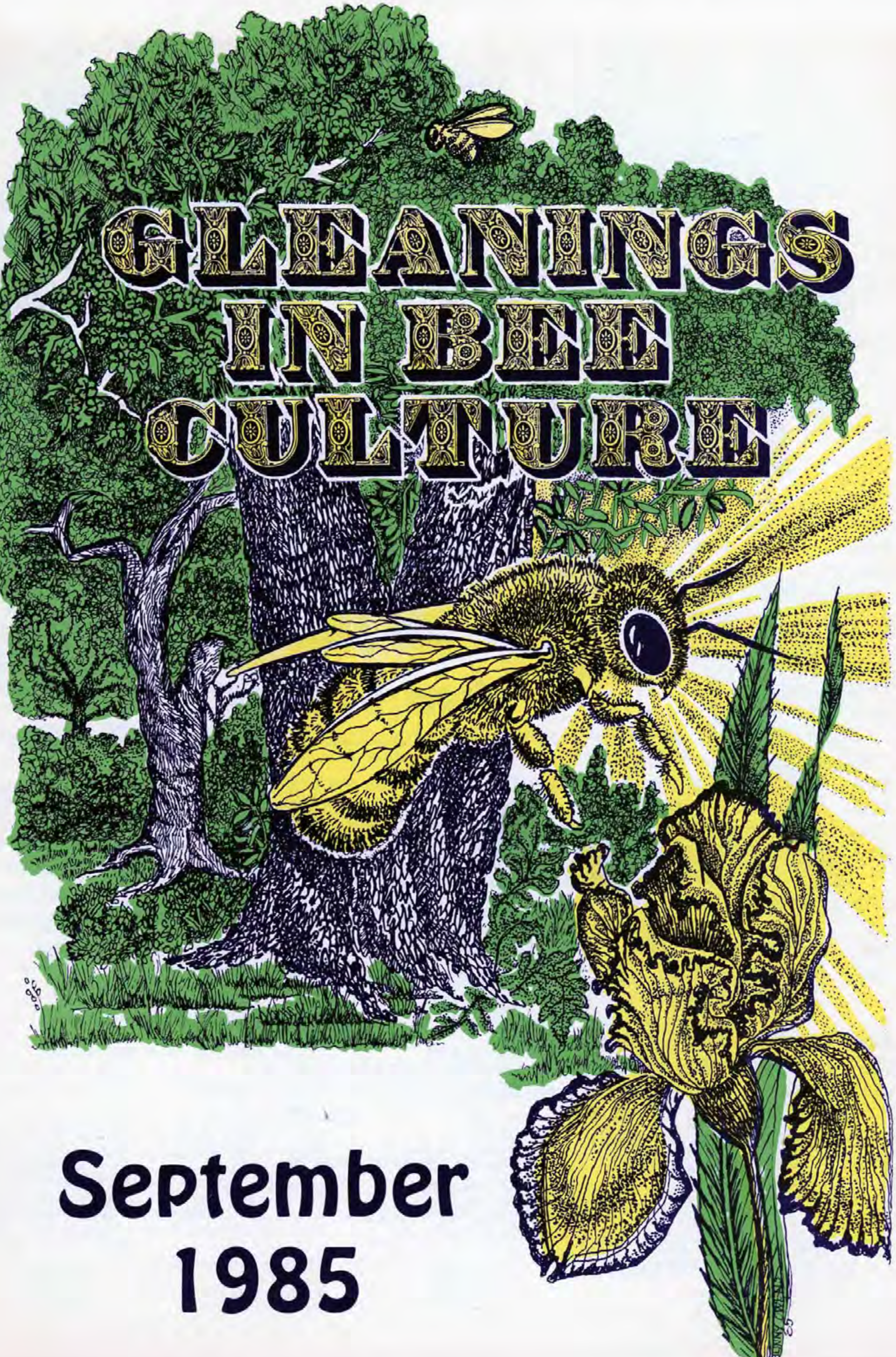

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CONTENTS

A CREATIVE COVER BY OUR FRIEND, BUNNY OWEN. IMAGINATION IS WHAT MAKES BOTH BEEKEEPING AND ART WORK WELL.

NOTES FROM THE BEEYARD

by Mark Bruner

AFRICAN BEES IN CALIFORNIA & *WHY YOU SHOULDN'T PANIC!*

Well, it had to happen eventually, eh? (But why did it have to happen now?) Things seem to happen to the bee industry in July. Last year, during that month, acarine infestations were discovered in Texas, sending all sorts of good folks into fits of spinning tizzies. This month, it was confirmation of the dreaded "Killer" bee, apparently brought into Lost Hills, Kern County, California as hitchhikers in a shipment of oil related equipment sent from South America. An oil worker apparently noticed these bees arise in a mass from their underground nesting site and dispatch a passing rabbit. Africanization was confirmed at UC-Berkeley and, subsequently at USDA, Baton Rouge.

As of press time it seems likely that swarms were thrown from this colony; but hopes are high that, due to the relatively desolate nature of this particular geographic area, any existing African colonies can be found and, in the lingo of our agricultural bureaucrats: "depopulated" (killed dead, in conventional English). This, of course, has not prevented a rash of media hooplah about the situation -- much of which has been inaccurate and/or ill-informed. My personal opinion is that we need not get ourselves in a giant bundle of nerves about all of this just yet. In fact, there may be a few proverbial silver linings in the black cloud of African bees.

First of all, should containment of this infestation be effected (as it looks promising that it will), it will serve to call much needed attention to the potential problems of the African's natural arrival into the U.S. (circa 1990); and might stimulate more advances in our understanding of and preparation for this insect. Public attention, despite what has been an intial abundance of incorrect information, might well eventually serve to better educate nonbeekeepers as to the true nature of the Africans as well as informing the general public about the broader range difficulties facing U.S. beekeeping. In fact, during a time when political decision making relative to agriculture is at a fevered pitch, there is some argument to be made for the favorability of having attention focused on the great role domestic bees serve in pollination of significant cash crops. I believe that what U.S. beekeepers must concentrate on is providing, to the media and others, essential information clarifying the nature of this situation. To that end, we have provided, on page 452, an article written by Lenore Bravo and Louis Dubay, two San Francisco beekeepers who have been extremely active in dealing with the media on matters concerning the African bees. This item will not only provide you good folks a bit more background, but will indicate ways in which you might help better inform others when asked.

Certainly, there are many people who assume that the African bee is likely to be in their backyards tomorrow. Anyone with a wasp's nest is likely to fear it to be Killer bees. Points of importance, of course, have to do with the improbability of the African bees' ability to survive in northern climates; the evidence of its manageability as a commercially viable honey producer (i.e., countries now "Africanized" have made significant progress toward regaining pre-African levels of honey and pollen production); the fact that, statistically, no more human fatalities from African bees have occured as compared with European stinging-related deaths (one in 14 million!). The threat to U.S. beekeeping due to piggybacking varroa mites is quite real; although recent evidence documents that the varroa and African bee are not necessarily traveling together anymore: that the Africans have leapfrogged ahead a bit.

There are basically three ways in which beekeepers can make this situation worse: one is by being ignorant of what is happening, therefore uninformed and incapable of providing immediate and accurate information to those who ask; the second is by getting hysterical and overacting to a very confined situation. Finally, but by no means of lesser importance, is a continuance of what seems to be a bad case of "Headline Grabbing Fever" infecting some of the more visible folks in our industry. It seems to me, and to many others, that certain individuals have purposely made themselves overly available to the media. Availability is fine, when it serves a prudent, informational purpose, but I've noticed a few names cropping up again and again in na-

tional news, and I'm afraid that this has served as an opportunity for those persons to be seen and heard at the possible expense of causing this episode to grow much, much larger and gustier than it ever needed to be. When a potentially unpleasant situation arises, we must all prepare to meet it, but that doesn't mean we should run hither and yon announcing it.

Keep abreast of all the national journals, *GLEANINGS, ABJ* and *SPEEDY BEE* will all be providing you additional information as it develops. Hang in there, next July should be better, if only because of the Law of Averages!

What We Can Expect With Africanized Honey Bees

The following is a reprint from Malcom T. Sandord's excellent July, 1985 issue of APIS, published by the Florida Extension Service.

It pays to think ahead. There's little question that Africanized honey bee behavior will give beekeepers cause to rethink some of their management practices. When I was in South America, I heard about some beekeepers who harvested honey at night; it seemed that Africanized honey bees are often more manageable in the evening. This certainly is a turnabout, because experiences manipulating colonies of European honey bees at night are some of the most unpleasant I've ever had. It's difficult to defend yourself against an unseen honey bee that crawls and stings. Nevertheless, the risk of getting stung by a few crawling Africanized bees at night appears to be preferable to facing the aggressivity of the bees during the daytime.

Honey harvesting at night is also common practice in Africa. A recent article, however, in the Newsletter for Beekeepers in Tropical and Subtropical Countries, by S. O. Adjare of the University of Science and Technology, Ghana reports a simple, safe and inexpensive method for harvesting honey in daylight, even at the warmest time of day, when the bees are most active. As reported in the June/July issue of Life, newsletter for the League of International Food Education, the method uses beehives on platforms that can be easily moved, rather than being hung from trees as is traditional. First the bees are smoked, then the hive is moved at right angles from the flight path. This diverts the field bees which return to the old site where an empty hive has been placed for them to cluster and keeps them from "bothering" the beekeeper. This makes sense because fewer bees are left in the hive and they are younger bees less likely to sting. The comb is then collected as quickly as possible, put in a covered receptacle with a lid and the hive returned to its old location. The author points out that daylight harvesting of honey is advantageous all around. By being able to see, the beekeepers can harvest more efficiently and control the brood nest better, as well as detect diseases and predators.

Another management technique suggested in the same newsletter by a Mr. Francis Sosu is to use the leaves of the cassava or manioc plant as a bee repellent. The leaves are squeezed, and the sap smeared on the beekeepers bodies keeps the bees away. Is it possible that in the future beekeepers in Florida will be forced to choose between harvesting honey at night or daytime and/or to use or not to use cassava leave sap to keep their bees at bay?

Fighting The African Honeybee Hysteria

by LEONORE M. BRAVO and LOUIS DUBAY 47 Levant St. San Francisco, CA 94114

At 6:30 on Wednesday, July 24, we had a call from the local American Broadcasting Company station, Channel 7TV asking to interview us on the subject of the Africanized honeybee (AHB), using "killer bees" of course. Probing questions revealed that a nest of bees in the ground in Kern County California attracted attention of an oilfield machinery operator when a cloud of those bees were seen to sting a cottontail rabbit "viciously". The operator threw asphalt over the opening to the nest and reported the incident to local agricultural authorities who found nothing but dead bees when they arrived. Fifty of those bees were sent to Dr. Howard Daly of U.C. Berkeley who has developed a computerized system for distinguishing subspecies of honeybees and a diagnosis of AHB was made.

A sample was also sent to the USDA laboratory at Baton Rouge where those same methods developed by Daly were used to confirm the diagnosis. Diagnostic features include length of the forewing, patterns of veination, and the wax secreting structures.

Being in the middle of dinner we asked the crew not to arrive until 8 p.m.. They were in a hurry, but went to Berkeley across the bay and tried to interview Howard Daly, whom they reported was not talking pending a press conference to be staged by the State Department of Agriculture in Sacramento the next day.

Recalling that this whole "killer bee" hysteria and that epithet had arisen because of the colorful and sensational handling of the bee in Brazil by the media we were set to do our part to see that the same thing didn't happen here. I quickly got out all of the copies of the bee journals that had articles on the AHB and opened them with their headlines showing on the dining room table. Try it! It was impressive.

Not that we **needed** backup. The public in San Francisco sees Louis Dubay all aglow charming a swarm into a hive without any protective clothing, and both of us expounding on the virtues of the local honeybees in general each spring on TV. We teach beekeeping every year to adults and take our bees into the schools where we leave material on stings, swarms, the value of bees as pollinators, AND the AHB for the children to take home. We are in fact continuously preparing for the AHB if and when it arrives, and have gained a reputation as bee experts as we go about our work.

We met the TV crew at the door wth the admonition that they were not to refer to the Africanized honeybee by the words "killer bee". That there was no such thing;' that any living thing will defend itself when attacked or disturbed and that the AHB with a longer history of exploitation by primitive and inhuman means was quicker to defend and more thorough in its efforts than other species. We pointed out that people in South and Central America were able to adjust ;to this bees once they understood its nature. We pointed to a Panamanian government poster telling people of the value to the country of the AHB and how to avoid accidents with this aggressive bee. (Caron and Gray, ABJ Aug. 1984 pg. 577).

We made it clear that a great deal of work had been done by U.S. scientists and beekeepers in helping beekeepers in infested countries develop techniques for managing this bee, pointing to Steve Taber's work in Columbia on artificial insemination, production of gentle queens and requeening, (ABJ March 1984.) We pointed out the headline on Taber's GOVERNMENT PLAN TO DEAL WITH THE AFRICANIZED HONEY BEE, (ABJ March 1984.) No matter that Taber was critical of the Plan as based on an alarmist attitude.

This was very important to us because we were able to demonstrate that there has been preparation for meeting this challenge IF and WHEN it arrives. It refuted a California researcher quoted in the *Chronicle* as asserting that there is no known way of controlling the AHB once established.

First of all, one hole in the ground with evidence that it may have been inhabited by Africanized bees does not constitute an infestation but only a signal to put into operation the government plan referred to above, which is now being done.

Besides, we have the whole South and Central American experience to draw on in meeting this challenge.

Conceivably, some AHB bees arrived on a piece of oil drilling equipment from Latin America and took up residence in a hole in the ground in that barren landscape of western Kern County and managed to keep alive long enough to build up considerable comb: 5 feet long, a foot high, and a foot wide. Were then subsequently killed by the backhoe operator when he covered the hole or perhaps a queen emerged from a queen cell reported and managed to found a viable colony somewhere. No one knows which, but there is a team of 20 people out there going house to house asking for any sightings of bees and examining the bees in hives in a 400 miles radius of Lost Hills for signs of Africanized bees.

I pointed out that there has been no death reported from beesting in San Francisco since 1917 when health records were first kept; that the probability of death from a bee sting was one in 14 million **anywhere** Africa, Brazil or California and was the result of the individuals defective immune system, not the bee venom per se. And as above, they do not attack but defend themselves agressively and in large number when they are attacked or disturbed.

ABC picked that element out of the S.F. program which was presented at 11:00 that night in S.F. for inclusion

Continued on next page

in an article on the national news on the 25th. Peter Jennings used "Killer Bee" but at least used AHB in part and admitted that they weren't killer.

But on the 26th the Hearst paper *The Examiner* with a national reputation for sensational reporting lived up to it from an outside observer's point of view. To us locals, it wasn't as bad as it might have been. But the *Chronicle* produced the worst most sensational article in California, moving me to call the reporter and ask him to stop misusing the words swarm and hive, neither of which existed in this discovery so far and to be a little more accurate and objective in his reporting. He got a lot of pressure from the public.

Today, the 27th, the item has moved off the front page of the *Examiner* and concentrates on the search going on in Kern County. Then the *Chronicle* started its article on the front page and uses killer bees, but then begins to use Africanized bee. Things are improving.

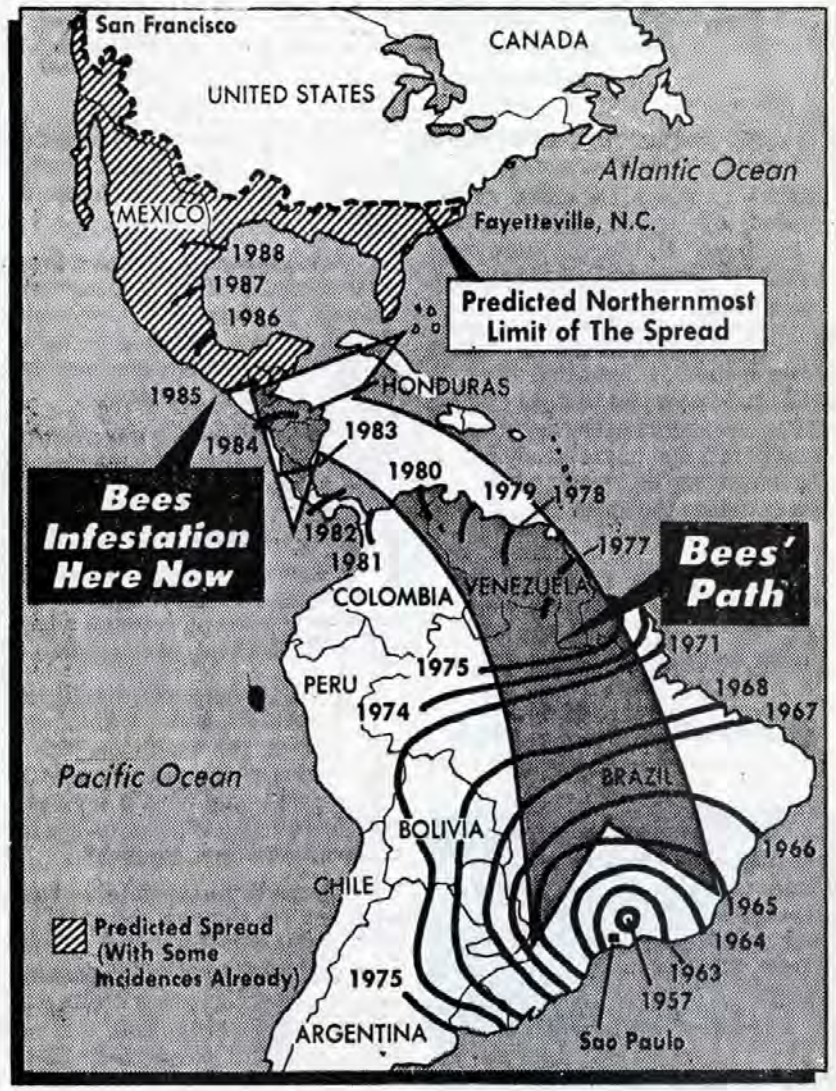
As we were about to leave the house for a dinner engagement on the 26th, Channel 4 TV, the National Broadcasting System persuaded Louis to wait long enough to be interviewed on the issue. He accomodated their desire for some bees for the story by pulling out a frame from a hive on the roof which just happened to have the queen on it to everyone's delight. People love to see bees on TV. We gave them the same propoganda blitz that we had given Channel 7 and discovered by watching the news at 11 p.m. and observers comments that their reporting improved considerably from the night before.

