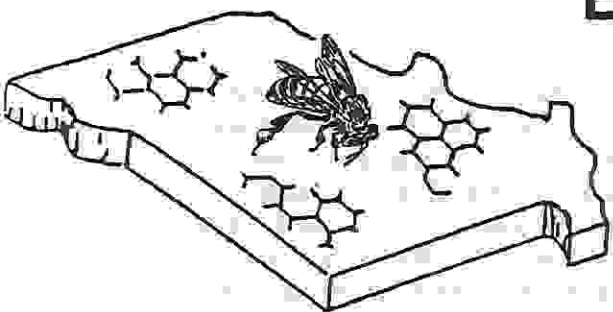


Spring 1994

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GEORGE VANARSDALL

George Layton Vanarsdall, 58, died December 19, 1993, at his home in Sibley, Missouri. Services were held at the Six Mile Baptist Church in rural Independence, Missouri. Burial was in the Buckner Hill Cemetery.

George was a lifelong area resident. He operated the Osage Honey Farm in Sibley. He was a member of the Six Mile Baptist Church, past member of the Buckner Masonic Lodge, past patron of the Eastern Star, lifetime member of the Midwestern Beekeepers' Association, member of the Eastern Missouri, Northeastern Kansas, Missouri State and Nebraska State Beekeepers' Associations and honorary member of the Oklahoma State Beekeepers' Association. In 1982 George was selected as the Missouri State Beekeeper of the Year. He served as president of the Missouri State Beekeepers' Association in the years 1966 and 1967, and member of the Executive Board from 1970 through 1972.

George attended the Missouri State University at Columbia and studied apiculture. During this time the Missouri Apiculture Department was the first to discover that sulfa antibiotic would combat foulbrood.

The above information gives a long list of the things that George did in his lifetime, but there are a lot of other things that are not mentioned. I will try to tell you about just a few others. George will be sadly missed by a large number of beekeepers in the midwest and in the state of Missouri. I will always remember George as a super friendly man and a very helpful person. George was always ready to help anyone with bees. If you had a problem, he had an answer. George had a plan on how he worked his bees and he shared this plan at association meetings all around the state. A lot of beekeepers have adopted this plan because it was so successful for George. It turned out to be successful for many other people including me.

I will always remember that every time I saw George he said, "By golly, Glenn, how are you doing?" His byline was "By golly, what's goin' on?"

There are numerous other stories which could be told at this time, but I think I will just end by saying we will all miss you George.

Glenn Davis

FROM THE VANARSDALLS

(I received a call from Mike Vanarsdall, George's son, asking if I would print a thank you from his family for the kindness and sympathy shown by so many beekeepers on the occasion of George's death. The following sentiments were expressed in a card from the Vanarsdall family.)

Missouri State Beekeepers

Thank you for the flowers and for the many cards, calls and prayers you have given during our families loss.

For all the kindness you have shown,

*We thank you very much,
For sympathy in sorrowing days,
For friendship's healing touch
With gratitude our hearts are full,
Though words cannot convey
The tender thoughts and
thankfulness
We hold for you today.*

*By the family of
George Vanarsdall*

MSBA SPRING MEETING MARCH 12

The Missouri State Beekeepers' Association will hold the Spring 1994 meeting in Columbia, MO at the Holiday Inn Executive Center on March 12, 1993. The schedule and program will be coming out later either in the next newsletter or a separate mailing. Mark your calendar now so you don't miss a minute of fun and information with your fellow beekeepers.

QUEEN PIPINGS

On October 9th, I travelled to Mera-mec Caverns for the State Meeting. We had an auction with the proceeds going to the Queen Fund (thanks to all who contributed--I'm going to Orlando!). While we were there we also enjoyed touring the caverns. Although a bit chilly, the cave was magnificent! Thank you to the MSBA for the scholarship and the cookie bouquet!

December 12th was the Governor's Conference on Agriculture. Lake of the Ozarks was beautifully decorated for the holidays and I think everyone who attended, including myself, had a wonderful time. Many different agricultural groups were present, each providing a unique dish for the banquet. We fixed and served a delicious salad with a honey dressing.

Thank you to everyone who helped make my reign as the Missouri Honey Queen possible. I really appreciate all the support given to me during the past year and a half. A special thanks to: Glenn and JoAnn Davis and Sharon Gibbons for not only coordinating but helping with all my promotions, Ron Vivian, for helping with all of my promotion expenses, Jim Thaxter, Pamela Wright, Larry Hensley, and last but not least, my parents for supporting me throughout my reign!

I leave for Orlando to compete for the American Honey Queen title on January 17th. I am greatly looking forward to the trip! Thanks again to all who helped make this trip possible!

Sincerely, Julie Batton, 1993 Missouri Honey Queen

Ed. note: I'm sure we all send Julie our gratitude for serving as our first Missouri Honey Queen and for so ably representing our association at the functions she has attended. I know she made a good impression on all with whom she came in contact. Our best wishes go with Julie to Orlando.

FROM YOUR PRESIDENT:

This year is ending with the sadness of the death of one of our most beloved beekeepers, George Vanarsdall. It seems appropriate that if one has to die it should come (for a beekeeper) in the winter at the end of a cycle; for as the bees are resting, so is George resting with God.

For all of us it is also another beginning. We have another chance to start over with bees, and correct mistakes we have made in the past year. Bees are very forgiving; they just go on doing what they were put on this earth to do in spite of our intervention. It is time to clean up that old equipment, and get things ready for spring, and it's time to help someone else discover the joys of beekeeping.

I had the privilege this past October of spending many hours visiting with and working bees with a scientist, Dr. Oldrich Haragsim from Prague, Czechoslovakia. He spent five weeks in St. Louis visiting his son who is a medical intern at St. Louis Univ. They have had varroa mites in his country since 1968, and tracheal mites a lot longer. I'd like to share some of the information he passed on. I feel that I now have a much better understanding of working bees with mites. Since varroa has now been found in the Kansas City area, I can safely say that mites can be found on honeybees in most parts of the state. All of us will have to become better beekeepers in order to stay in business.

Some significant differences and advantages that the Czech beekeepers have in controlling the spread of mites has to do with politics. Since they were under communistic rule for so long; their borders were closed to any movement of bees to and from other countries. All beekeepers had to be registered and had to belong to the beekeeping club. Only one race of bees was allowed in the country, and that was Carniolan. They also exterminated all feral colonies and managed colonies found to be infested with varroa.

He considers their worst disease problem with bees is American Foulbrood. This is because their government does not allow antibiotics to be used at all where a food product is involved. As a contrast, they can use formic acid to kill mites, plus they are allowed to use it when the honey supers are on. Formic acid has not been approved for use in this country.

He does not consider tracheal mites a problem. He feels that if you lose colonies to tracheal mites, it really is because they have several other problems, primarily nosema. They regularly treat with Fumidil-B. As for varroa, he does not believe that bees will develop a resistance to the mite, but rather through genetics, a shorter life cycle in the honeybee will limit the development of the mite.

