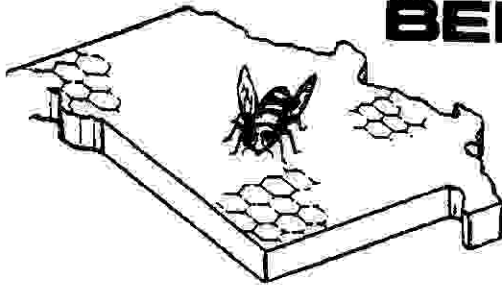


# MISSOURI STATE BEEKEEPERS ASSOCIATION



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NUMBER 3

DEAR BEEKEEPING FRIENDS,

With the arrival of autumn comes the Annual Fall State Beekeepers' Meeting. This year's meeting will be held on Saturday, October 23, in the J. C. Penney auditorium on the University of Missouri campus, St. Louis. (See back pages for a map and agenda information.) NOTE: There will be a \$1.00 registration fee per person for the Saturday meeting.

Also all members are invited to attend the Friday evening Executive Board Meeting at 7:30 p.m. on October 22. It will be held in room #229 of the J. C. Penney building on UMSL campus.

Suggested Hotel Accomodations: RED ROOF INN (307 Dunn Road)  
Around I-270 and North Hanley  
(314) 831-7900

\$23.97 - 1 person  
\$27.20 - 2 persons with 1 bed  
\$29.35 - 2 persons with 2 beds

Alternate Hotel Accomodations: HOLIDAY INN, N.W.  
Around I-270 and North Hanley  
(314) 524-2500

\$35.00 - 1 person  
\$40.00 - 2 persons

## ARTS AND CRAFT DISPLAY

At the 1980 Fall State Meeting in Lebanon, an arts and craft display was held. From comments over the past two years, many would like to see this display repeated. So we are pleased to announce the display of any handmade item depicting bees, beekeeping, honey, beeswax, etc. at this Fall's State Meeting. Please remember - This is a display, not a sale!! No selling is allowed on campus.

The success of the display depends on you. If you brought the item to Lebanon, please bring it again to St. Louis. Approximately 30% of our members are new since that 1980 meeting. Also many of our members would enjoy seeing the items again.

### SPEAKERS AT THE FALL STATE MEETING

MR. CHARLES MRAZ - Born in 1905 in Queens County, Long Island, Mr. Mraz is New England's largest beekeeper. Very early in his youth Mr. Mraz became interested in beekeeping. Over the years he has developed his own bee stock. It is mainly Italian with some Carniolan and Caucasian. Increase is made by dividing colonies and allowing them to rear their own queens. These queens have become widely known as Mraz queens.

Mr. Mraz developed the carbohic acid method of removing honey. He originally used this method on comb honey supers. He also collects and sells bee venom and uses it in his bee venom therapy. His views on the beneficial effects of bee venom on arthritis recently appeared in the February issue of THE AMERICAN BEE JOURNAL - "Bee Venom for Arthritis-An Update".

Over the past 53 years Mr. Mraz has written numerous articles for GLEANINGS IN BEE CULTURE and THE AMERICAN BEE JOURNAL. His most recent article for THE JOURNAL was "Disease Resistance" in the June issue. And, of course, his ever-popular and informative monthly column "Siftings" in GLEANINGS. \*\*

\*\* The biographical data was taken from SOME BEEKEEPERS AND ASSOCIATES by Joseph O. Moffett, 1979, p. 77. Moffett Publishing Company, Rt. 3, Box 175 A, Cushing, Oklahoma 74023. \$9.90 Postpaid.

DR. LARRY CONNOR - At our 1975 Spring State Meeting, Dr. Connor addressed us on the topic of "Bee Botany". At that time he was at the Department of Entomology at Ohio State University.

Later Dr. Connor directed the work at Genetic Systems, Inc. in Florida. At Genetic Systems they attempted to mass-produce instrumentally inseminated hybrid queen bees.

In late 1980 these efforts were temporarily suspended and a reorganization took place. At this time Dr. Connor decided to make a change and to relocate in Connecticut. He began his own consulting service in bees and beekeeping, with education programs as the primary focus. And so Beekeeping Education Service was established.

Most recently Dr. Connor published a series of articles entitled "Students of the Honey Bee" in the February through October 1981 issues of THE AMERICAN BEE JOURNAL.

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1982 MISSOURI STATE FAIR HONEY BOOTH REPORT (Submitted by the Boone Regional Beekeepers Association - Stanley Garton, President, and Fowler A. Young, Past President.)