Our last comment to that crew was that if these were in fact killers, then there would be no population in vast areas of Africa, and that the Africans wouldn't still be hunting them, and the same for South America. That seemed emminently reasonable to them. We also gave them a copy of de-Jong's *Africanized Bees Now Preferred by Brazilian Beekeepers,* (ABJ Feb. 1984), one of our favorite propaganda pieces when we are trying to bring people to a reasonable attitude toward the Africanized honeybee.

Obviously we hope that the AHB never reaches the U.S. or California, nor our latitude in its present form. Reading the literature and listening to people at beekeepers conventions we have confidence that the collective brainpower and ingenuity of all those researchers AND beekeepers such as Steve Park of California — especially the beekeepers who have so much to lose — will come up with some means of mitigating the worst aspects of this race of bees.

Meanwhile the writers, backed by the local beekeeping fraternity will aggressively pursue every opportunity to continually interpret the value of the honeybee to our community, or state and the country, and to counteract news that will frighten people and cause them to have a negative attitude toward honeybees of any race.

We recommend to beekeepers everywhere that they keep themselves well informed on this issue of the Africanized bee as well as on bee issues in general. Try to form an alliance with the local news media so that they will ask your opinion on such issues. If no one asks you, give them the benefit of your information when you think that it will correct such misconceptions as the "Killer bee" which if believed can raise so much havoc with the bee industry and with hobby beekeeping.□



ST. Ambrose, Patron Saint of Beekeepers

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

At one of Worcester County Beekeepers Association meetings this past winter, we had a guest speaker, Pete Hayden, who gave a presentation on beekeeping in Art. During the slide presentation we were shown a picture of St. Ambrose of Milan who was identified as the patron Saint of beekeepers. St. Ambrose, as a patron saint, was new to us, although we, like everyone else have heard of patron saints. According to Webster's definition a patron saint is "a saint supposed to protect and promote the welfare of a particular person, community, state or institution". St. Ambrose continued to intrigue us and we began to wonder who he was and why he was chosen as the beekeeper's patron.

St. Ambrose was born in 340 A.D. in Trier, Germany where his father Aurelius Ambrosius, was a commander of the emperor's Gallic body guard. Legend has it that when Ambrose was an infant a swarm of honeybees settled on his cradle where he laid asleep. The child was not harmed by this event which was taken as a sign from heaven that this babe would be honey-tongued in all his words, deeds and writings. Originally this same legend was told of Plato but has since been transferred to Ambrose whose name means nectar of the gods. While Ambrose was still young his father died and his mother (whose name is unknown) moved the older sister Marcellina, the brother Satyrus and Ambrose to Rome. Marcellina later became a nun and Satyrus became a provincial magistrate. In Rome, Ambrose's studies encompassed the law and mastering the Greek language. In 370 he was given a governorship in Northern Italy and in 374 he found himself elected Bishop of Milan by the populus when the election became a dispute between the Arians and the orthodox Christians. His religious background was Christian however, he was unbaptized at the time of his appointment. Within the next eight days he was baptized, ordained and elected to the post of Bishop. As Bishop of Milan, he proved himself as a leader and as an eloquent speaker. He dominated religious, cultural and political life of his age. he vehemently opposed Empress Justina in her demand to surrender churches of Milan to the Arians and he blocked the attempts of the pagan party in Rome to restore the Altar of Victims. Ambrose later became the religious advisor to Emperor Theodosius. It is through this relationship a model for medieval ideas concerning the relationship of church and state were delineated and instituted by

the Roman Empire. Ambrose denounced social abuses and often won pardon for condemned men. In 390 Bishop Ambrose publicly rebuked Emperor Theodosius and imposed a public penance on him for having punished a riot in Thessalonica by a massacre of some 7,000 citizens. In addition to the penance, Ambrose procured from Theodosius a law suspending the death sentence for 30 days allowing him time for the sentence to be repealed if it had been given on impulse, anger or insufficient evidence. Bishop Ambrose's honey-tongued sermons and hymns were acclaimed as masterpieces and his work on theology, ethics and his critical interpretations of the Bible influenced the Western Church. He died April 4, 397 A.D. and his body is in repose in the basilica of San Ambrogio in Milan, Italy. The church honors Bishop Ambrose as the first of the four fathers of the Roman Church and celebrates his feast day December seventh.

St. Ambrose of Milan may have been unfamiliar to the reader till now, however, Ambrose has always been represented in Art with a beehive. Beekeepers in the Netherlands' provinces of Brabant and Linburg designed a straw skep which resembled the great Bishop. The hive was known as the Ambrosius hive and placed in the center of a row of ordinary skeps. It was the contention that the beekeeper's patron would watch over his flying friends. The 20th century marked the end to the craft of the Ambrosious hive. We wonder if there are other symbols and representations of St. Ambrose, the beekeeper's patron and if they exist today.□

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Urban Bees, London

By CONNIE & ARNOLD KROCHMAL 119 Bell Road Ashville, NC 28805

Here in the United States bee-keeping in cities generally is a violation of city ordinances. In England however, urban bee-keeping is quite acceptable and is a valued source of honey in a country which does not produce enough to meet its own needs.

On a recent study and work period in England we met one evening for tea with Connie Lane, secretary of the London Beekeepers Association, to learn as much as we could of the program. Connie, who works during the day, arranged for us to meet the next day with Jennifer and Harold Harriott at their home in London, where they have six hives and one nuc, in their backyard.

Crowded are the hives, but the bees don't mind living in London.

There are about 1800 beekeepers in London. Dues-paying membership in the Society has varied from 300 to about 100 at present. The society rents a meeting hall and publishes a newsletter. There is no nationwide beekeeping association, but there are exchange visits between members of local groups.

Association members give talks at schools when invited and the London Association participates in agricultural fairs. The numbers of observation hives seems very limited, far less than found in the United States. The exhibits are extremely popular. Honey is considered a basic health food, as the British health-conscious, and homeopathic and herbal practices are widespread.

Some of the members use their backyards in London for their hives, others use allotment gardens, space rented from local government on a first-come, first serve basis, for a nominal rent, renewable yearly. The system started during the war when food was urgently needed to feed the beleagured British.

Connie Lane, the Secretary, pays 15 pounds a year for her allotment, a space about 150 feet by 50 feet.

A few members use public grounds, such as hospitals. The old and famous Chelsea Physic Garden in London has one member's bees on the grounds to pollinate plants for which seeds are collected, such as some endangered plants.

Bee-yards as we know them in the states, are not common in England because of a lack of space and a severe shortage of nectar flow in June and July in London.

Most impressive is the relationship between the beekeepers and the Arobriculture Association in selecting trees for planting in public areas which can also serve as nectar sources, as a joint effort.

The Society is encouraging members to pool equipment orders as prices are high, and there is no source close to London because the volume demand is low. A beginner's kit of one hive would cost about $125.

The warmth of our reception, the enthusiasm of the beekeepers we met, all were more than pleasant. We have told members we met that our home was open to them and most assuredly we will be back in England, to see more of British beekeeping.□

Connie , left and Jennifer Harriott in the backyard bee yard in London.

* * * * * * * * * * *

REVIEW

Bees at the Bottom of the Garden, by Alan Campion and Gay Hodgson. London: Adam & Charles Black, Ltd., 112 pp., $6.95. U.S. Distributor: Beekeeping Education Service, P.O. Box 817, Cheshire, CT 06410.

This charming book is written for the absolute beginner, or for those who might be thinking of having a hive or two of bees to go along with their gardening. Hives are described, the difference between queen, worker, and drone, colony life, swarming, how to get started, and so on. There is little that is not familiar to anyone who already has bees. The beauty of this lovely book lies in its profusion of drawings, averaging several per page, all expertly done, and all exhibiting the joys of the beekeeper's craft. It is a book that anyone who loves bees, beginner and old-timer alike, can peruse with pleasure.

— Richard Taylor

Fall-Planted Bee Forage In The Garden

By CONNIE KROCHMAL 119 Bell Road Ashville, NC 28805

Over a number of years I have found that planting bulbs in the fall in our garden area means much-needed nectar and pollen for our bees during the late winter-early spring months when there is usually critical shortage of available foods.

NARCISSUS
(Photo courtesy of U.S.D.A)

At the bottom of each planting hole I use a small amount of either bone meal or bulb fertilizer to help them get a good start. If some of our wild four-footed friends dig up the bulbs out of curiousity, I cover the planting site with some fine mesh screen, metal or fiberglass, until the shoots appear. I usually put on some mulch, either pine bark or cypress if I can find it.

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(Photo Country Park Seed Co.)

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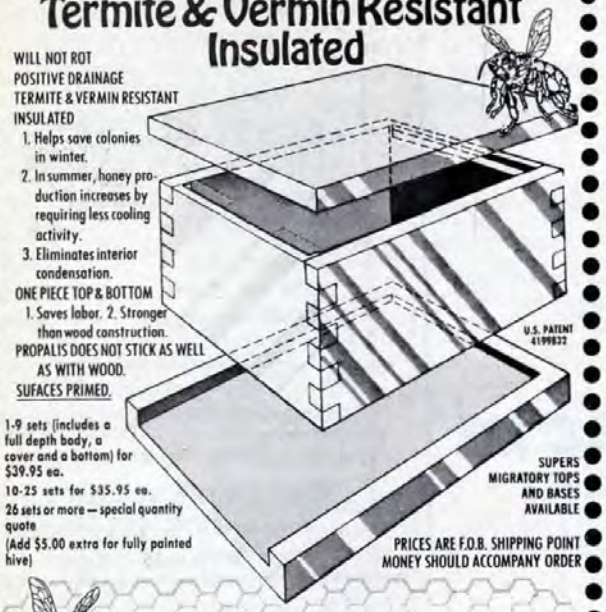

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Testing Your Beekeeping Knowledge

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

In the October 1984 issue of *Gleanings*, the exam questions found in this column specifically dealt with some of the laws that effect our beekeeping industry. Mr. G.M. Reid, National Apicultural Advisory Officer in New Zealand, recently corresponded with me in regards to part of the answer that I had for question number one and I want to share it with you.

QUESTION: Imporation of adult honey bees into Canada and the United States from anywhere else in the world is prohibited by law.

ANSWER: True. On August 31, 1922 Congress passed a law known as the "Honeybee Act," restricting importing living adult honey bees into the United States. At that time the law was principally passed to prevent the entry of *Acarapis woodi* into North America. This is the mite that causes Acarine or Isle of Wight disease which was just found in the United States on July 1984 for the first time. The act was further amended in 1947, 1962 and 1976. The most recent amendment prevents the introduction of genetically undesirable honey bee germplasm into the United States. This precaution was taken to prevent the entry of the Africanized honey bee. Honey bee semen may be imported into the United States only from countries determined by the Secretary of Agriculture to be free of undesirable species or subspecies of honey bees. Canada has a similar law, only they can import packages and queens from the United States.

It is the last part of the answer in reference to the Canadian law that needs clarification. Mr. Reid indicated that Canada has been importing queen bees from New Zealand under permit since the late sixties. Exports reached a peak in 1973-74 when over 8000 queens were sent to Canada. In addition, the first consignment of package bees (over 3000) was scheduled to go to Canada in April 1985 if transportation problems could be worked out.

"New Zealand has a very high bee health status which has allowed us to export to Canada and other countries. We have not imported any live bees into New Zealand since 1956 and maintain a rigid disease control policy as well as importation of bee products. Fortunately, we are free of EFB and the serious mite diseases such as *Varroa* and *Acarapis*. We control AFB to less than half a percent of colonies by inspection and burning. We permit sterilization of hive equipment that is in good condition by emersion in hot (160°C) paraffin wax. It is illegal to feed drugs to control AFB in New Zealand." They hope that U.S. law can be modified in the future, so they can also ship queens and packages to the United States.

Reader feedback in regards to these tests is encouraged and appreciated. All of us can benefit from each others' experiences and expertise. The primary purpose of these exams is to provide a way of testing and increasing your beekeeping knowledge. Take a few minutes and answer the following question to find out how well you understand general beekeeping.

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

EDITOR'S NOTE: In the June "Testing Your Beekeeping" article, there was a mistake on question #9.

9.____ Chalkbrood was first found in the U.S. in:

A) 1922 B) 1983 C) 1948 D) 1968 E) 1954

Answer D (1968) the correct answer, was omitted and E was listed as D.

We apologize for this error.

1.____ Honey bees cannot perceive airborne sound.

2.____ Larvae with European foulbrood usually die after the cell is capped.

3.____ Crimp-wired foundation is recommended in the production of cut comb honey.

4.____ Honey bees rob both honey and pollen from unprotected combs or weak colonies.

5.____ During larval development, nurse bees collect and remove larval excrement.

6.____ In addition to brood production, drone size cells are used for honey and pollen storage.

7.____ Honey bees have two types of eyes.

8.____ Workers are produced in cells that measure approximately 5 cells per linear inch.

Muliple Choice Questions (1 point each)

9.____ Queens are often marked with International Color Coding System for queens. In 1985 the color used is:

A) Yellow B) Red C) Green D) Blue E) White

10.____ In order to have the maximum number of field bees present at the time of a major honey flow, the queen should reach her maximum daily egg-laying rate during the period _____ weeks prior to honey flow.

A) 3 B) 7 C) 5 D) 4 E) 6

11.____ Metheglin is:

A) a chemical repellent used to remove bees from honey supers.

B) a spiced honey wine.

C) an antibiotic used to treat nosema disease.

D) an insecticide used to control wax moth.

E) a gas used to anesthetize the queen during instrumental insemination.

12. Smoke is commonly used by beekeepers as they examine and manipulate colonies of honey bees, since it seems to make them less aggressive. Describe two colony reactions to smoke. **(2 points)**

13. Please name the strain of honey bees developed by Brother Adam. **(Question is worth 1 point)**

14. Emergency medical treatment for an individual suffering from anaphylactic shock because they were stung receives an injection of_____. **(1 point)**

15. Name five ways an individual can obtain bees when they are just getting started. **(Question is worth 5 points)**

Continued on next page

Continued from previous page

1. True Sound waves consist of very small air movements and sense organs which are so refined that they respond to such movements serve as organs of hearing. No ordinary sound receptors have been found on honey bees. It is thought that the bee is only capable of hearing those sounds which set up vibrations in the substance upon which the bee is standing. These vibrations are detected by receptors found in the legs of the bee.

2. False Death due to European foulbrood normally occurs in uncapped cells with the larva still in the curled stage.

3. False Crimped-wired foundation is reinforced with corrugated vertical wires. This foundation is specifically designed for use in brood chambers and for the production of extracted honey. Since cut comb honey is cut directly out of the frame into the desired size sections and consumed, the presence of wires would make it unpalatable. Thin surplus foundation is used rather than foundations that have been reinforced with nylon threads, wires or thin sheets of plastic.

4. False Robbing is the stealing of nectar and honey, not pollen, by bees from other colonies. Robbing may be started in an apiary, at any time when there is no nectar flow in progress, by the beekeeper leaving combs of honey exposed or having colonies open for too long during manipulations.

5. False In order to preserve cleanliness in the larval cell, the Malpighian tubules (kidneys) and the stomach of the larva are shut off from the intestine until the larva is mature. Soon after the cell is sealed, the larval honey bee spins thin cocoon over the inside of the cell. Just prior to spinning this cocoon, the larva defecates and the feces are trapped between the cocoon and cell wall.

6. False Honey bees will store honey in both worker and drone-size cells even though they prefer worker cells. Little or no pollen is stored in drone combs.

7. True The honey bee possesses two types of eyes: two lateral compound eyes and three ocelli or simple eyes near the top of the head. The compound eyes are the main organs of vision and are responsible for forming images. The ocelli act as light-intensity detectors.

8. True Workers are reared in cells measuring about 5 cells per linear inch.

9. D (Blue)

10. E (6 weeks)

11. B (a spiced honey wine)

12. The primary colony reaction to smoke is the initiation of engorging behavior. Individual bees move to cells of nectar and honey and proceed to fill their stomachs. In addition, smoke repells bees downward. Other colony reactions to smoke include a reduction in the number of guard bees at the hive entrance and a decrease in the number of foragers leaving for the field.

13. Buckfast

14. Epinephrine or adrenalin

15. A. 2, 3, 4, or 5 pound packages with laying queen.
B. 3-5 frame nucleus colony (Nuc)
C. Purchase an established full-size colony
D. Collect a swarm of bees
E. Trap or remove bees out of a building wall or tree

There were a possible 20 points in the test today. Check the table below to determine how well you did. If you scored less than 12 points, do not be discouraged. Keep reading and studying — you will do better in the future.

NUMBER OF POINTS CORRECT

20-18 Excellent
17-15 Good
14-12 Fair

Culpability and the Hymenopterist

by WILLIAM LORD North Carolina State University Raleigh, NC 27695

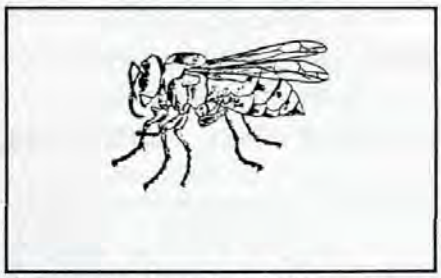
If you keep bees, you many times discover that when you assumed the title "beekeeper," you also assumed a mantle of diverse responsibilities that relate to beekeeping. Let's face it. To the average person you have to be a bit crazy, or perhaps masochistic to keep bees. After all, bees sting, stings hurt, and who in their right mind willingly cultivates pain? But back to responsibilities. As a beekeeper you become the resident expert on everything that flies and stings. The general public seems to have a tendency of classifying everthing that flies and stings as a bee and, since you are a beekeper, you must be in some way responsible.

Along with burden of responsibility comes the joy of justification. When your neighbor questions your sanity (and neighborliness) in keeping bees in your backyard (next to his), you give him a jar of honey. If this gesture does not get him interested in beekeeping, it does show him that honey bees are reasonable, productive creatures who only sting as a sideline. If this does not mollify his scorn, you explain the vital role honey bees play in pollination of agricultural crops (19 billion dollars worth last year). You should succeed.

But back to the responsibility. Many insects fly and sting. Your neighbor is stung by something, he never saw it, but deep down he figures it was one of your bees. You are responsible. If you take your responsibility seriously, you will begin to learn about relatives of bees that, yes, fly and sting. But so do many other insects if we look closely. Consider the wasp.

Wasps, or paper wasps, belong to the genus *Polistes* with some 150 species occurring worldwide. Nests are constructed of wood pulp in protected places and are generally active from spring to fall. Wasps feed on a variety of food. Most wasps feed on some nectar or fallen fruit, but the large majority of the wasp's diet is composed of insects. A study of the diet of paper wasps conducted in Holland in 1968 showed that wasps preyed on over 30 speices of insects. The dominant prey was the common house fly. Some wasp colonies captured flies over 80% of the time, while the second most common prey was caterpillars. Another study conducted in the 1960's examined over 500 loads brought back to a wasp nest. Over 60% were flies, followed by caterpillars, honeybees, and spiders.