His research involves the feeding patterns of the larvae in mite infested colonies. He says that there is a difference in the way the summer larvae are fed, and the fall larvae are fed. He calls these the winter bees that must take your colony through to spring. If those larvae do not develop right, then your colony will collapse at the first frost. He said that the summer bees will hold on as long as possible, but if there are not enough properly nourished and developed winter bees to take over the cluster, you will not have a hive that survives. For me this explained why I had an abundance of bees in September, and hardly enough to keep the hive going in late October. He says that the hives need to be treated in late summer, as soon as all of the honey is harvested. To wait until late September will spell disaster for the colony with varroa mites. My style of beekeeping will have to change entirely. I like to harvest fall honey, so I usually have supers on until the first part of October. As I watched many of my hives collapse in October, that I had set aside for fall honey production, I now know that I cannot afford to do this.

I'm looking forward to the coming new season, and with my new understanding, I'm hoping for a successful new year. I wish all of you a Happy New Year, and hope that all your supers fill with honey this next summer. See you in March at our spring meeting.

Sharon Gibbons

OUTGOING PRESIDENT'S FAREWELL

I have enjoyed being your president for the last two years. As my term comes to an end I can only hope that the things that I have done for the organization have been the right things.

The Honey Queen Program is one of the things which I believed in and was able to get started. So far I have been very happy with the way it has been received by everyone and also the way it has progressed. We have been very lucky to have found Julie Batton as our Queen.

Some of the other things that I am happy to have been involved in helping with is the European queen certification plan and helping the organization get in a better financial position.

Thanks for your cooperation these last two years that I have been your president. I hope that you will do the same for Sharon as she takes over. Glenn

POLLINATION INFORMATION NEEDED

Sharon Gibbons has been asked to address the declining honeybee population at the Small Fruit Conference and the Apple Growers meeting, both being held in February. She needs information from any beekeepers wanting to rent their hives for pollination. If you only have a few hives, but are interested, please let her know. Some orchards will help you move the bees. We are going to consider having a Pollination Hotline for MSBA members. This will be talked about at the Jan. 29, 1994 board meeting. It is desperate for many growers, and some are considering renting bumble bees. This is an opportunity to become more visible to other agricultural groups. It is

nice to be in a position of being necessary for agriculture to survive. We have known it all along, but it's sad that it took the mite problem to be recognized as an important ingredient to successful agriculture. Send information to Sharon Gibbons, 314 Quinmoor Dr., Ballwin, MO 63011.

SPRING MANAGEMENT TIPS

I. Early Inspection (February-March, only during good weather)

1. Close and remove dead colonies
2. Clean colony entrances (and bee yard)
3. Lift colony covers to check colony stores
4. Feeding of weak colonies

II. Early Spring Management (March-April)

1. Clean bottom boards
2. Maintain active brood rearing colonies
 - a. Feed as necessary
 - b. Insure queen presence and active brood rearing
 - c. Proper cluster position
 - d. Relocate weak colonies, transfer brood
3. Install packages
4. Remove entrance reducers
5. Medicate for foulbrood

III. Special Preparations for Pollination/Early Honey Flows

1. Stimulative feeding of colonies
2. Equalize colony strength
3. Preparing & selecting colonies for moving
4. Supering for early honey flow

IV. Mid Spring Management (April-May)

1. Maintain active brood rearing colonies
2. Disease inspection
3. Reverse hive bodies as necessary
4. Feeding (stimulative or as

- necessary)
- 5. Swarm prevention and control of strong colonies
- 6. Begin forming nuclei from strong colonies

V. Late Spring Management

- 1. Swarm prevention and control (weekly inspections)
- 2. Capture swarms
- 3. Dividing colonies, starting nucs
- 4. Feeding (as necessary)
- 5. Supering

SWARMING--ITS PREVENTION AND CONTROL

Swarming remains one of the greatest bee management problems in the production of honey or the providing of pollination services. Swarming represents the natural method of increase of the honey bee colony. Although the cause of swarming is not known, several factors that are connected with swarm biology serve as the basis of preventive manipulation. Control of swarming, once the honey bee colony has begun swarm preparation, involves more extensive manipulation and rather critical timing. These require time and knowledge on the part of the beekeeper.

The prevention and, when necessary, the control of swarming is good bee management. Colonies that swarm do not store extra surplus honey or provide a good working population for pollination of a crop. Increase of colony number and colony division should be planned and not the result of capture of one's own swarms. With an understanding of swarming and some efforts to prevent it, beekeeping will be improved and it will become more enjoyable and more profitable.

Swarming Biology

Swarming normally occurs in strong populous colonies. The first apparent preparation in swarming is

the laying of fertile eggs by the queen in the special queen cups that are normally present. With subsequent hatching of the egg and development of queen larvae (provided they are not destroyed), queen cells are capped eight days later and ready to emerge in another seven or eight days, depending upon weather and other factors. With development of the several queen cells, a series of behavioral changes occur in colonies. The queen loses from 1/3 to 1/2 of her normal body weight. The field bees do less work and may congregate at the hive entrance and/or on the lower frames. More drones are often reared; fewer and fewer eggs are laid by the queen. Finally, prior to leaving the hive the workers engorge themselves on honey and nearly cease normal flight activity.

A swarm normally emerges from the parent hive during nice weather and settles on some support such as tree limb, shrub or building. This clustering occurs a varying distance from the former hive. Each swarm consists of the colony queen, and a portion (1/2 to 2/3) of the workers and drones of the former colony. One or more sealed queen cells are present in the original hive. Swarms may remain only a few minutes to several days at the cluster location before moving to a new darkened cavity suitable for nest building. The net result after hatching of a queen cell in the former hive is two active colonies in two separate homes.

Preventing Bee Swarms

Three factors that are connected with swarming are the brood and adult population as related to room within the hive, the amount and distribution of available queen substance (a chemical produced by the queen) and the hive environment as it relates to the above two factors.

The measures listed below are all aimed at insuring that queen cells, the first step in swarming, are not started. In most years attention to each factor will keep the incidence of swarming at a very low and tolerable level.

1. Provision of plenty of room (not just adequate room) for queen egg laying in the brood nest. Two full-depth hive bodies may not be sufficient room for brood rearing in strong colonies; one hive body is never adequate in healthy colonies (comb honey production usually involves one hive body with intensive management including the cutting of queen cells). Reversal of brood chamber hive bodies every 8-10 days helps insure adequate brood room when 1 1/2 or 2 brood chamber colonies are maintained. All brood nest combs should be in good condition for egg laying, contain a minimum of drone comb and should not possess large amounts of stored honey or pollen after late April (all colonies should have 15-20 pounds of honey to protect against spring starvation).

2. Provision of sufficient nectar storage space. Some super space should always be available for nectar from late April to mid August. When supers are added it is sometimes necessary to entice bees into working in them immediately. Bottom supering (adding supers on top of brood area below other supers) and baiting of new supers (raising a frame or two of capped brood into super added or by dripping syrup on the comb face) is recommended. Full supers of foundation should not be added until the honey flow has begun or late in the season after the greatest danger of swarming has passed (after mid June).

3. Colonies should receive maximum sunlight early in the season but have shade if the temperature becomes high later. Afternoon shaded apiary sites are recommended. Colony entrances facing the morning sun or south are preferable. Hives painted white are useful in temperature regulation by the colony.

4. Sufficient ventilation should be present. Winter entrance blocks are best removed early in the season. Hive bodies can be staggered to aid ventilation. Some apiaries with poor air circulation could benefit if colonies are supplied with a deep ventilating bottom board. (If steps are taken to aid ventilation insure that robbing does not become prevalent.)

