (EAS) Conference, hosted by the Rhode Island Beekeepers Association (RIBA), August 8-11, 1984.

These activities have been planned as part of the RIBA's goal of not only providing an enriching beekeeping program through *lectures, demonstrations and workshops, but of also affording* participants an opportuntiy to enjoy some of Rhode Island's lifestyle.

The Conference will be held at the 1,200-acre main campus of th Univeristy of Rhode Island in Kingston. Founded in 1892 as a land grant college, the school is located near some of Rhode Island's 400 miles of shoreline.

The regular Conference will be preceded by the beekeepers *Short Course. Tentative topics to be offered include: seasonal* apiary management, honey bee diseases and pests, crop harvesting, along with processing and marketing.

Charles "Mac" McKellar, RIBA and 1984 EAS President, has announced speakers and instructors will represent a cross sec

tion of the nation's top research and teaching entomologists and beekeepers.

The Conference program is still being formulated, but plans call for covering such subjects as: the impact of the parasitic mite on the beekeeping industry, marketing of honey, update on the African bee and honey from hive to table.

A full schedule of workshops is also being planned for Thursday and Friday of the Conference, according to McKellar.

The Conference will open Aug. 8th at 9 a.m. Gov. J. Joseph Carrahy will welcome the conferees.

The RIBA has arranged a moonlight cruise on Narragansett Bay aboard the "Bay Queen" for early arrivals on Wednesday *evening.. This cabaret-style, dinner-dance cruise will include a* buffet of steamship round roast beef, turkey and ham. Reservations will be limited and assinged on a first come, first served basis.

The traditional ladies luncheon on Thursday will be held at the exclusive Dunes Club on the shore of Narragansett Bay. A chicken barbecue will also be held Thursday evening at the University's quadrangle.

Another highpoint of the Conference will be the banquet and awards presentation in the Sheraton Islander, overlooking Newport Harbor.

The banquet will be preceded by a tour of the Breakers, one *of the famed Newport mansions built by Cornelius Vanderbilt.*

Additional information about the Conference, individuals involved in it and social events will appear in future issues.

However, with more than 700 people attending the Maine Conference in 1983, McKellar has suggested beekeepers consider registering early for the Rholde Island Conference so that they are not disappointed in being left out of certain events.

Those desiring to be included on the 1984 EAS mailing list should send their name and address to: EAS 1984 committeee, 107 Chatworth Rd., North Kingstown, RI 02852.

1984 GLEANINGS IN BEE CULTURE SUBSCRIPTION INCREASE

It has been several years since GLEANINGS raised the price of subscriptions, but we will be doing so effective December 31, 1984. The new rates will be as follows:

1 year GLEANINGS-----$10.35
2 years ----------$20.50
ABC/XYZ and 1 year----$23.70 plus $1.09 domestic postage
500 Answers + 1 year--$10.75 plus .63 domestic postage
STARTING RIGHT WITH BEES + 1 year---$10.75 plus .63 domestic postage

Foreign postage rates: $3.25 per year

Association (if sent in by secretary):

1 year --- $7.76
NEW TWO YEAR DISCOUNT: $15.37

1984 Florida Honey Queen

Crystal Jones was crowned the 1984 Honey Queen at the Florida State Beekeepers Convention in Cypress Gardens on November 3-4-5, 1983. Crystal is the 18-year-old daughter of Kenneth and Margie Jones of Tampa, Florida. She is a freshman at the University of South Florida and plans on ma*joring in Mass Communications and Public Relations. Crystal has worked in 4-H for eight years, reigned as the Tampa Bay Beekeeper's Honey Queen for two years and is an artistic roller skater. Crystal has a few hives and has learned early of "thrills and spills" of harvesting honey.*

Maryland State Beekeepers Association

The Maryland State Beekeepers Association will hold its annual Winter and Business meeting on Saturday, January 21, 1984 at the new Maryland Department of Agriculture office building at 50 Harry St. Turman Parkway in Annopolis, MD. Featured speakers will include Dr. Larry Connor of Beekeeping Educations Service with talk and slides of his recent beekeeping field trip to Europe, and Maryann Tomosko of the Maryland State Apiary Inspection Serivce (and recent MS graduate of Syracuse University) speaking on "Worker and Queen Development".

The meeting gets under way at 9:30 a.m. with coffee and doughnuts, with the business meeting being held after lunch.