Aside from capturing flies and other insects, wasps have been employed as valuable agents in insect pest management. As early as 1913 wasps were being encouraged to nest around cotton fields in the West Indies



The wasp has fewer body hairs and a more pointed abdomen than the honeybee. It has no pollen collecting apparatus.

to help control cotton leafworms. Professor R.L. Rabb of North Carolina State University provided artificial nest sites around tobacco fields to encourage high wasp populations to study their effect on hornworms, a serious tobacco pest. On the average, hornworm populations in the fields studied were reduced by 60%, and hornworm damage was reduced by 74%. Professor R. Morimoto of Kyushu University in Japan studied the effect of placing different numbers of wasp nests around cabbage fields and noticing the effect on cabbageworms. Nest founding queens captured an average of 152 worms apiece before any of their young emerged. Morimoto found that the average rate of predation was about 2,000 worms per nest over the course of the season.

It is obvious that wasps are beneficial, but does that make them any easier to live with? Wasps are social insects. Not social as in friendly, but social as living in an organized society. Soliatry queens overwinter in protected places and emerge in the spring to construct new nests. The paper nest is constructed from wood pulp collected by the queen. The nest increases in size over the summer as new worker wasps are produced and added to the work force. Each worker wasp performs certain jobs during his lifetime according to the needs of the colony. These jobs may include nest building, water carrying, "child care" or care of the larvae, or foraging for food. All workers are subordinate to the queen, and each worker has a ranking in a fairly rigid social structure.

Wasps generally only sting in defense of their nest or when their own safety is threatened. They will almost always assume a threatening posture to attempt to scare away an intruder before actually stinging. When stinging, wasps do not leave their sting behind as do honeybees. Wasps can be a nuisance if they establish their nests in door jambs, or under picnic tables. These nests can be moved, but it is not a job that is recommended for the average peson. A more effective strategy is to encourage nesting behavior in more appropriate laces, near young garden, fields, or orchard. This can be done by providing artificial nest sites by your garden, in a fence row, or near your fruit trees. A simple way to build a nest site is to build a bird house without a front or bottom. This structure will provide an excellent nest site if attached to a fence post, tree or building. By providing nest sites it is possible to greatly increase the local wasp population and greatly decrease the population of flies, caterpillars, and many pests in the orchard, garden, and farm.

So, the next time someone brings you a paper wasp and asks you what kind of bee it is, tell them about wasps. Like honeybees, wasps are not put on the earth as a plague to mankind. Rather, they are useful creatures that have a definite place in the ecosystem and perform beneficial services to man and his agricultural system.

Gleanings Mail Box

Beekeeping Education

Dear Editor:

The article by James A. Westen, May '85, touched a sore spot.

In a Dutch Beekeeping magazine reference is made often to educational programs for certified beekeepers, education committees, etc.

The following may explain why those articles bother me, to say the least. During the depresion years as a result of unemployment many tried, some out of desperation to start a small business of their own. A similar situation in the U.S. at the time was the selling of apples at street corners, etc.

At one time there were, I have been told, 13 little bake shops at the Hoefkade The Hague Holland, a street less than a mile long.

Those figures may not be accurate, but give or take a few bake shops and yards it illustrates to some extent the manner at which some individuals or families tried to survive.

A large number of these bake shops and other enterprises went under. Suppliers who had gambled and given credit to the various businesses, often for similar reasons for survival lost their shirts.

To prevent the many bankruptcies the Dutch government stepped in and killed the free enterprise system.

Existing businesses were protected by the Grandfather law but many if not most new businesses were required to have:

1. A master certificate of their trade which required **years** of study.

2. A Business Administration Certificate also requiring years of study.

3. A certain amount of cash because only 50% could be financed long term.

Later, other laws were passed, such as milk delivery by **one** milkman for certain streets only.

The financial requirement to start a new business was and **is** favorable for the better situated, sons or daughters for instance, in established places.

Even if they could not pass the exam for both certificates (a considerable number continues to fail year after year), they could and still can hire people having the required certificates.

I had no problem with the certificates but the financial requirement killed me. I guess you know why I left Holland.

Don't get me wrong, I believe that a good education in any endeavor is a must in order to succeed. When I started hobby beekeeping I took a 12 day course to make sure I would know a little about what I was doing.

My trade and business education made it possible to earn a better than average living in this country (God Bless America). But Master Beekeeper Certificates? Journeyman Beekeeper Certificates? I think certificates are good for Brain Surgeons, Electricians, etc. I am with Mr. Westen and say please don't do this to us! We have *"Gleanings"* and all that Mr. Weston mentioned. We don't need certificates!

My average per hive is like Mr. Weston but who cares? I would be just as happy with the national average. When I lose a swarm I say "O.K., you win, lots of luck to you"!

Sorry this was long, but as I said, Mr. Weston touched a sore spot.

Gerbrand Van Dyk
"Good Old Beekeeper"
3 Samuel St.
Trumbull, CT 06611

Honey Bill Needed

Dear Fellow Honey Producers:

I thought I'd take a little time to do what is necessary to get the Honey Promotion Bill into motion. I'm sure it will not solve all the problems in the Beekeeping Industry.

The Honey Price Support Program will come to an end. This may not be all bad. One thing we have to face up to is, it's hard to sell my honey and your honey on one corner and have someone, our government, giving it away on the next corner.

I hope something would be in place for us until the new program goes into effect. I'm sure it will be 2 or 3 years before any benefits can be reaped from this act even it things fall into place. It would be an accident if that happened. First of all, hearings will have to be held by the Department of Agriculture Marketing Service. The hearings develop support or opposition to the order and gather information. Later on the Honey Producers themselves will vote in a nationwide Referendum. The time and place, I'm sure, will be announced later. A lot of this is being played by ear right now. No one knows how fast this will move.

I think this Honey Promotion and Research Act is badly needed if we're to survive.

Honey is the oldest sweet known to man and it's hard to believe people know so little about honey. Even us, beekeepers, don't know what we should know about honey. There are people who make a lot of statements about honey which is harmful to the honey industry. If given the proper information these people could speak in a positive manner.

I strongly urge you to support this and be ready to vote for this when the proper time and place arrives. Watch the bee journals and newspaper.

Thank God, we live in a country to be able to use the power of persuading.

Francis C. Henkelman
Defiance, Iowa 51527

Continued on next page

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Dear Editor:

On a recent visit to Washington, D.C., a stop at the Smithsonian Institute made me painfully aware that the bee industry is missing a golden opportunity to promote itself and educate the public.

In the Museum of Natural History the Smithsonian has set up an exhibit on beekeeping. It's an O.K. exhibit but, not one thing was said about bees' value to agriculture. The basics of the art, was explaned and some of our basic tools were on display as well as some samples of honey.

In my opinion beekeepers need to contact the U.S. Department of Agriculture (who set the exhibit up), and request that bees' contribution to agriculture, and some of the problems associated with keeping bees in agricultural areas explained. Pass the word please.

Bill Smith
828 Ayers Rd.
Wheatland, WY 82201

Dear Editor:

I found a clean fast way to get honeybees out from inside a wall cavity in your home or building.

Fashion a restricted opening for the bees from pieces of wood or plywood fastened over the hole that the bees use to get in.

Make the opening small so that only one bee can get through at a time.

The bees hate it! They will pack up their honey and leave to new quarters. I used this and it works!

Ben Locher
P.O. Box 805
Center Point, TX 78010

Dear Editor:

I am writing to ask if you know of any beekeepers who are open to taking on a student beekeeper on a volunteer/apprentice basis.

To explain, I have kept my own bees for five years in Massachusetts, have worked for the state as a County Bee Inspector, and spent ten months in West Africa where I worked in part in a rural beekeeping development with local Kenya top-bar hives. At present I am considering a return to Africa to continue bee work there, but am still undecided.

However, I wish to work for a beekeeper for six months to a year in order to perfect that which I know in part already. I realize that most beekeepers cannot afford helpers due to the cost of wages, so I would be willing to volunteer, as sort of apprentice, under a beekeeper. Could you therefore please refer me to a **real** master beekeeper; someone with less than 500 hives or therabouts, anywhere in this country. I am looking for someone who could teach me while I worked, who is an acknowledged master in most facets of beekeeping as an art. I am not looking for someone who might be a "honey producer".

Is there such a person? I would be pleased to correspond further if you have any questions, and look forward to your reply.

Stephen C. VanDyck
Tuttleback Rd.
Exxex, Mass. 01929 U.S.A.

The Solitary Beekeeper

Beekeeping Technology

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

Being an apicultural fanatic can be a loney mania as some of you may know already. I have had this point made all the more clear after recently increasing the number of my personal colonies to a point difficult to manage alone. As I have described in previous articles, non-beekeeping friends quickly fall away when asked for the third time to help work bees.

I was (and am) determined that I will not impose on anyone else — beekeeper or not — any more than I must. Sounds good — right? With that statement, I've committed myself to great amounts of lonely work. Each time I go out on a precious Saturday, I add more truisms to my list. I have, thus far, accumulated the following comments or procedures, subject to being up-dated in the future.

Neatness Counts — But not a lot — Having an outyard neatly mowed and trimmed looks nice. I honestly try to mow and trim occasionally. However, it's what's inside the hive that's important. In this regard a solitary beekeeper must:

Prioritize — One must do what will yield the greatest and most positive results if the sideline operation is considered to be a business. A few days ago, I longed to go sit beside a strong hive that I had placed some wax moth infested equipment on. I had frozen the deep super to kill the larvae and was curious to know how the bees were reacting. Instead, I did more mundane chores and stopped by the "wax moth hive" as I left. I hurried so I could do this, which leads me to:

Pace Yourself — My enthusiasm far out strips my common sense. I have been known to skip meals, take too many stings and get entirely too hot — all for the bees. Then I'm worthless the next day. Even though I never plan to grow older, it seems to be inexorably happening. Which leads me to:

Have cold water (or whatever) — I perspire profusely. I need to keep reminding myself to drink liquids before totally wearing myself out. To keep from wearing myself out any sooner than necessary I:

Put Wheels On Everything — I try to use hand trucks and carts wherever posssible. It's a big hassle to haul these carts around, but it's a bigger hassle to haul things manually. Speaking of hauling things manually:

Don't pick up anything you don't have to pick up. Some of the worst "catches" I've had in my back came from picking up hive tools — not cans of honey. I try to put everything on somethings else for convenience.

Nothing offered here is meant to be a new idea — just old ideas all listed together. I hope you won't mind if I address this topic more next month. Thanks.

Wintering The Honeybee Colony: Part IV Factors and Strategies for Survival

by T.S.K, JOHANSSON and M.P. JOHANSSON
R.D. 1 Box 256A East Berne, NY 12059

Wrapping

In 1903 A.C. Miller reported on a tar paper wrap as an alternative to cellars, chaff hives, and packing cases. To the resistance expressed in bee journals he replied: "Please try my whole formula before you say black paper is 'not good'. The formula is, plenty of bees, sound queen, abundant stores, **early preparation,** and black wrapping. But I may be mistaken. Two years is a short test"[84]. His "formula" sounds like advice given by apiculturists today. By 1906 a leading beekeeper in Wisconsin with hives in a sheltered apiary wrapped in building paper experienced only a 2% loss, including spring dwindling[85].

In Alberta H.T. Luther racked up some impressive statistics over 15 years: 90.4% of single colonies wrapped in paper survived compared to 70.34% of those packed in single cases with 77.4%, and those in 4-colony cases did best of all with 95.84%. The advantage of 5.44% with 4-colony cases cost $8.65 compared to 20¢ for paper wrapped single colonies. Edmunds stressed bringing the paper up flush with the edge of the hive, and not folding it over the top. A piece of absorbent (not tar impregnated type) "Ten-test" board was used as an inner cover with a dado saw cut for a top entrance. The telescope cover was laid so there was space for ventilation above the Ten-test to allow the moisture it absorbed to evaporate. He believed the low relative humidity characteristic of cold Alberta winters was a favorable factor[86].

The motivation for experimentation, in 1904 as today, was in the interest of reducing costs. Greiner had built two cases for wintering hives at a cost of 40¢, but was trying tar paper as an alternative. He wondered if straw and paper pulp might be used to produce seamless hive parts "...but they might be more expensive than even pine lumber". His dream has been realized with the plastic hives now on the market[87].

Beekeepers used to tie straw around hives with lath and tarred string[88]. When petroleum asphalts became common in the early 1900's, sleeves of asphalt roofing paper were used to cover insulation of leaves or straw. The overlap could be fastened with hot asphalt, and a hinged plywood form speeded up the chore[89]. Thomas made a case of cardboard with a flare so they could be stacked for storage, but it was also possible to take them apart. There was room for some chaff, and they were painted to make them more durable[90]. During 1954-1964 Haydak used mostly corrugated cardboard cases for packing, and building paper was not always applied as it had been in 1943-1953[78].

The cardboard box developed by Boch and Scott Fairburn with an asphalt coating proved to be as good as colonies packed with wood shavings, and there was much less Nosema[91]. Durable cardboard is no longer available, and the plastic substitute results in dampness and mouldy combs[92]. Tro-Cor corrugated plastic is available in sheets or can be fabricated according to specifications for covering hives[93]. An inexpensive covering of 2ml Visqueen (polythylene film) requires provision for escape of moisture that condenses under the plastic[94].

Wraps of fiberglass covered with nylon reinforced polyethylene as used in Saskatchewan have received a favorable reception. Groups of four colonies survived better than groups of two in the coldest winter since 1894. Groups larger than four consumed more honey, and were not as strong in the spring[95]. Pallets which also function as bottom boards for four hives made for easy shifting and wrapping, but with the hives tight against each other it is a disadvantage to split check for swarming, general assessment, or weighing hives for winter stores[96].

The concept of packing several hives together has been around for some time. Dzierzon's Twin-stock hive was kept in piles of 2-8 hives, and he observed that colonies clustered together on each side of the wall separating them. A.I. Root featured 4-colony "tenement" hives in his "Depository of blasted hopes" in January 1879 *Gleanings*. There are references in bee journals from 1872 through 1967 to the practice of placing colonies back to back in rows, covering them with straw or hay, and putting a piece of roofing paper on top.

Beekeepers in Nova Scotia pack single-body hives in groups of 6-16, and report losses down from 30-50% to 5-10%. Styrofoam is placed on the north side only, and a layer of paper covers the other sides[97]. Colonies in hives without packing on the side facing the sun warm up and fly as soon as unpacked colonies[88].

Top Insulation

Some beekeepers do nothing to winterize their colonies except to place insulation between the inner and outer covers. The sample of $^{3}/_{8}$" thick high density styrofoam we received from P.F. Thurber just fits the space between the $^{3}/_{8}$" rims. Other materials used have included Celotex, Insulite, 1" styrofoam (placed metal over the bee escape hole to prevent gnawing by bees), burlap sacking, and newspapers. Wrapping several layers of newspaper around the excluder also solved a storage problem for one beekeeper. Some recommendations for wrapping hives include top insulation of straw (deer have opened packs

to eat hay) placed above the inner cover[98]. With the bee escape hole open, moisture from the hive can escape into the straw.

When Manley introduced the "American type" hive to England in 1919, he included the chaff tray then in vogue. This was filled with chaff, hay, straw, leaves, planer shavings, or sawdust. Shallow supers or comb honey supers with the holders in place placed on the inner cover serve the same purpose. Bland's modified shallow holds a fiberglass batt, and has a flight hole protected from direct sunlight[99]. P. McTaggart-Cowan used a top super with insulated side chambers and space between for feeding sugar syrup in two 8 pound honey pails over 5″ screened holes, and a third 5″ hole in the center for feeding pollen patties[100].

The authors used to wrap their hives in roofing paper, but were annoyed with the dampness and mold on the combs in the spring in spite of an upper entrance and wide lower entrance. We now place a 9″ box (made of scrap lumber) nearly full of mulch hay on the hive. The bottom of the box is covered with hardware cloth, and there is no inner cover to interfere with moisture moving from the hive into the hay. As with any top insulation, wetness reduces its insulation value. But the lower portions remain dry from the heat released by the cluster. At the spring check, we can judge colony strength by the degree of wetness in the top layer of hay. When we find nice dry boxes, we can anticipate a very small or very dead colony.

Since we no longer wrap, winterizing is now a simple matter of lifting on a top box. This can be done even under less than ideal conditions, which is an important consideration for those who have limited opportunities when they can tend their bees. We have not lost any colonies the past three winters, but conditions have been ideal so we cannot credit the success to our treatment. In the milder climate of Britain some beekeepers place an empty super on top of the hive without an inner cover as the best method to prevent the accumulation of dampness in the hive[101]. The bees control the release of heat and moisture from the cluster so there need be no concern that the open space above the hive will result in unnecessary heat loss. Radiation is limited to the 44°F minimum at the cluster surface, and would occur even if there was an inner cover and insulation on the hive.

Replacing the inner cover with a layer of porous material such as Celotex, Donnacone, insulite, plaster board, etc. may serve the same purpose with a groove made to serve as a top entrance. The telescope cover is tilted with a small piece of wood so there is free movement of air over the inner cover to evaporate moisture[102]. Straw mats were once provided for placing over the top of the frames during the winter to provide insulation and absorb moisture.

Insulation can only reduce the speed of the heat loss, and when it loses this capability (as with wet socks). But benefits would already have occurred such as slowing cool down of the cluster in the autumn, and reducing the number of isolated bees freezing to death away from the main cluster.

Insulating Frames

The old fashioned chaff cushion board was used to pack the hive by placing one of these cushions along each side of the hive. They fitted snugly against the ends and floor of the hive. It is now back in the form of a frame fitted with a piece of styrofoam[103].

Supplemental Heat

The possibility of carrying hives into a room to warm up, feed, take a defecation flight, and recluster on new combs of honey prevent their death was suggested by M. Quinby (1853) J. Dzierzon (1861), A. Pettigrew (1875), and others as recently as 1949. Considering the difficult logistics of digging hives out of snowdrifts, moving them, etc., one beekeeper proposed placing heated bricks in the hives to accomplish the same purpose.

Whether Emil Wundrum was the first to consider using electric heat we don't know, but the Puget Sound Power Company reneged on a cooperative experiment they had promised to undertake with him in 1931[104]. In 1946 E.L. Sechrist and D.F. McFarland published *Scientific Beekeeping* in which they promoted a futuristic plan for optimum beekeeping they called **Thermodynamic Apiculture.** There was even an Optimum frame ("bow" type) similar to the British and Italian versions we described in "Natural combs". They proposed to balance the inside temperature with the outside to maintain a constant 57°F even during extremes of cold or heat[105].