5. Young queens heading all colonies. This is a definite aid in swarm prevention. All requeening should be done with stock with low swarming tendencies. Queens can be marked with paint on the top of the thorax to help find them. Most bee locations will support queen rearing activities so the beekeeper can rear his/her own replacement stock.

6. Removal of queen cells as they are started. If the queen cells are advanced or completed, removal will only postpone swarming and the time necessary to look for cells is seldom worth the effort except for the hobbyist. If a colony is just beginning queen cells, providing more room and adjusting the hive environment combined with the removal of all cells will help. It will be necessary to examine the colony again in a week to 10 days to insure that more cells are not started.

Remedial Measures

Once a colony begins rearing a number of queens and they are not discovered by the beekeeper until well advanced, more drastic action than explained above will be necessary to stop the colony from swarming. While all involve some work, the surplus honey crop or proper pollination service are well worth the effort. Three basic techniques are given below with some variations of each. All queen cells should be destroyed before proceeding with one of the swarm control techniques listed.

1. Removal of the Queen Dequeening a colony rearing queen cells is effective swarm control but often takes considerable time searching for the queen. After queen removal, the colony is left for 7 to 9 days and then the queen is placed in a cage and put back into the colony after all queen cells are again destroyed. Variations of this technique include the destroying of the original queen and introducing a newly purchased or reared queen or adding a queen cell 7-9 days later or, finally, cutting out all queen cells except one which is allowed to emerge, mate and head the colony. Removal of the queen for swarm control always produces a break in brood rearing. This can affect the honey surplus stored from summer nectar sources but late spring flows will not suffer from lack of bees.

2. Removal of the Brood By dividing a colony, the beekeeper obtains the net result of swarming but does so at his convenience and without the work of swarm capture or risk of missing or being unable to capture the swarm. To divide a colony, 3-5 frames of brood with clinging bees are removed from those

colonies that begin rearing queens. These frames are placed in a small hive (nucleus) and a queen cell or new queen added. The unit is placed on a new location and the entrance reduced to help prevent robbing and aid field worker bees in orienting to the new location. Frames of brood from colonies requiring swarm control may also be added to weaker colonies to equalize colony strength provided disease is not present.

A variation of brood removal is that of Snelgrove who advocates separation of adult nurse and field bees within the hive (and thus brood rearing and nectar ripening areas). His technique calls for placing of queen and 1 or 2 frames of unsealed brood in an otherwise empty super on bottom. A special double screen with 8 wedge openings (4 top and 4 bottom openings, one to a side) is then put on top of this super. The remaining brood frames are placed on top of the double screen.

The wedge screen is opened to permit entry-exit into the top brood hive body (the normal entrance to lower brood chamber and honey super always remains open) and then after 7 to 8 days it is closed. Another top opening on the side or back of the hive is opened for normal egress from the top hive body. At closing of the original top hive body entrance the lower wedge opening of the same side is opened in addition to the new top hive body entrance. Field bees foraging from the top brood hive body at the time of this action do not adjust quickly and most go below to the honey after their first flight (they do this without learning of the new top entrance at side or back). This means older foragers use the lower hive

area while younger bees remain above on brood frames. After 9-10 days new brood-containing frames in the hive body below the double screen must be removed again and placed above. Queen cells that are started above the double screen must be removed or alternately allowed to hatch and a two-queen colony maintained for the honey flow.

3. Separation of Queen from the Brood Separation of the queen from brood, or Demareeing, is probably the most widely used swarm control practice and is the easiest and most successful method in use today to control swarming. A large number of variations exist and almost all recent articles in the literature on swarming utilize the same basic principle of queen and brood separation.

The basic technique involves rearranging of the colony. The queen is placed with 1 or 2 frames of sealed brood in a hive body of otherwise empty comb (or foundation) on the bottom board and then a queen excluder placed over the single hive body. One or two supers are added above the excluder and then the remainder of the brood containing frames are placed on top of the rearranged colony in another hive body. The procedure of separating most brood from the queen should be repeated after 9-10 days with queen cells cut from the top chamber. Alternately some beekeepers permit a queen to hatch above and provide a second entrance and manage two-queen colonies.

A modification of this plan is to permit the bees to expand their brood nest through 4 standard hive bodies in the spring. This manipulation is accomplished by reversing the 2 wintering hive bodies in mid to late April,

raising one frame to the second body (formerly the lowest), and adding two standard hive bodies or 3 shallow supers. At flow, the queen is placed or driven into the lowest hive body and queen excluder placed over the single brood chamber. As the brood above the excluder hatches the newly emptied cells are used for honey storage.

Still another variation closely resembles swarming and is often called artificial swarming or the "Shook" plan. This technique calls for shaking all bees from the hive onto the ground at the entrance. A full hive body of foundation is put on the hive and then a queen excluder. The brood-containing frames are put back at the top of the colony. This modification yields a very nice surplus if performed during an early flow as the nectar, not needed for the small amount of developing brood, is stored in cells above as adults emerge.

Swarm Capture

Swarms are normally quite easy to capture and place in a modern hive for honey production. It is always necessary to capture the queen to keep the swarm as a unit. Since swarm bees engorge before leaving the hive they are usually very gentle and little inclined to sting. Caution is advised when a swarm of three or more days existence is taken since they may not have full honey stomachs and will sting readily when the cluster is disturbed.

To capture simply shake, scrape or somehow force the clustered bees into a hive with one or two drawn combs (preferably comb in which brood has been reared); an empty cardboard box may be substituted if a hive is not available. If the queen stays, the workers, except for stragglers and some field bees

will cluster around her and the hive or box can be removed from the area when most of the bees are inside. The few bees left behind will disperse within a short time and not create any problems. If captured in a box or paper sack the swarm should be transferred into a standard movable frame hive at the earliest possible time as comb construction starts very early. Capturing swarms in late afternoon or shortly before dark is advisable; queens may fly more earlier in the day and hive or box acceptance is not as great. Swarms should be inspected for disease before placing in established apiaries.

This information on swarming was taken from a Cooperative Extension Entomology Leaflet prepared by Dr. Dewey Caron, Apiculturist, then at the University of Maryland.

FORMULA FOR TREATING AFB WITH TERRAMYCIN

Mixing directions:

Terramycin (TM) powder mix: TM 25 (generally found in a 6.4 oz. package containing 10 g. of TM):

For one colony: Mix 1 level teaspoon of TM 25 with 5 level teaspoons powdered sugar. Feed 2 level tablespoons of this mixture to each colony.

For 48 colonies: Mix 1 level cup or 1 package (6.4 oz.) of TM 25 with 5 cups of powdered sugar. Feed 2 level tablespoons of this mixture to each colony.

Antibiotic Extender or Grease Patty Mix

2 Patties

1/3 lb. Crisco (vegetable shortening)
2/3 lb. Granulated sugar
2 Tablespoons TM25

20 Patties

3 lb. Crisco
6 lb. Granulated sugar
1 pkg. (6.4 oz.) TM 25

For patties, mix all ingredients together and form into 1/2 pound patties.

Recommendation: One treatment in early spring and one after the surplus honey has been removed will be adequate, unless there is a brood disease problem. If disease is found, two treatments, spring and fall may be necessary.

