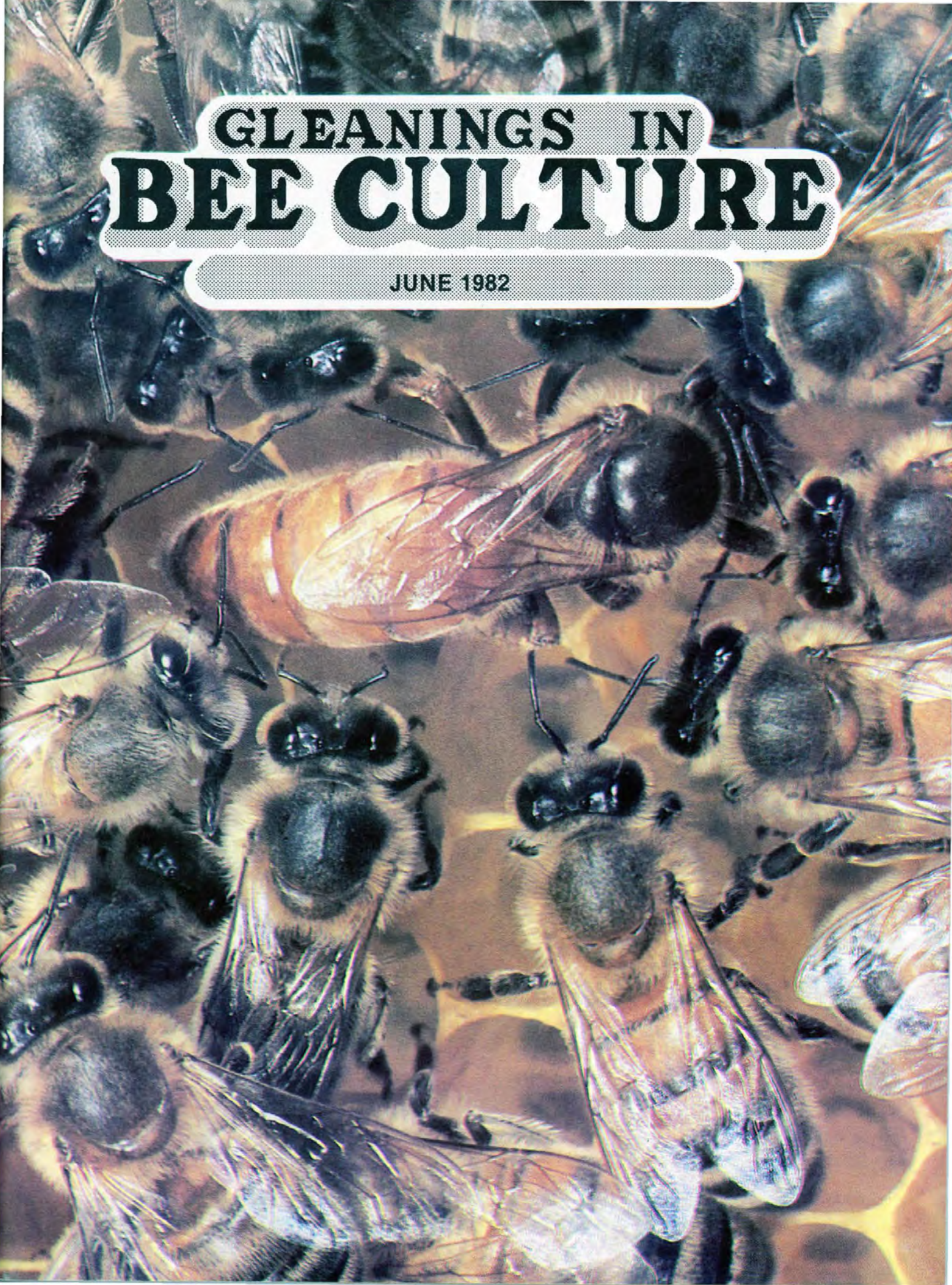

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COVER STORY

The queen is the "heart" of colony activity during the spring buildup period which readies a colony for the summer honey flow.

June 1982 (ISSN 0017-114X) Vol. 110, No. 6
Created to Help Beekeepers Succeed
109 Years Continuous Publication by the Same Organization

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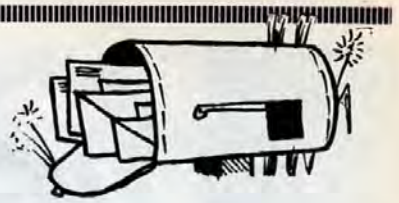
Gleanings Mail Box



More On Bears

Dear Editor:

I want to comment on "Hunter's View" in the March issue, page 130. Mr. Norris made a little sense, I guess, but he speaks of Dr. Morse as a villain. I live in McKean County Pennsylvania and have had bees since 1927. I have had bear problems also, with a lot of damage. Our state does pay some damages, but very little. We didn't have electric fences when I started beekeeping, just a 30-40 Krag. The sportsman became strong in Pennsylvania and demanded more restriction on this "bear control." Now the State wants all of the hunters to pay another five dollars to hunt bears for one day.

So long as I pay taxes on my land and help feed the bears for the hunters, let the hunters get rid of the bears, I say. Mr. Norris and the other hunters should be willing to pay an additional $5.00 to compensate for the damage to the bees. He said we should not mind putting up an electric fence which is a $200 to $300 job. The bears tore down my electric fence three times last year.

I hope to see the bill passed to have the hunters pay their way if we beekeepers have to put up with the bear damage and keep the bears.

Joseph E. Suain
Box 215
Main Street
Hazelhurst, PA 16733

Bees In Space

Dear Editor:

The test of drones in space should be of interest to all beekeepers.

Astronaut C. Gordon Fullerton reported, "The bees got smart fast," when released in space, they just floated around, instead of flapping their wings.

The drone bees adjusted to their environment which lacked motivation to cause them to seek a virgin queen.

Worker bees would have reacted similarly because there was no motivation, i.e. evidence of nectar, pollen or water to induce flight.

The test proposed by Todd Nelson, a Minnesota high school senior, illustrates the difference between instinct and intelligence.

Merritt I. Taylor
8220 Brookfield Road
Richmond, Virginia 23227

Third World Beekeeping

Dear Editor:

I wish to correspond with third world beekeepers, especially those involved in rural development. I am setting up a small project in Northeast KwaZulu using top bar Afrihives, and there is much interest in these hives. We catch swarms that abound in February when *Eucalyptus grandis* is in flower. We simply put bait or decoy hives in the trees and swarms enter these after a short time. If you could recommend beekeeping systems for developing countries I should be most pleased.

Peter Muless
KwaZulu Department of
Nature Conservancy
P.O. Box 93
Ngwanase 3973
Republic of South Africa
Africa

Problems With Neighbors

Dear Editor:

My hives (20) are located on a 120 acre farm, also located on this farm are a few mobile homes which are a good 200 plus yards from my fenced apiary, and are away from the bees normal flight path. One of the tenants has complained that my bees are a constant nuisance. He says that he can't sit out on his patio and drink his home brew, and his wife can't work in the garden. I should like to point out here that none of the other tenants have complained, and the farmer requested the bees for fruit tree, and raspberry pollination. However, I do not like to cause an upset, and I am appealing to your readers, to see if anyone can offer some helpful tips on how to discourage bees from bothering a particular residential unit.

D. Terry Kinch
1710 Woods Road
Campbell River, B.C.
Canada V9W 4T6

Crop Insurance For Honey Producers

The Alberta Beekeepers' Association is pleased to inform commercial honey producers in the province that crop insurance has been introduced this year, and that it will be administered by Alberta Agriculture's Hail and Crop Insurance Corporation.

This program is the first one of its kind in Canada. Alberta Agriculture will be funding administration costs and half of the premium costs.

Honey crop insurance is now available to beekeepers who have at least 200 hives, and applications should be filed with the nearest Hail and Crop Insurance office by April 30, 1982.

Crop coverage will be determined by the individual's average annual honey yield based on the past five years, or on the average yield for that area for that time period.

Premiums will be based on the percentage of coverage desired (70% or 80%), and on an area rate, which is lowest in the South and rises through the Central, North and Peace River Regions.

The deductible is set at 65 lbs. per hive, with a payout this year of 63¢ per lb. Claims must be filed after honey extraction and before October 15.

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Use pesticides effectively. Read and follow label directions carefully.

By KEVIN KELLY
Westfield, NJ 07090

A Chinese Way

THERE WAS NO warning at all. Suddenly the mountains were right before us. We had to crane our necks back to glimpse at their summits. For an hour we had been cruising along the flatness of southern Taiwan, when we finally ran out of rice fields and rolled up the back heels of giant mountains. Somewhere near the road, we knew, beekeepers lived among the folds of these foothills. Ravines in the hillsides allowed cooler hill air to drain down, pool in the crevices, nourishing semi-tropical shrubs in the heat, and refreshing their delicate petals.

Dragon eyes were in bloom and everyone was busy. Dragon eyes (*Euphoria longana*) are a Chinese fruit related to the litchi nut, looking like a leather ball the size of a large marble, but with a grape-like pulp inside. The flowers are a creamy cluster of miniature blossoms and they supply, to the Chinese way of thinking, the best honey there is. We had been eating it for months and at least agreed that you pay the most for it. The honey is extremely thin, dark, and strong. After tasting it we were not surprised to discover that it is primarily sold in Chinese medicine shops, in wildly decorated bottles.

We came to visit the apiaries of Mr. Ho Fa Hsing, an animated, open-faced man about 40, with a shock of thick long hair. He led us to chairs inside his shop. The walls were carpeted with colorful banners and flags of all sorts, heralding something in Chinese writing. "Oh those," he explained with a wave of his arm, "Those are for my circus!" I could sense that this would be a memorable afternoon. "My three brothers and I manage a circus and when it's the right time of year we take care of our 1,800 hives."

Eighteen hundred hives? Maybe my friends had not translated the difficult Taiwanese dialect correctly. Mr. Ho was supposed to be a small time Chinese beekeeper. Perhaps he used them in the circus; anything seemed possible that afternoon. Curiosity was getting the best of me and I was about to ask a stupid question, when Mr. Ho jumped up and pushed us back into our tiny, crowded car, then somehow hopped in himself, and directed us down the road a mile or so until we reached a spacious, leaf littered grove, and had us stop. He sprang out, darting through the trees, beckoning us to follow, all in a great hurry that we should see what was there. It certainly was a scene worth shaking a leg for. Eighteen hundred white beehives dotted the woods like a camp of nomad tents, in groups of about a hundred, scattered here and there on the hillsides. The whole panorama jostled with bees. They rushed everywhere. A three ring circus, and we were in the center, under a big top of dragon eye trees, at the height of their intense bloom. And in this part of the world that means it's the peak harvest season too. We were in for a show.

From the far end of the grove, two young men with homemade veils appeared, one of them lugging a smoking smoker. They headed for a tent, a real one, hung of cheese-cloth material. Inside, a locally made extractor waited. Plain arm power is enough to spin out the thin dragon eye honey efficiently; after a couple of minutes of grinding, the honey slips out of the eight twirling frames, draining into pails. The tent was to keep the bees from robbing the new honey, but there seemed to be almost as many bees clinging to the inside of the fabric as to the outside of the "extracting room."

To remove the frames from the hives the workers proceed this way: Two men approach a hive and aim the faintest puff of smoke at it, or none at

Mr. Ho Fa Hsing displays his homemade apparatus for producing royal jelly. He would like to produce more because it commands such a good price. Photo by Kevin Kelly.

One of many apiaries in southern Taiwan that appear for a month and then disappear until the following year. Photo by Kevin Kelly.

With Bees

Mr. Ho Fa Hsing, of Kaoshing, Taiwan extracts his honey within the net of his portable cloth extracting house. This equipment is perfect for the hilly regions where he keeps bees. Photo by Kevin Kelly.

all, swing up the lid and plunge their hands into the liquid mass of bees inside. Expertly, they remove the frames in pairs, brushing down the bees back into the hive, each working on one side. They lower the brushed frames into another hive placed adjacent, simultaneously exchanging them for two from the new hive. These newly inserted frames are empty of honey, though not brood. In fact, the frames have just come from the extractor. The Taiwanese harvest dragon eye honey before it is capped over, and for some reason it keeps well even during steamy summers. They have learned to take honey from frames without disturbing the brood, so that the frames can be immediately recycled, assembly line fashion, into the "next" hive. The brushed frames of hive "A" are extracted, brood and all, and exchanged into the bees of hive "B", whose original frames are lifted out, brushing bees onto "A" frames, then extracted, and in turn exchanged into bees "C," and so on, the rotation continuing down the line. This task really requires the skill and rhythm of a dancer to perform without mishap. Especially amid the terrible bee-commotion this arouses. The process is done daily while the dragon eye nectar flows. In effect, the beekeepers are skimming their honey as it comes in, rather than let the bees store it up. Otherwise it would soon fill up their single story hives. Every single hive there, and all the other ones I saw in Taiwan were single story brood chambers — not a super in sight. Mr. Ho was incredulous that we in America can pile three or four stories on top. He said that doesn't work for his eighteen hundred hives in Taiwan, much to my own disbelief. How much honey can you get from such hives?

The Taiwanese equipment is minimal, simple, and often homemade. Rubber wash gloves and a mosquito net veil are the main gear. Propolis doesn't seem to be a problem and the hives did not require a hive tool. Photo by Kevin Kelly.

The honey yield in Taiwan is something like the size of fish that fishermen tell of. They are usually fatter, heavier, bigger than the truth, and this news must be taken with a pinch of salt and a nod. I tried to weasel a candid appraisal of his own hives from Mr. Ho, hoping he'd trust me not to make him "lose face." Although exaggerating his yields was a cultural game Mr. Ho couldn't withdraw from, he was not in the least ashamed of the correct figure he confided to me: fifteen pounds per hive per season. And why should he be ashamed? He only had the bees three weeks a year!

Beekeeping in Taiwan is a migratory business. Flowers supplying nectar are ephemeral in the heat of this sub-tropical island, which paradoxically lacks enough wildflowers in one place to support a year round harvest of honey. So the bees are moved to follow the flowers. They are transported to six locations in a year, with a stay as short as three weeks during dragon eye bloom, affording our friend plenty of time for his circus the rest of the year. According to Mr. Ho, the bees actually swap "owners" as they are passed from place to place, the bees migrating more than the beekeepers. The "owners" are usually families, as are most businesses in China. Relatives care for the bees in the other spots, each selling the honey they collect. Equipment such as extractors are shared co-operatively, and wooden hive parts are made by village carpenters who specialize in this sideline. The honey is stored in stainless steel tanks. Retail, it is marketed throughout the island in unused government wine bottles for about $2.50 per pound. But much of Taiwan's honey crop is sold wholesale to Japan. The little beeswax they glean is melted and reformed into foundation locally.

Even more lucrative than honey, royal jelly is in great demand by Chinese medicine dealers, and produced by many Taiwanese beekeepers. Mr. Ho Fa Hsing builds

(Continued on page 310)

A Chinese Way With Bees

(Continued from page 309)

his own apparatus to mold and hold the wax queen cups, where worker bees will deposit the jelly. It's a lot of work, but when the price is good it will fetch $160.00 per pound from the Japanese who eagerly buy all he can produce.

As odd as Mr. Ho's beekeeping ways were, there was an earnestness and enthusiasm for bees that I would recognize anywhere. He never became exhausted talking about bees and seemed to have a pocketful of stories about them. As we sat drinking cool fruit juices in his shop he told us every one of them, and when he couldn't remember anymore, he told us about his circus, which I can assure you, is almost as amazing as bees are. □

Mr. Ho's workers, who normally wear veils, display a healthy hive under a Dragon Eye tree grove. Photo by Kevin Kelly.

How I Got My Beehive

By STEPHEN PAUST
Lindenhurst, NY

MY INTEREST IN bees began when I received an Ant Farm from my parents for Christmas. A little booklet was sent with the Ant Farm. I began to read it and learned that ants would stuff their stomachs with honey that they stole from beehives, but it didn't say how the bees would protect themselves against the raids of the ants that marched into the entrances and stole the bee's golden treasure. So, I set out to find the answer to this question.

I went to my local library and borrowed several bee books. As I was reading I became very interested in bees. I read how they made their honeycomb, how they air condition the hive by fanning their wings, and of course, how they protect themselves against the ants by blowing them out of the hive with their wings or by picking them up with their jaws and dropping them into the grass or into water to drown. I began to read more and more books on bees. When my family and I went to a festival there was a lady there who was a beekeeper. She had an observation hive and sold honey and beeswax candles. She also gave a demonstration on how to open a beehive and told everyone about the pollination role of the honeybee and that we should not kill the honeybees. This also got me very interested in honeybees.

I asked my parents if I could have a beehive but they always said, "No, you are not allowed to keep bees in this area." I went to our Town Hall about four blocks away and asked several people in the building where they gave out permits. They told me to go to the Town Clerk's office. I went to the Town Clerk's office and asked if I could have a permit to keep bees in my suburban area. She thought I was kidding, at first, then realized I wasn't and said, "I don't think you need a permit to keep bees in Lindenhurst."

Great, now I thought my parents would say yes.

But my parents still said, "No, they are going to sting everything in the neighborhood."

I had to tell them that bees will sting only as a last resort. I also told them about the Italian and Caucasian

Steven Paust

races of bees; that they are very gentle. I also told them about the pollination that honeybees do; and that without bees some of our foods would vanish from the earth. They didn't know what to say. I showed them books about bees and some copies of *Gleaning In Bee Culture*. I wrote for some bee supply catalogs and for answers to my beekeeping questions. I wrote to Fred Munzer, Edward A. Weiss, Dadant and Sons and the A. I. Root Company. I also wrote to B. J. Semegren who is in Georgia. He sent me a nice catalog on bee supplies.

My aunt and uncle live in Georgia and said that Mr. Semegren lives only a few miles down the road. We were going to visit my aunt and uncle in Georgia so I thought I would go to see him. A day after we arrived, my uncle, my father and I went to see Mr. Semegren about getting a beehive. I was very excited.

When we arrived, my uncle went across the street to visit one of his friends who owns a donkey farm. My father and I went to see the beeman while my uncle was visiting his friend. We all talked about bees and the cypress beehives he sells. After talking for a while my father bought me a beginner's kit. The kit consisted of a hive body with 10-frames, a reversible bottom board, a queen excluder, a shallow super with 10-frames, an inner cover, a telescoping cover, a boardman feeder, a pair of canvas bee gloves, a bee veil with a helmet, a 10-inch hive tool and a smoker. This summer I will probably buy a four frame nucleus from Fred Munzer.

In my school, one of my friends named Brian Stile is interested in bees and I am teaching him something about bees. One of the librarians in my school is a beekeeper and may have a beekeeping club this year, so Brian and I are visiting Mr. Parrish, the librarian who has six hives of bees.

When I grow up I want to be a commercial beekeeper, raise queens to sell to beekeepers and move to Maryland to work in the bee laboratory.□

Skunks which have been preying on the hives.

Skunks Damaging To Bees

This winter I have had extensive damage to my bees from skunks. Here is a picture of five out of eight trapped at a small bee yard. Four more were trapped about a mile away from my home. Out of a bee yard of sixteen colonies, six hives were completely wiped out, six left in poor condition and four are in fairly good shape.

By Martin A. Frantz.