Tampa, Florida Beekeeping Course

Beekeeping Course to be held at Hillsborough Community College, Dale Mabry Campus, Tampa, Florida, beginning January 28 through March 3, 1984. Saturdays from 9 until 1 o'clock.

This course is designed to introduce the beginner to the basic principles and procedures of handling the honeybee colony. Topics will include: installing package bees; managment for honey production; dividing colonies; pollen trapping; bee diseases and honey extraction.

For further information, contact Hillsborough Community College; P.O. Box 22127; Tampa, Florida 33622.

BUY & SELL

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

MAGAZINES

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

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

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

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

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

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

BEE CRAFT — Official (monthly) magazine of the British Beekeepers Association. Contains interesting and informative articles. Annual Subscription (Sterling cheque 2.22 p.or U.S. $6.) Post paid. The Secretary, 15 West Way, Copthorne Bank, Crawley, Sussex, RH10 3DS TF

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

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

WANTED

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

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

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FOR SALE

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

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

For Sale — Bulk Pollen. Minimum order 300 lbs. 806-896-4552. 12/83

COMBAT BEEKEEPING IGNORANCE WITH LARRY CONNOR'S TWENTY EDUCATIONAL SLIDE PROGRAMS Box 817 Cheshire, Connecticut 06410.

For Sale: 250 strong bee hives and equipment. Carroll Couture, Belleville, KS (Northcentral Kansas area) 913-527-5805. 2/84

For Sale: 50 — 2,000 Hives. YOUNGBLOOD APIARIES, 1216 East Alabama, Pearfall, TX 78061. Phone: 512-334-4430. After 5:00 P.M. cal 512-334-3536. 2/84

For Sale: Oil painting (1978) by Crossan Hays Curry. Portrait of Lorenzo Lorraine Langstroth the "father of modern international apiculture". Included are a bust of Langstroth in clerical costume, his revolutionary beehive, his Oxford, Ohio home which is now a National historic landmark and other autobiographical details. Painting is on fine Belgian linen. Size: 30 x 40 and is mounted in a massive antique, gilt frame. Price: $750. Contact C.H. Curry, P.O. Box 105, Oxford, Ohio 45056. TF

FOR SALE: Top quality Italian bees and queens since 1940; also 3 frame nuclei and single story colonies. Bring your cages and save. WALKER APIARIES, Rt. 1, Box 34-B, Rogers, Texas 76569. Phone: 817-983-2891. 6/84

500 4/frame nucs for 1984. Frame exchange or outright. Low Price. Pickup Southern Minnesota. Gerald Truman, Phone: 507-324-5716. TF

Nucs 4-frame Golden Italian stock $25.00 each or 3 for $100. Queens $5.00 each. All postpaid. Small orders only. 194 Cooper-Hurst Rd., Pearl, MS 39208. Phone: 601-939-5994. 5/84

500 Single Story Hives of Bees. Available April 15, 1984. $4.00 each. All or Part. Contact: Tom Hubbard, P.O. Box 416, Belleview, FL 32620. 904-245-2461. 4/84

2½ lb. Honey Jars—$2.25 per case (12) with plastic caps. 1½ lb. Honey Jars—$2.00 per case (12) with plastic caps. Beeswax wanted. Send order to William Wilson Honey Farms, Rt. 1, State Route 95, Fredricktown, OH 43019. 619-694-5071. 1/84

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For Sale: 1958 Peterbilt cabover with 40 ft. brown flatbed trailer. Both in excellent condition, ready to move bees. $15,000. LDA 1/84

For Sale: 1975 Chev. C65 ten wheeler, 22 ft. flatbed. $8500. LDA 1/84

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For Sale: 3000 Brood chambers, covers and bottom boards. 3000 Deep Supers. 3000 6-5/8" Supers. All equipment standard 10 frame.

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For Sale — Six ton very good grade of Wildflower Honey in 60's. Ned Cold, Venango, PA 16440. 814-763-4103. 1/84

MARYLAND BEEKEEPERS and adjacent states: Package bees for pickup April 14-15 near Frederick, MD. (queens fed Fumidil-B). 2-lb. pkg. $22.75; 3-lb. $26.75. $4.00 per pkg. books order. Ernies Apiaries, 9933 Kelly Rd., Walkersville, Md. 21793. 301-898-9746. 3/84

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For Sale: 50 Hives in honey production, some honey in hives, extra supers. J.L. Baker, Gilroy, Calif. 408-842-0784. 1/84