## EXPENSES

## Beginning Inventory

18 Skep Honey Pots @ 1.43	25.74
56 Kelley - How To books @ 1.055	59.08
11 Jaycox - H.B. Beekeeping @3.36	36.96
35 Kelley - Honey recipes @ .1168¢	4.09
4 Metal & Glass Servers @ 6.50	26.00

151.87

## Purchases - 1982 for stock

100 Root - Starting Right	129.64
72 Kelley - How To and 500 Recipes	133.97
500 Kelley - Honey Recipes	58.19
540 Plastic honey servers	176.25
210 Amana Honey Recipes	193.73
288 Empty Nuth Bottles	221.20
200 Gourmet (BC) Honey recipes	170.00
Bees wax for cakes	5.00
33 Calif. Honey Anytime recipes	20.46
2410 Pounds of honey	2127.33
100 Empty Honey Bears, Wills	18.00

3253.77

Total cost of inventory

3405.64

## Miscellaneous Expenses

2 season admission tickets (Youngs)	24.00
Pickup season pass, admission	14.00
Booth contract	300.00
Sales tax paid (cash)	190.65
Paper bags paid (cash)	12.70
Labels - third of original order	69.88
Honey for sampling	11.79
Mileage - (Young) 156 mi. @ .17	26.52
Mileage - (Wills) 224 mi. @ .17	38.08
Cash register rental	20.83
Copy paper and poster board	5.15
Phone calls	
Hardin	15.30
Young	2.55
Garton	1.30
Postage and Copies (Hardin)	9.46
(Young)	15.57
(Garton)	10.00

767.78

TOTAL EXPENSES

4173.42

(Continued on last page of newsletter)

## TWO BEEKEEPERS PRESENT FIVE DEMONSTRATIONS AT MISSOURI STATE FAIR

The Homemakers Showcase located in the Home Economics Building on the State Fair grounds offers an opportunity for men and women to review demonstrations which promote the use of various Missouri agricultural products, such as milk, eggs, turkey, beef, pork and honey. This year at the State Beekeepers Association spring meeting, Boone Regional members suggested that time and space be provided for a demonstration that would promote the use of honey. A request was made to superintendent Mrs. Elvera Schackenberg. The request was granted and Mrs. Maybelle Parton and Mrs. Lonnie Ray Cook of Boone Regional gave five demonstrations on August 21, 22 and 25. The ladies made cookies and granola and provided the samples for the audience tasting and enjoyment. Naturally the audience was delighted as was superintendent Mrs. Schackenberg who indicated that she wants honey cookery demonstrations again next year.

Submitted by Fowler Young

\* \* \* \* \*

### 41 MISSOURI BEEKEEPERS VOLUNTEERED AND WORKED AT THE 1982 STATE FAIR HONEY SALES BOOTH AND HONEY EXHIBIT

#### WEDNESDAY, AUGUST 18

Boone Regional Beekeepers Assn. - Stanley and Daryl Garton, Glenn Hoffman, Bob Willingham, and Fowler and Viola Young  
Ozark Beekeepers Assn. - Charles Wills and Truman Hardin

#### THURSDAY, AUGUST 19

Boone Regional Assn. - Stanley and Joyce Garton, Bob Willingham, and Fowler and Viola Young  
Ozark Beekeepers Assn. - Charles Wills and Truman Hardin

#### FRIDAY, AUGUST 20

Boone Regional Assn. - Fowler and Viola Young  
Ozark Beekeepers Assn. - Charles Wills, Truman Hardin, and Mike Roling  
Midwestern Beekeepers Assn. - Charles Perrin

#### SATURDAY, AUGUST 21

Boone Regional Assn. - Elmer and Maybelle Parton, Fowler and Viola Young  
Two Rivers Beekeepers Assn. - Mr. & Mrs. Vernon Reynolds, Jan Hesse, and Al Schwendemann  
Midwestern Beekeepers Assn. - Richard Nelson

#### SUNDAY, AUGUST 22

Boone Regional Assn. - Elmer and Maybells Parton, Ralph and Dale Thornton, Fowler and Viola Young  
Central Missouri Beekeepers Assn. - John Walther and Craig Oliver

## MONDAY, AUGUST 23

Boone Regional Assn. - Stanley and Melvina Whitaker, Wayne and Shirley Taylor, Fowler and Viola Young  
Midwestern Beekeepers Assn. - Jay Burnett

## TUESDAY, AUGUST 24

Boone Regional Assn. - Ray and Maudie Cook, Fowler and Viola Young  
Midwestern Beekeepers Assn. - Waldo Wagers and Harry Knowles