Monthly HONEY Report

LAWRENCE GOLTZ

May 10, 1982

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

Wholesale Extracted — **Reporting Regions**

Sales of extracted, unprocessed honey to Packers, F.O.B. Producer. Containers Exchanged	1	2	3	4	5	6	7	8	9
60 lbs. (per can) White	45.00	33.60	34.80			38.40	32.40	34.50	36.00
60 lbs. (per can) Amber	45.00	30.00	33.60			32.40	27.00	35.00	34.00
55 gal. drum (per lb.) White	.60	.56	.58	.56	.58		.54	.57	
55 gal. drum (per lb.) Amber		.50	.56		.55		.45	.56	
Caselots — Wholesale									
1 lb. jar (case of 24)	26.50	24.90	25.80	24.50	31.50	24.00		24.50	24.50
2 lb. jar (case of 12)	26.00	23.30	24.20	22.50	30.00	23.00		22.75	23.75
5 lb. jar (case of 6)	30.00	27.80	26.25			27.00		26.00	26.60
Retail Honey Prices									
½ lb.	.90		.90	.80	.87	.85		.90	.95
12 oz. Squeeze Bottle	1.30	1.20	1.35	1.15	1.35	1.30		1.35	1.40
1 lb.	1.50	1.39	1.49	1.35	1.45	1.50	1.49	1.49	1.60
2 lb.	2.70	2.59	2.95	2.50	2.75	2.50	2.59	2.59	2.85
2½ lb.	3.35					3.15			
3 lb.	4.00					3.75		3.75	3.95
4 lb.	5.00	4.95		4.90		4.80	4.69	4.80	
5 lb.	6.25		5.95		6.25	5.50		5.95	5.90
1 lb. Creamed			1.55					1.59	
1 lb. Comb			2.25			1.75			
Beeswax (Light)	2.00	1.90	1.90		1.85	1.95	2.00	1.90	1.85
Beeswax (Dark)	1.90	1.80	1.85		1.80	1.85	1.95	1.85	1.75
Pollination Fee (Ave. Per Colony)	25.00		22.50						16.00

Misc. Comments

Region1

A late spring in Vermont, but bees wintered well with little winter loss. Moisture conditions are good. Clover in excellent condition. Winter losses were very heavy in lower New England, as much as 25-30% in Connecticut. Winter stores were of poor quality and many colonies lost population rapidly by spring. Many small clusters just about made it until spring after being in good condition in the fall. Many feel that encapsulated pesticides stored last summer and used all winter may be causing a problem.

Region 2

Higher prices on one pound jars at retail during last 3-4 months in New York state. Winter loss of bees in New York state was severe; much starvation. Beekeepers who normally lose 3-10%, lost 20-30%, some, more. Good conditions for poplar honey

flow in West Virginia. Ten percent loss of bees in Pennsylvania among commercial beekeepers but run 20-50% among other beekeepers. Bees building up slow due to colder than normal conditions in Pennsylvania. Feeding necessary. Honey sales fair.

Region 3

Winter losses up to 30% in Ohio. Plant conditions 1-2 weeks behind normal. Bees that wintered well are building up well during early May. Bees in variable condition in Indiana. Winter loss about 20%. Some dysentary and colonies became quite weak. Honey sales are brisk. A late spring in northern Illinois with a slow build up. Good moisture conditions. Beekeepers feeding, as severe losses have been experienced. Winter loss was 25-50% in Wisconsin. Hives remaining are doing well although weather has been cool. Moisture conditions excellent and clover looks good in Wisconsin at the beginning of May.

Region 4

Reports from Minnesota beekeepers show winter losses between 20 and 60%. Locations which had winter wind protection fared better than average. Cold winds and prolonged cold affected colonies and brood rearing was retarded by cool weather in April. Brood rearing increased during early May so hope that colony populations will be ready for honey flow. Plants later than normal in developing. Honey sales

(Continued on page 341)

Beekeeping

"The Africanized bee will probably totally

By DEWEY M. CARON
AND
JOHN C. REESE
University of Delaware

PANAMA IS AN S-shaped, largely forested, tropical country in Central America. Its southern boundary is mainly uninhabited tropical rain forest and borders Columbia of South America. Panama is a narrow country, only 40 to 150 miles wide from the Atlantic to the Pacific Ocean side. It is well known for the Panama Canal and its location and the canal make Panama a point of commerce for South and Central America. It will also be the next country that will have to contend with the Africanized bee.

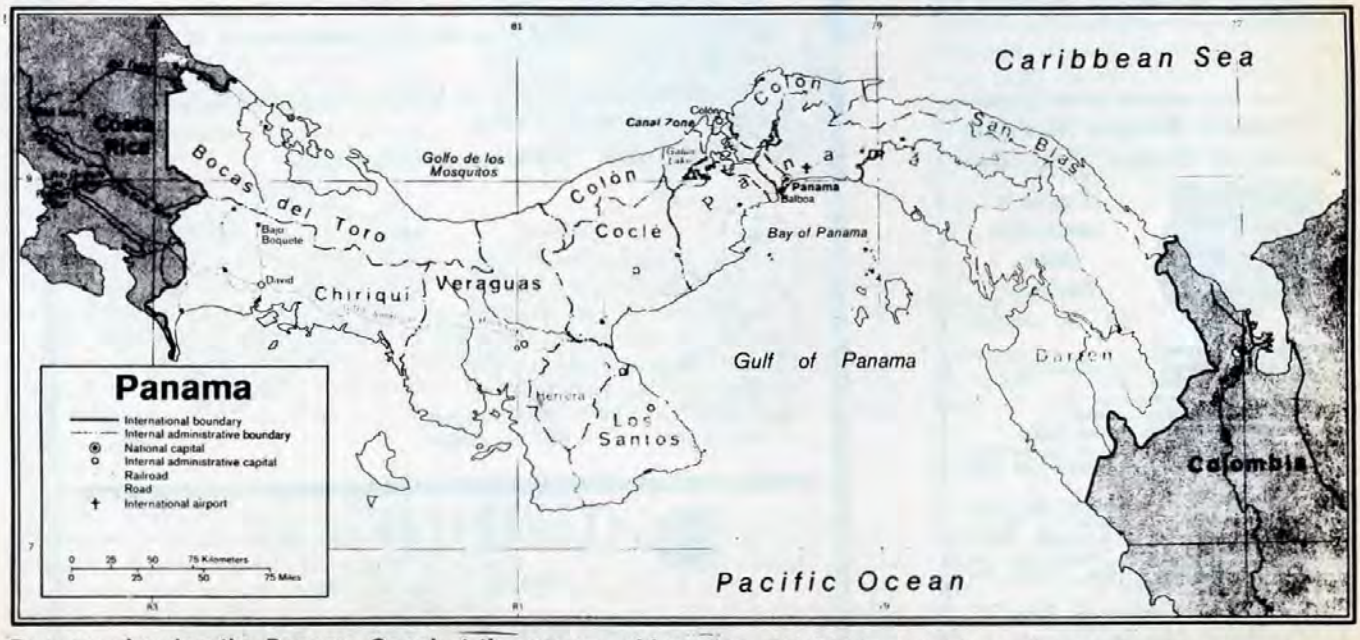
The Africanized bee was on the Panama-Columbia border in November 1980. Dr. Orley Taylor of Kansas University, an expert on the Africanized bee, predicts that the bee will reach the Panama Canal area by the end of the current dry season, about mid-April 1982. From there it will next move into western Panama which is the main agricultural area of Panama. Most of the estimated 20,000 bee colonies in Panama are located in this western part of the country. The Africanized bee will probably totally disrupt beekeeping in Panama as it now exists.

We recently visited Panama to tour its agricultural facilities and to see the research and extension work being done in Entomology. We visited the University of Panama, the facilities of the Gorgas Memorial Institute (Medical Entomology) and the Smithsonian Tropical Research Institute (basic studies of tropical ecosystems including insects) in Panama City. We also traveled to western Panama (Chiriqui Province) where we saw extensive agriculture of both tropical and sub-tropical crops. We also saw some of the beekeeping in this area of Panama.

There seems to be little preparation for the Africanized bee in Panama. The College of Agriculture is building a new facility in Chiriqui Province and agriculture, including entomology, will be taught to students in this college. Two entomology courses are now taught at the University in Panama City, but bees are not included in either of the two courses. There are no plans to increase the emphasis on bees or beekeeping in the curriculum taught to university students.

There is some hobby beekeeping in the Panama City-Canal Zone-Colon area of Panama. It is a lush tropical area with a wide variety of flora available to honeybees. There is no commercial beekeeping in this area nor is there much agriculture. The Africanized bee will probably make its greatest impact on humans in this area of Panama. Nearly 55% of the total population, an estimated two million people, live within a few miles of the Panama Canal.

Chiriqui Province, with its capital of David, is the center of agriculture as well as beekeeping in Panama. This is the westernmost province along the Pacific Ocean side of the country. The agriculture is highly varied from very tropical banana, plantain, oil palm and similar plants to high elevation, almost a temperate-type climate with crops of potatoes and vegetables. There is an extensive citrus growing area and other areas that grow a wide variety of crops such as rice, tea and sugar cane. Cattle raising is extensive as well. Most of the bee colonies are all in the subtropical to higher elevation areas. Apiaries are generally small with fewer than fifty colonies each. Some colonies are moved to the citrus area for the honey flow but most colonies remain in one location year round. The colonies are owned by some of



Panama showing the Panama Canal at the narrow mid-section and Chiriqui Province, the center of beekeeping, in western Panama.

in Panama

disrupt beekeeping in Panama as it now exists."

the larger landowners, by a few larger beekeepers and by some of the peasants of the countryside.

The impact of the Africanized bee will likely be extensive. It is not known how much planned pollination is done using bee colonies but a number of crops now grown in Panama benefit from bee visitation. Bee colonies are typically located in and among the areas where people live and other farm animals are kept. The bee has created many problems in other parts of South America it has invaded in this type of a situation. Many of the smaller beekeepers will not be able to handle the new Africanized bee with its stinging tendencies. More rural colony locations will likely remain but the number of bee colonies will probably drastically decrease as they have elsewhere in South America with the advent of the Africanized bee.

A typical apiary in Chiriqui Province near the Costa Rican border. People, animals and bees coexist but the Africanized bee will necessitate more isolated apiaries and individual stands for colonies.

A hobbyist apiary on the outskirts of David in Chiriqui Province. The fence is the "living fence" of cut branches common for Central America.

One of the serious problems Panama faces is the deforestation of the tropical forest for raising of cattle. The tropical soil is fragile with high nutrient turnover and major disruption to the forest ecosystem, such as cutting forests for cattle grazing, results in drastic changes. There is some reforestation efforts and honeybees are being included in at least one of the reforestation projects. The honeybees are collecting honey dew from plant sucking insects on the evergreen trees being planted to reforest the areas in need of a new vegetation cover. Honeybees are maintained by the peasants and as they secure a crop, they pay the government back for the investment in bees and equipment which in turn helps get more individuals started in beekeeping. Some of this honey is exported to Europe. It is doubtful that such programs will continue once the Africanized bee invades this area.

There is a potential for many more bee colonies in Panama than now exists. However, the imminent arrival of the Africanized bee makes any such venture very risky. When the Africanized bee first arrives in an area it is very difficult to handle and stinging deaths to farm animals and humans increases along with bad publicity. The flora in Panama certainly is varied and would support many more bee colonies than presently exist. Once the bee arrives and conditions stabilize, Panama will have to be reexamined to determine its potential for beekeeping. At present, with the Africanized bee due to arrive in its major agricultural and beekeeping area, the outlook is not very promising. □

Siftings

I was sorry to have missed the Federation Meeting in Atlanta this year. From reading about it, the honey market was an important part of the program. Much domestic honey is going into government loans, and more honey is being imported. Also, there seems to be a slowing up in sales of honey. Also, there is talk of an import duty on foreign honey up to 25%, or some other form of controls. Being familiar with Mexican beekeeping, one of the larger sources of imported honey for industrial use, I do not believe increase in import duties on honey from Mexico has any chance of being passed. Our balance of payments with Mexico is too much in our favor. Mexico does not have much to export to help pay for all the imports from the U.S. I can just see the headlines in Mexican newspapers, again with the warning: Any restriction of imports to the U.S. from Mexico will mean ever greater restriction by the Mexican government on imports from the U.S. That will mean more loss of U.S. production, and still more loss of jobs of American workers that produce the goods now exported to Mexico. What beekeepers in the U.S. must realize is that we have far more to lose.

If there is a surplus of honey in the U.S. it certainly is not an over-supply of honey. The U.S. consumes something less than one pound per person per year. The problem is under-consumption. That botulism business a while ago didn't do much to help honey consumption, warning against the feeding of honey to infants under one year old. Yet, every little while we read of artificial infant formulas being called off the market because of serious effects on infants fed with them, but not a word warning mothers not to use these formulas.

We beekeepers should counter such false propaganda with facts such as the release of the U.S. Dept. of Agriculture sometime ago; that sucrose, (common sugar), can cause heart disease, a fact that has been known, but not publicized for some years. If beekeepers would sponsor more research to prove that natural honey would indeed reduce the incidence of heart disease, if used in place of sucrose, how long would our surplus honey last? Sucrose, we must remember, is consumed at the rate of something like 120 pounds per year for every person in the U.S. Compare this with less than one pound of honey!! If we spent as much money and effort on research such as this instead of trying to put a duty on imported honey, we would not have to worry about imported honey. All the honey in the world could not supply the demand that would develop if we could prove honey would help prevent heart disease, the number one killer in the U.S. today.□

Obituaries

Dr. William C. Roberts

DR. WILLIAM C. ROBERTS died March 6 of a heart attack at the Baton Rouge General Hosiptal. He was 71 years of age. He was born in Alexandria, Louisiana and lived the greater part of his life in Baton Rouge. Dr. Roberts received the B.S. degree from Louisiana State University in 1935 and the M.S. degree in 1937 from the same school. He was an employee of the Department of Entomology, Louisiana State Department of Agriculture from 1937-1939. After three years with the Bee Culture Laboratory, Dr. Robert moved to Madison in 1943 where he took graduate work at the University of Wisconsin. He was instructor of apiculture there from 1943-1946 and worked part-time for the U.S.D.A. Bee Culture Division under C. L. Farrar. He obtained a Ph.D. degree from the University of Wisconsin in 1950. His thesis problem was concerned with the inheritance of body color of two strains of honeybees.

Dr. Roberts returned to the Southern States Bee Culture Laboratory in 1955. He became head of the laboratory in 1964 and retired in July 1972. He then became owner and operator of a catfish farm at Felixville, in Feliciana Parish until his death.

Dr. Roberts was married to Ruby Hurst in 1938. He is survived by his widow, four daughters, and one son.

While engaged in research, Dr. Roberts attended apicultural, entomological, and genetics meetings at home and abroad. He gave talks to beekeepers about his studies on color inheritance in honeybees and the advantages of hybrid stock. He was a member of Phi Sigma, Sigma Xi, Entomological Society of America, Genetics Society of America, American Genetics Association, and Insectes Sociaux.

Alone, and in cooperation with Dr. Otto Mackensen, Dr. Roberts developed impoved methods of artificial insemination. He was the author or joint author of many technical and popular articles devoted to apiculture.

Maurice Shutts

MAURICE SHUTTS, 84, of Merrill, New York, died March 11, 1982 at the Alice Hyde Nursing Home in Malone.

Mr. Shutts started keeping bees in the Chateaugay, New York area in 1917. Through the years, Mr. Shutts experienced all the facets of beekeeping, putting up with long winters, bears, and more recently spray poisoning, to harvest "Adirondack Wild Flower Honey" at his home overlooking the Chateaugay Lakes.

His last season on the bees was in 1976 when he was 78 years old.

You will be missed, Mr. Shutts, and the beekeepers following in your footsteps hope to have your perserverance and receive the pleasure you did from, as you put it, "fussing with the stinging critters."

There is now available in Tennessee a state owned ethylene oxide (ETO) fumigation chamber which can be used and is very effective for sterilizing bee equipment. This means that valuable equipment contaminated with AFB will no longer be burned. Also used equipment treated with ETO can be sold legally and used without fear of spreading disease. The ETO fumigator operates at 100°F and does not harm beeswax combs. Therefore extracting combs and stored brood combs can be treated as a preventative measure. Also those few colonies in each bee yard which are never very productive frequently have some presistent low-level invader. Fumigating these hives frequently results in enormous increases in productivity.

From *Tennessee Apiculture*, March, 1982.

Siftings

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"Instinct or Intelligence?" By Tam Robertson, page 155, March *Gleanings* is a subject that is bound to cause considerable arguments, pro and con. Personally, I cannot understand anyone with any experience working with bees for any length of time believing that bees do everything by "instinct," whatever that is. It would be so much easier to work with bees if they did everything by instinct. Then we could predict everything that they did. I believe Dr. C. C. Miller answered this instinct question very well when he said, "The most consistent thing about bees is their inconsistency." Amen, how true this is, anyone who can predict what bees will do, must be very intelligent. Even after sixty years, the bees are so far ahead of me, I have long ago given up any predictions.

Most people with experience keeping bees I am sure will admit that bees do learn, as some "experts" have found out when trying to collect bee venom by the electric shock method. I am sure in their thirty million years of existence, bees never had any experience to develop any "instinct" about getting the "hot foot" with an electric shock.

Some people had the brilliant idea of an electrically charged door mat in front of the hive to collect bee venom. A bee leaving the hive would get a shock, deposit some venom, go off to collect some honey, get another shock on the way in, and deposit more venom. With all the field bees in the hive making such a small contribution each time they leave the hive this would eventually make a nice collection of bee venom.

Of course, like most of these "brilliant ideas," this idea does not work. The first bee that comes out and gets the "hot foot," immediately turns back into the hive, spreads the word and as long as the electric shock is on, not a bee will leave the hive.

Naturally, you try to fool the bee by hooking up an off-on mechanism. When the shock is off, the bees go through fast. But the sad story is, as soon as it goes on, all bee traffic stops. How do those bees know when the shock is on and when it is off? How does the first bee tell the other bees not to go through and stop all traffic? Instinct? If bees cannot think then neither can people.

In another bee magazine, (*American Bee Journal*, March 1982), Sugden and Furgala have been evaluating six commerical honeybee stocks used in Minnesota. Since "Mraz" queens were included in this study, I perhaps can make some preliminary comments on this test.

One test was for aggressiveness, in which the Mraz queens rated higher than the other strains, in being more aggressive. They questioned the belief of some beekeepers that aggressiveness indicates greater honey gathering instinct. From years of experience there is some truth to this, not in every case of course.

Mraz queens also tested higher in swarm cell building, which came as a surprise, since we have very few swarming problems with our bees. Their advice was that queen breeders should take pains to breed more gentle bees as it makes it so much easier to work with them. Yes, by intensive, selective breeding it is possible to breed bees so gentle they will never sting under any conditions. How many old timers remember "Brown's Stingless Bees," from Cape May, New Jersey about 40 years ago? Anyone remember the demonstration he gave on the lawn in Washington at the National Meeting in 1937? He had about six hives. With no smoke he kicked off the covers, ripped out the combs, banged them around, no veil, no gloves and not a single sting to anyone, not even Mr. Brown himself. They were really and truly "stingless" bees. They were never too popular, however. They apparently were so inbred they did not have the strength to sting. They literally could not sting, nor could they collect any honey.

And who remembers "Mott's Non-Swarming Bees," about the same time, from Michigan? From personal experience with these bees, I can assure you they never would swarm, no matter how long you kept them. I had some in five frame nucs. When after a year, they were still five frame nucs, I was satisfied they did not swarm, but they never produced any honey, not even enough to live on. They had to be fed to keep them alive.

What you must realize is that queen breeding is a "trade-off." In queen breeding, if you intensify certain characteristics, it will be at the cost of others, perhaps even more important characteristics; notably, disease resistance, and hardiness to survive under adverse conditions.