In the 1950's and '60's serious investigations were made using electric heating. A Swedish treatise on beekeeping has a 13 page chapter illustrating wiring, thermostats, heating elements, etc. as used in an apiary for several years[106]. That the logic of such assistance to the colony still commands attention was shown by the inclusion of electrical heating of hives as a major topic for discussion at the 1974 Apimondia symposium on "Beekeeping in cold climate zones". United States and Swedish reports were encouraging[107]. There are now various appartus for heating on the market:

(1) 4-piece molded styrofoam insulation with heat tape between super and insulation (Arsaco Inc., Rt. 3 Box 242, Black River Falls, WI 54615).

(2) Hive heaters and controls (Beemaster Inc., 311 West 28th Ave., Bellevue, NE 68005)

(3) Frames wired on the bottom and sides have been used in the U.S.S.R. since 1958

(4) Electricomb foundation (Southwestern Ohio Hive Parts Co., 629 Lebanon Street, Monroe, OH 45050) is intended to ". . . . simulate a break in the weather and allows the bees to replenish the stores near the cluster . . ."

(5) Cluster controller: radiant heater for bottom board or top of the hive (U.S. Patent 2,506,118 May 2, 1950, M.I. Taylor).

The authors have not used these devices, and are not aware of any published data on their effectiveness. A nine year trial in Norway found heating useful for weaker colonies, provided they had adequate protein; 7-8 watts was supplied **after** the first defecation flight in the spring until the colonies occupied 10 combs. Bees

Continued on next page

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flew at lower temperatures, and water was a limiting factor with increased brood rearing. The brood rearing shortened the life of the winter bees, and there was a delay until they were replaced[108].

Cushman used four stone bottles filled with boiling water to heat two colonies lagging behind the others. He refilled the bottles each morning and evening from May 14—June 20. The records showed no differences between morning and evening temperatures, except when the temperature was lower it was so in the vicinity of the bottles. This was as he expected since the additional heat (averaging 4½°F higher) had caused the bees to expand their nest, and "when the surrounding temperature declines, to allow their own temperature to go some lower before they would contract and forsake that on the outskirts"[109]. One queen breeder places heaters under his cell building colonies. During cold snaps the heat goes on to prevent the cluster contracting away from cell cups at the ends of the cell bars.

G.H. Cale, Jr. used heaters during the winter under colonies maintained at Dadant & Sons for hybrid crosses to insure against loss. Since the colonies were often small, the heating also helped them protect themselves against robbing. Low temperature "Quickheat panels" used in New Zealand for livestock and seedling flats might be useful for heating hives. The heat cable is imbedded in a "particle board" and covered with oil tempered hardboard[110].

Sun and Snow

Amongst the topics at the Apimondia symposium on "Beekeeping in cold climate zones", snow was included as an important element in successful wintering. Hives buried in a snowbank are protected from wind, sudden changes in temperature, and enemies. Snowmobiles run over them without incident[111]. A photograph in a 1929 Italian beekeeping journal shows a crew shoveling snow over the hives, leaving the fronts exposed. In Saskatchewan beekeepers bank the base of the hive with snow to keep out cold winds[112], and insufficient snowfall may result in above average losses[113]. Wet snow or an icy crust may cause colonies to suffocate[114].

Snow is a problem for bees flying out when glare in bright sunlight causes them to disorient and crash into the snow where they chill, and are unable to return to the hive. A baffle to prevent sunlight enticing them out may be useful (See *Gleanings* 111(10):545, 113), but apparently the primary cause of such disastrous flights (250/day) is a rise in hive temperature[115].

In the article on hives, we mentioned the use of glass in hives to trap heat by solar gain. We all appreciate the warmth of a glass enclosed porch when the sun shines in winter. Recommendations for wrapping hives in black building paper (or painting hives black) are made with the same premise. There is no detailed information as to what the black wrapping does for the thermal benefit of the bees. A study of the black robe Bedouin's wear on the desert turned up surprising results. Although the surface temperature was 5°C warmer than on white robes, the temperature of air next to the skin remained the same. It was concluded that convection currents under the robe produced a chimney effect that pulled in cooler air from the ground. A. Latham considered that hives painted black, and kept in the shade during the summer, radiated more heat than white hives.

Some of the heat absorbed on black paper will be radiated to the surroundings, with another portion conducted to the air and removed by convection. Heat conducted through the paper will also create currents between the paper and the hive wall. Heat conducted through the hive wall will form convection currents on the inside of the hive which will transfer heat to the roof, combs, and walls not heated by the sun. Only when the temperature of the entire interior of the hive has been raised to that of the cluster will the bees be able to move around. If that should occur with bright sunlight and freezing temperatures outside, bees might fly out and become chilled. The danger of such overheating that might scatter the cluster at inappropriate times prompted the Wodahl to caution against wrapping hives[116].

Only by the study of effects of wind, sun, radiation, conduction, and convection of heat outside and inside the hive can we come to appreciate the effects on bees of wrapping hives. Such studies on the thermal exchange between the environment and white-tail deer have been done at the BioThermal Laboratory in Ithaca, New York.

Bee Houses

It was obvious from our visits to a bee house at the University of Bonn and to a neighboring beekeeper, that bee houses have advantages where procedures such as queen rearing must be timed irrespective of weather conditions. W. Drescher provided blueprints of the Bonn facility, but the only essential design specification is the opening in the wall into which back-opening hives are piled next to each other in stacks 2-3 high to fill the space. The entrances are face outward.

The standard German "Stander" back-opening hive with 20-30 frames used in bee houses is a cabinetmakers pride and joy[117]. Those with very deep frames might be ideal for wintering. Central Europeans settling in Manitoba during the 1880's used such Dzierzon hives with success, wintering them in cellars. The limited comb space required that honey be extracted before it was sealed to avoid crowding. Saskatchewan beekeepers have recently recommended that efficiently and productivity can be increased dramatically by extracting honey before it is capped, using household electric dehumidifiers to reduce the water content to levels required by packers. In 1880 the Ukranians cured their unsealed honey in 700 pound oak barrels, from which the heads were removed[118].

In Germany prefabricated bee houses are available for 8-30 hives, with an optional work room and/or living space. Some houses are simple sheds with one side open. Sheds mounted on a trailer are used in migratory beekeeping, and there are "Apiaries on wheels" as one in Netherlands with 44 hives[119]. Two German trailers were connected with a portable work/living space in between[120]. Permanent bee trailers are common in Czechoslovakia[121].

Continued from previous page

American bee journals throughout the years have published descriptions of bee houses (house apiares) built in the United States. They are ideal where bees must be kept in close proximity to neighbors as the hives are not so obvious. It is easier to work the bees, and the bees are less agressive. Perhaps bee houses will become popular in the United States when the bad tempered Africans cross our borders, and the price for calmer bees will seem right.

We had some experience with a bee house when the hives in the farm program at the neighboring high school annex were tipped over and stoned for the second time. We suggested placing the hives in a shed, pushing the bottom boards against openings cut in the wall. The landing boards were covered with wood (glass could be used) so the bees could not gain entrance into the shed. Bees that flew up during manipulations flew out the open door, but we could have provided a separate exit above the hives as in bee houses, or built windows in the roof as in the German trailers. Beehouses are indispensable in Africa to protect hives from theivery, and to make working the bad tempered African bees possible[122].

As far as wintering is concerned, hives in bee houses are protected from the wind. Radiation is limited to front and back, and insulation can be placed around the hives very easily without the need for weather proof wrapping. A disadvantage that bee houses share with packing cases is a retardation of brood rearing since the hives are not warmed by the sun as are hives out of doors.

In 1673 Sir Thomson considered a beehouse useful in preventing swarming of bees on Scotland[123]. Apparently English speaking beekeepers are becoming more interested in bee houses, as Germans shift away from them[124]. Beekeepers around Hohenheim (near Stuttgard) have outdoor apiaries using an elegant hive designed by Dr. H.G. Sachs. The frames are removed from the top, and hive bodies stacked on top of one another as they are in America. Fasteners holding the bodies together can be opened to permit tilting any portion of the hive backwards, onto a support, to pull frames out of a box for inspection. An adjustable stand for five hives makes leveling on uneven ground a simple matter of setting four pins[117125]. This admirably designed hive is also available in polyurethane[126]. In making the shift, the German beekeepers have retained a lot of the convenience, labor saving, and elegance of the bee house hives.

Nuclei

W.H. Kirk (Waterbury, CT) did not think much of wintering large colonies because in his 16 years of experience he found small colonies did as well as larger ones. Fussing with them was fun ("the very quintessence of enjoyment"), and he was astonished how fast they built up into strong stocks. One hundred years later at least one beekeeper agreed with him, and used division boards to house two colonies in each hive body[127]. An adjustable division board fits hives with variations of ½"[128]. The former Charles Mondeng Co. (Minneapolis, MN) sold a 6-frame nucleus hive for wintering.

For those who do not wish to work massive colonies in skyscraper hives requiring more skillful management, the largest of the overwintered colonies can be divided and provided with a second queen. This measure prevents the onset of preparations for swarming, and produces maximum honey crop possible in the area[129]. Where conditions for making nuclei are not ideal in spring, it might be better to produce them in the autumn. It is also easier to purchase queens then, or for the beekeeper to produce his own queens. Mraz, in the rugged climate of Vermont, overwinters 2-3 pound nuclei with almost no loss[130]

When a Midnite colony threw a small swarm in autumn that built combs under the bottom board of the parent colony, the authors placed the bottom board, with combs attached, on a hive body fitted with glass sides. This "observation hive" was placed in a greenhouse, and provided sugar syrup continuously. The bees flew when it was warm enough to collect any pollen that appeared on blooms. In the spring we brought the colony back to the apiary where they built up and overwintered successfully.

A. Toshkov placed small 3-frame nuclei between the glass of panes of a double window in a heated room, and fed sugar syrup. In the summer, two of the small combs were fitted into a standard frame for introduction to a colony. Other experiments using small cages with 40-120 bees have been undertaken in an effort to winter queens for us in the spring[131]. There are many difficulties, and Khidesheli suggests the following optimal conditions (74 of 75 introductions were accepted):

(1) Maintain air temperatures between 0° and 6°C (32°-43°F);

(2) House units (two 75 x 85 mm combs) compactly and avoid drafts;

(3) Provide honey or sugar syrup ripened and sealed in the comb by other stocks (feeding sugar syrup results in unrest and expenditure of energy);

(4) Replace the 100-120 bees every 50-60 days;

(5) Introduce queens to the units (initially and when replaced) 36-48 hours after stocking them with bees, but only after first chilling them in a cold room for 1-2 hours at 0° to 2°C (32°-35°F);

(6) Absence of Nosema spores may be explained by the fact that bees for stocking were obtained from colonies wintering outdoors with maximum opportunity for cleansing flights[132].

To Be Continued next month with the Conclusion of Package Bees, Apiary Checks, Essentials for Success, Hive Size, Bees, Stores, Reduced Entrance, Upper Entrance, and Queens.

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Continued on page 478

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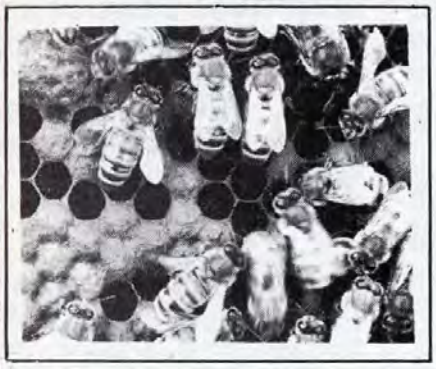

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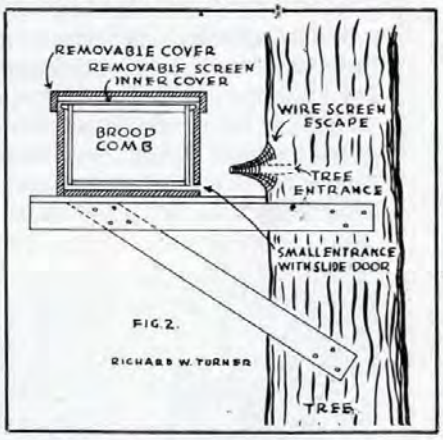

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Winner of the Progressive Beekeepers Association of Louisiana's photo contest: Dana Austin of Metarie, LA won first place with this shot of her girl, Peggy, biting into a piece of honeycomb.

Migratory Beekeeping and Royal Jelly Production with Africanized Bees In Sao Paulo State, Brazil

by GENE E. ROBINSON Dept. of Entomology Cornell Univ. Ithaca, NY 14853

Migratory beekeeping and royal jelly production require extensive manipulations of honey bee colonies. On a recent research trip to the state of Sao Paulo, Brazil I was especially interested to learn that Brazilian beekeepers engaged in both of these activities with Africanized bees.

Sao Paulo is one of the most developed states in Brazil. Its capital the city of Sao Paulo, is a business financial center for all of Latin America. Sao Paulo, is about 250,000 km² in area, which is about the size of the state of Wyoming, and has a population of over 29 million people. Located between the 20th and 25th south latitude lines, its climate is mostly subtropical to tropical and its principal crops are coffee, sugar and oranges. Beekeeping in Sao Paulo has greatly expanded over the past ten years. It is estimated that there are currently 2000 beekeepers, including about 400 commercial operators (A.E. Soares, personal communication). There are four active beekeeper organizations in the state, and an ever-increasing number of bee supply manufacturers.

The most notable fact about migratory beekeeping with Africanized bees in Brazil is that it is practiced as much as it is in N. America. Migratory beekeepers from the state of Sao Paulo move their colonies three times a year. Colonies are first moved to areas with many Eucalyptus trees that blossom from February to May. Colonies are then transported to orange groves in Central Sao Paulo for the orange nectar flow, which generally lasts from July to September. A final crop of honey is obtained by relocating the colonies to areas within the state where wildfowers are abundant or to the neighboring state of Parana, where the capxingui (*Croton floribundus*) tree is in flower from September through November. Beekeepers generally obtain 90-100 kilograms of honey per colony with this migratory scheme. Beekeepers report that colonies placed in an agricultural setting such as an orange grove do not disturb normal farm operations.

Techniques for moving hives are familiar. One or two story hives are secured with wooden strips or plastic straps and moved by hand. Due to the warm temperatures, conventional hive covers are replaced by screened transporting covers. As in this country, some Brazilian beekeepers screen their entrance to each colony, while others place a large mesh tarpulin over their entire load after all hives are on the truck.

Over the past few years, several beekeepers practiced an interesting variant of migratory beekeeping. At the beginning of the wet season in April, they transported empty hives from Sao Paulo to the state of Piaui, several thousand miles to the north. These hives were then inhabited by swarms of Africanized bees, plentiful in that region. Six months later beekeepers harvested an excellent crop and brought their new colonies back to Sao Paulo. However, this is no longer economical due to the fact that the price of gasoline has recently risen more drastically than has the price of honey. Instead, several Sao Paulo beekeepers have recently been setting up a second permanent operation in Piaui and move their colonies within that state for local nectar flows.

Royal jelly production in Brazil is currently practiced by only a few beekeepers. These procedures prefer to use hybrid colonies for royal jelly production, that is colonies headed by European queens which were allowed to mate naturally with Africanized drones. The techniques employed in Brazil are similar to those used elsewhere. One beekeeper in Sao Paulo maintains an operation of 500 colonies in which he rears queens for his own use and produces royal jelly. His queen rearing colonies are queenright, with the queen confined to the lower hive body. Every three days 50-75 young grafted larvae are given to each colony in the upper super. Royal jelly is also harvested every three days, with yields ranging from five to seven grams per colony. Frames of brood are taken from the lower super and placed in the upper super every 10-14 days.

Migratory beekeeping and royal jelly production operations seem to be thriving, and Brazilian apiculture experts expect activity in these areas in the future. In general, the flourishing of Brazilian beekeeping with Africanized bees that has occurred during the past decade, as reported by Weise (1977) and DeJong (1984), was quite evident even to a foreigner on a short visit. In the few cities I visited, bees supplies and honey were both readily available and attractively marketed. There are many reasons for the impressive vitality of Brazil's beekeeping industry, including the recent improvements in highways, new large plantings of orange trees and burgeoning interest in "pastoral" activities such as beekeeping and natural foods such as honey. However, it is apparent that much of Brazil's success has to do with the fact the apiculturists and beekeepers have learned how to manage Africanized bees productively. Some of the more important techniques used in Brazil include selection among Africanized stocks for less aggressive temperament, proper placement of colonies in apiaries (Figure 3, next page) and correct use of the smoker (Weise 1977, DeJong 1984).

A typical apiary in Sao Paulo State, with colonies of Africanized bees kept on individual stands, at least several meters apart and distributed among vegetation. These precautions are taken to avoid disturbing colonies other than the one that is being working with.

Brazil's successful adaption to beekeeping with Africanized bees took over ten years to accomplish (Weise 1977; DeJong 1984) and has not yet been repeated in other northern Latin American countries. However, the fact that both migratory beekeeping and royal jelly production are now practiced in Brazil is encouraging and suggests that the vital pollination activities and intense colony management schemes of U.S. beekeepers will also be possible, with modifications, with Africanized bees.□

Acknowledgements

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What Is A Mite?

by FRANCIS RATNIEKS/Graduate Research Assistant Dept. of Entomology Cornell University, Ithaca, NY 14853

With the recent arrival of *Acarapis woodi* in North America and the continued spread of *Varroa jacobsoni* in Europe and South America beekeepers are now mite conscious. yet how many of them actually know much about mites in general, what they are and how they live?

Mite — the very word conjures up visions of smallness, and smallness is par excellence the most notable characteristic of the mites. The largest mites are only some half an inch long, most are under 1/20th of an inch, with the smallest ten times smaller still. Mites are therefore virtually invisible and go unnoticed by the average person, despite their being one of the most widespread, ubiquitous, numerous and varied groups of animals on earth, maybe even rivalling the insect in this.

Not surprisingly amost no mites have a common English name and probably the only mites that most people have consciously encountered are the ticks, which by virtue of their relatively large size and parastitic mode of life tend to get noticed, if not exactly welcomed, when they attach to humans, pets and farm animals. Ticks have also received a great deal of attention from scientists because some species spread human and livestock diseases, such as Rocky Mountain spotted fever.

Small size has also hindered scientific investigation of the mites, compared to the insects, and it is anybody's guess how many species there are. At least 30,000 species have been named but the final total could be half a million or more. This is well illustrated by a group of mites known as the Phytoseiidae which are currently being studied and used commercially in the biological control of other mites which feed on plants. In 1950 less than 20 species were known whereas today the figure is approximately 1,000.