## WEDNESDAY, AUGUST 25

Boone Regional Assn. - Flerney Jones and Fowler and Viola Young  
Eastern Missouri Assn. - Jay and Jean Tohtz  
Midwestern Beekeepers Assn. - Walt Bigelow and V. O. Dodge  
Central Missouri Beekeepers Assn. - Bud Green

## THURSDAY, AUGUST 26

Boone Regional Assn. - Wayne Thomas, Fowler and Viola Young  
Eastern Missouri Assn. - Russell Nelson, Maurice Swoboda and Roy Gill

## FRIDAY, AUGUST 27

Boone Regional Assn. - Wayne Thomas, Fowler and Viola Young  
Eastern Missouri Assn. - Russell Nelson  
Midwestern Beekeepers Assn. - Clarence Vogeler

## SATURDAY, AUGUST 28

Boone Regional Assn. - Stanley and Joyce Garton, Fowler and Viola Young

## SUNDAY, AUGUST 29

Boone Regional Assn. - Stanley and Joyce Garton, Fowler and Viola Young  
Ozarks Beekeepers Assn. - Truman Hardin and Charles Wills  
Midwestern Beekeepers Assn. - Charles Perrin

A Hearty Thank You to all who worked at the Fair! A SPECIAL THANK YOU to the Boone Regional Association for taking on this momentous task, to Mr. and Mrs. Fowler Young for the entire 12 days, and to Charles Wills and Truman Hardin for guiding Boone Regional in this task and for helping to open and close the booths at the Fair. NOTICE to the Midwestern Beekeepers Assn. for having at least one member as a helper for 7 days of the Fair. FROM THE REST OF US - THANK YOU ALL!!!

\* \* \* \* \*



## LET IT BEE KNOWN . . .

Taken from the St. Louis Post-Dispatch, July 26, 1982.

THE COMING OF HOSTILE ALIENS: THE KILLER BEES by Bayard Webster  
New York Times News Service

The so-called killer bee is continuing to move north from South America, and scientists are worrying about it again, suspecting that after its arrival in the United States, expected in 1985, it may disrupt the nation's agriculture and beekeeping industries.

The killer bee, or Africanized bee, a descendant of African queen bees that were accidentally set free in Brazil in 1957 and started mixing with local bee populations, has long been the subject of much speculation, myth and fear. Its venom is no more toxic than that of other honeybees and less so than that of some wasps, such as the yellow jackets and other hornets.

Although it is not destructive or vicious by nature and is harmless in its visits to backyard flower gardens, the Africanized bee more fiercely defends its hive or nest when disturbed than does the familiar European honeybee.

Because of the Africanized bee's stinging propensity, unpredictable behavior and its tendency to invade and supersede the colonies of European bees it encounters, major changes in the practice of beekeeping in the Southern states, and possibly elsewhere, may have to be made if the alien bee becomes predominant, the scientists say.

American farmers and beekeepers now rely solely on the relatively gentle and easily managed European honeybee for crop pollination and honey and wax production. Honey production is a \$150 million industry and the Department of Agriculture estimates that honeybees pollinate about \$8 billion worth of food crops, including all of America's apples, oranges, cucumbers, cherries and alfalfa and portions of many other fruit and vegetable crops.

The Africanized bee . . . swarms more frequently than the European bee, and swarming temporarily slows a hive's honey production. The Africanized bees also habitually abscond from a hive when the flowering plant nectar flow slackens even slightly, or when the hive becomes too small for the colony's population.

Early observations of the bee in South America seemed to show that the African bee was a better honey producer than the European bee, that it readily hybridized with native bees and that mixing with native stock was making it less feral and easier to manage as it migrated northward.

But the most recent scientific investigations indicate otherwise.

Orley R. Taylor, an entomologist at the University of Kansas who has studied the Africanized bee for many years, has found that although the African bee strain has been in South America for 25 years and theoretically could have become hybridized as it encountered

European bees and mated with them, the African behavioral traits have predominated. Taxonomic studies show that the present-day bees that have moved northward do not differ significantly from the pure African bee, *Apis mellifera adansonii*.

One reason for the preservation of the African characteristics is the different mating patterns of the two species, Taylor said. In areas colonized by both bees, studies of the peak flying times of African and European virgin queens show that when the European queens are most numerous on their mating flights, the Africanized male drone bees are themselves most numerous. The result is that there are more African-European matings than European-European bee matings.