While they experimented with six colonies with different commerical honeybee stocks, on two occasions I did a similar test, each one involving 5,000 colonies of bees. My experience in both these tests were quite different from those of Sugden and Furgala. I hope to do more testing along these lines, also with quite a few thousand colonies. I would like to compare the same races also, mainly the Starline strain that they used. Some years ago I also tested the Buckfast and they turned out very well, better than any of the other outside strains I tried. So far, I have had poor results with Starlines, but apparently Sugden and Furgala seems to have found a strain that is even better than mine. This I would like very much to see. Perhaps they will give me the secret of the high performance of these queens. The Cale type, Curneen and Midnight strains I have already tried; but as with their results, I have no interest in trying them again.

Tests with just a few hives of bees can give quite conflicting results, depending on so many factors.

Chinese Tallow Trees

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THE CHINESE TALLOW TREES (*Sapium sediferum*), found along the Texas and Louisiana Gulf coast remained relatively unknown until Walter Kelley found them on his bee farm in 1947. Mr. Kelley quickly discovered their potential to produce large and consistent honey crops on marginal land. Soon he had hundreds of tallow trees growing on his Louisiana bee farm and began listing the seeds in his bee supply catalog. Steadily, the beekeeping industry began to spread with the trees.

The Chinese tallow blooms at an early age and grows well on marginal land. It grows so well, in fact, that it is considered somewhat of a nusiance by all but beekeepers. Springing up in fence rows and pastures, the tallow tree will become the dominant growth when left undisturbed. Thousands of acres among Southern states that were once farm land have been claimed by the tree. Although the crop may vary, the tallow will never fail, yielding an average of about 100 lbs. of honey per colony. This author's own colonies have yielded as much as 290 pounds Chinese tallow is one of the workhorses of the industry, being the principle component of Sue Bee's newest product bottled as Aunt Sue's Raw Honey.

High moisture content is the bane of all tallow honey producers. Extracted honey is in equilibrium at a moisture content of 17.4% with a relative humidity of 58%. Because the humidity in Southern coastal states is frequently above 58%, a moisture content of 18% is an issue for celebration. The past summer's harvest was found to be averaging a moisture content of 22%. At moisture contents of 18% and greater, fermentation is almost certain. As a result, tallow honey must be quickly sold to packers who have the elaborate equipment necessary to evaporate the moisture. Further aggravating the problem is a high colloidal content which has an affinity for moisture. Colloids are the large molecules or their aggregates that exist in permanent suspension. "They do not settle out and are too small to be filtered out by ordinary filtration media."[1] They are reported to be the gummy, noncrystalline substances consisting of proteins, waxes, pentosans, and inorganic constituents. Dark honeys usually contain about 1% colloids, an amount five times greater than in light honeys.[2]

The Chinese tallow tree has undoubtedly enhanced the beekeeping industry of Southern states, particularly coastal areas, in recent years. However, it now seems that the tallow tree will yield even more important resources than honey. Crushed tallow seeds will yield a liquid that can be added directly to a diesel engine without processing or refining. "The engine will continue to run at the same power level, but the smoke will turn from black to white and smell more like honey cooking than diesel fumes."[3] The tallow tree produces more oil and wax per acre than any other vegetable oil plant grown in the United States and could produce 5% of the petroleum used in this country. The tallow tree's value as a source of fuel seems more than matched by its potential for industrial use. Oil can be rendered from the seed hull that can be used as a substitute for edible fats, like cocoa butter. The solids can be fed to cattle in compressed form. Like a big pig, you use everything.[4]

The beekeeper can only look forward to the industrial interest in the Chinese tallow. The reliability and proliferation of the trees have brought package bee production, queen rearing and honey production to one geographic area. More trees can only mean more bees.

Keeping tallow honey on a year round basis is not a simple task. High moisture contents must be dealt with immediately to prevent the honey from developing an off flavor. Tallow is probably the only honey which heating will change for the better by improving both the viscosity and flavor by removing free water, the water not intrinsic or bound in the honey. Large packers have the equipment to remove excess moisture, but producers who want to pack a part of their own product are left to their own devices about how to remove the moisture and clear up the honey for bottling.

Yeasts abound in honey with moisture contents above 18%. They are everywhere. Yeasts become an inseparable part of processing equipment and facilities. Established apiary sites even have yeast in the soil. No amount of cleaning or precaution can prevent sugar-tolerant yeast from contaminating honey. Heating honey to the temperature and for the time required to prevent premature granulation will exceed the requirements for pasteurization. For beekeepers who want to pack under 10,000 pounds, this can be accomplished in double boilers with paddle wheels. Agitation is essential because the honey must be exposed to air with a relative humidity under 60% in order to reduce the moisture content to 18% or below. This is difficult to achieve along the Gulf Coast, where climatalogical data for the past twenty years reveal annual relative humidity averages above 75%. However, the relative humidity is lowest at noon each day,

Chinese Tallow Tree

gravitating around 60%. A disregard for humidity levels could result in paddling moisture into the honey rather than out. Clarifying honey is an awkward task for beekeepers with more than a few hives. Many are too big to pail it through cheese cloth and too small for sophisticated filtering and packing equipment. However, there exists a compromise which results in very clear honey.

Honey can be extracted directly into a sump covered by cheese cloth and then pumped to double boilers through an in-line filter bag system available from many bee equipment suppliers. The filter should be at the end of the hose to prevent honey from flowing back when replacing the bag. The bag must be replaced often, a minor inconvenience for honey needing no further handling. Cleaning the bag can be made much easier by lining it with a clean nylon sock. An ample supply of both will expedite the filtering process.

Heating tallow honey soon after extracting will prevent it from granulating for five months. At the end of this time it must be heated again. Age and additional heating will darken honey. Fortunately, tallow is a medium amber honey and further darkening does not depreciate its flavor or sales appeal. Oddly enough, premium grade clover honeys are looked on with suspicion in tallow producing regions. Consumers are convinced that their light color and mild flavor are direct results of adulteration.

The mechanics of working out a processing and storage system for tallow honey is no problem once the producer understands the fundamentals of tallow honey. Only one small but important detail remains. All methods of heating honey must be accompanied by some means of cooling. Excessive heat for prolonged periods will impair the flavor of any honey. The important question is how does the double boiler accomplish both heating and cooling? Heating can be completed in the shortest time by setting the thermostat at 190°F. and monitoring the temperature until the honey reaches 145°F. for forty-five minutes. This procedure usually requires about four hours. At the end of this time drain out the hot water and refill the boiler chamber with cold water. With a little practice, the drain can be adjusted to where water is draining at the same rate it is filling the reservoir. With the lid removed and the paddle operating, the cool water should reduce the temperature to 110°F. in another four hours, requiring eight hours for the complete cycle.

For all of its problems, there is much advantage to producing tallow honey. The bees begin spring activities the first week of March and have a ninety day build up. The crops are dependable and sizable.

It has been my purpose to acquaint the reader with tallow honey and to develop a feasible method of packing for tallow producers. I invite reader comment and hope many will have useful information for future articles. □

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3. Richman, Tom and Benner, Susan, "Stanley Mason is Growing Oil on Trees," *Inc.*, August 1981, p. 31.

4. Richman, Tom and Benner, Susan, "Stanley Mason is Growing Oil on Trees," *Inc.*, August 1981, p. 31.

Bee Talk

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THE OTHER DAY I saw some four-ounce squares of cut comb honey in a popular delicatessen priced at $2.49. That got me to doing some figuring. I immediately arrived at $9.96 per pound, which I rounded off to ten dollars. Then I figured how without even trying I can get a hundred pounds of comb honey from a reasonably well managed colony. There's a thousand dollars. Maybe with some effort and a two-queen system I could get half again as much. So with twenty colonies in my back yard, and another twenty or so down the road — it does add up, doesn't it? Of course I have to admit I didn't see people lining up to buy those four-ounce sections, and I don't suppose the beekeeper got even half that for them, but for a few minutes I had fun getting terribly rich in my fantasies.

And just to remind ourselves of how times change, I've got on my desk a letter from my friend Walter Kelley saying how back in the 'thirties he was mailing out queens, postpaid, for a quarter. A dollar and a half would buy you a three-pound package with queen. The only thing that stays the same, from one millennium to another, is the bees themselves — praise God!

And, of course, the seasons, where the thing that stays the same is change itself. I had a letter from a friend in the south telling me of the swarms he'd been chasing, and as I read it the wind was blowing snowdrifts around my door. Now, a couple of weeks later, the grass has turned green overnight, the willows are out and the maples are budding. In no time, before these remarks are even read, summer will have arrived with a rush.

Which brings me to an interesting point about biological development that seems to me to have a special application to beekeeping. It is not sufficiently appreciated, even by a great many lovers of nature, and it throws light on many things.

The point is that biological development seems almost invariably to follow a sigmoidal pattern, illustrated in the accompanying curve. That is, it begins very slowly, gradually picks up speed, which is followed by a brief and explosive increase, and finally levels off. This is the way a colony of bacteria develops, for example. It is also the way an organism — such as a human being, for example — develops. A mammal begins as a single cell, or zygote, which gradually, at first, splits up into more cells, and that stage is then followed by exceedingly rapid development, during which time all the organs are quickly developed, and then a slow growth and differentiation. Species populations usually follow the same pattern. Thus we are, in the East, witnessing the explosive phase of the gypsy moth population, which will be followed by the normal leveling off and decline. Every beekeeper has seen

(Continued on page 333)

COMING!

Here are just some of the exciting articles you may look forward to in the coming issues

July:

Are We Raising a Lot of Welfare Bees?, Ancel Goolsbey. "I think you will be pleasantly surprised at the amount of surplus honey this hive management system will reward you with."

Bee Yard Menace, by Patricia Yunkes. "Something had been killing and probably eating bees all summer."

August

Pollen Trapping Basics, by Paul Limbach. "Pollen trapping may increase the possible places economically feasible to run bees."

My Husband — The Beekeeper by Pam Kaliff. "At first the banker was not thrilled with the idea of lending money to a man whose only ambition in life was to raise bees who made honey."

September

Comb and Cut Comb Honey Production by Dr. Roger Morse. . . . .No Product is as fine as a section of Comb Honey . . . . .

Smokers and Their Use by P. F. Thurber. "If you want to use a smoker light it right and make sure the smoke is cool."

— AND MUCH MORE —

Bees and Gardens

LAST MONTH, in this column, we wrote about the "where" of bees in respect to placing them in or near a garden and how they can be fit into a home landscaping plan.

This month we will discuss the "when" of beekeeping in respect to seasonal management.

Early Spring

The early spring season is a critical time for a colony of bees. A stressful winter period has just passed. A lowered food supply faces the bees just when the nutritional needs of increased brood rearing places a serious drain on the remaining food supplies. In addition, the internal environment of the hive may be as bad, or worse, than during cold weather. The rapidly fluctuating temperatures, high humidity conditions and irregular flights to void accumulated wastes may cause some colonies to lag behind in early spring development or even perish. An early spring examination to detect and possibly correct these conditions is essential in good management.

Follow the usual steps in opening a hive for the first examination. Check the progress of brood rearing, the quantity of honey remaining and the internal hive conditions in general. The hive may be opened any day which is pleasantly warm, preferably above 55 degrees, when the bees are flying. The only precaution is to avoid exposing the larvae longer than a few minutes; drying out of the brood being as harmful as chilling.

Feeding

If the supply of honey is determined to be low, by either lifting the back of the hive or by examining the combs, it may be necessary to give the colonies additional combs of honey saved from the previous fall or to feed sugar syrup. Use any one of the several types of feeders for syrup feeding but do not neglect this important chore when it becomes necessary. Feeding may be required at any time after the middle of February on through to the first of May or even later, depending upon the food reserves, the amount of brood rearing and colony strength, and the amount of fresh nectar available.

In addition to the carbohydrate (sugar or honey) requirements of the colony in the early spring the protein (pollen) needs must be met if brood rearing is to proceed uninterrupted. If pollen reserves stored in the combs are inadequate or of unsatisfactory quality, the bees may be receptive to the feeding of pollen substitutes, especially if there are no very early sources of natural pollen in the neighborhood of your bees. To give you a clue as to the needs and availability of pollen watch the entrance on a warm day when the bees are flying in the early spring. If they are not regularly coming back to the hive with freshly gathered clumps of pollen on their rear legs you may find it advantageous to feed pollen substitutes until natural pollen becomes available. Mix a commercial brand of dry pollen substitute with a light sugar syrup to the consistency of dough and make a patty of this mixture between sheets of waxed paper. Lay the patty on the top of the brood frames. You may wish to use the prepared packs of pollen substitutes now on the market instead of mixing the ingredients.

Colony Buildup

Once your colony is through the critical early spring period, you will see an acceleration of brood rearing if conditions are favorable. During these several weeks colony condition is usually greatly improved because of warmer weather, sunshine and minor honey and pollen flows from dandelions and fruit bloom, for example. You would be wise to make at least one or more checks during this build-up period to be certain that the queen and the hive workers are doing satisfactorily; that the brood is healthy and increasing.

Swarming

A normal, growing colony of honeybees may attempt to swarm just prior to the main honey flow. The main honey flow usually begins sometime during the middle of May, during June, or as late as early July in the northern states. Most swarming takes place about the middle of May in the central states. Many beekeepers simply ignore swarming except possibly to attempt to hive their own or stray swarms in the neighborhood. Evidence of an inclination to swarm and the preparations for swarming by a colony of bees may escape detection by the beekeeper who is either reluctant to, or neglects to make an internal examination of the colony at this time of the year. About the only completely reliable indication of swarming preparations is the presence of queen cells along the bottoms of the combs of the brood nest. It may be to your advantage to practice one or several of the elementary swarm prevention measures:

1) Place empty supers on the hive one, two or three weeks prior to the main honey flow. Give two supers at the beginning if colony strength and the prospects for a strong honey flow are favorable.

2) The position of the brood (bottom) chamber may be exchanged with the top (food) chamber when brood rearing is well under way. This reversing may be repeated at ten day intervals prior to the swarming period.

3) You may wish to perform a simple manipulation of removing combs of mostly sealed brood from the brood chamber and placing it in an empty hive body above the brood nest, replacing the removed brood combs with empty ones. This elevated brood will eventually emerge as adult bees and the space will be available for honey storage.

Requeening and Increase

The spring period may be the most convenient time to determine the condition of the queen and to replace her if necessary. Her condition is best determined by examining the brood "pattern". Combs filled solidly with worker brood in all stages and eggs confirms that the queen is well. It is difficult for a colony to replace (supersede) a failing queen early in the spring, but with queens available from breeders in the warmer climates it is possible for the beekeeper to do so. A discussion of the various steps of requeening is impossible in a short article but it may be worthwhile listing several precautions and one highly recommended method.

1) Order your replacement queens as soon as you anticipate a need. Ask for delivery on a date when you feel

certain that the weather has settled down, the bees are rearing brood, and the bees are flying regularly and bringing in some nectar and pollen.

2) Your chances of having a new queen accepted is much better if you first remove three or four frames of brood with bees (nucleus) and introduce the queen to this nucleus. This division may be placed on top of the colony from which the nucleus has been taken, separated by a double screen, from the parent colony and its queen. After the new queen has been accepted and is laying, the nuleus may be reunited with the parent colony after first removing the old queen. Place a newspaper between the two units if you wish, which will be chewed away by the bees.

The same procedure is used in forming divisions for increasing the number of colonies. Simply set the division or nuc off on a bottom board instead of uniting with the parent colony.

The Honey Flow

If all has gone well during the build-up period and your colony has come through strong without swarming, your bees will be ready for the main honey flow. After the main honey flow is underway your bees should be largely self-sufficient. You will no doubt wish to keep an eye on the supers to see that honey is being stored. The activity of the bees at the entrance is a good clue as to the progress of the bees but an internal examination of the brood nest is the only positive check on the condition of the colony.

Admittedly, only a few of the basic "whens" and a few "whys" have been covered in respect to caring for bees in the garden. From time to time other important points in beekeeping will be discussed. Next month will begin some discussions relative to the relationship of bees to gardening. □

First Anniversary

By KEN LORENZEN
Davis, CA

AS THEIR WEDDING portrait might tend to suggest, Tim Lawrence and Sue Cobey had no ordinary nuptials. They exchanged vows of their own writing during a modest backyard ceremony at a home in Davis, California. More than 70 family members and friends (not counting the bees) were in attendance. Sue and Tim sealed their pledges of love by signing their own specially prepared partnership-marriage contract and then toasted each other with homemade mead. They later cut into a skep-shaped wedding cake, finally topping off their evening's celebrations by soaking in a hot tub.

Tim's interest in bees dates back to high school when he got his first hive from Sears, while Sue became interested in bees as a student at Oregon State University. The two met during the spring of 1977 when both were employed at Wenner Honey Farm in Glenn, California. They have been together ever since and have done a considerable amount of traveling in connection with their interest in bees, beginning that year following the queen and package season when they traveled to Montana with the bees for the summer's honey flow.

In the fall of 1977 they journeyed to Australia to attend the XXVI International Congress of Apiculture in Adelaide and then visited with many beekeepers while traveling through Australia and New Zealand. In the spring of 1978 they went to LaBelle, Florida to begin work for Genetic Systems, Inc., where they were involved with the production of instrumentally inseminated queens. In the fall of the same year they returned to California where Sue began work at the Universtiy of California's Bee Biology Facility at Davis, while Tim enrolled at UCD and obtained a part-time job at the Bee Biology Facility. Tim gained approval for an individual major program in apiculture (Davis does not offer this specific major), and earned a B.S. degree in June, 1981. (Sue earned her B.S. in entomology from the University of Delaware in 1976).

Sue and Tim are currently located in Baton Rouge, Louisiana where Sue is a technician at the U.S.D.A. Bee Breeding & Stock Center and Tim is a research associate at the Louisiana State University's Department of Entomology where he is working with social insects. Aside from their regular jobs they recently have set up a unique mobile instrumental insemination service. . . . They pack up their insemination equipment and travel to the beekeeper where they collect the drones and make the inseminations on the spot!

So, on the occasion of their First Anniversary we want to wish much success and happiness to Tim and Sue and hope their road together is a long one. Their mutual interest in bees should help toward that end, for as Sue and Tim put it, "The bees have always taken priority and somehow managed to keep us together." □

Tim Lawrence and Sue Cobey pose with 15,000 of their friends who swarmed in to help them buzz it up in celebration of their marriage on June 27, 1981 in Davis, California.

Solar Beekeeping

By MERRITT I. TAYLOR
Richmond, VA

THE HIGH COST OF labor, energy, and inflation mandate that production cost per pound of honey be reduced to a minimum. Wherever bees cluster to rear brood, or wintering is a problem, management plans which encourage rapid spring build-up and early splits of strong colonies will double production, with bees bred to the producer's climate.

Langstroth[1] envisioned Solar Beekeeping 128 years ago when he said, "In the spring of the year it is exceedingly desirable that the warmth of the sun penetrate the hive to encourage bees in early breeding."

Albert Einstein summed up beekeeping by saying, "I know from my own painful searching, with its many blind alleys, how hard it is to take a reliable step, be it ever so small, towards understanding of that which is truly significant."

Beekeepers have gone down many blind alleys searching to design hives which conform to bee instinct. Dr. P. D. McTaggart-Cowan[2] remarked, "I know a bit about climate — less about bees — something about man — and his use and abuse of scientific knowledge. Most text books on bees will at some point make a statement that climate has more to do with success or failure in keeping bees than any other factor and then leave the reader not much wiser." He strongly recommended that commercial beekeepers give top priority to improve their knowledge of the direct effect of climate on the colony.

Profitable beekeeping is a matter of recognizing and co-ordinating vital principles of the life cycle of the colony, adding management expertise, and providing hives adapted to bee instinct and climate.

A) Too much emphasis cannot be put on the necessity of a dry hive.
B) The cluster should have lateral freedom of movement below brood combs to nurture brood.
C) The colony cannot remain healthy without occasional evacuation flights.
D) Cluster temperature is independent of outside air.