BEEKEEPING COURSE

A beginning beekeeping course will be offered by the Mo. Valley Beekeepers' Association on Saturday, February 12th, 1994, from 9:00 a.m. to 4:00 p.m. The class will be held at East Central College in Union, MO, registration time 8:30 a.m. There is a cost of \$10 per individual or \$15 per family, which includes membership in the Mo. Valley Beekeepers' Association, course handouts, lunch, and refreshments. Reservations need to be made by February 9. For reservations and information call (314)629-2513, 927-5560, 327-6001, or 828-5014. In case of inclement weather, the alternate course date will be February 26th.

CAPE CRUSADERS KILL AFRICAN "KILLER" BEES

by Stephen Day, Indiana

Africa's "killer" bee is being wiped out by an even more lethal invader which infiltrates its hives and turns the bees against each other. So far, about 50,000 colonies in South Africa have succumbed to the Cape honeybee (*Apis mellifera capensis*)—and some apiaries have been utterly

destroyed (*American Bee Journal*, vol 132, p 519).

African bees (*Apis mellifera scutellata*) are notoriously aggressive and can quickly colonize new areas. For example, the descendants of African bees that escaped from a laboratory in Brazil now dominate most of South America and Mexico. But despite their fearsome reputation, African bees are no match for the Cape bee, a favorite of beekeepers in the Cape Town region of South Africa.

Cape bees have adapted to the area's wet winter and dry summer. The bees forage mainly in winter, the principal flowering season in the Cape. Elsewhere in the country, beekeepers keep African bees, which forage in summer, the country's rainy season. The two species come into contact when Cape bees are taken northwards to pollinate crops.

If hives of Cape bees are placed beside hives of African bees, the Cape bee infiltrates the African colonies causing the African bees to destroy each other. The Cape bee is so deadly because of a unique characteristic: its workers can sometimes act as queens.

Usually, worker bees are described as sterile females, but occasionally they lay eggs. In most species, however, such unfertilized eggs can only develop into male bees called "drones," while fertilized eggs develop into females (workers or queens). Only queen bees mate, so they alone can lay fertilized eggs.

However, the Cape bees overcame this restriction. Their workers can produce female offspring, a feat they achieve by something similar to self-fertilization.

Female bees are "diploid," which means they inherit two sets of chromosomes, whereas male bees are "haploid," inheriting one set. Both sexes inherit a set of chromosomes from the egg cell but a female bee also inherits chromosomes from the sperm cell that fertilized her egg. Eggs are produced by a process called meiosis in which a diploid cell divides to form haploid cells. One of the haploid cells develops into the egg and the other cell normally dies. But in Cape workers which lay eggs, the egg cell sometimes fuses with one of the other haploid cells produced by meiosis to give a diploid egg. Being diploid, the egg develops into a female bee. So in addition to the true queen, a colony of Cape bees usually contains a few egg laying workers called "pseudoqueens."

The disaster in South Africa's apiaries has occurred because Cape pseudoqueens can enter the hives of other species. So a colony of African bees near a colony of Cape bees often plays host to several pseudoqueens. The violence in the African colony begins because the pseudoqueens emit the same pheromone as true queens. This produces a high concentration of the "queen pheromone" within the hive. Although Cape bees can tolerate the excess pheromone, it appears to drive African bees into a stinging frenzy.

Eventually, the African queen succumbs to the chaos and the Cape bees take over the African colony completely. Beekeepers have reported seeing queens dragged from affected African hives by gangs of workers. African and Cape bees look very similar so it is not clear if the queen is deposed by her own workers or by the invaders. With the queen gone, the Cape pseudoqueens quickly fill the hive with their own offspring. Sometimes

they even rear a true Cape queen to reign in their new territory.

A Cape bee takeover would not matter to beekeepers but Cape bees mainly forage in winter. This means they cannot survive long outside their native area. In northern South Africa, colonies taken over by Cape bees starve to death within a few months.

According to Michael Cooke, a commercial beekeeper in Cape Town, the northward spread of the Cape bee has only occurred with the help of beekeepers. The problem is that many beekeepers can earn more by providing a pollination service to farmers than by selling honey, even if this means trucking hives hundreds of miles to client farms. Cooke gives several examples where Cape bees are taken far into northern South Africa, and African colonies were brought into the Cape area.

At some point in the last few years, one or more African hives must have been "infected" by Cape pseudoqueens. The initial infiltration probably went unnoticed because the two species appear so similar. Although the affected African colonies were doomed, they clearly survived long enough for Cape bees to contaminate fresh hives. The contamination may have spread through northern South Africa because beekeepers from different areas sometimes congregate their hives in regions offering good foraging. By the time beekeepers realized something was wrong, the Cape bee invasion was epidemic.

South Africa's beekeepers now hope that if Cape bees and African bees are kept apart, the problem will burn itself out.

Thanks to Rolla Chandler, beekeeper and skeppist from Sullivan, Mo for

calling this article to our attention.



NATIONAL HONEY BOARD NEWS

New Cookbook Tells Consumers to Sweeten It With Honey--The Natural Way

The National Honey Board will publish its first cookbook, titled Sweetened with Honey -- The Natural Way, this winter.

The cookbook, published and distributed by Publications International, will be sold at supermarket checkout stands throughout the country starting in February for a cost of \$2.95 each. Additional copies will be available from the National Honey Board.

The cookbook contains over 100 delectable honey recipes for tangy salad dressings, savory entrees and oh-so-heavenly desserts! Full-color, mouthwatering photographs are splashed throughout the book for added appeal.

"We want consumers to know that honey is more than a delicious topping for biscuits and toast," said Mary Humann, marketing director of the National Honey Board. "Honey enhances all types of foods--the natural way."

Watch for the cookbook in your local supermarket or contact the National Honey Board to order by mail. Quantity discounts will be available.

Alert: Help Honey Board Identify Imported Honey Products

Imported honey products which contain 51 percent or more honey are subject to the Honey Board's one-cent per pound assessment. "An increased effort is being made to identify products to assure that assessments will be collected by U.S. Customs," explained Bruce Boynton, compliance administrator of the National Honey Board. If you have information on imported products which contain a substantial amount of honey, please call Bruce Boynton or Julia Pirnack at the National Honey Board (303) 776-2337.

Honey Board Approves Honey Definitions Document

The National Honey Board approved a document which defines honey and honey processing terms at its recent meeting, Oct. 9, in Phoenix.

"This document evolved over a year of industry discussions and expert review," said Steve Klein, chairperson of the Board's Product Research and Development Committee. "We finally have a document which describes and defines our product."

The Board agreed that the document will be reviewed and revised next year and every two years thereafter. Comments should be submitted to the National Honey Board office.

Honey defined by National Honey Board

The National Honey Board approved a document at its October 9 meeting in Phoenix which defines honey and honey processing terms. The board agreed that the document will be reviewed and revised next year and every two years thereafter. Comments may be submitted to the National Honey Board office. The text of the document follows:

HONEY

I. Definition

Honey is the nectar and sweet deposits from plants that have been gathered, modified, and stored in the honeycomb by honey bees.

II. Typical Composition

As a natural product, the composition of honey is highly variable.