Examination of a typical mite under a microscope reveals an animal with an external skeleton, four pairs of jointed legs, two additional pairs of limblike appendages at the front end modified for feeding, and not antennae. The external skeleton and jointed legs indicate that the mites belong to the group of animals known as the Arthropode (this name is derived from two Greek words meaning joint and foot). The four pairs of walking legs, two pairs of feeding limbs and no antennae are characteristic of the arthropod subgroup known as the Arachnida (name derived from the Greek word for spider) which also includes the spiders, scorpians, harvestmen or daddy longlegs, as well as some other less familiar animals such as the Sun Spiders. The insects and their relatives the centipedes and millipedes, and the crustaceans form the bulk of the rest of the Arthropoda. Mites are therefore more closely related to spiders than they are to insects or crustaceans. Figure 1 shows these groupings illustrated with familiar examples.

A closer look at the mite body reveals that there is no separation of the body into distinct parts as happens in the insects, spiders and most other arthropods. What appears to be the head is in fact only the fused bases of the feeding limbs and does not contain the brain which is in the body proper. In the different mite species the feeding limbs have been modified in a great variety of ways, suitable for different foods and ways of obtaining it. Mites which suck plant sap, or blood, may have long needle like retractable appendages for piercing and sucking. Predatory mites often have powerful lobster like claws.

Things eaten by mites include almost every conceivable edible substance from fungi and decaying plant matter in the soil to insect blood, plant cell contents, other mites and small animals, pollens, grains and foods in storage etc. This, combined with their small size, enables many mite species to specialize in what would appear, to us at any rate, as almost impossibly restricted places. *Acarapis woodi* is a case in point, being confined to the tracheae of honeybees. The honey bee also supports two other species of *Acarapis* mite. One species is found only on the bees' neck and the other in a groove on the upper surface of the thorax. These three *Acarapis* species all feed on honey bee blood which they obtain by piercing. Other species of mites are found inside feather quills, under the scales of reptiles, and at the bases of mammal hairs safely tucked away in the follicle or sebaceous gland. Two of these so called follicle mites are found on humans and apparently almost everyone has them, without knowing it as they are harmless and only some 1/100 of an inch long.

Almost any handful of soil, leaf litter, moss or piece of dead wood will reveal a multitude of mites of many species. Similarly old bird and mammal nests are rich sources of parasitic, scavenging, and mite eating mites.

Mites are also common on plants. One important group of plant pest mites are the spider mites, so called because they produce a fine silk which offers them a measure of protection against predators and drying out. They pierce plant cells and suck out the contents. The plants gradually lose their green color, and wither. Many a house plant, not to mention crop plants, met their end thanks to spider mites. Other plant mites induce the plant to produce galls inside which they live. These galls are familiar to many people. For instance the bumps on maple leaves. Safe inside their gall home the gall making mites typically have a reduced number of legs. Other plant living mites, such as the phytoseiids mentioned earlier, themselves feed on the plant feeding mites.

Mites are also very numerous in freshwater, where they are often parasitic on fly larvae in their young stages and predators as adults. Some are even found in the sea, living in sediments even at great depths, in various sea creatures or on seaweed. Other extreme habitats colonized by mites include bare cliff faces where they feed on pollen blown into rock crevices, and the polar regions. One species of mite ventures further south on the Antarctic continent than any other arthropod.

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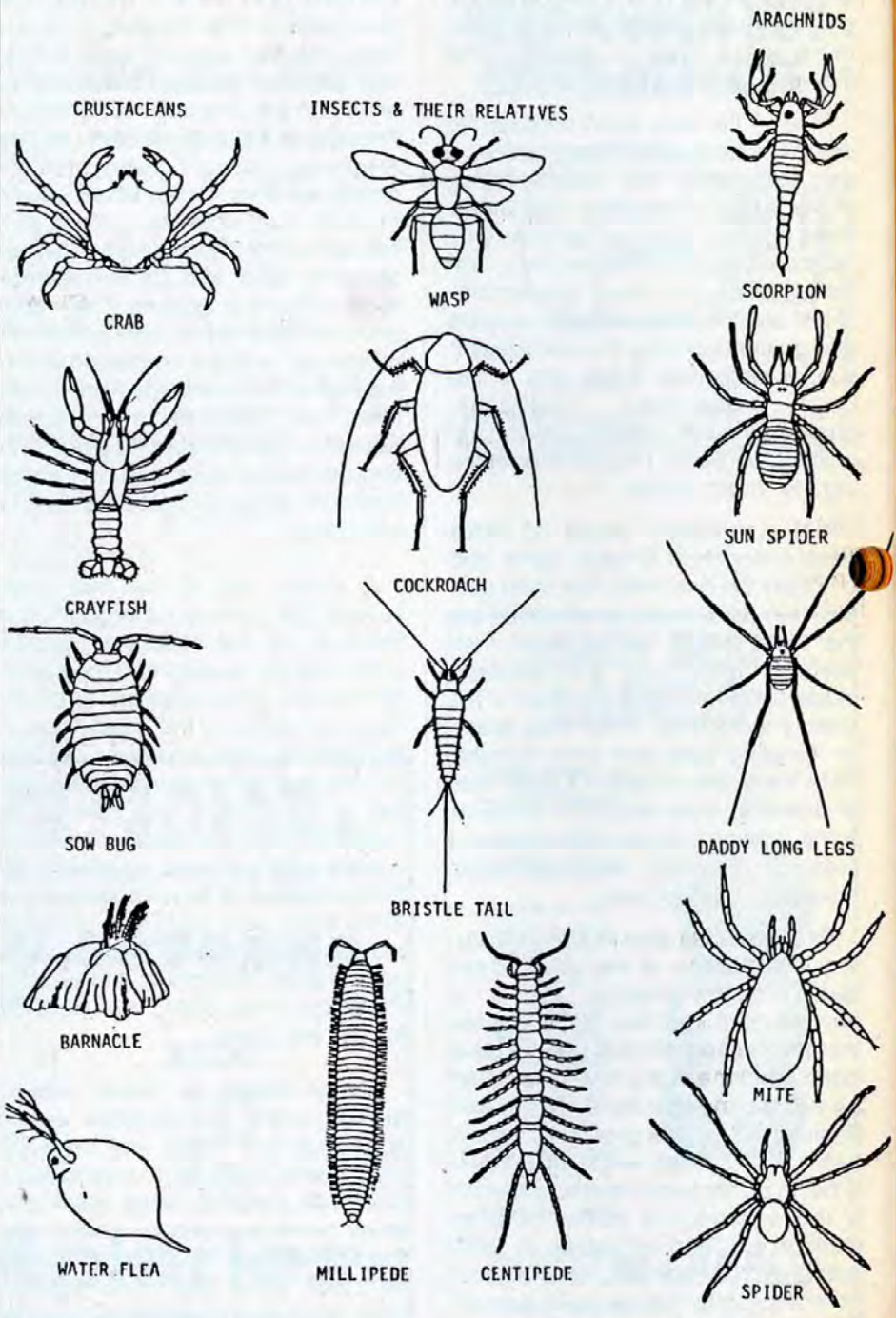
Acarologists, that is people who study mites, which incidentally are scientifically referred to as the Acari (and sometimes as the Acarina), have a seemingly endless store of bizarre tales relating to mites and the way they live. Of these one of the most fascinating is the story of the moth ear mite. This mite is found in North America. Female mites climb on board certain moths as the moths are feeding at flowers and make their way first to the moth's head, and then to one of the moth's two ears which are located one on either side of the body. Once in the ear the mite starts feeding and laying eggs. One section of the ear is used as a garbage dump and eventually a brood of young mites is reared which migrate out of the ear and onto another flower. The amazing part of the story is that should a second mite get onto the moth it always goes to the ear already occupied, apparently guided by a pheromone trail left by the first mite. In this way the moth is only deafened in one ear and can still hear the cries of bats and respond with evasive action. Were it completely deafened the moth would probably be more likely to be eaten, together with the mites, by a bat. The mites therefore help ensure their own survival by sparing one ear.

As a final example of the versatility and unusualness of the mites their great talents as hitch-hikers on other animals, particularly insects but also birds and mammals, should be mentioned. Insects, with their wings, are very capable of moving from one location to another, but a mite living in say a rotting tree or some other relatively isolated food source has little chance of walking to another, maybe distant, foodsource of the same type when the first one becomes used up or otherwise unsuitable. However, by hitching a lift on some insect going in the right direction, such as a wood boring beetle, the mite has a good chance of arriving at a new feeding site. Some species of mites have special non-feeding states in their life cycle during which seek out animals to hitch onto, using special suckers or catchers. When an appropriate destination is reached they disembark, and cast their skins to turn back into a feeding stage in the life cycle.□

FIG.1 FAMILIAR ARTHROPODS



Research Review

By DR. ROGER A. MORSE
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European Varroa Research

The most recent issue of *Apidologie,* a journal published jointly by German and French laboratories, devotes four of its six papers to the mite *Varroa jacobsoni.* A fifth paper is concerned with *Tropilaelaps clareae* another Asian mite that is of great interest to beekeepers but which has not been found outside of that area to date. This emphasis on mites indicates the great concern Europeans have about these small creatures. At present no one has a method of controlling the mites that is cheap, easy and acceptable to the Environmental Protection Agency or American beekeepers. It seems certain to me that one or both of these mites will someday, somehow, be found in North America. We can only hope that when the time comes we will have a satisfactory control method.

The first paper reports on the testing of four chemicals for controlling *Varroa.* Three were satisfactory from the point of view of control though nothing was said about residues or side effects. The paper points out that within the European community there is no uniform method of mite control; this suggests to me that no really good or acceptable method exists.

A paper from Czechoslovakia reports that colonies infested with varroa mites in that country are being destroyed. The mites were found there in 1981. In 1948 only 0.17 percent of colonies were found infested. In several areas colonies were found to be mite free. Apparently colony destruction, which has not been found to be effective elsewhere, at least in the long term, will continue for some time in that country.

A third paper is concerned with the buildup of mite populations in colonies during the summer in Europe. As might be expected, colonies with heavy infestations of mites showed symptoms of European foulbrood and acute paralysis. Others have noted that when bees suffer from one disease, or problem, they are more likely to suffer from another.

It was found in the fourth paper that one could mark mites with a fluorescent pigment and thus follow marked mites through their life cycle. This is no simple task since the mites are the size of a pinhead; a very small needle was used. It is known that on their native Asian host the mites reproduce on the drone brood only. It was found that on European bees mites that infested drone brood produced more offspring than did those that infested worker brood. Also, under natural conditions only 73 percent of mites on worker brood were fertile whereas 95 percent on drone brood were fertile. Mites preferred drone brood over worker brood by a factor of 8.6.

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Job Changing in Honeybees

When worker honeybees emerge they first clean cells. A day or two later glands in their heads begin to develop and they produce royal jelly that is fed to larvae. As the bees age they move from one task to another. Each succeeding job is more complex and usually more dangerous than the previous one. The final job a worker undertakes is that of being a forager.

The factors that control this job changing have been under investigation for some time. Changes in the glandular systems of workers have been observed. One hormone, called juvenile hormone, has been found to change in quantity as workers age. When applied to young bees it causes them to forage at an earlier age.

In the paper cited below it was shown that a substance closely related to juvenile hormone, called an analogue, would cause bees to age and to become foragers earlier. The material is called methoprene. Interestingly too, the analogue caused the bees to produce the alarm odors several days earlier than normal. The substance was applied to one day old bees only.

The amount of methoprene that was needed to bring about these changes was much greater than might be expected. The reasons for this appears to be that we do not understand the mechanism by which the material works or is distributed in the body of the bee.

It is interesting to speculate about the long-range consequences of this research. An age-old trick to cause a colony to produce more honey is to cage the queen before the honey flow. If one knows when the flow will begin, and can time the caging properly, there will be less brood to care for when the flow starts and the workers present can turn their attention to gathering nectar and making honey. Finding and caging queens is slow and difficult. If it were possible to age the young bees in a colony rapidly using hormone treatments, and to turn them into foragers at an earlier age, one might also increase the honey crop or have a greater number of bees available for pollination.

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Eva Crane & Aristotle To Speak

By STEVE FORREST

From it's inception in 1927, the Southern States Beekeepers' Federation has tried to get beekeepers working together for the benefit of our industry. What better speakers to headline our next convention in Savannah, Georgia, November 10-13, than Eva Crane the recently retired Director of IBRA, the International Bee Research Association and Aristotle, the 4th century philosopher and naturalist who is credited as being our first recorded bee scientist.

Eva Widdowson started keeping bees in 1942 while living at the edge of Yorkshire Moors in England. Her first colony was a wedding present from a friend prior to her marriage to James Crane. Her formal education consists of degrees in Math and Physics with honors from Kings College in London. She then received her Masters of Science in Quantum Mechanics and then her Doctorate in Nuclear Physics. In 1949 the Bee Research Association was incorporated and Eva Crane was elected it's first director, a position she was to maintain until her retirement this past December. While under her guidance the association continued to grow until it expanded into the largest international beekeeping organization in the world. Through their three publications, ***Bee World, Apicultural Abstracts,*** and the ***Journal of Apicultural Research*** they attempt to keep the world abreast of what is happening in beekeeping today. They are committed to the belief that we can solve our cumulative problems by working together and sharing research and management techniques. To this end they have also become the largest collector and disseminator of beekeeping information in the world and currently have a staff of 19 full and part-time people and a yearly budget of 228,000 pounds.

At the convention on Tuesday, November 12, Mrs. Crane will trace the development of world beekeeping from early times to present day highlighting her renowned book ***The Archeology of Beekeeping.*** She will also speak Wednesday explaining IBRA and their roll in promoting world beekeeping. At a speakers reception she will also be serving refreshments to conference attendees. For those of use who have never met Eva Crane in person this will be an excellent opportunity. She occupies a unique position as a world beekeeping leader.

At last years convention in Williamsburg, Virginia many activities were considered excellent but none received acclaim like the talk by the Reverend L.L. Langstroth. The good Reverend came back from the grave for one more visit and lecture and while he was there he suggested we consider Aristotle for our next convention. For those of you who aren't familiar with Aristotle he was a man of many hats. On one hand he was a scientist and naturalist. On another, he was a philosopher and student of Plato. On still another, he was an advisor to Alexander the Great. He was an astute observer and invented his own observation hive. Since glass wasn't available in the 4th century B.C. he had to come up with something he could see through to watch the bees and he took animal horns and shaved them down super thin to serve his purpose. He was one of the first scientists to correctly identify the three types of bees in the hive although he never quite figured out their sexes. He was also one of the first scientists to realize that honey was the collected nectar of flowers. His observations were many and were astute. He published them in two books devoted solely to apiculture. You will be amazed at what he did know about bees and how he went about finding it out. You will also be amazed at the quality of the presentation by our modern day Aristotle and the meeting that follows.

Each day of the convention has a different theme. The first day, Monday, November 11, will attempt to explain different aspects of our commercial industry. Speaking will be a honey packer, Darl Stoller, a queen and package bee breeder, Ray Wilbanks, a importer, Nicholson Sargeantson, a pollinator, Bill Lord, and an equipment manufacturer, Tim Dadant. Our commercial industry is so different from hobbyists operations that we will all benefit from knowing more about their operations. The second day's them is, Beekeeping: Past, Present and Future, featuring Eva Crane and Aristotle. Joining them will be Dr. Al Deitz to give us the most recent information of the African bee and how it will affect the future of American beekeeping. Dr. Larry Connor will also look into the future and review efforts being made to develop a super bee genetically. Our third day is devoted to promotion with speakers covering the major motions undertaken by our industry today.

These lectures last half a day only and leave the afternoon free for vacation. Organized tours will be available for those interested. An advanced bee school will also be offered in the afternoons for those who want to fine hone their beekeeping skills with advice and instruction from our industry's leaders, both scientist and commercial. Evening activities will also be provided nightly. An awards banquet will be culminate our convention on Wednesday running November 13th, with an auction of old books, journals and catalogues, and antique equipment, honey pots and memorabilia.

The city of Savannah is a vacation in itself. You will be surprised at just how much fun history and architecture can be. Of course, beautiful surroundings, great food, great room rates, and an unbelievable amount of tourist amenities will combine to make this the most informative and best vacation you and your family have ever taken. For more information write to: Southern States Beekeepers' Federation, NCSU, Box 7626, Raleigh, NC 27695-7626.

The Monthly Honey Report

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	45.00	42.00	52.00	34.50	42.00	40.00	38.00	36.00	42.50
60 lbs. (per can) Amber	42.00	40.00	42.00	32.40	33.00	35.00	30.30	34.50	37.80
55 gal. drum (per lb.) White	.52	.55	.52	.59	.64	.55	.55	.60	.58
55 gal. drum (per lb.) Amber		.52	.42	.54	.53	.52	.50	.57	.54
Case lots — Wholesale									
1 lb. jar (case of 24)	28.50	24.00	23.75	20.40	25.00	24.00	25.00	25.40	25.20
2 lb. jar (case of 12)	27.50	24.00	22.75	20.16	26.20	24.00	21.50	25.24	
5 lb. jar (case of 6)	30.00	28.50	23.95	24.90	28.50	24.00	21.50	25.24	24.60
Retail Honey Prices									
½ lb.	.90	.90	.75	.99	.90	.90	.85	.90	.89
12 oz. Squeeze Bottle	1.50	1.25	1.29	1.09	1.25	1.35	1.35	1.29	1.19
1 lb.	1.50	1.40	1.35	1.19	1.50	1.55	1.52	1.50	1.40
2 lb.	2.70	2.60	2.45	2.50	2.50	2.60	3.00	3.19	
2½ lb.	3.75				3.55	3.25	3.50	3.59	
3 lb.	4.00	3.75	3.15	3.44	4.60	3.85	4.00	4.00	3.40
4 lb.	5.00	4.95		4.40	4.98	4.90	5.00	5.00	
5 lb.	6.00	6.00	5.25	5.50	5.75	5.80	5.90	5.90	5.25
1 lb. Creamed		1.75	1.45	1.40		1.39	1.50	1.55	1.40
1 lb. Comb	2.25	2.25	2.25		2.00	1.85	2.00	1.80	
Round Plastic Comb	1.50	1.75	1.85				1.75	1.65	1.75
Beeswax (Light)	1.35	1.35	1.10	1.40	1.25	1.25	1.17	1.15	1.50
Beeswax (Dark)	1.20	.1.15	1.05	1.25	1.12	1.10	1.10	1.10	1.25
Pollination Fee (Ave. Per Colony)	28.50	20.00	27.50	15.00	20.00	21.00	27.00	18.00	25.00

REGION #1

A good crop is predicted for this general area. If plenty of supers are available the bees can average from 75-125 lbs. This is much better than last year by at least 50%. Sales are down so a good crop may not be a blessing at this time because of the cost of harvesting honey that may not sell. Insecticide problems have not been as bad as other years. Our new regulations and the fear of more to come seems to have done the intended job of "making them be carefull." Honey containers may be in short supply this year because of the good crop.