In climatic areas where bees cluster to rear brood, the **womb** of the colony is the cluster space below brood combs. The rind of winter clusters may vary up to 7 CM, (3″), about the size and shape of a large honeydew melon. Evidence suggests that hive design permit the cluster to nurture brood when temperatures plunge well below -18 degrees C. (0° F.). A practical beekeeper, W. Z. Hutchinson[3], advocated a 3.08 CM (2″) deep cluster space below brood combs which seemed to have a

The "spring entrance" in use. ¼ inch by 5 inch. Refer to photo number 3 which shows the cut out ¼ inch by 5 inch "spring entrance" in the rear of the slatted rack.

The solar top cover could be left on the hive during the summer if a shade board is used. Shown is the slatted rack with full open entrance ready to provide full ventilation when pushed into position.

wonderful influence in bringing bees through in fine condition.

M. H. Haydak[4] observed a colony in a greenhouse from November to February. It moved from one corner to the rear, to the other corner, maintaining a connective cluster of 200 bees or more around end bars or over top bars until the temperature dropped to -25.83C (-14.5° F.), when the connective cluster disappeared. At prolonged low temperature, when the cluster was short of food, the bees became excited (demoralized) and attempted to uncap and suck honey without success. He is telling beekeepers that without cluster space below brood combs breeding is restricted.

E. T. Sturtevent[1], E. Cleveland, Ohio told Langstroth he lost 19 out of 20 stocks standing in a row from "lack of ventilation" but that a neglected stock suspended 20″ above ground without any bottom board came through strong and healthy. They did not realize the cluster formed below brood and nurtured it in spite of -34.44C (-30° F.) temperatures, the coldest for fifty years.

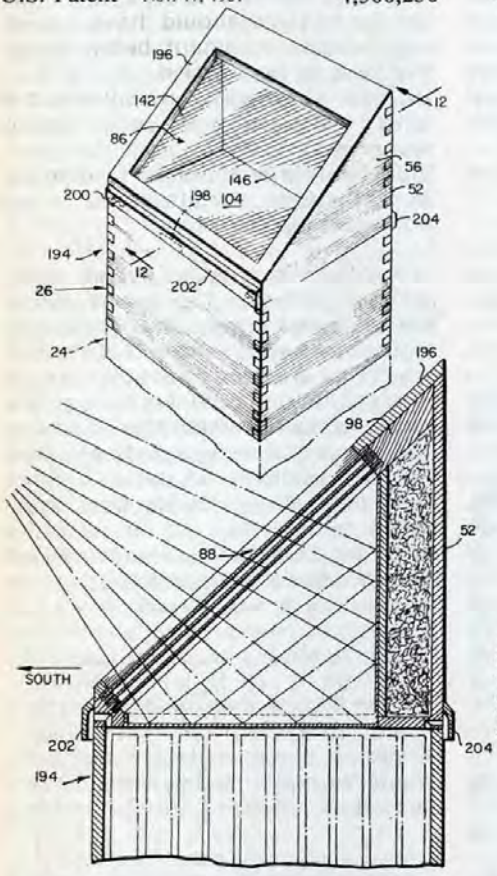
Bees will winter in a hive with no bottom at all if protected from draughts and if hive walls extend a long distance below the cluster, according to E. B. Wedmore, a noted authority[11].

Natural laws governing clusters are evident in dogs asleep in snow in coldest weather. Coarse hair, with another coat of fine hair, insulates them. They sleep curled-up with bushy tails and paws covering their nose.

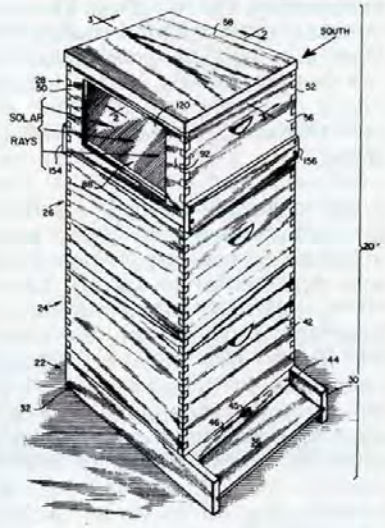
Since *Apis mellifera* are endowed with the ability to survive the most

(Continued on page 332)

U.S. Patent Nov. 17, 1981 4,300,250



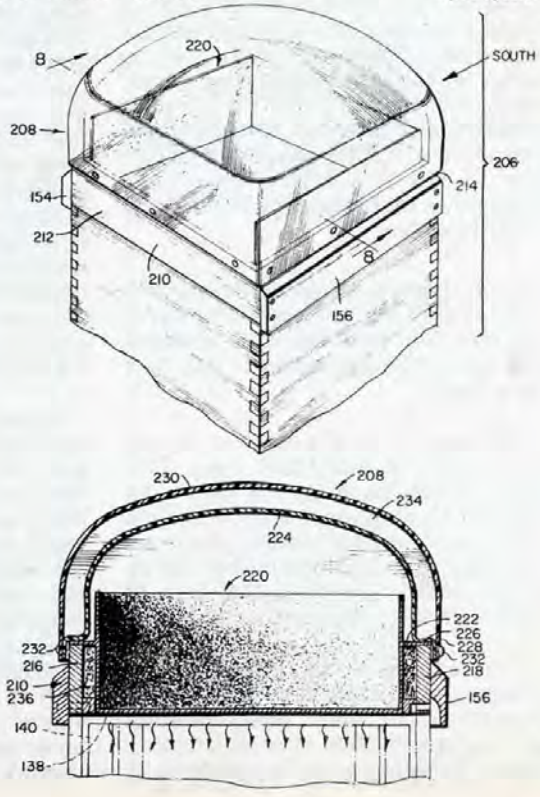
United States Patent 4,300,250 Nov. 17, 1981

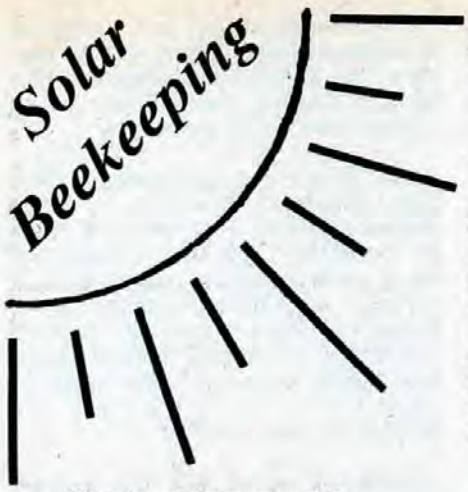


Beehives which feature passive solar heating, the ventilating of moisture, wind protected bee entrances, closeable bottom boards of sufficient depth to encourage breeding, and other attributes that minimize wintertime losses attributable to starvation, dysentery, and other causes.

The cluster space bottom board with slatted rack in winter position, enabling the winter cluster to form below the brood combs. The bottom entrance is closed.

U.S. Patent Nov. 17, 1981 4,300,250





(Continued from page 331)

severe winters there must be a reason that the, "Big May swarm from a beekeeper's unheated farm house in Manitoba made more honey than any other colony, wintered or package bees." Hy Sander's keen analysis prompted him to say, "It seems inconceivable that mere control of temperature and ventilation which have occupied our minds when thinking about wintering could have such results as that — there must be some other condition which benefits them." Several vital factors worked with bee instinct. Water vapor from the cluster floated up side walls, preventing condensation. Secondly, space below brood enabled the cluster to nurture larvae.

Being free from disease was a related factor. W. Z. Hutchinson[3] observed, "The loss in winter, aside from that caused by diarrhea, is not worth mentioning — it is diarrhea that kills our bees — there is occasionally a still mild day in winter, an hour or two of sunshine when bees can enjoy a real cleansing flight," and remain healthy.

C. D. Owen's experiments showed that severe **long** refrigeration heavily infected two colonies with nosema, proving hostile environment can be a handicap[5].

Nosema is more a disease of colonies than of individual bees. Colonies which have winter cleansing flights will show less infection than those confined for weeks. The gain resulting from the elimination of infected bees outweighs the loss of those failing to return.[13]

The approach to dysentery — nosema has been medication, but prevention through environmental control has much to offer as an alternative. Elimination of moisture and assured evacuation flights in winter coincide with bee instinct and insure colony health.

Moisture is the insidious handicapper of beekeepers. What was so obvious proved to be a fallacy. Huber's[7] use of the word "ventilation" was misconstrued. Water vapor released by clusters is not in solution. It is in **suspension**. Being lighter than air, it bubbles up to the inner cover, where if not trapped in the hive it would float out before cooling enough to condense. "Abundant ventilation" in effect throws the baby out with bath water.

Air to supply oxygen is essential but excessive ventilation to remove moisture is contrary to bee instinct and detrimental to colony development. Huber performed marvelous experiments proving that, "Removal of air inside the hive is absolutely necessary to the existence of bees but certainly takes place — there remained only one hypothesis to explain the purity of air in the hive, namely, to admit that the bees possess the extraordinary faculty of being able to draw fresh air into the hive and at the same time to expell that used up in their breathing — The Almighty in assigning to these insects a dwelling place into which air (cold) could only penetrate with difficulty, also gave them a means to overcome the sad effects which might result from **alteration of their atmosphere** — of all the animal world bees are perhaps the only creatures to which care of so important a function is given. An indirect consequence of this ventilation (fanning) is the high temperature which bees sustain without effort in their hive — this heat is certainly derived from their gathering together (clustering of a number of bees in the same place — it is so absolutely essential to them and their brood that it should be independent of the temperature of the outside air." Hive design should not prevent bees from clustering where instinct directs.

Much of our world most of the time is either too hot or too cold. Man and bees thrive within a relatively narrow temperature band. If working conditions and hive design coincide with bee instinct colonies are best wintered out of doors, coupled with the new passive solar units with vents and entrance ventilator, which permits warmth of winter sun to enter the hive, retards heat loss, conducts heat to a radiant inner cover above the bees and expedites escape of water vapor, without excessive ventilation.

Passive solar units are insurance against highly variable winds and dramatic weather changes[2]. No attempt is made to heat the hive; doing so confuses outdoor colonies. Bees in cluster are at rest and use less energy than in any other period of their life cycle. The sun's warmth is absorbed by the solar units, conducted to the inner cover, over coming the hives ice-box time lag, enabling bees to feed and fly during brief periods of weather moderation. If bees evacuate frequently during winter months dysentery is not a problem. Morale is improved by elimination of stress. Ills attributed to fall honey disappear.

Follower boards in brood nests mean more bees. The queen lays in nine frames instead of in eight, providing an extra frame of brood, reaching maximum strength in May. It is essential that colonies have ample stores in the lowermost brood combs above the cluster space. Deep snow is an excellent insulator against wind-chill. Hives should have maximum slope to aid in venting moisture. Solar units should be in full sun. Windbreaks of trees around permanent yards would reduce cost of production. The value of deep bottom boards to reduce swarming was proved by Dr. C. C. Miller and Karl E. Killion[9]. The new design deep bottom board 10.15 cm (4″) for outdoor wintering provides ample space for cluster formation **below brood** combs as well as full ventilation in summer.

Hive designers did not realize brood rearing begins in mid-December[8] and that shallow bottom boards prevented breeding in lowermost brood combs. Moses Quinby[12] observed that "chance" located the cluster, which becomes an organ (womb), and though mobile, it is instinctively anchored to that part of the comb where the first eggs are laid by the queen in cells prepared by worker bees in the central part of the heat producing area. Once breeding (fetus) is begun the cluster will not abandon brood unless forced to do so.

Frances Huber[7] built a glass hive 1.52m (5′) high simulating bees in trees. He observed it was easy to see how the cone-shaped cluster hung from the combs. Beekeepers succeeding Huber did not envision the multi-functions clusters are endowed to perform. We now know that starvation is prevented[6] by the ability of clusters to move slowly enmasse to fresh stores at 16.6c (2-9 degrees F.) as attested by Owens[6], who noted

that a cluster moved sideways and down into the center body for food and then returned. He also observed that solar radiation **markedly** affected cluster movement.

Regarding the importance of entrances, Owens[8] observed "Periodical flights in winter seem to make for healthier colonies. Without an upper (middle) entrance bees were confined to the hive most of the winter and thus their chance for survival possibly was decreased. The lower body of the unheated check hive never warmed up enough to permit bees to fly from the bottom entrance." Profitable beekeeping is coming more and more to a closed bottom entrance for winter but a simple middle entrance would serve an essential function until spring inspection when the small lower entrance is activated.

The double feature bottom board with cluster space works summer or winter. The new slatted rack only requires that it be turned upside down according to the season. A small entrance for early spring, 1 x 12 cm (¼" x 4") is available or a wide open entrance for the swarming season may be chosen by reversing the rack end for end.

Though flying conditions only last a few hours on occasional winter days, colony health is assured if bees can evacuate frequently. The implementation of solar principles is effected by use of solar units, the middle entrance, and 5.08cm deep cluster (4") space with multi-feature slatted rack which work together like a mother's womb, lungs and heart.

Instead of spring dwindling solar colonies are strong and build up on early pollen and nectar. They can be split and established for the main flow with bees acclimated to the producer's climate. Bees in their natural habitat raise brood below and store surplus above but man takes surplus honey and eliminates space below brood using shallow bottom boards which interfere with bee instinct. The solar concept addresses the problem, but management expertise is necessary to permit the cluster to form naturally below expected brood by placing well filled combs of honey and pollen in the lowermost brood area, keeping in mind that cells readied by worker bees for the queen to lay in anchors the cluster to its early winter location.

The 21 day cycle of egg to emerging bee continues until late spring when the colony reaches maximum development. So vital a thing as the location of the winter clusters need not be left to chance if hive design permits the cluster to form below brood.

Profitable beekeeping is assured if one implements the fact that bees do not freeze to death — they starve[10]; that a colony is not unduly taxed by extreme cold; that hive design could be improved to the point where starvation, dysentery-nosema and harmful moisture are eliminated.

If over-wintered colonies are in dry hives designed to work with bee instinct, synergistic effect guarantees increased profit in Canada, United States, parts of Alaska and Russia or wherever wintering is a problem.

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Bee Talk

(Continued from page 326)

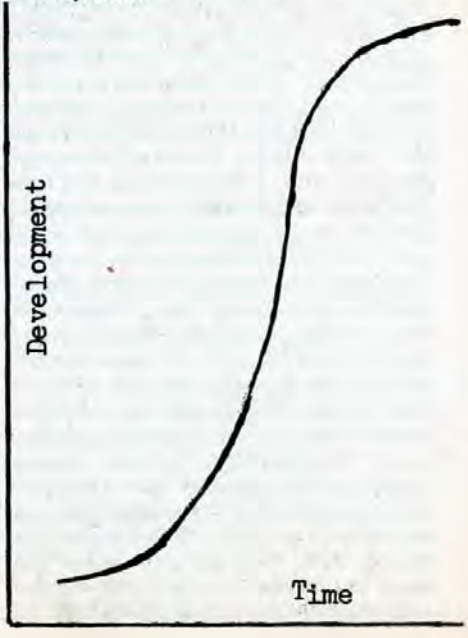
this pattern of development in wax moth populations. Human populations follow the same curve, pretty much, though here I suspect that technology tends to interfere with the final, or leveling off, phase, resulting in considerable misery in various parts of the world, including our own teeming slums.

The aspect of beekeeping to which this sigmoidal curve of development is especially relevant is colony development and swarm preparation. You go to your apiary in the early spring and the colonies are relatively "weak." It is easy to find the queen, for example, because there are not too many bees to get her confused with. And you sort of hope the colony will build up to honey-gathering strength. Then you look again, a couple of weeks later, and Wow! The colony has gone into the explosive phase of population growth! If you failed to appreciate the sigmoidal pattern of growth, then perhaps you neglected to get the supers on in time. You thought the bees were gradually building up and it would be quite awhile before they would need supers. Now, suddenly, they are crowded for room and just about every other colony is preparing to swarm! Fix in mind that sigmoidal curve, and don't get caught off guard like that again.

Lots of beekeeepers suppose that this explosive rate of growth just continues right on through the summer, and they are apt to get extravagant visions of what their honey crop will be like. But of course it levels off, in accordance with the curve, the swarming fever abates, the colony main-

(Continued on page 366)

A sigmoidal curve of growth or development



Questions and Answers

Q. I am a beekeeper with a small number of hives and I am confused about the use of Terramycin® in beekeeping. Some say antibiotic patties may be used all year. Some people say absolutely no Terramycin® should be fed during a honey flow. Some say that only in the fall should a colony be treated.

How should Terramycin® be used (liquid, patties or dust) and when? What about laws regulating their use. How long before the honey flow should treatments cease? Please help with my confusion. P.F., Texas

A. The use of oxytetracycline chloride (Terramnycin®) in antibiotic extender patties, that is, Terramycin® mixed with sugar, water and vegetable shortening, is not an approved method of administering this antibiotic to honeybees. This manner of feeding by patties may have both advantages and disadvantages, as do the other methods, but the mixing of Terramycin® with powdered icing (confectioner's) sugar is the recommended method at present. Terramycin® is relatively unstable in honey or sugar syrup and for this reason should not be fed by this method.

Antibiotic extender patties may indeed prolong the period of time the bees are exposed to the administration of the antibiotic but whether this exposure time would extend through the entire season would depend upon how often the patties were given, how much, and whether the bees continued to use the patties during the summer. This method could obviously violate the axiom to not feed antibiotics during the honey flow but other moderating factors could reduce the possibility of contaminating the honey in the supers from using patties containing a drug during the honey flow. More investigation is needed. Actually, a colony of bees should not have access to drugs of any kind at least a month prior to the main honey flow to avoid any chance of having the drug appear as a contaminant in the honey harvested for human use. This rule will usually allow a period of time in the spring, say, during the months of March, April and perhaps early May when the drugs can be safely given, and again in the fall after the surplus honey crop is removed from the colonies.

To prepare Terramycin® with icing sugar, mix 1 part antibiotic with 5 parts icing sugar (ie. 1 level teaspoon of antibiotic to 5 teaspoons of icing sugar or 1 pound antibiotic to 5 pounds of icing sugar). The first treatment of antibiotic should be done within 4 days after hiving the package or the overwintered colony unpacked. For a small colony or package administer 1 level tablespoon of the mixture per colony; for a large colony 2 level tablespoons should be fed. The second treatment should be administered 2-3 weeks later giving 1 tablespoon of the mixture to a small colony or 2 tablespoons for a large colony. Colonies should receive the third treatment in the fall after the honey crop is removed. At this time all colonies should receive 2 level tablespoons of the antibiotic/icing sugar mix.

Terramycin® can be toxic to honeybees if the recommended doses are exceeded. Therefore all drug and antibiotic feeding should be done in strict accordance with recommendations available from the Extension Apiarist.

Before any medication program is begun by a beekeeper the prevention and control recommendations of the apiary inspection service should be consulted. Conditions are so variable throughout the country that the handling of a disease problem should not be left to an individual's judgement unless considerable experience with disease problems exists. Even so, beekeepers with the most experience are the ones most likely to seek advice when they recognize that bee diseases are threating their colonies, or an infestion has been found.

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Q. In the spring of 1981 I had three very strong colonies. I made up nuc hives to keep them from swarming. One of the strong colonies swarmed anyway. My problem was I couldn't tell which hive the swarm came from because the activity was the same at all three colonies. L.P., Michigan

A. Most beekeepers will agree that there is often little visible evidence outside the hives as to which has lost the swarm, unless the swarm was seen emerging. An examination of the brood combs of a colony which has been rightly suspected of swarming will nearly always reveal several capped queen cells along the bottoms of the brood frames. One of these cells contains a queen pupa which will be the future hive queen when she emerges. The examination of the colonies must be made immediately after the swarm is seen as the young queen will emerge shortly after the original queen leaves the hive with the swarm. Another clue could be if a recent examination of the apiary revealed that certain colonies were very strong and a second examination shortly after the swarm is seen reveals that one colony seems diminished in population, and of course has evidence of the queen cells, you can be certain that that particular one is likely to have cast the swarm. Of course there is always the possibility that the swarm may have come from outside your apiary and settled near your bees.