	Average	Range	Standard Deviation
Fructose/Glucose Ratio	1.23	0.76-1.86	0.126
Fructose %	38.38	30.91-44.26	1.77
Glucose %	30.31	22.89-40.75	3.04
Minerals (Ash) %	0.169	0.020-1.028	0.15
Moisture %	17.2	13.4-22.9	1.46
Reducing Sugars %	76.75	61.39-83.72	2.76
Sucrose %	1.31	0.25-7.57	0.87
Total Acidity, meq/kg	29.12	8.68-59.49	10.33
True Protein, mg/100g	168.6	57.7-567	70.9

References

- F/G ratio, Fructose, Glucose, Sucrose:
White, J. W., Jr. (1980) Detection of Honey Adulteration by Carbohydrate Analysis. *Jour. Assoc. Off. Anal. Chem.* 63 (1) 11-18, 1980.
Reducing Sugars: Calculated from data in
White, J. W. et al. Composition of American Honeys. Tech. Bull. 1261, Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C. 1962.
Protein: White, J. W., Jr., and Rudy, G. N.
The Protein Content of Honey. *Jour. Apicul. Res.* 17 (4) 234-238, 1978.
Moisture, Total Acidity, and Minerals:
White, J. W. et al. Composition of American Honeys. Tech. Bull. 1261, Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C., 1962.

III. Types of Honey

Comb Honey: Honey presented in its original comb or portions thereof.

Extracted honey: Honey removed from the comb and presented in several forms, as defined in the U. S. Department of Agriculture's Standards For Grades: (1) liquid, (2) crystallized or granulated, or (3) partially crystallized.

IV. Designation of Honey Sources

The source of honey determines many of its attributes, e.g. aroma, flavor, color, and composition.

Floral: Indicates the primary flowers from which bees gather nectar to produce honey.

Non-Floral: Indicates sources other than flowers, such as extra-floral nectaries and honeydew.

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Seasonal: Natural mixtures which occur in the hive may be indicated by season, e.g. spring, summer, or autumn honey.

Geographic Origin: The name of a production area (state, region) may be included, provided that the honey has been produced entirely within that area. Blends containing honey of foreign origin must be labeled to indicate their origin(s), in accordance with the Code of Federal Regulations (CFR).

V. Forms of Honey

1. **Blended Honey:** A homogeneous mixture of two or more honeys differing in floral source, flavor, density, or geographic origin.

2. **Churned Honey:** See creamed honey.

3. **Creamed Honey:** Honey physically processed by controlled crystallization to a smooth, spreadable consistency. It is also called creamed honey, spun honey, whipped honey, churned honey, and honey fondant.

4. **Crystallized Honey:** Honey in which part of the natural glucose content has spontaneously crystallized from solution as the monohydrate. It is also called granulated honey.

5. **Filtered Honey:** Honey processed by filtration to remove extraneous solids and pollen grains.

6. **Honey Fondant:** See creamed honey.

7. **Honeydew:** A sweet deposit - usually secreted by aphids, scale insects, and sometimes fungus - which is found on the leaves of many plants.

8. **Organic Honey:** Honey produced, processed, and packaged in accordance with state and federal regulations on honey and organic products, and certified by a state department of agriculture and/or independent organic farming verification and certification organization.

9. **Pasteurized Honey:** Honey that has been heated under time and temperature conditions which destroy spoilage microorganisms.

10. **Raw Honey:** Honey as it exists in the beehive, or as obtained by extraction and settling or straining without applied heat.

11. **Spun Honey:** See creamed honey.

12. **Strained Honey:** Honey which has been passed through a mesh to remove particulate material (pieces of wax, propolis, and other defects) but not pollen.

13. **Whipped Honey:** See creamed honey.

VI. Honey Products

(Honey products do not meet the compositional criteria for honey.)

1. **Deionized Honey:** A honey product (manufacturing ingredient) which has been processed to remove selected ions.

2. **Deproteinized Honey:** A honey product (manufacturing ingredient) from which protein has been removed by appropriate processing.

3. **Dry Honey:** Honey from which substantially all moisture has been removed - without the use of drying adjuncts - and which can be returned to its original state by adding water.

4. **Dried Honey:** A dehydrated honey product (manufacturing ingredient) in which edible drying aids and processing adjuncts have been included to facilitate processing and improve product stability. Dried honey may be reduced to a powder.

5. **Honey Extract:** A natural flavoring product entirely derived from honey by appropriate processes.

6. **Honey Spread:** A variety of edible, extremely viscous honey products made from honey or creamed honey and sometimes blended with ingredients including fruits, nuts, flavors, spices, or margarine, but excluding refined sweeteners.

7. **Powdered Honey:** See dried honey.

8. **Ultrafiltered Honey:** A honey product (manufacturing ingredient) from which all materials not passing a specific membrane pore size (less than 0.1 micron under pressure) have been removed. Material removed includes most proteins, enzymes, and polypeptides. Evaporation required in the processing also may remove some volatile flavor and aroma constituents.

NOTE: Imitation or Artificial Honey is a mixture of sweeteners which are colored and flavored to resemble honey. This product does not meet the definition of honey.

VII. Grading

Current U.S. Standards for Grades of Extracted Honey and Comb Honey are herein incorporated by reference. The grades of extracted honey include factors such as color, clarity, absence of defects, moisture, flavor, and aroma.

VIII. Methods of Analysis

The official methods of analysis for honey, from the Association of Official Analytical Chemists International, are herein incorporated by reference.

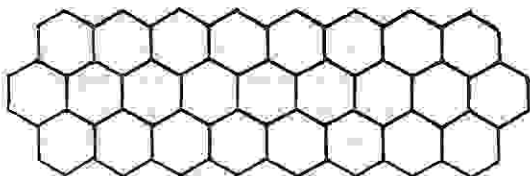
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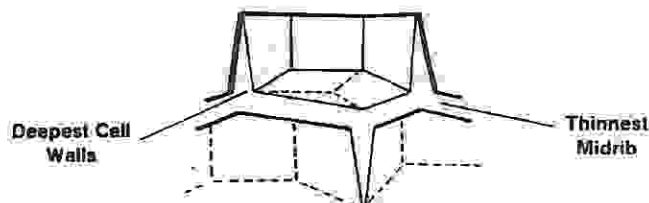
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Preparation time: 10 min.

Cooking time: 9-12 min.

- 1/3 C. coarse-grain or regular
Dijon-style mustard
- 1 Tbsp. chopped parsley
- 1 1/2 Tbsp. honey
- 1 Tbsp. each cider vinegar and
water
- 1/4 tsp. hop pepper sauce
- 1/8 tsp. coarse grind black pepper
- 2 well-trimmed boneless beef top
loin steaks, 1 inch thick slices
- 1 large onion, cut into 1/2 in. thick
slices

Combine mustard, parsley, honey, vinegar, water, pepper sauce and pepper. Place beef steaks and onion slices on grid over medium coals; brush both sides liberally with glaze. Makes 4 servings. 256 calories per serving.

Thanks to the Missouri Cattlemen's Association for this recipe, printed in the 1993 Missouri State Fair Official Daily Program.

BLUEBERRY POLLINATION

(Taken from a publication from the State Fruit Experiment Station of Southwest Missouri State University)

At the outset, we can make two definite statements concerning pollination of blueberries: 1) insect pollination is obligatory and 2) bees are the principle pollinators.