REGION #2

Good honey flow first two weeks of July. Enough to produce comb honey, not much since. Purple Loostrife flowering seems to be earlier each year. Had some white clover in early July. Hives seem to be in good shape.

Honey flow is spotty. Butler County is good, 4 miles way in Crowford County bees need feed to build up for fall flow. Honey sales seem to be good considering the conditions of export honey.

Some of our upstate New York markets continue to have stiff competition from Canadain honey that is being sold for prices varying between 89 cents and $1.19. These low prices have resulted in good shelf space for the Canadian firm to the detriment of our own producers.

It is still too early to determine what crop will be in the northwest. Some beekeepers reported a good crop at our annual picinic last week but other said they had little.

REGION #3

Scale hives has 100 pounds more honey than one year ago. Some yards better than others. Very little rain since April 1st, less than 1/3 average. Basswood did produce. We hope the hives will keep producing and not eat 35 lbs. as they did last year during late July and August.

Honeyflow in Illinois spotty. Southern areas had good flow of water white low moisture clover honey. Heavy rains stopped flow early. Good basswood flow in northern Illinois. Flow on strip mine area has been good with extracting underway.

According to southern Indiana reporters honey flow is fair to poor. Central Indiana fair to good depending on location. West central and northern Indiana extremely dry and is affecting the honey flow adversely. Our bees in the western counties may have to be wintered with the feed buckets on them. Northwest Indiana has little if any honey in the supers. Some market activity but mostly inquiries.

REGION #4

Honey flow has basically stopped in areas of low rainfall and is spotty in areas that have been receiving rain. Honey that has been made is light in color and of good quality. Very little swarming was reported for the spring.

The last killing frost east of the Missouri on April 27th was three weeks early. Subsequently honey flows

Continued on next page

Continued from previous page

on sweet clover and alfalfa were a week ahead of schedule on June 10th where bloom was adequate. Package bees did not come up well as June also averaged 4° below normal temps. Heat finally arrived on July 1, and since that time above average temps., and virtually no rain have made for severe top and sub-soil moisture shortage throughout the Dakotas and eastern Montana (except for isolated pockets.) This is the third year in a row for western SD, and some beekepers have been forcd to lease bees out of the area or sell beehives below market prices.

First crop of alfalfa was cut early due to early growth and farmers hoped for a second good cutting. Most alfalfa is now dormant in the face of 100°F heat, and hot south winds are really punishing the area.

Prospects for sunflower are uncertain. I'm not sure how much stress the heat has put on the plant. Under these conditions, plants will "flash" into bloom, and pass the flowering stage rapidly in an effort to set seed. Heads will be smaller, oil content lighter, and test weights will correspondingly suffer.

Personally, we brought up some pretty good bees, and better locations might go two cans, but I don't at this point think we will get 100 lbs., which will put us well below normal for average in Dakota.

I apologize for a lack of data on market conditions. Not many people out here; and such a significant percentage of the populations now received rent honey either directly or through a neighbor, that sales here are negligable.

Basswood flow in this area produced yields from 100-150 lbs. per colony. However, considering that many colonies were being fed and started with very little reserve honey, this doesn't amount to much more than winter stores for whose who do winter. Since then there have been varying amount of honey flowing from second crops of alfalfa. The southern 1/3 of Minnesota is suffering from the worst drought in 75 years and some beekeepers are thinking there may be honey made from 3rd crops of alfalfa. Reports from the Twin Cities area and north are that there is a good crop being produced. Honey sales remain depressed.

No market at present for beeswax. Comb honey is available at grocery stores, and has not come on the market in area producers markets.

REGION #5

Hive condition is a "mixed bag". Some with ample stores and others close to starvation. Feeding will be required this week! Still quite some time until goldenrod and aster bloom. Without a good nectar flow from this we will have to resort to heavy feeding for winter.

REGION #6

The honey flow has been very disappointing. Many colonies did not produce any surplus. Unless we have a fall honey flow heavy feeding will be necessary for winter stores. All plants that we depend on for an early sprign build-up were frozen and colonies did not reach full strength in time for early clover and tulip poplar, which we must have for our surplus. Honey sales are good and prices unchanged from last month.

Best production so far has been in central and western areas. Flow was just beginning in the fall flow areas and in a few yards was mixed with honeydew. The flow was still on at most places, honey was light colored but thin bodied. Rainfall ranged from adequate to short. An average crop could still be possible. Market unchanged!

REGION #7

Very dry weather for July. Texas high humidity and 100°F temperatures. Heavy honey flow and very light color.

Good honey crop in east central Oklahoma. Some strong colonies produced 150 lbs. of surplus honey, light in color and good flavor. Honey sales fairly good, but no many people buying a big supply. Bees in good shape and looks like we are about to get into a heavy honeydew flow from pecan and oak trees. Honey selling from $3.75 a quart to $5.50. Temperatures in low to upper 90's, mid to upper 70's at night. Having a few local showers, but getting dry. Looks like we may have fall flowers for more honey and pollen this fall.

REGION #8

Drought in Montana continues with dim prospects for honey crop in eastern one-half of state. Westerly of divide may have a crop as rain has helped nectar plants. Yellow and white sweet clover are blooming now but the lack of moisutre and intense heat chokes off the flow. Irrigation water is nearly depleted and it is being rationed. Dry land crops are being plowed under in some areas and it is anticipated the harvest will be reduced. Flathead sweet cherries were in good supply and the bees did a good pollination job. Bees near creek bottoms and in irrigated areas should do above average but the majority will not.

Area wide frost in the later part of June stoped the early flow. Some areas were hit by hail shortly after and the bees have been idle since. Recent rains which were sorely needed have been general throughout the state. Prospects for a normal crop are bleak at this time. Consumer demand has been steady with prices staying about the same. Some imported honey is being offered.

REGION #9

Kiwi and feojoa pollination finished. Wild buckwheat, blue curl, and Toyon berry honey non-existent this year due to lack of rains in April coupled by excessive hot spell in late June. South coast sage crop was a disaster in L.A. area

It has been an extremely hot and dry summer. One of the driest years on record in the state of Washington. Weather has caused honey plants to dry up permanently. Bees are making some honey off of thistle, but because of short bloom period, the crop will be very short. Need rain badly! Local honey sales are on the slow side thus far.

QUESTIONS & ANSWERS

Q. I have ten jars of honey six years old that has turned sour. What can I do with it? **John E. Klima, Cleveland, OH**

A. Feed it back to the bees or, if it is not too far gone, use it for baking. —Richard Taylor

Q. Last year I moved a hive out to the country to get some basswood honey. I extracted only five combs, but in November I discovered that this colony had American Foul Brood. I don't know where those five combs are now, or in the super. And what about the extractor? Will that be diseased? **L.G., Wisconsin.**

A. There is nothing wrong with the extractor if you rinsed it out with warm water. As for your colonies, it takes more than the mere presence of AFB spores in a hive for the colony to become diseased. For a colony to succumb to AFB, the nurse bees must feed contaminated honey to their brood. Even then, a colony will not necessarily become diseased if any sick brod is promptly cleaned out by the housekeeper bees, as sometimes happens. Thus the chances are pretty good that the colonies that got those five combs will be all right. Needless to say, you should be on the lookout for possible AFB.
—Richard Taylor

Q. Two or three years and the queen is still producing great. Should I replace her or not? **Douglas Atkins, Waterbury, CT**

A. I'd leave well enough alone. The bees will eventually replace her, either by supercedure or, more likely, by swarming.
— Richard Taylor

Q. Am I so far north that I should make special preparations for wintering by bees? I make sure they have a full story of honey plus some in the brood story. I have tried wrapping with tar paper and putting hay around them, but the hay is messy in the spring and holds moisture. This year I fastened styrofoam to the outside of the hives. **Dennis Fay, Levering, MI**

A. I never wrap hives, and our winters are sometimes severe. The hay doesn't sound like a good idea, because moisture puts more stress on a colony than cold. Shelter from wind by trees, etc. is more important than tar paper wrapping. Certainly wrapping with tar paper would do no harm up where you are, and the bees might consume a little less of their winter stores, but its purpose would be more protection from wind rather than confining the heat of the hive.
—Richard Taylor

Q. I have two hives, one strong and one weak, which I've been feeding for several weeks. For some time I've noticed yellow jackets going in and out of the weaker hive, and recently they have been entering the strong one as well. Aren't Italian bees supposed to be able to repell yellow jackets? **Don H. Clady, Cashiers, NC**

A. The yellow jackets have discovered the sugar syrup, which they have learned to steal without rousing the bees' defenses. There is always a population explosion of yellow jackets in September, and in their competition for food they will try almost anything. They are no serious menace to a reasonably strong colony, at least not in this part of the world.
—Richard Taylor

A. Which is better to feed in the fall — pollen, sugar water, or honey? **Marshall Slotterbach, Sellersville, PA**

A. There is no point in feeding pollen in the fall, because that is a protein needed by emerging brood. Spring is the time for pollen. Nor is there much point in feeding honey; better to have left enough on the hives in the first place. And if you have done that — left the bees plenty of honey — there is no point in feeding sugar water, either. I never feed my bees, except as a rare emergency matter in the spring.
—Richard Taylor

Q. How can you keep yellow jackets out of the honey house? **Duane Waid, Interlaken, NY**

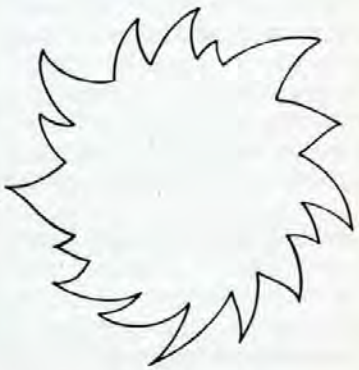
A. Yellow jackets become a problem in some regions in late August and September, when they become extremely numerous. This is when most beekeepers do their extracting. Once they find their way into the honey house, it is impracticable to try keeping them out, because it is virtually impossible to discover how they are getting in. They can be gotten rid of, however, by hanging a pan or pail with about an eighth inch of kerosene under a light and leaving it on all night, then dump all the dead insects outside the next morning and touch a match to them.
—Richard Taylor

Q. I still have a problem with wax moths in my stored supers even though I put moth balls and flakes between them. How come? **Bernard Lockstampfor, Newport News, VA**

A. I think you're using the wrong stuff. Moth flakes are usually naphthalene. Use paradichlorobenzene, sometimes called simply "paradi."
—Richard Taylor

Q. Can Thompson's Water Seal be used on the outsides of hives to prevent dampness inside during the frequent showers we have here? **Brett B. Gilbert, Seattle, WA**

A. That would not be a good idea. Nothing would be accomplished by trying to make the wood waterproof, and the product you refer to is not, I am told, a wood preservative. Dampness inside the hive arises mostly from the moisture given off by the bees themselves, at least in the winter.
— Richard Taylor



NEWS and EVENTS

Southern States Beekeeper's Federation Annual Meeting November 10-13, 1985

Mark your calanders now and plan to be in Savannah at the Sheraton Savannah Resort and Country Club November 10-13 for what promises to be the biggest and best Southern States meeting ever.

Each day of the conference will feature a different theme — day one will be "A Look At Our Commercial Industry"; day two will be "Beekeeping: Past, Present and Future".

Eva Crane from England will be one of our featured speakers. Dr. Crane has just retired after 35 years as Director of the International Bee Research Association.

Those of you who were in Williamsburg will remember that the Rev. L.L. Langstroth paid us a visit from out of the pat — well, this year we have really fine-tuned the old time machine, and we have, believe it or not, arranged to have Aristotle visit with us. You won't want to miss this — it isn't every day that you have the opportunity to meet somebody who lived in the fourth century B.C. There will be other well-known and interesting speakers also, but we will tell you more about them later.

Among the other activities at this year's meeting will be an auction of antique beekeeping memorabilia including old books, equipment, etc. For the non-beekeeper spouses and beekeepers too, there will be several interesting tours of historic Savannah. Savannah boasts the largest national historic landmark district in the United States and is a truly unique and interesting city. There will also be a golf tournament sponsored by the Dadants as well as bridge tournament, a pool tournament, and a tennis tournament.

The Sheraton Savannah Resort and Country Club is a magnificent hotel located on Wilmington Island overlooking the intracoastal waterway. It is just minutes away from the Atlantic Ocean and downtown Savannah. On the grounds are an 18-hole golf course, tennis courts and an olympic-sized heated swimming pool.

A magnificent setting and a super meeting are in store for you at this year's Southern States Beekeeper's Federation meeting, November 10-13. Mark your calanders now! We will see that you get more complete information later this summer. Look forward to seeing you in Savannah.

"Ya'll come, ya heah!"

Minnesota Honey Queen

Christine Madson '85 Minnesota Honey Queen.

The 1985 Minnesota Honey Queen is Christine Madson of Minneapolis. This fall Chris will be a junior at the University of Minnesota, majoring in business with an emphasis on financial investments.

Chris enjoys meeting people and looks forward to working with beekeepers promoting honey.

Chester County PA Bee Meeting Set

DOYLESTOWN — The Chester County (Pennsylvania) Beekeepers Association will be holding a meeting on Sunday, September 15, 1985 at the home of Frank and Edna Steidler, Mineral Springs Road, Coatesville, Pennsylvania.

The featured speaker for the afternoon will be Dr. Bob Berthold, Delaware Valley College's (Doylestown, PA) beekeeping expert. Professor Berthold has been involved with honey bees for many years as a beekeeper, teacher, short course instructor, and part-time apiary inspector for the Pennsylvania Department of Agriculture. Dr. Berthold will be presenting a program dealing with many of the uses of beeswax including some of its folk-lore, uses in making polishes, Ukranian Easter eggs, batik and candles.

The meeting is open to anyone interested in attending and there is no charge. It is suggested that you bring lawn chairs. To get to the meeting take Mineral Springs Road west from Rock Run Road and the latter of which connects Coatesville with Wagontown. The Steidler's residence is the 5th houe on the right on Mineral Springs Road from its intersection with Rock Run Road. The Steidler's phone number is 384-8036.

American Beekeeping Federation Convention News

by Jerry Cline and Robert Hancock

Arizona beekeepers invite you to the 1985 American Beekeeping Federation convention next January. There is so much to do here in Central Arizona we don't know how we're going to have time to show it all to you, let alone allow you the time you will want to spend in the convention meetings.

The convention will be held in the beautiful Hyatt Regency Hotel in downtown central Phoenix which is adjacent to shopping areas and the new Phoenix Convention Center as well as having three in-house restaurants. One of the restaurants sits on top of the hotel like a beautiful glass crown and makes one complete revolution about every hour giving you not only great food but a splendid panorama of our beautiful Phoenix landscape. This four star hotel also has a jacuzzi, a pool, and two tennis courts and a health club is across the street.

Golf in January is unsurpassed and only minutes away. You are only 20 minutes away from downtown Scottsdale with its famous resorts and shopping districts. And for your convenience, hourly shuttle buses make the 3-mile trip from Sky Harbor International Airport hourly for only $4.

Next month we will be filling in more information on what to look forward to in sunny Arizona and details on our plans for you while you're here. But just for a sneak preview, consider one night with a giant fiesta of authentic southwestern Mexican food and entertainment, or a one day trip to world famous Oak Creek Canyon and Sedona, Arizona, or a trip to the USDA Bee Lab in Tucson with side trips to Old Tucson (the famous western movie set) and the Sonoran Desert Museum, a natural wildlife animal habitat and study of the Sonoran Desert and more . . . much more. And while you're here in Phoenix, how about a big 16-ounce juicy Cowboy Size steak at Pinnacle Peak? . . . "Gosh, folks come from 'round the world to eat there . . . . better not wear a tie tho' pardner . . . 'cause the waiter'll cut it off with a big ol' knife and nail it to the ceilin'."

For more information on the convention, including entry forms and rules for the American Honey Show, contact American Beekeeping Federation, 13637 N.W. 39th Ave., Gainesville, FL 32606, ph. 904-332-0012.

Illinois

The Illinois State Beekeepers fall convention will be held November 9th, at the Heritage House Smorgasbord, 3851 South 6th Street, Springfield, Illinois. The main speaker will be the renowned bee researcher, Dr. William T. Wilson, from the U.S.D.A. Agriculture Research Service, Laramie, Wyoming. He will give two presentations, one on the Current Status of the Mites and another on Beekeeping in Mexico and South America. You must have meal reservations, which are $5.75 for adults and $2.90 for children under 12. Reservations ust be receved by Mr. Udell Meyer, R.R. #3, Box 308, Edwardsville, Illinois 62025, no later than October 21st. Make check payable to Illinois State Beekeepers Association.

CALIFORNIA

Ventura County, California — A seven-week beginning beekeeping course starting Sept. 19, 1985 will be offered through Ventura College, Ventura, California. The course includes a Saturday field trip as well as the evening lectures. For futher information, contact Ventura College Community Services (805) 656-5163 or 4667 Telegraph Rd., Ventura, CA 93003. Class fee is $40.00.

Can anyone identify the hive in the enclosed photo? It seems similar to those used by the woman beekeeper in Archive photo GO984 (*Gleanings* December, 1984, p. 651.) It is $12^{9}/_{16}$" square and $13^{3}/_{16}$" deep (inside dimensions). Spacing for the 9 frames is provided by staples in the top rabbets and pivotting wooden blocks at the bottom along one side.

Toge S.K. Johansson
R.D. 1 Box 256 A
East Berne, NY 12059

KANSAS

Kansas Honey Producers To Meet In Concordia Oct. 18-19

The Thunderbird Best Western Motel on North Highway 81 in Concordia, Kansas will be in the site of the Fall Meeting of the Kansas Honey Producers Association on Friday and Saturday, October 18-19, 1985. Featured speakers will be Richard Adee of the Adee Honey Farm, Bruce, South Dakota, and John Klenk, Overland Park, Kansas. A field trip featuring basic beekeeping skills such as making splits, assembly of equipment, supering for the honey flow, and basic beekeeping techniques will be held Saturday afternoon and will be followed by a trip to the bee yard — weather permitting. Bring your questions for the basic information classes and your bee veils for the field trip.

The Kansas Honey Queen Contest will be held Friday and Loring Miller, Leon, Iowa, will be the featured speaker at the Coronation Banquet Friday evening.

For the ladies there will be the opportunity to try out that new or favorite recipe using honey in the Ladies Auxiliary Bake-Off. Prizes will be awarded to the top three places.