★ ★ ★ ★ ★ ★

Q. Back in the early part of 1981 I heard of a new sulfa drug called sulfadimethoxine that showed promise for the control of American foulbrood.

Has anything come of this new drug and is it being marketed and approved for honeybees? F.R.S., Florida

A. During the past two summers a small research project demonstrated that American foulbrood disease of honeybees could be controlled by the feeding of sulfadimethoxine. This compound is similar to the sodium sulfathiazole that many beekeepers have used in the past for AFB control. The material is distributed to retail veterinary supply outlets by Anchor Laboratories of St. Joseph, Missouri. The trade name of the compound is Ancosul. It is a soluble powder. It is not currently approved for use in the control of diseases in honeybees, being considered experimental.

★ ★ ★ ★ ★ ★

Q. A lot of talk is being made about preventing the varroa mite from being

(Continued on page 345)

1981 U.S. Honey Exports Increased

By J. B. PARKER
Oakton, VA 22124

The United States: Exports of honey to major markets by quantity and value, annual 1980 and 1981.

Destination	Quantity		Value	
	1980	1981	1980	1981
	--- Metric Tons --		-- 1,000 Dollars --	
West Germany	811	948	1,216	1,348
Saudi Arabia	937	696	1,922	1,567
Netherlands	448	623	721	908
Kuwait	75	172	31	312
Japan	223	231	386	420
United Arab Emirates	131	181	219	378
Canada	207	175	239	273
Philippines	29	98	60	209
France	104	86	234	186
United Kingdom	116	94	173	150
Mexico	103	188	61	104
Yemen Arab Republic	15	52	17	96
Lebanon	31	55	25	101
Taiwan	56	45	89	74
Nigeria	16	33	24	75
Qatar	3	20	7	43
Oman	33	15	47	40
Singapore	41	42	85	97
Malaysia	50	22	81	47
Norway	16	20	30	37
Total *	3,877	4,173	6,611	7,153 *

* Includes countries not shown. Source: Bureau of the Census.

EXPORTS OF HONEY by the United States increased eight percent in value to $7.2 million in 1981 — following a slight setback in 1980. Our exports of honey vary a great deal in size of containers and average price. In terms of quantity, the leading market in 1981 was West Germany. German importers seek honey in large containers at attractive prices. In contrast, Saudi Arabia is a market where honey in small containers is popular. Saudi importers prefer consumer ready items. Many shoppers in Saudi supermarkets like to buy relatively small containers of honey. U.S. exports of honey to Saudi Arabia declined from the peak of 937 tons in 1980 to 696 tons in 1981 and the value fell from $1.9 million to slightly less than $1.6 million.

U.S. exports of honey to West Germany increased from 811 tons in 1980 to 948 tons in 1981, but the value grew at a slower pace of only ten percent to $1.35 million. The average price for U.S. exports of honey to West Germany declined from $1,502 per metric ton in 1980 to only $1,420 per ton in 1981. The attractive prices of American honey also attracted more customers in the Netherlands during the recent year. Our exports of honey to the Netherlands increased from 448 tons in 1980 to 623 tons in 1981 and the value increased from $721,000 to $908,000. U.S. exports of honey to the United Kingdom and France declined slightly in 1981, but sales to Norway increased.

The setback in our honey exports to Saudi Arabia resulted from greater competition from suppliers in Australia, Latin America and Eastern Europe. Their sales efforts didn't prevent some significant gains in U.S. exports of honey to some other Mideast markets, particularly the UAE, Kuwait, Lebanon and Oman.

U.S. exports of honey to Kuwait reached 172 tons in 1981 — more than double the 1980 quantity and the value soared to $312,000. The United Arab Emirates was even a larger market for U.S. honey in 1981 — buying 181 tons valued at $378,000. Kuwait and the UAE are important distribution centers for customers from other countries. Kuwait sends consumer goods to Iraq and Saudi Arabia in considerable volume. At one time the Kuwait duty-free zone was a favorite shopping place for some customers from Iran. This may no longer be the case. Yet, Dubai is an important supplier of consumer goods to Iran. Australia's direct shipments of honey to both Iran and Iraq have increased in the last several years. Our exports of honey to Lebanon reached 55 tons in 1981 and the value quadrupled, rising to $101,000. U.S. exports of honey to Qatar bounced from three tons in 1980 to twenty tons in 1981 and the value scored a sixfold increase to $43,000. U.S. shipments of honey to Yemen tripled in 1981.

Closer to home, our sales of honey to Canada fell from 207 tons in 1980 to only 175 tons in 1981, but higher prices pushed the value for those shipments to $273,000. Our exports of honey to Mexico jumped from 103 tons in 1980 to 188 tons in 1981, partly because of bargain prices. The value for our exports of honey to Mexico increased from $61,000 in 1980 to $104,000 in 1981.

U.S. sales of honey to Japan increased slightly to 231 tons in 1981 and the value rose ten percent to $420,000. A severe loss occurred in our sales to South Korea, from 120 tons in 1980 valued at $258,000 to only seven tons for $13,000 in 1981. Our exports of honey to Singapore remained steady at 42 tons in 1981 and the value rose to $97,000, but shipments to Malaysia declined severely. Our exports of honey to Nigeria more than doubled in 1981 and sales to the Philippines reached 98 tons — triple the 1980 quantity.□

Moving Bees Into Or Through New Jersey

Every year beekeepers transport hundreds of colonies of honeybees up and down the East Coast. Each beekeeper should be concerned with the safety of their truck loaded with honeybees.

Nets should be used on all loads of any size that are being hauled long distances. The nets should be secure to stop the bees from getting out while being transported. Beekeepers with smaller loads travelling shorter distances should have the colonies screened to keep the bees secure.

Beekeepers who plan to use the New Jersey Turnpike **will not be admitted** unless the bees are contained. **No** vehicle with loose bees flying around or from which bees can escape will be permitted on the New Jersey Turnpike.

Your cooperation is needed if beekeepers are to continue to use major highways along the East Coast.

Any beekeepers moving bees into New Jersey for any reason must have a permit from the New Jersey Department of Agriculture, Division of Plant Industry, CN 330, Trenton, N.J. 08625, c/o Jacob C. Matthenius, Jr., State Apiarist.

Send a copy of the Certificate of Inspection from the state you are coming from to the above address. If the Certificate is satisfactory, this Department will send a permit to transport bees into New Jersey.

Anyone entering New Jersey without a Certificate and permit will be liable for a fine of $100.00 for each colony under Chapter 6 of Title 4, Paragraph 15, "Requirements respecting importation of bees or used supplies, Penalty."

By Jacob C. Matthenius, Jr., New Jersey State Apiarist.

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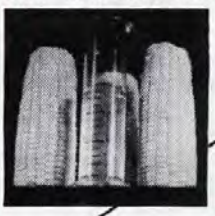
Western **$9.75 wet** ($13.75 dry, $15.75 available)



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"Have you ever thought. . . about whatever industrial efforts, all his calculations and com over working draughts and blueprints, invari tion of a thing whose sole and guiding princ of simplicity?

"It is as if there were a natural law which o end, to refine the curve of a piece of furnitu

New Headquarters

By ROBERT RICHARDS
Madrid, Spain

SPAIN HAS A brand new plant to back its beekeepers' association. This is situated in Ayora, a small village in the province of Valencia, some 150 kms. from the capital, Madrid. This has just been opened with a special ceremony and lunch for the 400 members and their families. The new plant will soon have a yearly production of 4,000 tons of honey, 400 tons of beeswax, 180 tons of foundation and 500 tons of food supplement for bees.

In a recent visit to the plant, the president of the association, Senor don Jose Cerda assured me that the plant has been possible "through the efforts of the men involved in our association. Our aim is to serve our members in the best manner possible, and thus we shall go ahead with the plans for the future, which includes expansion of production of products."

This beekeepers' association has received official aid from the Civil Governor of the province. Senor don Jose Maria Fernandez del Rio y Fernandez handed over a check for nearly eighteen million pesetas to ANA (Association of National Apiculture) from the Minister of Agriculture. This grant was made because the association serves the whole of Spain, and is not restricted to any particular region.

This plant in Ayora (Valencia) is the first of its type in Spain and is thus unique, although perhaps commonplace in other countries of Europe. It is an important advance and registers the change in honey production in Spain. From being a country which exported about one half of its production, Spain now consumes its own production and contemplates importing honey.

This increase in home consumption, plus a growing interest in natural foods, has been the catalyst which has stimulated the men of Ayora to build this new plant and greatly increase the importance of their association. The idea began with the formation, on December 3, 1977, of the National Association of Beekeepers of Spain, which is an honorary body, but in fact created the cooperative ANA on December 2, 1978. This latter controls the plant and the function of the personnel in Ayora for the benefit of the 425 members from all parts of Spain. The present number compares with the 186 founding members. Given the wide publicity which the new plant has received, it is fully expected that the number of members will continue to rise.

Senor Francisco Gonalvez Benavente (telex: 64262 Gotz E) is the designer of the new plant and the technical director of ANA. Twelve tanks are installed in the plant and it is said that seven different types of honey can be handled simultaneously. Jars can be filled at the rate of sixty per minute. These are packed in trays, each containing twelve jars of the particular type of honey being processed. The jars are vacuum packed with a plastic sheet covering.

One main effort of ANA is to see that its members are fully informed of the latest technology available for honey production. The Ayora plant is staffed with a laboratory and technical staff headed by Senor F. Gozalves who showed me the care which is exercised in their honey processing. Each drum of 300 kg which

Typical Spanish commerical beehive.

The headquarters of ANA in Ayora (Valencia), which have recently been opened and will have a yearly production of importance.

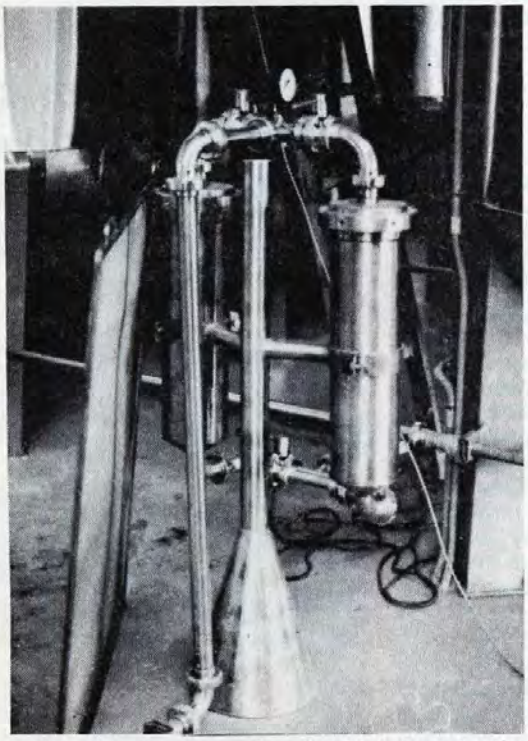
For ANA In Spain

is received at the plant has a sample extracted, which is preserved for future reference. Many mono-flora honeys are produced which are specialties of Spain but should any trace of nectar from another flower be detected, the honey is then typed as multi-flora. Honey sold as orange blossom, heather, rosemary, etc. are guaranteed to be precisely that.

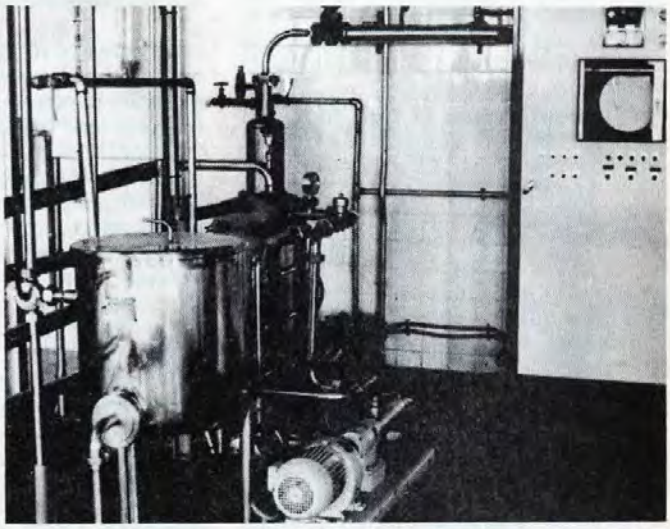
The Ayora plant, which has an area of 35,000 square meters is located in the Valencia region; one of the most productive in Spain due to the large acreages of citrus and other horticultural products. Also, the Valencianos are active in forming cooperatives. A Minister of Agriculture official commented, "For young persons who are interested in beekeeping we make grants of one million pesetas each, and I recently approved thirty such applications for the sum of thirty million pesetas. Many young beekeepers are starting with this official backing, and can repay the loan in nine years." This program will certainly help to augment honey production, which is necessary in Spain at the moment.

The technical director of ANA, Senor don Francisco Gozalves Benavente mentioned that much offical aid had been given for the construction in Ayora of their plant. The buildings in ANA are four in number, as shown in the photographs. Those on the left are used for the storage of

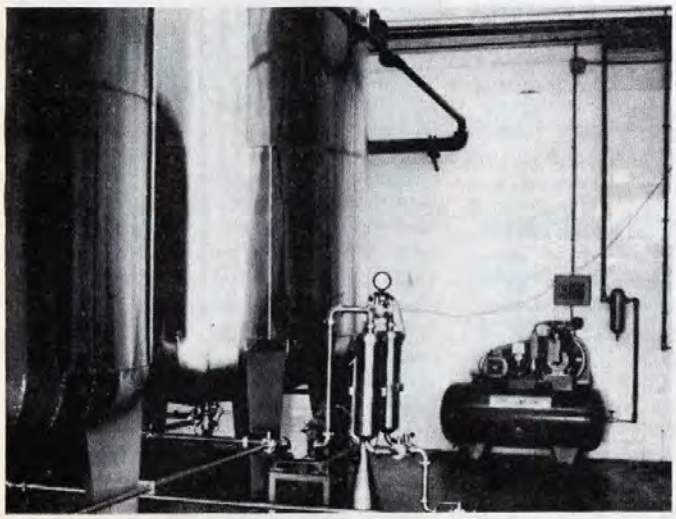
(Continued on page 341)



Filter for the incoming liquid honey to the packaging plant.



The pasteurizing apparatus in the honey processing section, which is totally enclosed by glass panels.



End filter for honey beside the tanks in ANA.

The control panel being connected for the tank "farm" to transport honey.

Research Review

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

The Pesticide Season Again

WE CAN EXPECT that honeybee-pesticide losses will again be high this year in many parts of the country. There is some pressure on state and federal agencies for research and change but not enough to make much difference. Beekeepers could be much more active in this regard. I have spoken with several researchers recently and it is becoming increasingly apparent that in the case of Sevin the formulation used has much to do with pollen contamination and toxicity. For gypsy moth control the Sevin-4-oil and probably the Sevin XLR formulations create much less of a problem for bees than does the older version, Sevin 80S. On sweet corn, also, Sevin XLR kills many fewer bees than 80S. One problem is that state recommendations usually list a pesticide by its generic name only; "carbaryl" is used for all forms of Sevin. From a practical point of view, we should no longer do this. We should write and talk about the various formulations separately.

The publication that most of us still turn to when we want information regarding the toxicity of a pesticide to honeybees is that by E. Lawrence Atkins and his colleagues. The copy I have before me is entitled *Reducing Pesticide Hazards to Honey Bees*, dated February 1981. It is leaflet 2883 and single copies are free of charge by writing Mr. Atkins at the Department of Entomology, University of California, Riverside, California 92521.

Mapping the Distribution of Bee Diseases

The world distribution of eight bee diseases and parasites has been mapped recently. Those included are American foulbrood, European foulbrood, sacbrood, chalk brood, nosema, amoeba, acarine and the bee louse. The distribution of varroa disease was reviewed in an earlier issue of *Bee World*.

Of special interest is the fact that not all of our problem diseases are everywhere on earth. The distribution of acarine disease is of distinct fascination and worthy of more research. It is not present in Norway, Sweden, Finland or Denmark, yet it is found in almost all of the rest of Europe. Acarine disease was found in Mexico only last year and we are all very much concerned it may soon enter the United States by accident. In light of the fact it is not in the Scandinavian countries, I wonder if it can survive in Canada?

International air travel and the moving of bees around earth by people is causing the rapid spread of bee diseases. Chalk brood, for example, was introduced into the United States and Canada sometime in the 1960's. Perhaps by spreading word about these problems, we can do something to slow the further spread of certain of these diseases.

Nixon, M.
Preliminary world maps of honeybee diseases and parasites. *Bee World* 63: 23-42. 1982.

New Gypsy Moth Bulletin

Cornell and Syracuse Universities have cooperated in the publication of a 14-page bulletin on the gypsy moth. Efforts to control this insect have resulted in thousands of colonies of honeybees being killed or damaged in recent years. In 1981 gypsy moths defoliated nearly 13 million acres of forests in the northeastern states alone, and I expect similar losses this year. The pest has been found as far west as California, and I've heard it is a problem as far south as North Carolina.

The bulletin listed below contains a thorough description of the biology of the moth and the trees it attacks, as well as a discussion of control strategies. It is richly illustrated with many color pictures. The insecticides that may be used for control are listed and discussed on a separate sheet inserted into the bulletin.

Abrahamson, L. and C. Klass
Gypsy moth. Cornell University Information Bulletin 188. 14 pages. 1982. Available for $2.00 by writing; Distribution Center, 7 Research Park, Cornell University, Ithaca, NY 14853.

USDA Announces 1982 Loan and Purchase Rates For Extracted Honey

The U.S. Department of Agriculture issued 1982-crop loan and purchase rates for extracted honey which range from 54.4 to 62.4 cents per pound, depending on color and class.

The rates, which apply to extracted honey in 60-pound or larger containers, are:

Color and/or class	Cents Per Pound
White or lighter	62.4
Extra light amber	59.4
Light amber	56.4
Other table and non-table honey	54.4

According to Everett Rank, administrator of USDA's Agricultural Stabilization and Conservation Service, the rates are based on a national average loan and purchase rate of 60.4 cents per pound announced by USDA April 7. The 1982 level represents 60% of the April 1982 adjusted parity price of $1.007 per pound.

Loans and purchases will be offered on 1982-crop honey in eligible containers, on or off farms, Rank said. Producers have until Jan. 31, 1983, to request loans that will mature April 30, 1983, he said. (Note that the 1981 end of loan availability period was March 31, 1982 and the 1981 loan maturity date was June 30, 1982.)

Rank also said discounts for moisture content have been increased to more nearly reflect actual current market conditions.

Honey Report

(Continued from page 316)

holding up well. Many people are continuing to buy honey, despite economic conditions.

Region 5

Colonies building up slow in North Carolina due to cool weather. Lower temperatures during winter caused 10-15% winter loss. In Florida, the titi has produced a good crop, but not as good as last year. Orange honey is very scarce, with packers buying lots of 1981 citrus honey from under the government loan program. Tupelo honey flow being hindered by cool and rainy weather. Gallberry honey flow fell below expectations after looking promising in late April. Weather conditions generally unsettled in Southeast during spring period.

Region 6

April was cool with frosts and freezes during April. Tulip poplar hurt by freezing temperatures and colony development behind normal in Kentucky. Colonies not showing swarming tendencies during late April and early May. Supplies of honey for sale are low with demand normal. Cold, wet weather delayed early honey flows in Tennessee. Feeding of colonies has been necessary. Honey prices are holding steady and sales good.