For Sale: 5 Frame Nucs and single story hives. West Central Wisconsin. Call Marqson Company 612-934-3168 or 715-263-2633. 4/84

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MICHIGAN BEEKEEPERS. I will be hauling package bees from Georgia again this spring. For prices, dates and information call Don Reimer at 517-695-9031.4/84

Italian Queens, Packages & Nucs. March 25 - April 15. All orders FOB Los Banos. Bob Brandi, 1518 Paradise Lane, Los Banos, California 93635, (209)-826-0921. 1/84

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PACKAGE BEES delivered to Wisconsin near Green Bay, Eau Claire and my home, Ronald Hazard, RT 2, Poynette, Wis. 53955. Phone: 414-992-3217. 4/84

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

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Select grade heavy duty frames, all sizes
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Dealership Territories available in some areas. Please contact The A. I. Root Co., P.O. Box 706, Medina, OH 44258 TF

SEEDS

BEE-BEE TREE SEEDS $1.50 per packet and two year seedlings $4.00 postpaid. Arleth's Apiaries, 395 Carolina St., Lindhurst, NY 11757. 1/84

"Mixed Sweet Clover seed, 50% white, 50% yellow. 10 lb.— $7.50 plus U.P.S. Innoculent $1.50. Visa or Mastercard. Higgins Apiary, 3801 U.S. 50, Hillsboro, Ohio 45133. Tel. 513/364-2331 5/84

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

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

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PURE FRESH Royal Jelly, 2 oz. bottle, $19 pp.; 1 lb. $120. Prairie View Honey, 12303 12th St., Detroit, MI48206 TF

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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. TF

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Propolis U.S.A. R.8 Hayward, Wisconsin is again buying good quality propolis — either concentrated (by cold water washing) or hive scrapings. Send 5-10 pound sample for evaluation and payment. Good propolis is worth up to $8.00 a pound. Hive scrapings guaranteed at least $2.00 a pound — we pay Shipping Costs. Phone: 715-634-4274. 2/84

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"Propolis, The Eternal Healter" **$10.00 hard cover.** *"Pollen, The Miracle Food"* **100 books $40.00. For details, Challar, 2132 Northwest 11th Avenue, Miami Florida 33127.** FMC TF

HONEY WANTED

BEEKEEPERS TAKE NOTICE — We cannot guarantee honey buyer's financial responsibility and advice 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.

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

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

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

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

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. TF

WANTED — All grades of extracted honey. Send sample and price to MacDonald Honey Co., Sauquoit, New York 13456. Area Code 313, 315-737-5662. TF

HONEY FOR SALE

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

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

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

HOW TO...

Continued from page 33

you would expect. How hot is hot? Well for sure you cannot put your hand down on it without getting burned, but I would judge the center of the heater gets to at least 140 degrees F. That is a bit hot, but realize I did not have a dishpan filling with honey on it. With a pan of honey to lead away the heat I thought it just might be OK. Finally to guild the lily I rooted around and found a 110 volt neon pilot light so I drilled a hole to inset it. That way if I wander out of the extracting area and turn off the lights, the pilot will alert me to go unplug the heater.

Before I used the pan heater, I began to worry about how hot would the pan heater get if it was just left to run so next I put a 200 degree Celcius thermometer on the heater and folded an old bath towel up and placed it on top of the thermometer which was lying on the heater. In two hours I got a reading of a bit over 93 degrees Celcius or about 200 degrees F. I thought about that for a while and then decided to try the pan heater with an actual pan with honey running into it. Well I was relieved to find that the flat bottomed pan drew heat away from the heater as I hoped, and as it filled to three gallons I got a noticeable warming of the honey without any scorching or discoloration of the honey. Also I got a hoped for ten degree increase in the honey temperature overnight. Whee, I was in! The honey heating dolly will give a 7 to 10 degree boost in temperature overnight. The heat tape on the extractor not only compensated for the wind chill of the rotating baskets but gave the honey temperature a modest boost, and then the pan heater did its part. The end result was over 90 degrees F., honey which strained rapidly through the paint strainer sacks. Hey, MOM, I am a genius! Well maybe not but I am tickled that now everything works

Now as I clean up to put all the equipment away for next year I found another use for the pan heater. Here and there I accumulated over a gallon of honey. It dripped from the cappings and in the bottom of the uncapping tray and also slowly dripped out of the extractor, etc. So? Well, I snuck upstairs and sneaked by wife's stainless steel soup pot and dumped the accumulated dripped honey in it. I put the pan heater on top of a piece of cement asbestos board which in turn was placed on top of a piece of plywood, and plugged in the pan heater. The honey was cold and thick and had a temperature of 68 degrees F. In an hour during which I cleaned up more equipment and stowed it away, the honey warmed to a little over 90 degrees F., actually 94 degrees F., so I dumped it in the strainer, washed out the soup pot, and put it away. Hey, with only 250 watts that is a neat gadget. Maybe if we ever have a cookout on the patio we will use it as a bun warmer. Meantime a couple of buddies already want to borrow it!