The traditional auction of beekeeping equipment and bee or honey-related articles will be held to benefit the Kansas Honey Queen Fund.

The Kansas Honey Producers extend an invitation to all beekeepers and other interested persons to attend.

Those desiring further information are invited to contact Melissa Noel, 7327 Sloan, Kansas City, Kansas 66109.

Beekeeper's Tour To: Nicaragua

The Beekeepers Tour of Nicaragua, December 8 to 15, will give U.S. and Canadian beekeepers a first-hand look at the Africanized Honey Beë (AHB) on the frontier of its advance through Central America. Its presence has been confirmed since 1984, but it has not yet completely displaced European stock,

We will visit apiaries at private farms, cooperative farms and state farms, and we will be accompanied by a representative of Nicaragua's Beekeeping Development Program, who will brief us on methods used to face the AHB. Visits are also planned with local beekeepers, extension per-

Continued on next page

sonnel, the agricultural school at Esteli, and with representatives of the National Farmers and Ranchers Union, the Sandinista Front and opposition groups. Excurisons for touring, shopping and for visiting the Masaya Volcana are also on the program. Thousands of Americans and Canadians visit Nicaragua each year and are warmly welcomed.

The trip will be led by West Virginia State Apiarist Bard Montgomery, who has previously visited the country. Mr. Montgomery is also available to present a slide show and report on beekeeping development in Nicaragua.

Travel and hotel arrangements will be made by the Tropical Tours agency. Round trip from Mexico City with two meals per day, hotel (double-occupancy) and transportation will be $750. Interpreters will be provided.

For complete tour information, or to arrange for Bard Montgomery to address your group, contact: TROPICAL TOURS, 141 E. 44th St., Suite 409, New York, NY 10017. Phone: (212) 599-1441.

SOUTH DAKOTA 1985 Annual Convention

The South Dakota Beekeepers Association will hold its 1985 Annual Convention at the Hilton Inn in Rapid City, South Dakota on Sept. 13 & 14.

Registration will begin at 9 a.m. on Friday. The regular session will begin at 1:00 p.m. with a full slate of speakers including Richard Numamaker from the Laramie Research Lab speaking on current mite research and beekeeping in Mexico and Central America.

Friday night will be the annual banquet and coronation of the new South Dakota Honey Queen.

Saturday morning the meeting will continue with speakers and the annual business meeting.

The advisory board will meet both Friday morning at 10:00 and again Saturday afternoon at 1:30.

Exhibit tables will be set up during the convention. Anyone wishing to set up an exhibit please contact: Gary Schmidt, P.O. Box 249, Martin, SD 57551.

For hotel reservations phone the Hilton Inn at 1-605-348-8300 and be sure to mention that you are with the beekeepers convention in order to take advantage of reduced rates.

So...take a few days off your work schedule and enjoy a short, relaxing vacation in the Black Hills of South Dakota while you take in the 1985 South Dakota Beekeepers Convention. See you there!

Honey Bee Research Lab Moves To Texas

On October 1, 1985, the Honey Bee Research Unit, presently located in Laramie, Wyoming, will moved to Weslaco, Texas. Please make note of their new address:

USDA ARS Honey Bee Research
Dr. W.T. Wilson, RL
509 W. 4th Street
Weslaco, Texas 78596

THE ILLINOIS STATE BEEKEEPERS FALL CONVENTION — Nov. 9, 1985

9:00-9:30 a.m.	**Registration**
9:30 - 10:00 a.m.	**Welcome Address, Alfred E. Trost, President; Secretary's Report, Mrs. Rita Taylor, Secretary; Treasurer's Report, Mr. Udell Meyer, Treasurer.**
10:00-10:15 a.m.	**Apiary Inspection Report for the State of Illinois, Mr. Eugene E. Killion, Supervisor Apiary Protection, Paris, Ill.**
10:15-10:30 a.m.	**Election of Officers**
10:30-10:45 a.m.	**Break**
10:45-11:15 a.m.	**Trachea Mite Detection, Dr. Lloyd Lindenfelser, Vice President , Illinois State Beekeepers, Tremont, Ill.**
11:15-12:00 a.m.	**The Current Status of the Mites, Dr. Richard A. Nunamaker, U.S.D.A. Agriculture Research Service, Laramie, Wyoming.**
12:00-1:30 p.m.	**Noon Meal**
1:30-2:00 p.m.	**Beekeeping Can Lead To Other Things, Mrs. Karen Pruiett, Vice President, Central Eastern Beekeepers Association, Penfield, Ill.**
2:00-2:30 p.m.	**Wintering Bees, Mr. Phil May, Commercial Beekeeper, Harvard, Ill.**
2:30-2:45 p.m.	**Break**
2:45-3:00 p.m.	**Installation of Officers**
3:00-3:10 p.m.	**Historian Report, Mr. Virgil Johnson, Philo, Ill.**
3:10-3:20 p.m.	**Ladies Auxilary Report, Mrs. Sharon Heinzl, President.**
3:20-4:00 p.m.	**Local Chapter Reports**
4:00 p.m.	**Adjournment**

Smorgasbord Dinner Reservations are $5.75 for adults and $2.90 for children under 12. Reservations must be received by Mr. Udell Meyer, R.R. #3, Box 308, Edwardsville, Illinois 62025, no later than October 21, 1985. Make check payable to, Illinois State Beekepers Association.

Cite of Discovery of the Africanized Bee

by JIM CANNON 1616 Letts Ave. Corcoran, CA 93212

My experience with bees in the Lost Hills area of California.

Since the discovery of the "African" Killer bees in the Lost Hills area of California — and the resultant media coverge — I thought others would be interested in my beekeeping experiences in this same Lost Hills vicinity in the 1960s. At that time I was an elementary teacher in the Belridge Elementary School District. This was a school located in the oil fields about seven miles south of Lost Hills. This area is one of the low hills and at the foot of the coast range mountains. It is at the western edge of the San Joaquain Valley of California. In the 60's teachers salaries were low — too low for me to have an adequate standard of living for my wife and three children — thus at the consternation of a few, I made some extra money taking care of bees as a side-line. I had two friends, Jess Potter and Boyd Hair, oil field employees who were also side-line beekeepers. Because we loved each others company we often worked together. We were migratory — moving our bees to the flowers. Often as far as 60 miles away.

This is a typical California area. Nothing but desert sage brush growing on the open range land. In the spring there are desert flowers that bloom for about six weeks as the results of the winter and spring rains. Then the grass dies and everything becomes desert like. Water is scarse, no flowers for miles, and hot! Lost Hills was about five miles from any irrigation. The chambers of commerce calls it "Golden", I call it "desert".

I experienced in running bees in this desolate area that the bees were more protective of their honey supplies than in other areas. This seemed to be logical since there were no flowers blooming from May to February. I'm not saying that the bees were aware of this. Could it be that in order to survive they knew that they had to protect their food supply?

One morning I finished working my bees and drove to my friends apiary to assist them. When I came near them and stopped the car, I was unable to open the car door. Literally hundreds of bees were attacking the glass attempting to get at me. I had to put on my veil, coat and gloves before I dared to open the car door. I asked my friends if their bees were in a bad mood. They laughed it off and said that the bees got up in a bad mood.

I still run bees, around 800 hives in fact. I am not suggesting that the authorities mis-diagnosed the bees in Lost Hills as Killer Bees. I am saying that there are many factors affecting the behaviour of bees. In a desert area do bees fight more fiercely for their survival?

We keep bees all around us — in our yard, even one hive in our house. None ever bothers us as long as we do not bother them. Do bees know that their survival is at stake?□

Honeybee Collected Pollen

by Prof. Joe. M. Parkhill, Honeyologist Honey, Inc. Bldg. Rt. 2, Box 190 Berryville, AK 72626

Introduction

Beekeepers have long recognized honeybee colony pollen storage as a necessary fulfillment for healthy brood development. Its usage as the protein component of bee larvae has a direct relationship to increase in honeybee population so necessary for working of the major nectar flows.

The beekeeper relying on a honey surplus as his major source of income is dependent on the natural buildup of honeybee population strength and will therefore seek early trickle flows of both pollen and nectar to require this need. Modern day beekeeping in a rapidly expanding agricultural environment is forcing wider migration of apiaries, resulting in rising fuel and management costs.

A beekeeper relying on his main produce, honey, suffers when the world is over supplied. His monetary returns fall to uneconomic levels and business management must be redirected to cover means of survival.

Perhaps a development not yet fully appreciated is the marketing bargaining power provided by the increasing demand for associated honeybee products and utilization of honeybee pollination activities. Additional income from other hive products provides the answer to making beekeeping an attractive and desirable business venture. A situation is developing whereby one foresees the possibility that a beekeeper/honey farmer may soon be able to program his activities and management to activate production in the area which offers him the greatest reward. One of the most inviting opportunities is the current demand for honeybee collected pollen.

Pollen has long been known as the protein factor in the honeybee preparation of brood food. Although many attempts have been made to produce substitute preparations beekeepers are finding that few, if any of these preparations give the same brood stimulation as natural pollen. Trapping of pollen in quantity now enables feedback to honeybee colonies in time of natural dearth and such stimulus can be programmed to provide the necessary colony strength buildup in readiness for an expected flow rather than relying on the same flow for both build-up and gain of honey surplus.

A greater demand for honeybee collected pollen now comes from the consumer market where people the world over seek to acquire a more natural and beneficial food balance. Although the main source of inquiry is from

within the health-food area, the composition of natural pollen is such that it has found its place as an accepted addition to the general cosmopolitan diet.

Pollen grains have a wide range of chemical composition. The crude protein content may vary between 10 and 41 percent depending on floral source. In the amino acid range there is a suggestion of twenty identified types although analysis on individual pollens may show a variation in their presence. This is why you need a mixture of many different pollens from as many different foods as possible.

Publications on work done on pollen indicate a valuable protein content, the presence of vitamins and in particular all the vitamins in the B group. Dr. Remy Chauvin and Dr. Lenormand, two French research workers suggest the presence of an antibiotic in pollen. The trace mineral content also suggests the presence of elements important to metabolism. Information of the nutritional and therapeutic value of pollen is becoming more extensive and is a study on its own.

Quality of honeybee collected pollen is gauged on color, flavor, moisture content, size of pellets and cleanliness. These considerations reflect human consumption values. The only advantage in seeking pelleted pollen is in confirmation of its honeybee collected origin. Powdered pollens provide the opportunity for adulteration by the addition of bulk substitutes.

For honeybee feedback, powdered pollen is undoubtedly the more desirable consistency. It is accepted readily by the bees if it is sprinkled over the top bars of the brood nest area or fed as a stiff cake when mixed with a little honey or sugar syrup. There is however, a possible need for qualitative recommendation where a brood build-up is sought. This need reflects the known reaction of bees to different pollens.

Straight floral type pollens provide a consistent nutritional value and straight line flavor. Mixed pollen pellet collections are very often found objectionable by the inclusion of pellets of bitter flavor. The natural trend is for the yellow colored pollens to be more acceptable to the human taste.

Pollen Trapping

Developments in the trapping of pollen loads collected by honeybees has advanced to the statge where a number of trap designers make claim to harvests of pollen in excess of one pound per day from specific known

heavy pollen flows, such as high desert region. There is no doubt that the beekeeping industry the world over has the expertise to produce honeybee pelleted pollen in quantity.

Pollen trap design has in most instances evolved around simplicity in manufacture and the urgency for immediate need to acquire pollen surplus to meet marketing demands. No individual type trap appears to meet the requirements for general honeybee apiary management. Loading and transport of hives is possibly one of the most important factors in selection of trapping equipment.

Initial trap design incorporated the use of wire screen and in some instances a double layer of screen. In most instances these screens were placed on the horizontal and pollen pellets removed, as the pollen foraging bees passed through the screen on the vertical plane. The pellets fell to a collection tray below. Similarly, 5 mm punched metal plates placed on the horizontal had the same effect and possibly increased the effectiveness of offloading of the pellets.

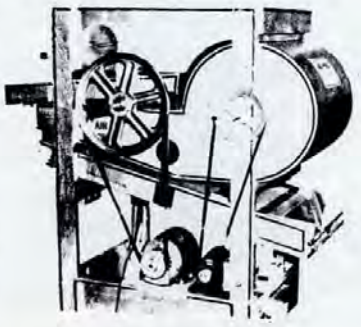
Work carried out within the western Australian Department of Agriculture indicates that it is possible to protect incoming pollen collections from excessive hive waste contaminations. Repeat pollen harvest programming has show significant waste and product separation.

Drying

It is the general belief that trapped pollen loads should be removed from the collection tray as soon as possible after trapping. It is understood that deterioration of pollen is rapid under conditions of excess moisture and undesirable temperatures. During dry conditions and with the collection being protected from direct sunlight and aired within the collection tray it is believed that harvesting can be extended to seven day intervals.

Method management in harvesting is most important. A harvest collection container should be designed to permit aeration of the bulk collection. A four-sided bottomless box covered with fiberglass flywire at the bottom will allow for penetration of air through the vertical plane. A ventilated lid should be provided to protect the collected pollen from excessive sunlight.

Large containers are not desirable as heavy moisture content of trapped pollen could activate rapid fermentation. A harvest collection container, designed to hold approximately 5 to 7 kg. fresh pollen weight, is most serviceable. Protection of honeybee collected pollen loads from moisture, sunlight, heat and dust is required during managment and transport. At no time should it be left stored in bulk lots before drying. For holding storage before dryng and processing, it is desirable that the fresh pollen loads be spread to an approximately 2 cm. thick layer for continued and ensured aeration.



Seed cleaner modified for pollen

The keeping qualities of pollen are related to its cleanliness, handling, drying and packaging. With regard to its demand as a food for human consumption particular thought should be given to producing a sanitary clean product free from damage during processing.

Initially, sun drying appeared to be the accepted approach, but pollen dried in trays protected from direct rays of sun by fiberglass screen mesh appears to show little deviation from its original form.

A study of drying methods has shown that in no way can the job be done quickly without heavy investment in complicated and expensive equipment. Vacuum drying does offer the opportunity of rapid treatment with the promise of clean processing and elimination of insect life. Equipment supply is understood to be extremely expensive and is not fully perfected to suit the operation, and I could not recommend any type of micro oven flow system.

A. Caillas, Agricultural Engineer of the French Agricultural Academy made suggestion of two types of drying procedures, the infra-red drier and the electric resistor drier, which I do not recommend.

Out of the necessity to treat parcel lots of honeybee collected pollen, it became obvious that the resistance drier system would be the simplest approach. consists of construction had to be low to permit full beekeeper participation. A simple and effective drying process had to be employed to attract beekeeper interest. From this reasoning evolved the "Rotary Unit Drying Cabinet."

Rotary Unit Drying Cabinet

The unit costs of fiberglass mesh screened barrel turning in a horizontal plant with a spindle protruding through hard timber reinforced side walls of a plywood cabinet 188 cm high, 123 cm wide and 94 cm deep. One full width door hinges to the top of the cabinet and covers the top section down to 47 cm. Two doors seal the lower front of the cabinet and close to meet in a vertical line center of the cabinet front. A service door runs the full length of the barrel and is used for feeding in and removal of pollen. Externally, a 65 cm pulley wheel is activated by belt from a 5 cm drive pulley supplied with an electric motor and gearbox coupling. The drive mechanism provides a turning rate of five revolutions per hour. Pollen contained within the barrel is activated sufficiently to permit constant aeration of the pollen bulk.

Heating is by turbo 3 kw room heater, the standard wall insertion unit which carries heat adjustment switching from four to two elements; 3 kw to approximately 1 kw. A fan enclosed in the front of the elements draws the heated air and feed it into the cabinet. Thermostat controls are adjusted to maintain a constant temperature of 45°C (113°F).

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Separate controls are provided for both drive and motor heater. It is then possible to stop rotation of the barrel and yet hold the through flow of heated air.

Two adjustable 6 cm draught escapes are fixed to the ceiling of the cabinet and may be opened or closed from the outside of the cabinet.

A great variation is found in the drying times required for pollens from different sources. Some pollens dry to between 5 and 6% moisture content in four to six hours. Others may take days. Drying is very dependent on air moisture content at the inflow heater. Under humid conditions the through flow of warm moist air is less effective. Work is being carried out on the addition of condenser tubes to remove the

Bottom style pollen trap

moisture from the air before it reaches the heater. Such an arrangment should provide a more constant drying atmosphere.

Bakers ovens have been effectively adapted to do the required drying but one must be constantly on the alert to insure that interior oven temperatures do not go above the recommended 45°C. Temperatures above 45°C could cause rapid break down of pollen constituents.

Pollen Collection Boxes

Experimentation over the 1977-78 season has led to the development of continuous thorough processing from the time of trapping. Partially air dried pollen is removed from the traps at harvest time, placed in suitably designed collection boxes which become part and parcel of both transport and processing equipment.

The container boxes used at harvest time measure 322 mm x 250 mm internal, are rectangular in shape and have a depth of 111 mm. The open bottom is covered with fiberglass flywire 16 mesh to 2.54 cm. A 4 x 2 cm timber surround is fixed to the outside bottom edge to provide a 2 cm overlap. This permits each box to be stacked, one on top of another, and remain fixed within the stack by virtue of the overlap hold on the box beneath. Similarly a cover lid with the same type overlap surround is provided for protective covering to any stack height that suits the operator. Stacks can be locked or roped for transport.

These container/processing boxes hold approximately 5 to 7 kg untreated fresh pollen. A unit stack of 10 boxes used in the drying treatment would hold in the vicinity of 50 kg. This represents the harvest from 100 hives on a medium flow of pollen; 50 hives on a spring pollen flow or 15 hives under heavy flow conditions of 454 gm. per day. All calculations are assessed over a seven day trapping sequence.

Processing Pollen

Having made harvest from the traps in the field collected pollen is transported to the processing plant. The collection boxes are transferred to the processing house where a selected number are places above an air feeder box of the same design as the collection box but fitted with a closed sealed bottom. A suitable hole in the side of the air feeder box permits fitting of the forced air feeder hose. No physical handling of pollen is required at this stage.

Forced air flow is supplied by use of an industrial vacuum cleaner with the inflow hose connection switched to the outflow air exit connection. Air is therefore directed into the air feeder box and makes its upward movement through the stack to escape at the top of the box or cover outlet. A felt seal at the join of the boxes is seen as a means of sealing the stack from unnecessary air leaks.

Natural heating of the electric motor contained in the vacuum cleaner is found to provide an air temperature of above 40°C. If it is found that air at the bottom inlet is lower than 45°C then it may be necessary to include a heater box in the inlet circuit. This can be provided by housing an electric frying pan in a metal box and by regulating the thermostat control warm air control warm air can be drawn off the box and directed to the vacuum cleaner by an inlet hose. Air being forced out of the feeder hose can then be controlled to provide the necessary continuous 45°C required within the feeder box.