Region 7

Weather cold in East Central Oklahoma making it necessary to check on food stores. Much moisture. Temperatures cooler than normal through April and bees were slow in building up. Some heavy feeding in Arkansas due to a cold April. Heavier than normal winter bee loss due to poor food stores. Bees in good condition but temperatures about 10° F below normal. Honey moving poorly in stores due to economy.

Region 8

Spring weather has been extremely variable in Montana. Winter snow pack in mountains is heavy. Variable weather has interfered with normal brood rearing. Plants averaging 2 to 3 weeks behind in development in Montana at the end of April and into early May. Bees are rearing much brood at the end of April in Colorado. Cold periods have restricted flying and some feeding was necessary. Winter loss has been normal in Colorado. Retail honey sales have picked up. Packer's stores seem to be adequate or purchases are made on a demand basis.

Region 9

Retail honey prices have increased in Oregon. No local honey left with producers. Spring in Northwest has been cool and wet but bees in good condition.

Early season honey yields from sage in Central coastal regions of California have been outstanding. Citrus honey crop is reported to be good. Overall prospects are favorable for honey production in California.

New Headquarters For ANA In Spain

(Continued from page 339)

honey of all types, drums being lifted four high with a fork lift truck. As each drum weighs some 300 kgs. the load-bearing capacity of the warehouse is good. The roof is insulated to keep the temperature down, as this can reach over 40 degrees C. in summer. The air space and insulation measures 37 cms. in thickness. One attractive detail is that the window lattice is in the shape of a honeycomb, which provides protection for the windows as well as decoration, which carries through in the theme of the plant design.

The main store is shown on the right in the photograph, from where the drums of honey are moved to the two heat chambers where the temperature is raised to liquefy the product. There are ventilators in each corner to assure that air temperature and circulation is constant. Drums are then moved to the tipping rack, shown in the photograph, and the honey drops through the grid and runs towards the subterranean fillers and pumps. An enclosed part of the machinery room contains the pasteurizing equipment made by APV Iberica S.A. of Madrid. Foster Clearbridge Clearway M 140 vacuum fillers are utilized to fill the jars with honey. A distinctive label is used by the ANA showing a flower with six bees at work. The other building has a large store and a processing plant for beeswax and preparing food supplements for bees. This building is fitted with a Teyvi boiler and a Sta-Rite water conditioner, as the calcium content of the water is high. One machine, made by Bernhard Rietsche Biberach of Baden, Germany helps in the production of 120 kg. per hour of wax. Five thousand new drums have been purchased and there is every intention that these will be given full use.

ANA has an ambitious program for the future production of bee pollen and they have designed their own pollen trap.

The next steps will be the use of cold chambers, the rearing of queens, the construction of a hostel alongside the factory to permit beekeeper members to stay for courses, the use of solar energy, and bee breeding and research programs.

An important activity of members is the nomadic form of beekeeping. Truck loads of bees are moved from the south of Spain northwards. A commission has been formed by the Ministry of Agriculture officials which updates regulations for transport, secures permission from the landowners for the placement of hives, provides insurance and assists with the protection of the apiaries. The Commission of Insecticides, headed by Senor don Juan Ignacio Calvo of the Minister of Agriculture has also approved legislation to protect bees and their production.

There is a great deal of uninhabited land in Spain, as any tourist may note, and much of it is under the control of the Ministry of Agriculture's organization for open land called Icona. With over a million hectares and only 10,300 beehives there is room for expansion. Production has averaged 9,000 tons per year during the last two decades, being 9,068 tons in 1961, 10,508 tons in 1965, 9,106 tons in 1969, 8,128 tons in 1970, and 9,000 tons in 1973.

It is hoped that by means of official aid and encouragement from the ANA organization it will be possible to increase honey production in Spain.□

Beeswax

By LARRY GOLTZ
Medina, Ohio

ONE COULD QUESTION whether we should perhaps not change the name of our *Apis mellifera*, the **honeybee**, to the **"waxbee"** when comparing the price of honey at approximately fifty-three cents per pound to beeswax at $1.85 per pound. This seeming misproportion is partly explained by the relative yield of wax compared to the production of honey by a colony of bees. A strong colony of bees will produce, on the average, in the United States, about seventy pounds of honey while a seasonal surplus of barely one pound beeswax can be expected. If more wax is harvested than the usual average it comes from melting up old or damaged comb. Normally, in extracted honey production, the comb is preserved from one season to another. Good combs, that is, combs built of 100%, or at least a high percentage of worker cells, and filling the frame from edge to edge are too valuable to be melted up for wax salvage as long as they are serviceable. The only possible reasons for rendering combs into wax during their useful period of life would be because of damage by wax moth, mice or due to damage sustained during extracting. Combs ten to fifteen years old may still be serviceable as brood or extracting combs but they should usually be replaced long before this. The fact that they become very dark may be a factor in the decision to melt up the comb. Dark combs in good condition are frequently used for years as brood comb, if not as satisfactory extracting honey storage comb, but a cell that has hosted several seasons of brood rearing turns dark due to the accumulation of residue shed by the growing brood. This could have some effect on their efficiency as brood cells. In addition, dark brood combs, when used for honey storage, were found to have a slight darkening effect on honey stored in them. This is due to the absorption of the coloring pigments from the cell contaminants left by successive generations of brood.

"Few waxes match beeswax in economic value."

Wax From Comb

Contrary to a common belief among many beekeepers, the queen prefers to lay eggs in newly drawn, light colored comb rather than dark comb. Dr. John Free made comparative tests in England which showed that queens heading colonies did not prefer old, dark combs for brood rearing, rearing less brood in old combs as compared to new. Actually, bees prefer to store honey in the older, darker combs rather than the lighter combs according to Free, reports Elbert Jaycox in **Bees and Honey** (April, 1981).

Your experiences with light and dark combs may not be in agreement with the conclusions of researchers but there can be little doubt that combs with large patches of drone brood, warped midribs causing unequal cell depths and with other defects such as large holes, moldy surfaces and broken frames are best melted down for the wax salvage. When defective combs are in the brood nest or food chamber it may require some maneuvering of the frames within the hive to first rid them of brood. If such combs are moved to the outside of the brood nest during hive examinations they can be extracted of their honey in the fall and the combs rendered periodically. This weeding out process can improve colony efficiency by providing many more worker cells for the queen and adults added to the population of workers rather than ex-

Light colored combs and cappings rendered into solid blocks of light colored wax bring the best price on the market.

cess drones.

A strong colony of bees will build superior combs at least once and perhaps several times during the active season. The early spring honey flows such as from fruit bloom seldom generate sufficient stimulation to cause bees to build combs from foundation. Adequate space is usually available in the brood nests to store nectar from these early sources. The period immediately prior and at the beginning of the main honey flow is usually the best time to have foundation drawn into good combs. Frames containing foundation placed in the hive during a dearth of nectar will sometimes be mutilated by the bees. Holes are chewed in it and edges are frayed by having bees nibbling at the sheets of wax. If you find it necessary or desirable to replace combs before or after the main honey flows, foundation may be given and the bees fed sugar syrup. This will usually provide sufficient stimulation to produce wax from which comb will be built. The syrup need not be in large volume but the food must be continuous during the comb building period. A bucket feeder with three or four sized nail holes in the cover, inverted over the inner cover hole or over the top bars of the frames is an excellent means of achieving stimulation for comb building.

Combs in extracting supers may be replaced at any time they are off the hive and out of service. Again, to draw good super combs the bees must be stimulated by a strong honey flow or by feeding. When extracting supers are placed on a hive the use of only nine frames in a ten frame super will allow bees additional space between combs to add to the depth of the cells. This is an advantage when uncapping combs during extracting honey. To achieve a uniform depth of comb the frames must be spaced evenly, either by hand or with some form of spacing device. When uncapping these extra thick combs it is possible to increase the wax yield by removing more of the comb depth.

"Shortages could develop before the 1982 crop comes in the market."(Sue Honey News)

Wax From Cappings

The source of the best quality lemon colored wax is the cappings. Much time is saved in removing the surplus honey in the cappings if they are allowed to fall from the uncapping blade into a container with a screened bottom. The extra honey in the cappings will then drain out as the combs are uncapped. After the honey is drained out the cappings can then be stored in a plastic bag or in a container until processed. There are several types of cappings melters on the market which will melt the cappings and separate the honey from the melted wax as uncapping proceeds. The larger units have the capacity to process the cappings from automatic uncapping machines and are usually used only by commercial beekeepers with a large number of colonies.

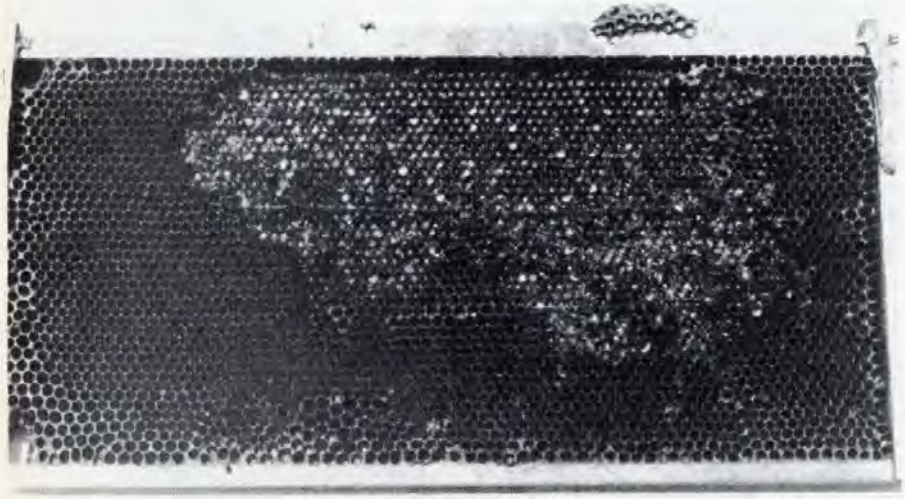
Small quantities of cappings, the result of uncapping several supers of honey, should not be discarded. Small amounts of cappings can be processed simply by adding them to water in a metal container of sufficient size. After a period of heating the melted wax will float to the top of the water from where it can be dipped off with a ladle. Perhaps a better plan is to place the cappings, or pieces of old comb to be rendered, in a porous bag such as burlap and place the bag in a tub of water. Weight the bag with several rocks to keep the bag of wax submerged. Several inches of water should cover the bag. Use a galvanized tub or one made of stainless steel, never of copper or iron, which will discolor the wax. As the container is heated the melting wax will filter through the cloth sacking and rise to the surface of the water, leaving any debris in the sack. When the wax is completely liquefied the heat can be removed and the water and wax allowed to cool. The solid cake of wax can then be removed in a fairly pure form from the surface of the water. If old combs are being rendered, keep them separate from the cappings since the dark wax from rendering old combs is generally of less value than light wax from cappings.

A WORD OF CAUTION — Never allow molten wax to spill out of a container onto a flame or a hot surface. Wax is very flamable. Use containers of ample size to contain the melting wax well below the rim of the tub when rendering in this manner.

Marketing Wax

The wax rendering systems described above can be made from materials available around home or can be purchased at a reasonable price from bee supply manufacturing companies. Another system of

(Continued on page 344)



Damaged combs should be replaced as soon as possible and melted up for wax.

Beeswax

(Continued from page 343)

melting and rendering cappings and old combs is the use of a solar wax melter. The principle of the solar wax melter is that heat trapped within the glass-topped box will be sufficient to melt beeswax placed within, whether it be cappings, old combs, pieces of burr and brace comb or hive parts to which chunks of wax are clinging, such as queen excluders. On a hot, sunny day the wax will melt and flow off into a container placed at the outlet of the tray lining the interior of the solar wax melter.

Beeswax rendered into a solid cake may be sold to the buyer paying the best price but selling your wax to a bee supply firm or store has an advantage. Crude, but rendered, beeswax may be exchanged for fresh foundation. Equal amounts of beeswax foundation is exchanged for the customer's wax, less processing costs. The raw beeswax must be of quality suitable for processing into foundation.

Another source of a potentially substantial accumulation of wax are brace and burr comb gathered during the spring, summer and fall. A container should be carried to the apiary to save these odd bits of wax, which is a sanitary measure as well. Gathering up the bits of comb avoids exposed honey, which could start robbing or spread disease.

Why is the market for beeswax up? For one thing beeswax is in limited supply. Large shipments of beeswax were once available from foreign sources, but no longer, at least to the same extent. Countries of Africa, who once supplied beeswax to the world, are no longer concentrating on this form of agriculture or have ceased production because of political turmoil. Beeswax is a wax of superior quality which is used in manufacturing cosmetics, lubricants, polishes and sealers and coatings for a variety of materials. Wax needed for these uses is in addition to the wax used for candles and for recycling into foundation sold back to beekeepers.

In 1980, the principal source of beeswax imported into the United States was the South American country of Chile, followed closely by Mexico and the Dominican Republic. The only African nation now furnishing a fair share of the American imports is Ethiopia.

Few waxes match beeswax in economic value. Carnauba wax, obtained from dried carnauba palm tree leaves is one of the hardest, highest-melting point natural commercial waxes. Most comes from Brazil. Candelilla wax is a secretion of several desert shrubs of northern Mexico and the southwestern United States. However, only Mexican shrubs are harvested of this wax, the harvest being subsidized by the Mexican government. Candelilla's primary use is as a binder in chewing gum.

The sale of surplus wax can contribute to the income of beekeepers and any amount exchanged for foundation can help defray the cost of foundation and new equipment. The sale of honey and returns from pollination fees will continue to provide the main income for most beekeepers but everyone, including the hobby beekeeper with only a few hives, can profit from marketing beeswax.

Trends On The Market

The past ten years' beeswax market was the subject of a review in the January, 1982, (Vol. 15 No. 3) issue of *Sue Honey News*. We quote: "With the price of beeswax escalating the way that it has during the past ten years and the usage dropping down, it seems quite evident that substitutes are being used to some extent." The Catholic church, although they do not say so officially, no longer requires beeswax candles on the altar. No doubt the price of beeswax is a factor.

In 1970, the total United States production of wax was 4,377,000 lbs. and 3,697,000 lbs. were imported. In 1980 3,333,000 lbs. of beeswax was produced in the United States and 2,178,000 lbs. were imported (U.S.D.A. figures). These figures show a continuing decline in the total pounds of beeswax available to the refiners and users. Reductions in supply is also reflected by the increase in prices paid per pound to producers. Like any other commodity, the price of beeswax is tied to a supply and demand factor.

According to the Beeswax Market Report in *Sue Honey News*, the beeswax market appears to be firm but with slightly less movement than last year. This in part, it is said, can be attributed to refiners and users reducing their inventories. With the U.S. dollar gaining strength in the world money market, imported wax has become relatively cheaper. High quality wax is being offered on the world market by China, at competitive prices.

The commercial users of beeswax report that there has been increased activity in the wax market in early 1982. Several factors may contribute to this: the need for cash by producers, an anticipated price drop for raw wax, and the possibility that the sales of wax by producers had been deferred from previous years until 1982, when the sales would add less to the tax burden.

The philosophy most acceptable to the wax market analysts is that "the best way to protect our beeswax market against inroads from substitutes is to have a continuous supply." Although price can be a determining factor in the user's decision to change to a substitute, if there is not a supply available, they would have no alternative. □

W.A.S. Conference To Be In Logan, Utah

The Western Apicultural Society announces its 1982 Conference. The dates are: August 16-20. The place is the new, modern Conference Centre at Utah State University, Logan, Utah. President Bill Nye has developed a fine program which appeared in the May issue of *Gleanings*. Further information can be obtained by contacting the Secretary, Western Apicultural Society, 2882 E. Standish, Anaheim, CA 92806. Phone (714) 632-7725.

The 1982 conference at Logan provides a marvellous opportunity for members and prospective members to visit the scenic wonders of Utah's famous national parks in conjunctions with a trip to the conference. Plan your vacation for August 16-20 and watch for further announcements about the 1982 conference.

Single Or Double Brood Chambers — Part I
A Two Part Look At A Controversial Subject

By GARY FRIEDMAN
Houston, TX

ONCE AGAIN SUMMER is upon us. We beekeepers, like our bees, have spent the long cold winter anticipating spring's arrival. Now that the honey flow is just around the corner I again find myself desperately trying to get all my work done in preparation for the first light flows. My bees are likewise trying to prepare for the flow, but I must admit that this year they are ahead of me.

All this reminds me of the old saying that pets are like their owners and vice versa. Just as my bees are busy and preparing for their honey flow, I too am joyous at the thought of the warm sun that will soon find me eagerly working with my bees in, what are to me, the most wonderful menageries of sights, sounds, and smells in the whole world — my apiaries!

The subject of single or double brood chambers is the topic of this article, where I will release my findings concerning a 1½ year experiment I just completed. I got the idea to perform this experiment when I saw that half the beekeepers around me used single story brood chambers and half used double brood chambers.

Simply put, my experiment consisted of nine colonies. All queens in these hives were produced from the same mother queen and they were all mated with relatively the same drone stock. Three hives were in single brood chambers, three in 1½ story brood chambers (a deep super with a shallow on top), and three in double brood boxes. Three weeks before the tallow flow I put excluders on all the hives plus each hive got a shallow super. During the middle of the flow the singles filled up their supers and I added another super to each. The 1½ story colonies had begun work on their supers but were in only 2 or 3 frames. The double brood chamber colonies hadn't even drawn out foundation yet, being more intent upon filling the upper brood box as the brood emerged.

When the tallow flow ended I had three capped shallows from the single colonies, two capped shallows from the 1½ story hives, and no harvest from the double brood hives.

By the end of the season I harvested five shallow supers off each of the single brood chamber hives. From the 1½ story colonies two gave me five supers and one gave me six supers of honey. From two of the double brood chamber hives I got three shallows and from the third I got four shallows.

Now comes my opinion concerning brood chambers:

1. I don't know if single brood chambers would work in the North. They might but I'm not in the position to make that judgement.

2. It is of the utmost importance to crowd the bees into the supers. They love to be crowded and they produce honey much quicker this way. If you are careful and see to it that they don't become too crowded, you won't have a problem with swarming.

3. The strength of a hive is directly proportional to the size of the hive in terms of honey production. For example, you may have a very strong hive in a double brood chamber with four shallow supers on top, but a hive of similar strength could be built into a single story brood chamber with five or six shallow supers on top. As a result the beekeeper could take home two extra supers of honey at the end of the season. (Wintering over these hives will be discussed later on).

4. If you make the brood chamber too large the bees will fill the brood cells in the upper chamber, instead of the supers, with honey as the young bees emerge, and the beekeeper loses since the bees are not crowded into the supers. Sure the bees will fill the upper super once they fill or nearly fill the upper brood chambers, but you have lost valuable spring honey to the bees and by the time they start on your supers the flow could end.

5. I see no reason to use double brood chambers unless you live in the far North, or you have that occasional "Buster" or incredibly strong hive where the queen is so prolific that she **must** have a double brood chamber. Even here though, caution should be taken that not too large of a brood chamber is given and I often compensate by giving the queen a 1½ story brood chamber. That way, when she has to move up in the early spring, she can fill upper combs for a few days while she waits for brood in the lower story to hatch. Then she will move back down again and fill up the lower chamber. She probably won't have to move up again, but if she does, the bees will already have started filling the outside combs of the shallow brood box and they certainly can fill these shallow combs much easier than big deep frames.

6. Striving for incredibly strong hives may get you strong hives, but often this doesn't assure you lots of honey because the bees may never get out of your brood chamber if it is too large. Therefore it should only be as big as is absolutely necessary. □

(Part II will be in the July issue.)