The necessity of insect pollination of blueberries is determined by the morphology of the flower. The blueberry flower has all the characteristics of an entomophilous (insect attracting) flower. These characteristics are:

1. Corolla of the flower in shape of a tube, opening only at tip (prevents wind pollination).
2. Pistil of flower extends well beyond anthers, and stigma flanged to inside, preventing unaided self pollination.
3. Nectary glands produced at base of ovary to attract insects.
4. Fragrance produced to attract insects.
5. Pollen heavy, clumping, not readily wind-borne.

Thus, the construction of the flower effectively suppresses both wind pollination and unaided self pollination. However, as insects enter the corolla tube seeking the nectar at the base of the ovary, their bodies collect pollen as they rub on the anthers and deposit pollen on the exposed stigmas of flowers subsequently visited.

Numerous research studies using various types of caging have shown that bees are the principal effective pollinators of the blueberry. Most reports state that both honey bees and bumblebees are effective pollinators, but in many blueberry producing areas, native bee populations are considered inadequate for complete pollination and honey bee colonies are introduced into the fields.

Inadequate pollination of blueberries may be expressed in two

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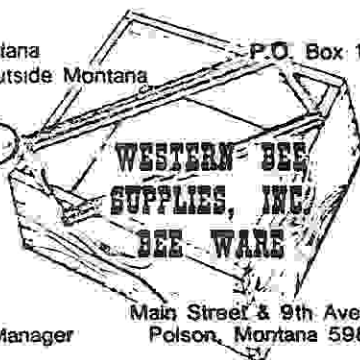
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ways. Flowers receiving no pollination will abscise without fruit set. Flowers partially pollinated may set, but produce small fruits. The blueberry normally contains up to 65 seeds and seed number and fruit size have been shown to be highly correlated. Thus, any reduction in seed set will likely result in production of smaller fruit.

Studies on the effect of cross- vs. self-pollination of the highbush blueberry have not all been in agreement, but most careful studies show that pollination with pollen of a different cultivar results in slightly increased fruit size and sometimes earlier ripening fruit. Most studies of the rabbiteye blueberry agree that cross-pollination is important and that two or more cultivars should always be planted together.

Blueberry cultivars appear to differ in attractiveness to bees. Two cultivars identified as "unattractive" are 'Coville' and 'Earliblue,' and these require more honey bee colonies per acre for adequate pollination. Attractiveness of cultivars to bees seems to be conditioned by nectar volume and nectar sugar content.

Blueberries are generally not a preferred food source for honey bees. Blueberries are a very poor source of pollen. Consequently, bees may overfly blueberries to forage on other plant species nearby. A major problem in Arkansas fields is the presence of dandelions during the blueberry bloom period. Bees may be seen foraging on dandelions

rather than blueberries. Since bees tend to continue foraging on a plant species that they start on, we recommend that bee colonies not be placed in blueberry fields until the blueberries have some open blossoms. Do not withhold bees past 25% open bloom, however, or reduced set will result. Pistil receptivity lasts only 5 to 8 days.

I consider the bumblebee to be a more effective pollinator for blueberries than the honey bee. They are less intimidated by adverse weather and bumblebees can be seen foraging in blueberry plantings on cold, windy days (common in Arkansas during blueberry bloom) when honey bees remain in their hives. Unfortunately, however, bumblebee pollination is not reliable due to population fluctuations. Modern agricultural practices have greatly reduced bumblebee (and other native bee) populations in many areas, and the only recourse to ensure adequate pollination is to place honey bee colonies in the field.

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Generally, a set of 80% of the blossoms is needed to yield an excellent crop of blueberries. To achieve this goal, recommendations for introducing honey bees into blueberry plantings have been made by most blueberry producing states. The number of colonies recommended per acre vary among states and are associated with the extent of native bees. Michigan, for example, with 12,000 acres of blueberries, recommends up to 5 colonies per acre. In Arkansas, with our less concentrated acreage and still available native bees, we recommend 1 to 2 colonies per acre. A rule of thumb developed in Michigan is that if 4 to 8 bees are observed per bush when temperatures during bloom are in the 70's to 80's, pollination will be adequate.

The inescapable conclusion to blueberry pollination is that blueberries must be pollinated by bees and, in most areas, native bee populations are insufficient to provide adequate pollination.

BUMBLEBEES FOR BLUEBERRIES by Marilyn Odneal

The "Blueberry Cultivar Evaluation," established in 1986 by Dr. Martin Kaps, is a half-acre planting located at the SMSU State Fruit Experiment Station in Mountain Grove. The plants have since been pollinated by native bees. That is, until 1993. The wild honey bee population apparently had crashed due to infestation by tracheal and varroa mites and possibly other environmental conditions. Bumblebees are not drastically affected by the mites and have pollinated blueberry flowers even when conditions were too cool or windy for honey bees to work. Unfortunately, bumblebee numbers appeared to be low this year as well. As a result, we decided to try a new technology: Bumblebee hives.

We rented a 4-hive complex from

Gerhart Biological Systems in Ridgeville, Ohio. Each hive is a foam box supplied with BeeHappy food and a bee door for exit and entry. We planned to use a single hive (one queen and 50-70 worker bees) for our half-acre planting, but the single hives were not available at the time we needed them. Hives may either be rented by the week or purchased for the season (8-10 weeks). Bumblebees, however, cannot be overwintered like honey bees.

The bumblebees were shipped to us air freight. We picked them up at the Springfield airport and drove back to Mountain Grove with the A/C on high and Mr. Pat Byers on edge. We set the hive out in the field overnight and opened the bee doors the next morning. The bumblebees exited the hive immediately and proceeded with an orientation flight. The bumblebees from the hive complex were smaller than the native bumblebees observed in the spring. The only native bumblebees active early in the season are queens, whereas the ones from the hives were smaller female workers.

We observed approximately 7 to 10 bumblebees per bush at full blossom on warm (about 75 degrees) calm days. Pollinator activity appeared to be more than adequate. The number of hives per acre and cost effectiveness of use is yet to be determined, but the results of this initial experience was very encouraging. Bumblebees are advantageous to have when you have cool windy weather during blueberry blossom, which is not at all unusual for this crop. We had adequate pollination on all but a few of the early season cultivars that had reached peak blossom before the hives were set up. Although we rented honey bees for other plantings on the station, the majority of pollinators in the blueberries were the efficient bumblebees.

REVISITED NEWS

I have been looking through old issues of our association's newsletter for information on the association's history. Julie Batton asked me to do that so she could include it in a talk she must give at the ABF convention in Florida in January. I am glad she did. There is a lot of good information in those old newsletters and I plan to include some of it in the current newsletters. The first article on moving bees is from June, 1973, the second on hobby beekeeping is from September, 1973, both edited by Elmer Headlee.

If bees are to be moved, several things should be kept in mind to avoid trouble. A short move of one mile or less may be made by moving the bees a short distance (25 ft.) each day or move them to a more distant location for two weeks and then on to the new location. New swarms can be moved more freely.

It is a good idea to close the front of the hive with screen and run tape over other holes late in the evening, then move them that night or early the next morning. Moving very strong and crowded hives can cause bad losses. The bees may crowd the screened entrance, thus cutting off their air. One hive I know of suffered better than 75% loss. If one leaves the entrance open in an open car or truck many bees may be lost also.