OK, gang, have at it. Hot-Watt, Inc., 128 Maple Street, Danvers, Mas. 01923 can tell you a dealer who can probably furnish you a 250 Watt 110 volt rope heater with or without a metal sheath. Order one without the sheath for this application. Better send a self-addressed stamped envelope because they are basically an OEM supplier and are not set up for retail sales from the factory.□

BROTHER ADAM

Continued from page 48

book and have not bee disappointed. It is not a text but a well organized manual which can be use to help set up your management plan or track down solutions to problems.

To raise queens, Brother Adam begins with a very strong two story M.D. hive n 24 frames. A queen excluder is placed between themand 10 days later the upper queenless portion has no open brood while the lower protion has usually begun preparations to swarm. The lower story is set aside and the queen is found. Six or eight of the twelve frames of bees are shaken back on to the original location. All queen cells must be destroyed. The queen-right half is removed to another apiary. Sixty cells are grafted into this hive about one half hour later and it is fed sugar syrup mixed with honey. This is a very crowded cell builder. The theory is that all three natural stimuli for raising queens have been created. The upper story had begun queen cells after the excluder was put in place on the supercedure impulse. The hive had been fed regularly all spring, and the lower story with an older queen is well on its wayto swarming. Just prior to grafting the queen is removed along with ALL open brood and the colony is crowded down severly as described above.

Several days later, the cell bars are checked for acceptance, and the bees from the cell builder colony are shaken through a queen excluder to screen out drones and another check is made for queen cells which may have been overlooked on grafting day.

Why screen out drones? Because when the cells are ripe, the entire colony is transported intact to the isolated mating station on the Dartmoor 25 miles away where drones have already been reared from six selected sister queens. The bees are used to restock any nuclei which have become weak. If good weather prevails the nucs are checked in two weeks. Weather conditions re so severed on the moor (there was a light frost on night in July while I was there), that it is not impossible for a long period of bad weather to prevent mating flights for more than three weeks rendering, occasionally, a whole batch of queens useless. These nucs are wholy dependant on feed throughout the spring and summer, the only flow coming from heather in late August or September. This is the price of controlled mating at a remote station.□

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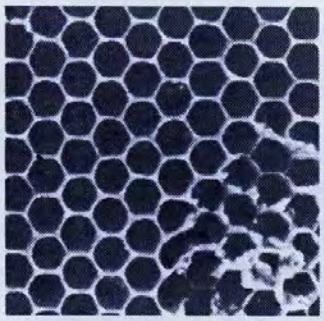

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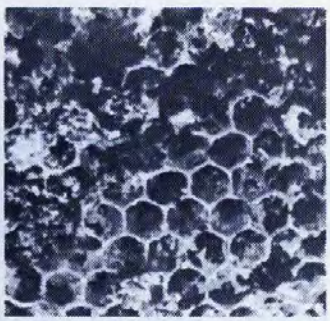

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Its unique biological formula contains natural bacterium which, when eaten by wax moth larvae, paralyzes and destroys the digestive tract, resulting in death.

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Give wax moth larvae the treatment! With Certan, the *natural* insecticide.

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Use pesticides effectively. Read and follow label directions carefully.

WARRANTY

Grandpa, what does w-a-r-r-a-n-t-y mean?

Well, a warranty means a company stands behind all the goods they make, just like I stand behind the honey I sell. . . hand me that top bar.

But everybody knows your honey's the best.

Yup, and so are Root bee supplies. Root's been making this equipment for over 100 years. . . that's longer than I've been around. See here, those folks stamp **ROOT** right into the wood, because they're proud of it. Why, they want it back if you aren't just as happy to use it. And that's what a warranty is.

Grandpa, would you tell my class about bees and this new hive you're building? It looks pretty good.

Yup, I'd be proud to. Say, are you going to help me with the bees this summer?

Yup.

THE A.I. ROOT COMPANY