Questions and Answers

(Continued from page 334)

imported into the U.S.A., but nothing has been said about preventing AFB, EFB, chalkbrood, nosema and other diseases common to your region, from being imported into developing countries. Is there any way by which importers in developing countries can make sure that the bees they import do not carry any disease? Can any bee breeder guarantee that the package bees he is selling are not carriers and are "disease-free"? H.Y., Philippines

A. All of the bees and queens which are shipped through commercial channels in the United States must be from inspected apiaries. Inspection is for the common brood diseases, but this inspection may not detect some levels of nosema. Since the various mites are relatively unknown the inspector does not certify the bees free of mites and is not expected to do so. Also it is up to the receiving country to pass and enforce import regulations which will assure that only healthy bees are allowed into that country, the United States

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Some Thoughts On Bee Disease And Medication

By P. F. THURBER
Kirkland, WA

I TAKE SAMPLES of American foulbrood to bee association meetings and have for years. As a result, locally at least, there must be hundreds of people who can identify AFB. On the other hand there are probably some hobbyists who are not registered and/or are not members of any bee association who would have extreme difficulty recognizing or even finding AFB or any other disease for that matter. In case you have not seen disease and how to look for it let me address the subject.

Healthy brood in the larval stage is a glistening, almost pearlescent white. Any other color, dull white, tan, brown or black means death. Death of larvae can be from starvation, chilling or disease. It's not hard to think back. Has the colony been short on pollen, hit by pesticides so that there were not enough nurse bees to keep the brood warm, or did you open the hive and allow the brood to be chilled?

If none of these apply then there must be disease. Look some more or check in your books. Are there sunken cappings, perforated cappings or an odd smell? If the smell is sort of acidlike and the brood died before it was capped there is porbably European foulbrood. If the brood died after capping it may be a variant EFB caused by *Bacillus alvei* or AFB. The presence of brood dead of *B. alvei* has a smell resembling vinegar. If it is AFB there may be arguments on how to describe the smell. Anyway, the smell is quite strong and we oldsters will probably agree that it smells like hide glue made from animal hides.

Your books will tell you how to take a match and stir it around in a cell with a dead pupa in it and then draw it out slowly. If the "rope" or thread pulled out is over one half inch long you have AFB. Sometimes the roping stretches out to three-quarters of an inch or longer.

A bee inspector looks for scale, I think. This is hard to detect for someone who has had no training or experience in disease recognition. AFB scale is especially difficult to see in old, dark colored combs. I can suggest this procedure for making the scale visible. Face the sun or the brightest part of the sky with the comb you want to study held about six inches from your face. Hold it horizontally by the top bar. Then slowly rotate it downwards. If there are scales they will show in the bottom side of the cells. Starting about an eighth of an inch from the top rim of the cell, you'll see them as the sun shines into the cell. To be certain, hold the frame by the bottom bar, horizontally, and again rotate. The scales do not now show up because they form at the bottom side of the cells and you are now looking at the top side of the cells.

If you by chance have a frame of relatively new comb in the brood nest, one which is not yet darkened, the scale really stands out and it is instantly visible.

How does a particular colony get AFB? Who knows? I am aware of a lady who lives about two blocks from where foulbrood was found in a hive. She just loves to have bees in her yard. So would you believe every so often she pours a little purchased honey in a flat pan filled with wood chips and sets it out in her yard for the bees to carry off! That is an invitation to a disaster. In addition, the person who owned the hive needed more equipment so bought half a dozen supers at a garage sale. All six were on the five hives (out of seven) that had AFB. Probably this was the true source.

The tragedy is that the person who owned the hives truly loves bees. He had attended the short course in Seattle held in connection with the 1981 convention of the American Beekeeping Federation. He heard the lecture on the use of antibiotic extender patties, read and reread the handout that accompanied the lecture. He even went so far as to buy Crisco, powdered sugar and a package of Terramycin but had not gotten around to making the patties and putting them on his colonies. I'll tell you that person was and still is absolutely miserable and not just because of the loss of money invested.

In closing let me respectfully comment about the Gilliam-Argauer article in the October, 1981 *Gleanings*. The patties should be made per the formula given but should be placed between two pieces of wax paper and then rolled to one quarter of an inch thick. They are normally placed on top of the top bars of the bottom hive body. The bees come up through the wax paper and consume the patties in a period of normally between ten and thirteen weeks. You leave the pieces of wax paper on the patties so that if you need to work the hive the pattie doesn't get all stuck up to the bottom bars of the hive body above and make a miserable mess, which with your luck would trap and then squash your queen.

Making patties just two at a time is a messy nuisance. If you don't need more than one or two at a time I guess that is OK, but I use one package (6.4 ozs.) of Terramycin with ten grams of the active ingredient and I mix that into three pounds of powdered sugar. I then mix in three pounds of vegetable shortening such as Crisco or Fluffo, which are two brands available locally. The above mixture makes fifteen patties and those which are not used are frozen. Drs. Gilliam and Argauer showed, as Dr. W. T. Wilson did in other research about seven years ago, that when protected by the AEPs there has never been any Terramycin found in the surplus honey at any time. I assume that is because the bees which gnaw on the patties are different, being much younger as an age group than the bees which work on incoming nectar or syrup. Terramycin medicated syrup and the powder formula TM medication does get into the honey supers as Gilliam and Argauer showed so I don't use this method except that I do give a swarm a little TM medicated syrup. I give a quart to a small swarm and a half gallon to a large one. Actually, I keep patties on all year long and will continue to do so because there is so much AFB locally. Yes, I know approval for the patties is pending: pending, I think, since 1973. I wonder how many thousands of colonies have died because the FDA sits on the application. □

Capping The News

THE EDITORS

"Beekeeping Small Talk"

The Weather And Beekeeping

EVERY ONCE IN a while Mother Nature stuns us with an outburst of ferocity or a deviation from the normal that reminds us of our human frailty. Such a weather anomaly was recently experienced through the middle of America when a severe blizzard swept through during the period of April fourth to April seventh, 1982. Heavy rains and mudslides on the west coast, floods in Indiana, severe drought in the south central states and the recently experienced cold and record snowfall in the mideastern and eastern states have already marked the decade of the 1980's as one which has the portent for possibly more surprises.

The climate office at Cornell University, Ithaca, New York described the "Great April Blizzard of 1982 as "severe", that is it had (1) winds of 45 MPH or more, (2) great density of falling and/or blowing snow, and (3) temperature of 10 degrees F. or lower.

The low pressure system which was in the vicinty of Colorado on Sunday, April the fourth intensified and moved across the upper midwest and mideast and into the eastern states by Tuesday morning, April the sixth. The blizzard battered southern New England, leaving two feet of snow and brought wind gusts of 80 plus MPH in some sections.

This storm was the most severe April blizzard of the century.

The April, 1982 blizzard was preceeded, accompanied by and followed by severe cold. On April 5th record cold temperatures were set in Michigan, New York and Massachusetts. On April 6th records were set in Arkansas, Idaho, Illinois, Indiana, Iowa, Kentucky, Minnesota, Missouri, Nebraska, Ohio, South Dakota and Tennessee. Behind the storm, record cold was recorded in sixteen states.

There is no question that the storm and related low temperatures had, at least temporarily, some effect on pollen collection and colony growth in the central and eastern states. Colonies of bees which had barely survived the winter died. Plants which had begun to break out of winter dormancy were "shocked" into a regression that may have continued to affect the plant's "timetable" for several weeks. However, nature is resilient and any temporary effects on plants may be offset by accelerated growth once warm, settled weather returns.

An all-time record snowfall of 100 plus inches fell in northern Ohio. It may have helped protect colonies during the coldest weather but heavy drifting around hives also created moisture problems as the snow slowly melted. This is no doubt the experience of other beekeepers where heavy snows are the rule.

Very likely the severe winter weather was a factor in the heavy bee losses being reported in the northcentral states; but there may have also have been other, prior, conditions which contributed to the abnormally heavy losses. Generally, a 5% to 10% loss is accepted as normal but losses of 15% to 30% have been reported from many states.

The 1981 honey crop was severly down in many of the states which have reported heavy winter losses this past winter and spring. The bees apparently went into winter under less than satisfactory conditions, although the fall weather did not appear to be unusual to the human senses. For the bees, however, the same conditions which limited the gathering of a summer crop of honey many have carried through the autumn months causing a shortage of honey reserves or some disturbance to the normal pattern of winter preparations in colonies. Colony condition was extremely variable going into the fall and winter. Cold, wind, and prolonged confinement simply did those colonies in which even last summer had begun to lag behind.

Nature can be a cruel master but she sometimes turns out to be a generous provider. Let us hope that the coming beekeeping season brings together all of the many conditions which work for the benefit of both the bees and the beekeeper. □

Questions and Answers

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cannot enforce these regulations in other countries.

We share your concerns about the spread of disease throughout developing nations but the burden of enforcement must be at the receiving end. Our inspection programs have been developed after many years of trial and error and are among the most rigorous in the world but no inspection and sanitation program is perfect and there is always the possibility of some contamination escaping detection.

★ ★ ★ ★ ★ ★

Q. This year I intend to collect pollen for the first time. When is the best time to put traps on and when do you remove them? G.C., Kansas

.A. Pollen traps may be put on the hive whenever the flow of incoming pollen appears to be in excess of the normal needs of the colony.

The traps should be removed when the incoming pollen seems to be less than the amount needed to supply the requirements of the colony. Some pollen traps need not be removed but simply have the trapping screen adjusted so that this screen no longer is in a position of stripping pollen from the incoming bees. Later, as pollen becomes abundant and the colony has been able to replenish their reserves of pollen, the screen can again be placed in the "trapping" position.

News and Events

Meeting Notices

The deadline for publishing notices of beekeeping meetings in *Gleanings* is the fifth of the month preceding the month of issue. For example, if you wish the meeting notice to appear in the April issue you must have the notice arrive in the *Gleanings* office by or on the fifth of March. We plan to have *Gleanings* in the hands of each reader before the first of the month of the month of issue but this is not always possible due to unavoidable circumstances. In any event it is best to give us information about meetings well in advance so that the current issue events which will be upcoming and not at a date already past.

NEW YORK
Southeastern Beekeepers' Club

The Southeastern Beekeepers' Club will be meeting Sunday June 20th at the home of Mr. and Mrs. Herman Schmid, Old Ridge Rd., Warwick, NY starting with a picnic at 12 noon. Those attending are asked to bring their own place settings and a covered dish to be shared. Following a visit to the bee yard, a bee decoration will be made. The meeting will conclude with an audio visual presentation on bee diseases. Visitors welcome.

MASSACHUSETTS
Queen Rearing Workshop

A Queen Rearing Workshop is scheduled for Ware, Massahusetts for June 5, from 9 a.m. to 4 p.m. at the Mt. Carmel Parish Hall, Upper North Street, Ware, Mass. Teaching the course will be Dr. Larry Connor of Beekeeping Education Service. The course is being offered by Frank Lagrant, a bee supply dealer from Ware. Registration is $13 per person or $20 per family, and should be sent to Lagrants, Osborne Road, Ware, Mass. 01082. Phone: 413-967-5067 for further information.

GEORGIA
Beekeeping Short Course

The annual beekeepers short course for beginners and more experienced beekeepers will be held on June 5, 1982, at the University of Georgia in Athens, Georgia.

Topics and demonstrations will include honeybee biology and behavior, bee diseases, management for honey production, honey extraction and honey house operation, queen rearing and package bee installation.

The teaching staff will consist of several specialists including commercial honey and queen and package bee producers. The course fee is $20.00 per person. Advanced registration is requested by June 3, 1982.

Requests for additional information, program and registration forms should be addressed to Dr. Alfred Dietz, Department of Entomology, University of Georgia, Athens, Georgia 30602.

CANADA
Tour To Hawaii

Bee ready! Don't forget to block off January 14th-28th, 1983 on your calendar for the event of the year! Reservations will open soon for Bee Maids' Canadian Tour to the American Beekeeping Federation meeting in Hawaii. A very exciting itinerary has been planned and early bookers will get extra clues for the fabulous windup Treasure Hunt on the beaches of Maui.

All hotels have been personally selected, inspected, and approved by your tour representatives from Mackie Travel and New Horizon Holidays. All hotels have fridges, balconies and pools, (the essentials). All offer exceptional value for your dollar.

In order to be included in future mailings, please send in your name and address to: Manitoba Co-operative Honey Producers Ltd., 625 Roseberry Street, Winnipeg, Manitoba R3H 0T4.

MINNESOTA
Minnesota Hobby Beekeepers' Association

The Minnesota Hobby Beekeepers Association, will meet at 7:30 p.m. on Tuesday, June 8th in Room 495 of Hodson Hall on the St. Paul Campus of the University of Minnesota.

Comb Honey Production will be the topic of the June meeting. All area beekeepers are invited to attend.

MARYLAND
Maryland State Beekeepers' Association

The summer meeting of the Maryland State Beekeepers' Association will be held at Princess Anne, Maryland on June 26, 1982. Program presentations will be made in the Library Auditorium of University of Maryland, Eastern Shore, which is located just off Route U.S. 13. The theme of this meeting is to be: "Queens — their production and introduction in the home apiary." The lecture portion of the presentation will take place in the morning starting at 10 a.m., with the afternoon dedicated to a field trip/demonstration at a nearby commerical queen-rearing yard.

Lunch arrangements are of the "bring-your-own-picnic-lunch" type with vast shaded lawns for facilities. The ocean beach is only minutes away. Limited information on commercial attractions and facilities is available from: W. Van Aller, VP; 7623 Old Washington Rd., Woodbine, MD.

KANSAS
Kansas Group Favors Domestic Honey Label

The members of the Kansas Honey Producers Association at their Spring Meeting in Wichita voted to ask honey packers to label domestic honey "Produce of the U.S." and invited other beekeeping associations to join them in this enterprise.

An "Appreciation Award" Plaque was presented to Mrs. Marene Levin, of Stuttart, KS, editor of "Cappings," the Association newsletter for her work in editing the newsletter and for her work for the Association.

In other business the Association voted to establish an equipment identification brand registration system

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for use by the membership. They also voted to establish a continuing dialogue with the aerial applicators of Kansas to maximize pest control while minimizing damage to bees and other beneficial organisms.

The Fall Meeting of the Kansas Honey Producers Association is scheduled for October 22-23, 1982, at the Downtown Ramada Inn, Topeka, Kansas.

TENNESSEE
Tennessee Honey Queen

Miss Melissa Hart is the 18 year-old daughter of Mr. and Mrs. Thomas C. Hart of Watertown, Tennessee. She is a senior at Watertown High School where she is active in 4-H, Beta Club, FHA, and a member of the newspaper staff. Her hobbies include beekeeping, cooking, sewing, travel, and promoting honey. Melissa was crowned 1982 Tennessee Honey Queen during the Tennessee Beekeepers' Association Convention at Shelbyville last fall.

Miss Melissa Hart, Tennessee Honey Queen.

PENNSYLVANIA
Bucks County Beekeeping Association

The Bucks County Beekeeping Association and Delaware Valley College will be sponsoring the June 1982 meeting to be held on the Delaware Valley College campus. Featured speaker for the afternoon will be Mr. Jack Matthenius, the New Jersey Supervisor of Bee Culture. In addition to this talk, Miss Simone Koos of Monmouth Junction, New Jersey will be giving a short talk dealing with "Honey Plant Landscaping." The meeting will be held on June 20th in Room 114, Mandell Hall on the Delaware Valley College campus, Route 202, just one mile west of Doylestown Pennsylvania. The formal part of the program will begin at 1:30 p.m. Preceding the talks and starting at 12:00 noon, there will be a bring-your-own picnic. Following the formal presentations, there will be an open house at the College Apiary and Honey House with opening of hives and refreshments.

Additional information on the bee meeting and/or the course may be obtained by writing Dr. Berthold, Delaware Valley College, Doylestown, PA 18901 or calling him at 215-345-1500.

OKLAHOMA
Oklahoma Beekeepers Association

The Oklahoma Beekeepers' Association will hold its SPRING MEETING June 19, 1982 in Guthrie at the Logan County Fairgrounds Building.

Registration will begin at 8:30 a.m. and the program will be from 9:00 a.m. to 4:00 p.m. The host club is the Frontier Country Beekeepers' Association.

CONNECTICUT
United Concerned Beekeepers

U.C. Bees will have a Educational Field Day for both beekeepers and non-beekeepers on May 29th. The program will be held at U.C. Bee supporter Norman Farmer's farm and apiary in Bristol, Connecticut. Various demonstrations and displays will be set up, and a bee-free area

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established for non-beekeepers. A number of managment ideas will be demonstrated, as well as honey use, and other bee products. Supply dealers are invited to set up a display, tail-gate style if necessary, to develop a suitable atmosphere. U.C. Bees will benefit by receiving the proceeds from a $5 per person/$10 per family donation. The program will run from 9 a.m. to 4 p.m.

CONNECTICUT
Connecticut Beekeepers Petition To Research Penncap-M®

Petitions are being circulated by members of United Concerned Beekeepers in Connecticut to place restrictions on the use of Penncap-M® within the state. The petitions are addressed to the Connecticut Pesticide Control Board.

The petition requests that Penncap-M be available only on a Permit-Use basis within Connecticut, and that such permits be issued only when no (zero) pollinating insects are foraging within the treatment area, and no flowering crop, flower, wildflower, weed or tree is in any stage of bloom at the time of application, or will bloom during the next ten (10) day period after application.

Petitions are available from Mr. Bill Gerdsen, Bedlam Road, Chaplin, CT 06235, (203) 455-0010, and other members of United Concerned Beekeepers.

KENTUCKY
Kentucky Beekeepers' Association

The annual Kentucky Beekeeping Summer Conference will be held at Eastern Kentucky University in Richmond, Kentucky, on July 15, 16, and 17th. Chairman J. D. Stucker, Sr., P.O. Box 82, Shelbyville, Kentucky 40065, (502) 633-5507, is in charge, or Charlie Martin, 303 Redwood Drive, Stanford, Kentucky 40484.

Mr. Howard Kerr from the Tennessee State Beekeepers Association will discuss pollination and contamination of bee hives by radiation. Dr. Walter L. Gojmerac, entomologist with the University of Wisconsin and author of the book *Bees, Beekeeping, Honey & Pollination*, will be there. Joe M. Parkhill of Arkansas, author of *The Wonderful World of Honey*, and other books, will be there.

ALABAMA
Madison County Beekeepers' Association

The different aspects of pollen will be the center of attention at the Madison County Beekeepers' annual Field Day on Saturday, July 31 at Huntsville, Alabama.

Royden Brown, C. C. Pollen Co., Phoenix, AZ, will conduct a seminar open to the general public on the value of pollen.

The Field Day is traditionally a family get-together at Monte Sano State Park on the east side of Huntsville.

At noon, barbecue with all the trimmings will be served at the Pavilion in the heart of Monte Sano Park.

Door prizes will be awarded at the end of the day.

For further information, please write .Madison County Beekeepers' Association, P.O. Box 3069, Huntsville, AL 35810.

KANSAS
Kansas Queen Presents Honey To Governor

Carolyn Sachse, Kansas Honey Queen, spent a busy day on February 19th when she addressed both houses of the Kansas Legislature and presented a jar of Kansas honey to Governor John Carlin. She spent the remainder of the day in the Kansas Honey Producers booth at the Topeka Flower and Garden Show promoting honey.

Mrs. Mike Sachse, Mrs. Thelma Saxby, 1982 Kansas Honey Queen Carolyn Sachse, Governor John Carlin, Chief Apiary Inspector Gary Ross, Representative Ambrose Dempsey, and Senator Ed Reilly.