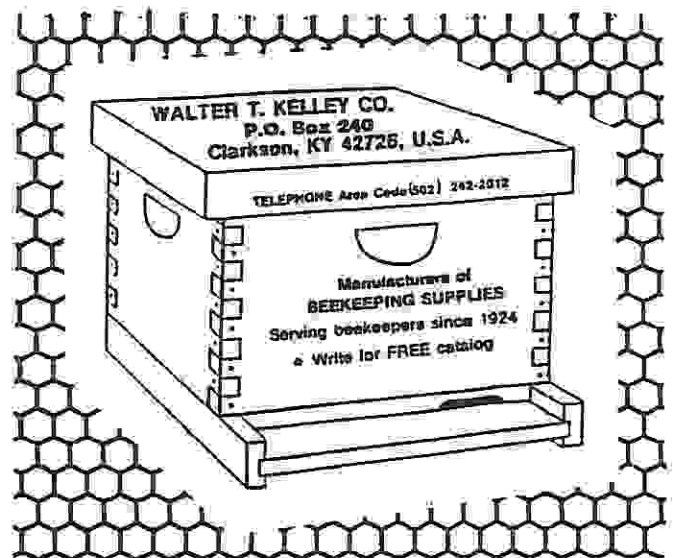
Many beekeepers nail their hives together for the move. If one is careful the hive can be tied two ways with small rope and lifted carefully in and out of the car or truck. A sudden jar or drop will disturb the hive greatly and may do damage to the comb. Bees have been known to crowd the queen in a ball or cluster to protect her when they are greatly disturbed

and suffocate her by so doing. If bees are carefully handled there should be little or no loss.

Trials and Tribulations of the Hobbyist Beekeeper

I am a bee hobbyist and have had a lot of time and experience to observe beekeeping by people who do not do it as a source of livelihood, but who hope to make part or all of the expenses on their hobby.

Every now and then someone starts out with two or three hives and after one or two successful years decides to go into it in a big way. Take the fellow whom I heard about a day or so ago. He bought a good hive and got all the honey he could use and give away to friends and relatives. The next year he caught two good swarms



and by the third year he had several hundred pounds to sell. So he reasoned that if he would build a hundred hives during the winter, he could catch the swarms to fill them. So, he bought lumber and worked every spare minute. Spring came, but not enough swarms; so he did the best he could. Late in the summer he bought honey and set up a stand on weekends out on a secondary highway where he did rather well.

By spring half of his colonies were gone, since the previous summer was a poor one and his swarms hadn't done too well. But he tried again with about the same success. In late August, during the busiest time of his highway sales, the police shut down his operations and this left him with a lot of bought honey on hand. Also, his bees weren't doing so well, either.

Completely disgusted with hard luck, hard work, and costs of honey and equipment, he started to liquidate the business. Some time the next spring and several dollars in the hole, he left town and my friend who related this story said he had not been heard from since.

I talked to Joe Maher, Secretary of the Missouri Beekeepers' Association, about writing an editorial in this newsletter about the problems and pitfalls of the hobbyist beekeeper. Joe told me that I dare not do it, since each beekeeper in the state would think that I was referring to him. If I am pointing anyone out, it is myself, for I have been guilty of many of the errors I am talking about.

When I got back into the business after I retired in the late '60's, I said that I would have no more than four hives. Well, this year I have twelve and one-half. There is just no way one can compare the work and trouble between two or three good hives and that of twelve. I am going back to four next year. (Maybe).

I have written the following progress report of a hobbyist beekeeper since I have seen these things happen to so many people.

First, the hobbyist starts out by buying some equipment and some bees. He or she has seen pictures of beekeepers working in shirt sleeves and just a veil for protection so, he says to himself, "If he can, so can I." The very first thing a beginner should buy is a good bee suit and high-top shoes. There is nothing that starts the downfall of the hobbyist faster than to get thoroughly stung the first time he encounters the bees. Some people find themselves highly allergic to the bee venom so it doesn't pay to take chances. You old-timers can get by with lesser equipment; but keep in mind that some people reach the place where they can no longer take the stings. I doubt that bee stings are good for what ails you.



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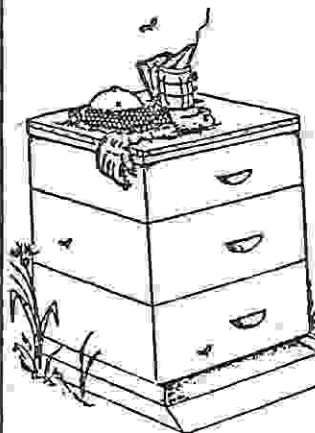
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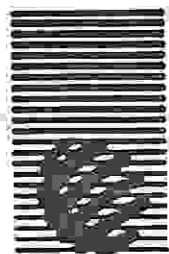
Now, the second year the bees do real well and you get some more. The work on three is not much more than one, but your wife begins to grumble and you spend more time and money. You have to have an electric knife and an extractor, etc. So, to pay for this, there must be more bees. Subsequently, you register with the city police and various other agencies and the swarms start to come in. By the end of the season you have twelve hives. You give them good care during the summer and by fall you have a good supply of honey and the swarms look like they will winter well. You treat them with disease preventive and give them good winter protection.

Spring rolls around and you only lost two hives. Feeding and taking care of ten hives is more work than you can or care to do. Right here is where a wise person should wake up and run an ad in the paper and sell down to four hives. But he rationalizes, "No, let's go for another year and make a killing on the honey for the summer." The weather is cold in the early spring and it turns dry come summer. The bees don't do so well. Interest begins to lag and you let them go into the winter unattended. By the next spring you are down to six hives. The moths have had a banquet on four of them that were weak. You may be late on spring care such as feeding, checking the queens, providing medication, taking out entrance boards, checking for queen cells, and putting on supers. The moths have ruined the comb in about half of the supers left in the garage without moth killer. Such calamities dampen the spirit and hinder the work.

Then, you figure you'll let them alone and see how they make out. Some of the hives swarm; others have worn-out queens. One hive is trying to get along with a laying worker, and you don't discover this

until in July. The dry weather and poor care brings the honey down to less than what two good hives should produce. So you take what you can get and forget them until spring. Mice, moths, disease, and starvation take their toll and by spring there are only three hives left and they are not in good shape.

Here is where you should wake up and start being a beekeeper and not just one who "keeps" bees. With some early feeding and medication, these three could be put back on the winning track. You may need some new queens. All you have to do is look at the brood in the hive about March. If there is good brood pattern, even though it may be small, the queen is adequate. If there are only drones or lots of drones and a poor brood pattern, you had best get a new



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queen. This should be done around the middle of March or first of April.

Brood rearing in the cities where there are lots of early flowering trees, shrubs and plants should be encouraged by early feeding. Your bees may be storing honey long before their country cousins begin to get any nectar. This year was a fine spring for the city bees, inasmuch as the warm weather got the brood rearing started early. My bees in Kirkwood were seen bringing in pollen from a soft maple tree on February 5th. The bees out of town, where they depend upon sweet clover, reared so much brood early that they ate all of the honey and either starved or had to be fed for about a month. One Illinois beekeeper reported the loss of 100 colonies of his 400 colony apiary this spring. He attributed this loss to early brood rearing, a May freeze, and starvation.