This simple apparatus is useful for treatment of pollen collectons of up to 50 kg but there is no limit to the number of units that can be installed. Of course for large quantity processing one would have to look at elaborations of the process and probably in-

Front mount pollen trap

corporate larger industrian fans for feeding of air to a bank arrangment of box stack units.

Drying of small quantities of pollen by this method is very effective. Under 20 kg bulk lots appear to dry to a satisfactory hard dry condition in 7 to 8 hours. A few pollen types of natural high moisture content can be troublesome but gearing harvests can be directed to those pollens of known attraction, market demand and satisfactory response to treatment processing.

In conditions of high humidity it is advisable to air condition the process-

ing room. If air within the processing premises can be held at a slightly dryer to condition to that of the normal atmosphere then removal of moisture from the pollen being treated is much more effective. Drying time can be cut to far less than treatment under normal atmospheric conditions.

There appears to be no easy way for quick drying of pollen. The ultimate need is for a dry warm air. Heating of natural air supplies at times of high humidity appear to be a waste of time and effort.

The desirable degree of dryness of the pollen mass is difficult to determine. Electric sensitive probe testers are said to read accurately down to about 8% moisture content. Below this figure one has to rely on laboratory moisture test methods or a basic understanding of the finished product's physical state. A desirable dry state for marketing is between 2.5 and 7% moisture content. A rough physical test is to endeavor to break a dried pollen load between the finger nails. If it does not disintegrate and difficulty is experienced in getting it to part then the moisture content could be well within the range of 2.5 to 5%. Pollen loads that break between pressure of the finger nails but do not powder could possibly be the moisture range of above 5%. It is normal to seek laboratory confirmation on moisture content. Repeat laboratory determinations will eventually acquaint the processor with the desired physical state but it would be wise to seek laboratory checks from time to time.

Cleaning

Removal of foreign matter from the pollen collections is more effectively achieved after drying of the pollen. A dry state in the vicinity of 6 to 7% moisture is desirable for effective cleaning.

Seperation of the wastes during trapping does help to restrict contamination of the collection. The simple "Clipper Laboratory Seed Grader" does an excellent job when pollen is fed in small quantities. Overloading of the machine breaks down its efficiency and in bulk quantity treatment may be considered inadequate. Cleansing of pollen would possibly be more effective if it was treated through a gravity separator machine of the kind designed for bulk throughput and air blanket movement.

Small pollen harvests can be treated by hand. A series of seives can be used to remove the bulk of undesirable particles. Commencing with fine fiberglass mash the removal of the powdered pollen permits more direct handling of the larger bee bodies particles, if any. If the major bulk is then shaken through two closely held sheets of 6 to the inch (6 to 2.54 cm 22 g) mesh, then most of the bee body will be held on top of the screen. Some hand packing of the final product may be necessary.

A simple and effective operation for the cleansing of bulk pollen is the gravity fed screening system. This involves pouring the pollen pellets on to a top slanted punched or slotted metal plate capable of witholding undesirable large lumps. The general bulk flows through a similarly slanted plate of finer slotted holes. The process continues over three slanted plates with a collection box at the lower end of each plate. A bottom collection box beneath the lowest plate is provided for collection of the dust. This primitive approach allows for retreatment from all collection terminals, and therefore, limits the possibility of waste.

The most recent development in cleaning of pollen is the "Through Air Tunnel Cleaning Machine". Pollen dried to approximately 6% moisture is fed from a hopper above a slowly revolving cylinder adjustable to the horizontal. The pollen bulk enters one end of the cylinder as a curtain and air directed through the cylinder from the opposite end to the feed entry provides sufficient draught to force dust and fine particles to an outlet below the entry end. Internal fins continue to raise the bulk material and repeat the curtaining effect as the bulk moves forward. Midway within the cylinder an insert opening covered with 2 mm punched plate permits off-loading of the smaller pellets which fall to a collection container. The large pellets work their way forward and fall to a final collection container below and just forward of the fan. Adjustment to revolving speed of the cylinder and angle of the cylinder from the horizontal has been added to cope with different floral type pollens.

The system works extremely well. Speed of cylinder movement and angle adjustment provides for handling of material containing bee particles or foreign matter weighing nearly the same as individual pollen pellets.

Packaging and Storage

In the packing of pollen for marketing one must consider the dangers associated with the mishandling of fumigants and the damage they may cause to both the finished product or the operator. Well dried pollen with a moisture content of below 5% will usually pack and keep without additing of fumigants. Its dehydrated consistency appears to hold a natural barrier to infestation by wax moth and like insect penetration. It is recommended that pollen be supplied in its natural form without the addition of fumigants where possible.

Pollen will take up moisture readily. For protection it should be packed in foil lined bags immediately on drying.

Ordinary plastic bags are permeable to some gases and may lose the treatment affected by the use of fumigants. A combination nylon/plastic bag is available for storage use where fumigation may be thought desirable.

Bags should be well sealed, and for transport and better keeping again sealed within a suitable drum container.

Forced feeding of carbon dioxide (CO_2) into bagged dry pollen will disperse and limit natural atmospheric packaging. Wax moth and other insects cannot exist outside of natural atmospheric conditions. CO_2 however cannot be used where there is the presence of moisture and because of the difficulty in determining content it is suggested that pollen be dry packaged without the use of CO_2 of any other fumigant.

T.S.K. and M.P. Johansson have indicated through the International Bee Research Association publication that freezing pollen for a period of 24 to 48 hours before storing at room

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temperature will destroy eggs and larvae of any insects and mites in the pollen, that might otherwise damage it. This information suggests that a suitable system on bulk through put of processed pollen would be to subject the sealed containers to freezing conditions for 24 to 48 hours after packaging. This method is now extensively used in most pollen processing houses.

Market Prospects For Pollen

Enquiries seeking supply of good quality edible pollens have been progressively on the increase. On an estimate exercise in relationship to production possibilities, it is foreseen that with the current trend continuing, pollen may well become an attractive source of income to the beekeeper.

Although the main interest in pollen appears to be with the consumer market, beekeepers are viewing its possible use in the backfeeding of honeybee colonies for the purpose of seeking improved and early bee foraging populations. Already feeding of trapped pollen back to honeybees has shown an extraordinary uplift in colony condition at times of pollen dearth. The possibility of backfeeding trapped pollen for the purpose of making stock increases and therefore prepatory management of apiaries before a honey flow offers the beekeeper an added advantage in an earlier yield of honey. The effective trapping of honeybee collected pollen must therefore open up new horizons for an industry which for so long has been dependent on an income from virtually a "one end" product. No man made pollen can compare with bee pollen.

Acknowledgements

Honeybee Collected Pollen — S.R. Chambers, Senior Instructor, Apiculture Branch, Department of Agriculture, Jarrah Rd., South Perth, Western Australia.

'Apitherapy to-day' — Apimondia International Beekeeping Technology and Economy Institute.

International Bee Research Association M91 — Feeding Honeybees Pollen and Pollen Substitutes.

British Bee Journal, May 25, 1975.

'The Role and Importance of Apiculture Byproducts' — A. Caillas, Agricultural Engineer, Laureate of the French Agricultural Academy.

Bee Talk

By RICHARD TAYLOR
Route 3
Trumansburg, N.Y. 14886

This year I learned again, as if I hadn't already known, how unpredictable bees and honey flows can be. We think the bees go their fixed and invariable ways, and the seasons impose a regularity on nature that we can depend on from year to year, but we get some surprises.

My bees are all so strong this spring that I rushed the supers onto the hives early. And a good thing I did, too, for I got quite a nice crop of comb honey from the fruit blooms. That doesn't happen very often. And it enabled me to get my honey stand open a whole month early, which helps the domestic economy. Then I relaxed and waited for the reliable basswood flow, which hardly ever fails around here. And everything seemed to be breaking just right. We got some cold wet weather, but that was okay, because the basswoods weren't ready to bloom anyway. Then, just in time for the basswood flow to start, it turned hot. Perfect! In my imagination I could just see the supers filling up, the hives gaining maybe 20 pounds a day, and me getting richer by the hour. I finally went to have a peek in a few supers, and to my dismay I found that the bees had hardly done a thing since the last time I had checked, a couple of weeks earlier. What was wrong? Maybe the basswoods weren't blooming this year? But I found some in full bloom, some within sight of my apiaries — but not many bees in them. Well, I am stoical about such things. When you depend on nature, you take what you get. Then we got several days of rain. Not a day went by without more rain. My dear mate offered to cheer me up by baking me a raspberry pie, if I wanted to go gather the berries. So I drove off a couple miles to one of my apiaries where there are lots of berry bushes and very little competition from other berry pickers. As I was gathering berries in the rain I became aware of a considerable hum of the bees. I stepped into the apiary, of about 25 colonies, and sure enough the grey sky was filled with bees coming and going, oblivious to the rather steady rain. When bees are coming and going like that, you've got a honey flow. Driving home I checked the large patches of sweet clover by the roadside, and found them full of bees. So I had things figured out. We were getting a honey flow from the sweet clover, not a very common thing around here. Sweet clover is the king of American honey plants, but it isn't cultivated much anymore, and in these parts grows only as a roadside weed, sometimes, like this year, abundantly. When the rainy days finally ended I returned to the hives, and was elated to find the supers loaded with snow white comb honey. So everything made sense after all. Until I harvested the honey — which turned out to be basswood!

I'm sure that beneath all this there is coherence and order, which perhaps the gods understand, but I have concluded, once agian, that I never shall.

I think I have learned one thing for sure, however, after all these years, and that is, that there is not much point in putting bait sections in the supers. Every year, for as long as I can remember, I've added a bait section to some of the first supers to go on the hives. These are imperfectly finished sections from the previous year which I've set out to have the bees lick dry. The theory is that the bees, finding a section pretty well drawn out, will get right down to work drawing the others out. So this year I put a thumb tack on the front of each super that had a bait section. I put these on strong colonies, and put supers without bait sections on what seemed to be equally strong hives, and then started making comparisons. I found that the bees did not occupy the supers with the bait sections any faster or more fully than those without them, nor did honey begin to appear any sooner in the bait section supers. In fact it was pretty obvious that the bait sections were not making the slightest difference. All I've been getting for my trouble all these years is some inferior sections, for the bees do not make very good comb honey from bait sections. They are too waxy, and are apt to be travel stained. And that, I must say, seems to be something worth knowing.

There was another surprise early on in the season, and this one had to do with the behavior of the bees themselves. One of my colonies threw a swarm, so I moved the colony off to the side, faced it the other way, and hived the swarm in a shallow super on the original hive stand, then added an excluder and three comb honey supers— the sort of thing I've done many times. It always works. You get a real strong colony there, with lots of field bees, great vigor, and a fast crop. But this time the bees decided they would do things a little differently. The field bees, instead of joining the swarm on the original stand, moved over to the original hive, now facing the other way! That is absolutely contrary to nature. They positively outwitted me. Then a few days later a correspondent wrote that he had shook swarmed a colony, and had the same thing happen. The parent colony which he had moved had become so strong, from the field bees transferring over to it, that he was raising comb honey on that parent hive. Now I have done shook swarms, off and on, for as long as I can remember, and I have never had that happen.

One way or another, though, we get our honey crops, and right now my honey house is stacked high with comb honey and with supers of comb honey waiting to be emptied out. I go out there from time to time, when I feel like it, and deal with a few more supers. I'll gross about $40-50 dollars for each super, depending on how I sell the honey, and although this won't make me rich, it will help a lot, and I don't know a pleasanter way to pick up some extra income.□

[Questions and comments are welcomed. Please enclose a stamped addressed envelope.]

Beekeeping — A Dog's Life

by NICK KERLIN RD #1 Portersville, PA 16051

Well, it has finally happened. Beekeeping has gone to the dogs!

That is at least bee inspection for American foulbrood in the state of Maryland and all for the better. The Maryland Department of Agriculture's newest bee inspector is an 80 pound, two year old yellow Labrador retriever by the name of Max.

The idea of using a dog for AFB inspection came from Max's handler and Maryland state bee inspector Maryann Tomasko.

"I had read about a dog being trained in Michigan for similar use and thought why not here?"

After exploring the feasability of such a program, she contacted the Baltimore County K-9 Training Center. Once the idea was explained, the Center agreed to take on the training program.

Sgt. Morris Pearce became Max's trainer, utilizing similar techniques of the Center for training dogs to use their highly effective sense of smell in detecting drugs and explosives.

Initial training dealt with Max being able to alert to AFB sample that was placed in an arrangment of several coffee cans. Max soon learned to alert the detected AFB sample by sitting and waiting for his reward — a tennis ball.

Advanced training followed with more cans being added and finally to searching hives without bees, with quantity and arrangement of hives and disease being changed.

Final stages of training involved searching live hives known to contain AFB. Much of this training occured at the Beltsville Bee Lab. During one such session Max's reliability shone forth. While returning from an apiary training site Max alerted to a hive in a separate area. The technician accompanying Ms. Tomasko and Sgt. Pearce felt Max had goofed, as he explained the hives had contained AFB, but were now clean. After opening and inspecting the hive a single cell was found to contain AFB! Max's nose did know!

The true test is how Max performs in the field under varying conditions.

"I can inspect about 30 hives in 2-3 hours" says Ms. Tomasko.

"Max can check the same number in 15 minutes. In addition checking can be done year round, even in the rain and winter since the hives need not be opened."

Max alerts to hive containing AFB for bee inspector Maryann Tomasko. (photo courtesy of Maryland Dept. of Agriculture)

"Right now Max is about 95% accurate" relates Sgt. Pearce, "with field work and supplemental training I expect it to be around 98% by his first year of inspection."

Any problems?

"Max doesn't like getting stung on the nose" relates Ms. Tomasko (What beekeeper does?) and will usually refuse to work after such an occurence. Staying to the back of the hives and working in the winter should greatly minimize that problem."

To date Max's training has involved about 360 hours at a cost of $3500 with a $25 a month now for care and feeding. More than cost effective for earlier detection of a major beekeeping disease. Max is now the first dog to be trained and utilized by a state agency for apiary inspection.

How do beekeepers feel about Max? Perhaps best summed up by Mrs. Tomasko. "They all want to know when he's coming back!"

Norway's Bee Keeping Society

The Postal Authorities of Norway (a Scandinavian nation in Northern Europe) issued a stamp to commemorate the first centennial of the nation's apiculture (bee keeping) society, established in 1884.

The stamp's face value is 2.50 Krones (Crowns) which in terms of American currency means about 34 cents.

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Oklahoma's "Beekeeper of the Year"

Raymond Lane and his wife Erma, and the "Beekeeper of the Year" award committee. They are, left to right, Mrs. Dorothy Brister, Mr. Ted Legako, Raymond and Erma Lane, and Mr. M.L. Lashbrook. Photo by Randal Wise.

On October 6, 1984, the Oklahoma Beekeepers Association held it's annual Fall Meeting. Since it meets only twice a year, there were a number of things to be done at this meeting. One of the most interesting was the choice of "Beekeeper of the Year" to receive the Albert Lincoln Award. This year the award went to Mr. Raymond Lane.

Raymond was born in Wagoner, Oklahoma in 1919. In 1969, while living in Pryor, Oklahoma, he married Miss Erma Morris. The two of them later moved to Adair, Oklahoma.

About 15 years ago Raymond was forced to retire from county road work and heavy equipment because of back surgery. He needed something to do and a beekeeper friend, Mr. Bob Burkemeyer, introduced Raymond to beekeeping. He furnished the bees and equipment and gave Raymond books and back issues of magazines to read.

Raymond and Erma attended the Northeast Oklahoma Beekeepers Assoc. for about two years until Green Country Assoc. was formed. They became charter members of the new association and Raymond was elected president the second year when it seemed the struggling new association would not survive. He began attending meetings of the Northeast Assoc. and joined the State Beekeepers Assoc. in an effort to learn all he could to help his association and his community. During his term as president, Green Country Association hosted the State Spring meeting and had the largest attendance of any state meeting up to that time.

Raymond is interested in his community work. He has been invited to make speeches and give demonstrations in Adair and Osage Schools. He was invited to speak to a group of beekeepers at Muskogee, Okla., and tried to interest them in forming an association. It was some time before the Muskogee Association came into being, but Raymond Lane had sown the seed.

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1873

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PUBLISHED QUARTERLY. No. 1.

MEDINA, O., JAN. 1, 1873

Vol. I.

INTRODUCTORY.

YELLOW Novices.—We most confess to a feeling of not being quite as much at home here, just yet, as in the old *American Bee Journal*, but we trust we shall *all*, in time, feel all the liberty here that we have there enjoyed. Remember at all times that Improved Bee Culture is our end and aim, and we trust no one will hesitate to give any facts from experience, because they may tend to overthrow any particular person or "hobby."

If any of our especial plans don't work, or if any thing we advertise has had its value over-estimated, here in these pages is the place of all others to set the error right. Please don't be hasty or prematurely positive, and when one of our number acknowledges a fault and makes proper reparation, the matter should be overlooked and friendly feelings renewed on both sides, at once and forever.

The advances now being made in Bee Culture, it seems to us, must necessarily bring about *individual* losses often; for instance, one of us may have made up a quantity of hives for sale, and new developments may point out plainly that they are not fully adapted to the present needs of Bee Culture, and when you are satisfied of this, please do not attempt to sell them without telling your customer the *whole truth*, and making the price correspond. The same may be said of Extractors. If necessary to throw them away as old lumber or old metals, do not, we implore you, hesitate an instant.

Our most successful business men of the present day, have discovered it to be a fact that it is more profitable to tell their customers the bad points of their wares as well as the good. There are ample opportunities in this world to acquire a competence honestly.

One of the most lamentable wrongs in Bee Culture is the custom of taking money for a "right to make and use" a hive, knowing that the buyer could "make and use" a hive so nearly like it as to answer every purpose, without using a single one of the PATENTED FEATURES. It will be our especial aim to fully inform the public of all such transactions coming under our observation.

Please give facts all you can without regard to their bearing on individuals, if they are of such a nature as to benefit the masses. Without further moralizing we will try and let our little JOURNAL show for itself what it is; but, dear readers, we hope you have read this carefully for we may refer to it hereafter.

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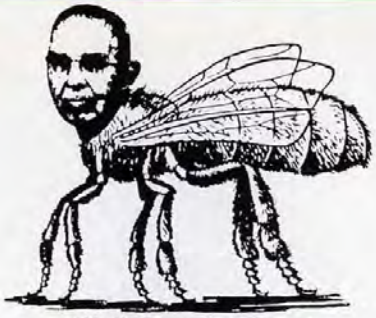

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