NEW YORK
Empire State Honey Producers' Association

The summer picnic of the Empire State Honey Producers' Association will be held at Gifford Miller's home and apiary on Saturday, July 31. The location is on Route 26, six miles north of Endicott and 13 miles from Whitney Point. Signs will be posted. Parking for self contained campers is available. Beekeepers are asked to bring their own lunch; coffee will be provided. The informal meeting will start about 10:00 a.m. with a regular business meeting following lunch.

INDIANA
Michiana Beekeepers' Association

The Michiana Beekeepers' Association will meet June 13th at the Harris Township Fire Station, 51070 Bittersweet Rd., Granger, Indiana. A slide program on supering of overwintered colonies and a discussion of extracting are on the program.

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MASSACHUETTS
United Concerned Beekeepers

On June 12 in Amherst, Massachusetts, U.C. Bees will conduct a joint meeting with the Massachusetts Beekeeping Federation. In the afternoon, U.C. Bees will provide educational discussions and demonstrations on various aspects of the insecticide-bee issue. Dr. Larry Connor of Beekeeping Education Service will coordinate the program. The program will be held in conjunction with the Massachusetts Beekeeping Federation at the University of Mass. campus.

SOUTH DAKOTA
South Dakota Beekeepers' Association Award

The South Dakota Beekeepers' Association has presented its annual Aerial Sprayer of the Year award to Jim E. Georgeson of the Turkey Ridge Agricultural Service, Hurley, South Dakota. In an effort to promote better relations between crop sprayers and beekeepers, to solve and avoid problems between the two. The South Dakota Beekeepers' Association presented the award to Mr. Georgeson in recognition of the extra care and consideration for the agricultural environment which he demonstrated in his application of chemicals for insect control. Mr. Georgeson had worked with the Beekeepers' Association in making maps available which pinpoint locations of bee yards so that sprayers could contact the owner of bees in order to take measures to avoid losses due to pesticide application.

LOUISIANA
Queen Rearing Short Course

A course designed to take the mystique out of queen rearing. Course includes: grafting larvae, several different methods of setting up a cell builder, queen mating nuclei, caging, marking, clipping queens, and queen introduction. The instructor is Susan Cobey. The cost for students and union members is $15.00; for faculty and staff $20.00. Minimum enrollment is five, maximum is fifteen people. The dates are; Sunday, June 20th and Sunday, June 27th, 3:30 to 6:30 p.m. The location will be announced later. Contact L.S.U. Union at 504-388-5118.

COLORADO
American Honey Producers

President Johnston has notified board members of plans for a meeting in Denver on July 16 and 17 and has urged them to make plans to attend. The need for the meeting was throughly discussed at the January 28 meeting of the Executive Committee in Orlando, Florida.

Yesterday, April 10, our President advised me to broaden the scope of industry participation and invite all industry people to come even though the meeting is an official board meeting. Inviting outsiders to our informal board meetings has been highly successful at our conventions. Non-board members and even non-AHPA members have been given ample time to express their views. Comment from outsiders has certainly been helpful when drafting resolutions.

The meeting will be held at the Travel Lodge Airport Village Inn, 6160 Smith Road, Denver, Colorado 80216, telephone 303-388-4821. Sessions will commence at 1:30 p.m. July 16 and last through noon on July 17. The Executive Committee will meet in the afternoon of July 17. Room rates are $30 single and $34 double. The registration fee will be $5. When making a reservation, be sure to say that you are meeting with the American Honey Producer's Association. Glenn Gibson, Exec. Sec., P.O. Box 368, Minco, OK 73059, Ph: 405-352-4126.

OHIO
Tuscarawas Beekeepers' Association

Our meeting and picnic, will be June 13 at Ninarh Grange on State Route 416 out of Tuscarawas, Ohio at 12 o'clock. Anyone interested in bees is welcome to attend.

PENNSYLVANIA
Beekeepers Short Courses

Over 70 people attended the Delaware Valley College Spring Beekeeping Short Course, with most of the participants coming from Eastern Pennsylvania, New Jersey, Delaware, Maryland and New York.

Due to the continued response, Delaware Valley College will again be offering its Summer Beekeeeping Course to be held on Friday, Saturday, and Sunday, June 25, 26, and 27, 1982. This course will also be under the direction of Dr. Berthold who will be assisted by Mr. Matthenius and a number of other skilled instructors. The Summer Course has attracted people from all over the United States and Canada who have incorporated the course into their vacation.

For additional information, on the Summer Short Course, write to: Director of Continuing Education, Delaware Valley College, Doylestown, PA 18901 or telephone: 215-345-1500, Ext. 375.

Mr. Georgeson, right, receiving his award from Bill Brazell, left.

COLORADO
Colorado Beekeepers' Association

The summer meeting of the Colorado Beekeepers' Association will

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take place at 10:00 a.m. on June 26, 1982. Shavano Mannor, located adjacent to the city swimming pool pavilion in Salida, Colorado, will be the meeting place. A picnic lunch will be provided by some western slope beekeepers for a small fee. This summer meeting is primarily a social event, but there will also be a short business meeting of the Colorado Beekeepers' Association.

For further information, send a self-addressed stamped envelope to: Randy Fischer, 3007 Moore Lane, Ft. Collins, CO 80526.

TENNESSEE
Beekeeping Home Study Course

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1982 EAS Conference
Hosted by West Virginia University
Morgantown, West Virginia

Monday, August 2 — Wednesday, August 4

EAS Short Course: Registration Monday 8:00 a.m. — 10:00 a.m.

The short Course, scheduled for August 2-4, is sponsored by the Eastern Apicultural Society (EAS) and precedes the annual EAS Conference August 4-7.

The course will be conducted by Dr. Lawrence Connor. Dr. Connor will be assisted by Dr. Dewey Caron, Dr. Robert Berthold, and Dr. Clarence Collison.

The Short Course will be taught in separate sections for beginning and advanced students. Beginners can expect to learn to handle bees confidently, to start a colony of bees, basic hive management, beekeeping problems and further sources of information. Experienced students will cover the same topics at a more sophisticated level and in addition will receive instruction in the rudiments of queen rearing and in the management of bees for crop pollination.

The Advanced Section will also benefit candidates for Master Beekeeper certification.

A $40 pre-registration fee will be charged those enrolled in the Short Course by July 14. After that date an additional $10 will be charged. Lodging and meals will be available at the University Towers during the Short Course at $55.00 plus tax for individuals and $40.00 each plus tax for couples sharing a room.

Wednesday, August 4

12:00 noon	Registration Desk Open (open 24 hours).
1:00-5:00	Registration of Honey Show entries.
4:00-6:00	Honey Queen Reception and Fruit Punch Social — Towers — East Breezeway
5:30-6:30	Mead & Cheese Reception Hosted by Professional Apiculturists Association — Holiday Inn Lounge.
6:00-7:30	Dinner — Towers Cafeteria
7:00-8:00	Apimondia: 10 Years in Slides — Arthur Strang. Towers — Rooms A & B, lower level.
8:00-9:00	Delegates Meeting. Towers — Formal Lounge
9:00-10:00	Directors Meeting. Towers — Formal Lounge

Thursday, August 5

7:00-8:30	Breakfast — Towers Cafeteria
9:00-5:00	Educational & Commercial Exhibits Open — Towers — Blue Room
9:00	President's Call to Order — Towers — Rooms A & B, lower level.
9:05	Invocation: Rev. Earl P. Cochran
9:15	Welcome: Dr. Gordon Gee, President, West Virginia University
9:25	Opening Remarks: The Honorable Gus R. Douglass, West Virginia Commissioner of Agriculture
9:35	History & Methods of Mead Manufacturing in the U.S.A.: Dr. Roger A. Morse, Cornell University
10:20	Coffee Break
10:40	Deadline for Honey Show entries — Towers — Gold Room
10:40	Pest Control & Bee Protection in West Virginia: Alan R. Miller, Forest Entomologist, WVDA.
11:20	Bee Venom Allergy: LTC Artie Shelton — Walter Reed Army Hospital.
12:00-1:30	Lunch — Towers Cafeteria
12:30	Buses depart Towers for Ladies Luncheon
1:00-2:30	Ladies Luncheon: Hostess — Nancy Ramsey, WVDA — Lakeview Inn
1:30-3:00	Panel Discussion on "Bees: Insecticides and Alternatives." — Towers — Rooms A and B, lower level. Jack Matthenius — New Jersey's Experience. Jesus Cota, Forest Service — Gypsy Moth Control, bee notification. Rob

(Continued on page 358)

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1982 EAS Conference

(Continued from page 356)

Rose, Bio-Chem — *Bacillus Thuringiensis*, biocontrol. Alan Miller, W. VA Dept. of Agriculture.

1:30-3:00 Movies — Room 315, Forestry Building **Queen Mating** by Gudrun Koeniger — **Israeli Modular Nuclei** By Gideon Shelach, Huliot Plastics Industries, Israel. — ***Varroa jacobsoni*, a New Parasite in the Bee Hive** by Donat Waltenberger, Deutscher Imkerbund, German Federal Republic.

1:30-5:00 Honey Show Open, Gold Room — Towers.

2:30-3:00 Buses Depart from Towers and from Lakeview Inn for Glass Factory Tour, Return by 4:30.

3:00-3:45 Workshops: Transferring a Box Hive — Stanley Loudermilk, Apiary Inspector — Near Tennis Courts.
Beeswax and Candle Making — Bob Berthold Room 332 Forestry Building.
Mead Making — Dr. Roger Morse — Room 335 Forestry Building.

3:45-4:30 Workshops: Pollen Trapping and Harvesting Ernest Miner and Melanie Odlum — Room 316 Forestry Building.
Honey Cookery — Ann Harman — Room 335 Forestry Building.
Bee diseases — I. Barton Smith, Maryland Dept. of Agric. — Bee Cage Near Tennis Courts.

4:30 Bee Beard: International Contest — Near Tennis Courts.

5:15-5:45 Shuttle Buses to Mountain Lair.

5:30-7:00 Country Vittles Buffet — Mountain Lair.

6:00 Mountain Harmony Chapter of Sweet Adelines.

7:30-10:00 Concert & Square Dance — Michael Kline, Elkins, WV — Mountain Lair.

9:30-10:00 Shuttle Buses to Towers from Mountain Lair.

Friday, August 6

7:00-8:30 Breakfast — Towers Cafeteria.

9:00-5:00 Commercial and Educational Exhibits open — Towers Blue Room.

9:00 President's Call to Order — Towers, Room A and B, lower level.

9:05 Beekeeping in Philosophy and Practice — Earl P. Cochran, EAS President 1972-1973.

9:45 Identification of Honeybee Races — Dr. Hachiro Shimanuaki — USDA, Beltsville.

10:25 Coffee Break.

10:40 Pollen, Propolis, Royal Jelly, and Venom. — Ann Harman — North American Apiotherapy Society.

11:20 Assessing Effectiveness of Pollination — Dr. Lawrence J. Connor — Beekeeping Education Service.

12:00-1:30 Lunch — Towers Cafeteria.

1:00-2:00 Business Meeting Towers, Rooms A and B, lower level.

2:00 Buses Depart Towers for Preston County Honey Tour — Return by 5:30. Fair Weather Only.

2:00-3:00 Panel Discussion on "Small is Beautiful in Beekeeping" — Moderator: Pete Bizzoso, Long Island Beekeepers Association — Towers, Rooms A and B, lower level.

2:00-6:00 Honey Show open — Gold Room, Towers. (Entries may be claimed after 4 p.m.)

2:00-3:00 Movies — Same as Thursday's program — Room 315 Forestry Building.

3:00-4:30 Workshops: Same as Thursday's program.

4:30-5:30 Professional Apiculturists Association Meeting — Towers — Formal Lounge.

6:00-6:20 Shuttle Buses Depart Towers to Mountain Lair.

6:30-9:00 Banquet — Mountain Lair. Presentation of awards. Speaker: U.S. Senator Robert C. Byrd.

9:00 Shuttle Buses Depart Mountain Lair to Towers.

Saturday, August 7

7:00-8:30 Breakfast — Towers Cafeteria.

9:00-12:30 Commercial and Educational Exhibits Open — Honey Show Open (Entries must be claimed.)

9:00 President's Call to Order — Towers, Rooms A and B, lower level.

9:05 EAS Student Award Winner.

9:40 Beekeeping and Development in the Third World: Diana Sammataro, Co-Author, *The Beekeepers Handbook*

10:20 Coffee Break

10:40 J. I. Hambleton Award Address

11.20 The International Bee Research Association and North America. Dr. Karl Showler, IBRA, Hill House, Gerrards Cross, Bucks, England.

12:00 Conference Adjourned to Maine, August 1983.

12:00-1:30 Lunch — Towers Cafeteria.

12:30 Deadline for claiming Honey Show entries.

1:00 Checkout deadline from Towers Residence Halls.

Pre-registration forms and further information are available from Mrs. Liz Rodrigues, Secretary/Treasurer of EAS, 157 Five Point Road, Colts Neck, NJ 07722. Please specify which information is needed, such as Conference program, Honey Show rules, Master Beekeeper Certification, Short Course, or Accommodations. Pre-registration must be sent in before July 14, 1982. The total conference cost will be approximately $130 for individuals and $115.50 each for couples. Charges will be less for those who do not elect all Conference activities.

A $10 late registration fee will be required after July 14. Persons who plan to attend the Conference only one day must also pre-register before July 14 for a fee of $15, or $20 for late registration.

Gold Dust For The Bees

By FRED THOMPSON
Grand Island, NY

ARE BEES ABLE to detect pollen as well as floral scents in the air? Wind-borne pollen can travel great distances and signal a source of food to the bee.

Late summer and fall are bad times for hay fever sufferers in the Northeast. Eyes become bleary and noses get stuffy. There are days when you feel just miserable. What causes these symptoms? The allergic effects of pollen.

During hay fever season, a pollen index or pollen count is usually reported on the radio. This figure is based on the number of pollen grains in one cubic yard (0.8 cubic meters) of air. The collection device may be a grease-coasted microscope slide or cellophane tape which is viewed under a microscope for pollen identification and counting. The count is usually taken over a 24-hour period. It is higher during the day, highest during dry, windy weather, and lowest after a rainfall.

Wind pollinated flowers often produce large amounts of pollen dust since the chances of a grain of pollen reaching the female stigmas are very slim. The date palm actually has separate male and female trees; pollen must be blown by the wind from one tree to another for fertilization. Even in ancient times the Babylonian people apparently understood this, for they used to cut the branches of pollen-bearing male flowers and hang or shake them among the female trees in case the wind did not do it for them. Pollen grains carried by the wind have shapes that help keep them air-borne so they can drift great distances. J. G. Kolreuter in 1766 first subdivided pollen according to wind-borne (anemophilous) and insect-borne (entomophilous) types, the former having a small volume and simple shapes, while the latter range from very small to very large and heavy. Wind can carry pollen three miles high and deposit the grains 100 miles from the plant. A single male cone of pine may produce 1,500,000 grains. Spruce forests of southern Sweden alone produce something like 75,000 tons of pollen each year.

Few wind-pollinated flowers need to be showy, nor have they a sweet odor, as this wouldn't have any advantage to the plant. However, bees still collect this pollen at times for food and may also use its presence as a means of detecting and collecting pollen from other blooming flowers in the area. At the time ragweed is spreading its pollen throughout the area, the chances are goldenrod and aster are also in bloom.

There are all indications that bees can differentiate pollen from various sources. Gontarski (1954) stated that no observation so far indicated honeybees prefer a specific kind of pollen and make a qualitative selection. Haydak (1944) and Maurizio (1960) reported the difference in protein content between insect-pollinated and wind-pollinated plants is insignificant and Taber (1963) was able to show that the pollen collection by bees is stimulated by some attractive component present in pollen.

The fact that bees can be drawn to a food source by means of air-borne pollen as well as an odor and visual stimulus adds yet another dimension to the interdependence of plants and insects.□

Never deceive yourself with the idea that there is no hard work in beekeeping, as success is the result of prompt and systematic attention. This becomes more than evident when we realize that the bulk of the surplus honey is gathered in about six weeks. Like the keeping of poultry one must be interested enough in it to attend to it properly, else failure is the inevitable result.

From *22 Years Experience in Queen Rearing*, by Henry Alley, 1885.

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THE INTERNATIONAL BEE RESEARCH ASSOCIATION regularly publishes new information on bees, beekeeping, and hive products, for beekeepers and scientists all over the world. Mail inquiries from USA: H. Kolb, P.O. Box 183,, 737 West Main, Edmond, OK 73034, Phone: (405) 314-0984. IBRA PUBLISHES: **Bee World,** a quarterly journal for the progressive beekeeper. **Apicultural Abstracts,** a survey of scientific literature from all languages. **Journal of Apiculture Research,** for original bee research papers. Books and pamphlets on all beekeeping topics. Catalogues of publications and details of journals and membership $1. Specimen copy of **Bee World** $1.50; **Journal of Apicultural Research** $1.50; **Apicultural Abstracts** $2.00, from INTERNATIONAL BEE RESEARCH ASSOCIATION, Hill House, Gerrards Cross, Bucks. SL9 ONR, England.

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

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

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

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

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Bee Talk

(Continued from page 333)

tains its strength without getting much more populous, and settles down to gathering honey and getting ready for the inevitable decline and the inevitable repetition of the same pattern another year.

It is an interesting pattern, which greatly assists in the understanding of all life — of populations and, no less significantly, of individuals and, I think, of the entire evolutionary process. And of course it throws light, it seems to me, on oneself, as he passes through the traditional four stages of life from beginning to end. I suppose we would all like to tarry a bit longer in that exhilarating middle phase, but there is not much we can do about that, and it wasn't we, in any case, who designed that interesting pattern. □

Summer Ventilation

By CLARENCE KOLWYCK
Chattanooga, TN

The question and answer on page 203 of April *Gleanings* regarding summer ventilation prompts me to enter this forever unsettled question. My opinions have evolved from many years of experimentation and observation. I am sure I am in conflict with many experienced beekeepers of equal experience. Of such is the lifelong interest in beekeeping.

I will start with the opinion of which I am the most positive. There should never be any top ventilation admitting air inside the hive during a honey flow and until all nectar is cured. The inside of the honey storing portion of a hive may well be likened to a kitchen range. A cook would never drill a hole in the top of an oven. In curing, ripening or "cooking" honey, the bees must have the same undisturbed area.

This opinion is fortified by the observation that bees will store no honey within a radius of three to four inches below an open bee escape hole in an inner cover. Also if this hole is covered with screen wire they will immediately seal it air tight with propolis if they are storing honey. If we can learn anything from bees, it is that they do not want any outside air into their "honey curing oven." If there is no honey flow, perhaps no harm can come from allowing air into the hive from the top.

There are many other ways to admit air. In the hot summer during a lull in the honey flow it is true that "unemployed" bees will pile up on the front of the hive. But this can be alleviated in many ways. The simplest remedy is to push the hive forward on the bottom board, thus creating an entrance equal in size to the front entrance. Strange as it may seem, this remedy is not mentioned in any beekeeping literature. Yet it was taught to me by my great mentor 67 years ago.

There are numerous other very simple ways to reduce the temperature in a hive when the bees are not storing honey. Here are some suggestions:

1. Elevate the telescope cover at least an inch above the inner cover by inserting blocks in each corner of the inner cover. This will also prevent ants from resting between the two covers.

2. Use a slatted rack or any other means of elevating the brood chamber above the bottom board.

3. Provide afternoon shade, if possible.

4. Have a readily accessible water supply.

I do not approve of any form of ventilation into the sides of a bee hive, such as elevating the inner cover or dodging supers, especially while honey is being stored for the reasons already stated and for the reason that such practice invites robbing.

As most beekeepers will agree, honeybees are very resourceful and can adapt to most situations. But there is no reason why they should not be made comfortable, and perhaps thereby make them more profitable to their owners. □

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