A person starting out in beekeeping should have some sort of an advisor or helper who has had some good experience with bees. Many of the pitfalls that discourage beginning beekeepers can be avoided by reading a good book or bee journal before starting. One of the best aids for both beginners and old-timers is a membership in the local and state beekeepers' associations. In the local groups there are always people with experience who can and will give counsel.

Everyone who has bees for a year or more becomes an authority on how to keep bees. So, a beginner does well to have several with whom he can talk, ask question, and get help—a stable of experts. You have noticed that there are usually several ways to do every job in beekeeping and the experts can't agree on which is the best. The fellow who attends a bee club and does a reasonable amount of reading and study has a good chance of success if he has the time and is

willing to work.

Cleanliness is an important part of beekeeping. The bees may not know that they are living in a ghetto, but the accumulation of propolis and old wax in a hive makes the operation much harder. I went through some hives a few weeks ago that had had poor care for several years, and it was an almost impossible job to get the frames out. Had it also been poor equipment there would have been a lot of damage. These hives are now for sale. The person who gets them will get some good bees and have to do some work to get them into shape.

Last spring, one of our local people called and wanted me to come out and see if he had good queens in his hive. He told me that he had never been able to find the queen. I expected to find a new beekeeper. He had kept bees for over 30 years. So, we opened the hives which were in need of nailing and painting. The comb in the one super had been cut out last fall and no new foundation put in. We finally found one frame in the first brood chamber that we could get out. It had a good brood pattern, so we judged that the queen was in good shape. The second hive was in the same condition with good brood in it. I took a super, frames and foundation home with me, put in the foundation, and wired it properly. When I returned it, he said that he didn't know how to put in foundation and wire it properly; so, we had a lesson on how to put it in. Later, I visited him and he had caught a swarm and had it in a brood chamber with properly wired frames. He had never belonged to a bee club.

I am not so much concerned about beginner's mistakes as I am with the people who have had bees for years and do not know or don't do beekeeping in a reasonable way.

Last spring, I was called to pick up a swarm. The lady had two strong hives with one brood cham-

ber and one super each. She said one of her hives didn't produce much honey last year because it swarmed three times. Later, she had another swarm which we put in one of my empty hives and left it at her house. I put two supers on her other hives and they are almost full. I am to get some of the honey for care and extraction. She has never belonged to a bee club.

There are literally hundreds of hives setting around houses that could be producing honey if people knew how to care for them in a minimal way.

I have a hive with a horseshoe print on it. The bees got to bothering this man's wife, so he put the hive in the horse pasture under a tree. The end of the story is self-evident. He gave me the hive which had a queen excluder on it completely closed by wax and gum. It is now my best hive, and I have it in front of my house behind some bushes. The former owner of this hive never belonged to a bee club.

Any beekeeper can come up with many stories of neglect of bees. Bees can stand a lot of inattention, but if one wants them to do their best for him, he must do the best he can for them.

Neighbors with bird baths and swimming pools may be bothered with bees. It is hard to tell whose bees they are since they don't wear labels. Before I had bees where I live, we had bees on the flowers, garden vegetables, and around water. This can be partially avoided by keeping water near the hive, and giving the neighbors a quart of honey now and then. It sure sweetens their disposition towards your hobby.



Advertising Information

MSBA is published four times per year, with an average mailing of 460 newsletters per issue.

Advertising requests should be sent to: Larry Hensley
13520 Old Jamestown Rd.
Florissant, MO 63033

Deadlines for Advertising:

<u>Deadline</u>	<u>Publication</u>
February 15	March 1
June 1	June 15
September 1	September 15
December 1	December 15

Advertising Rate:

Per issue
Business Card Size \$7.50
Quarter Page 25.00
Half Page 40.00
Full Page 75.00

Classified Ads, per 30 words:

MSBA member \$2.00
Non-member 3.00

STATE OFFERS FUNDS TO MARKET MISSOURI PRODUCTS

When Missourians go to the grocery store, studies show they'll buy products made or processed in the state if given the choice. To help state producers advertise their goods as Missouri-made, the Missouri Department of Agriculture each year helps fund certain advertising and marketing costs through its AgriMissouri program. Money is still available in this year's budget to eligible applicants, says Director of Agriculture John L. Saunders.

"The benefits of the AgriMissouri program come full circle," says Saunders. "The program helps Missouri producers afford the cost of developing promotional items that bear the AgriMissouri logo. The AgriMissouri logo alerts shoppers to food or fiber products that are grown or processed in Missouri,

which promotes demand for Missouri agricultural goods. Everyone benefits."

Eligible producers, including agricultural commodity groups, food manufacturers and farmer's markets, can apply for up to \$1,000 in matching funds through the AgriMissouri program, Saunders says. Commodity organizations can use the money for promotional banners, flyers, recipe cards, organizations directories and printed items bearing the AgriMissouri logo. Private businesses are eligible to receive matching funds for labeling and signs, as well as promotional items.

"The Missouri legislature has generously made this money available to promote Missouri agriculture, so I urge our state's producers and processors to take advantage of the program," Saunders says.

A three-member panel reviews all requests for AgriMissouri matching funds to determine eligibility. Projects that are already completed or paid for are not eligible for matching funds. For more information about the AgriMissouri program, or to apply for matching funds, write the Missouri Department of Agriculture, Market Development Division, AgriMissouri Program, P.O. Box 630, Jefferson City, MO 65102, or call (314) 751-4561.



TIPS ON USING HONEY

Substitute equal amount of honey for sugar up to one cup.
Reduce total amount of other liquids by 1/4 cup per cup of honey.
Lower baking temperature 25 degrees to prevent overbrowning.

Two tablespoons of honey added to your favorite cake mix will make the cake wonderfully tender and less crumbly. For best results, add the honey in a fine stream to the batter as you beat.

Foods sweetened with honey will have a better flavor if kept until the day after baking before serving.

When using honey in cooking, moisten the measuring spoon or cup first with water or oil, then measure the honey; this will eliminate sticking. Drizzle honey over a freshly-baked coffee cake as it comes hot from the oven. Finish off with a light dusting of cinnamon sugar.

Store honey at room temperature, not in refrigerator. Keep container closed and in a dry place.

For a delicious treat, pour honey over cereal, fruit or ice cream, or mix it with milk for a nutritious, tasty drink.

Mixed with lemon juice, honey is an excellent remedy for simple coughs. Make honey, brown sugar, and orange juice glaze for your Easter broiled ham slices. Or, try a glazing combination of honey and crushed pineapple.

Sweeten hot tea with honey for a treat.

TO MEMBERS:

We are interested in each and every one of our members. Although we cannot give each one the individual attention we would like, we try to make your membership meaningful and trust that it adds zest, pleasure, and profit to your beekeeping endeavor. You may not even have bees, but your interest in bees and what the bees contribute to our nation's economy will lead to prosperity for all.

If you know of any beekeeper who does not belong to Missouri State Beekeepers' Association, please pass this newsletter along to them and encourage them to join.

Dues are \$5.00 per year. Make checks payable to Missouri State Beekeepers' Association. If you belong to a local association, you may pay your dues through your local treasurer.

Enclosed is \$_____ for _____ years of membership

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE: _____

Mail to: Ron Vivian P.O. Box 448 Oak Grove, MO 64075

MISSOURI STATE BEEKEEPERS' ASSOCIATION
13520 OLD JAMESTOWN RD.
FLORISSANT, MO 63033

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