Taylor's data also showed that African drones mated with both European and African queens, but the European drones tended to mate only with European queens. As a result, over several generations an area's population of European bees tended to become Africanized. And bees resulting from crosses between the two strains seemed to select genetically for the retention of the behavioral characteristics of the African species in succeeding generations.

David Roubik, a biologist at the Smithsonian Tropical Research Institute in Panama, has found that the Africanized bees were not, after all, good honey producers. Among the reasons, he believes, is that the tropical bee, accustomed to a constant year-round nectar flow from everblooming tropical flora, does not have to amass huge honey stores to tide it over the winter months as the European bee, a temperate-zone insect, must do.

In Venezuela, Thomas Rinderer and Anita Collins of the Agriculture Department's Bee Breeding Laboratory in Baton Rouge, La, found that the Africanized bees produced less honey because they used more brood cells in which to raise their young and fewer for honey storage than the European bee. This caused the hive population to expand rapidly and resulted in more frequent swarming. . . .

Although slightly smaller in size than its close relative, the European honeybee, the Africanized bee closely resembles the European bee in shape and color. But there the resemblance stops.

According to Ms. Collins, the most noticeable difference between the two species is that the Africanized bees are "much more excitable". A knock on a hive, she said, can provoke them to sting the nearest outside object with such ferocity that about 10 times more bees will sacrifice their stingers and lives than if they were European bees similarly disturbed.

The Africanized bees will also pursue fleeing intruders for longer distances than other honeybee species will. And they will stay agitated for several days after an intrusion, while European bees quickly recover their calm.

Entomologists believe that the tropical bee's unusual mass-stinging behavior also involves quicker communication of alarms within and between colonies than European bees can manage.

Other distinctive characteristics of the Africanized bees noted by scientists include their shorter tongues, the slightly smaller size of the cells they build in their hives, and that they nest in the wild much more than do European honeybees.

The Africanized bee has expanded its population in all directions from Sao Paulo at the rate of about 200 miles a year. Several months ago, Roubik found a few colonies in Panama, the northern limit of expansion so far. There are now about 200 colonies in that country.

Taylor, who has accurately predicted the bee's northward progress for the last decade, expects them to enter the southern United States shortly after they arrive in northern Mexico in 1988. He noted that studies of the bee's southward progress from Sao Paulo showed that when they got to colder areas in southern Argentina their progress was halted at about 34 degrees south latitude, about as far south as Buenos Aires.

Taylor estimates that the Africanized bees will not survive where there are fewer than 240 frost-free days a year. Thus the northern limits of such an area in the United States would extend in a wiggly line from San Francisco through the southern tier of states and up to Fayetteville, N.C. Taylor said that a less specific northern limit could be defined by the 34th parallel of north latitude, which passes through Columbia, S.C., and just north of Athens, Ga.

Although the Africanized bee is not expected to be able to survive in higher latitudes, scientists point out that it could have a nationwide impact nevertheless. Most commercial bee-raising and queen-rearing operations are based in Southern states. Bees from these states are shipped to farmers farther north for crop pollination and to apiaries and individuals in the United States and Canada for honey production. If bees in the American South become Africanized, the Southern apiculture business stands to be gravely damaged or moved northward.

Bee experts note that little research has been done on the pollination capabilities of the Africanized bee, so that scientists do not know what the impact on United States agriculture will be if the Africanized honeybee takes over.

In some South American countries where the Africanized honeybee has become established, honey production has fallen off drastically and many beekeepers have quit because of the added difficulty and expense of managing the bees.

Some of the changes required have included more extensive safety precautions, such as placing the hives several hundred feet from the nearest human habitation; moving the hives only at night when the bees are quiescent; and wearing extra heavy protective clothing when working with the hives.

To manage the bees efficiently, beekeepers have found placing the hives further apart helps to keep them from raiding each other's stocks, while providing more room in hives helps prevent swarming or absconding. But how they may behave and perform in the United States where the habitat, climate and temperature are different from South America, is an unanswered question.

"We can't expect them not to cause any trouble," Roubik said.

"There's no question that they will have an impact on beekeeping in the United States," Ms. Collins said.

\* \* \* \* \*



Taken from ORGANIC GARDENING, August 1981, Pgs. 102 - 104.

### YOU CAN JAM SIX WAYS WITH HONEY

Looking at most jam recipes, you would think the stuff has to be made with enough sugar to rot anybody's sweet tooth. Actually, you can cut out the sugar altogether and use small amounts of honey to complement the tang of your fruit.

A big reason more people haven't switched to no-sugar, low-honey jams is that they think those jams won't jell. Yet that isn't true. There are at least six ways to thicken honey jam. Your jams may not be quite as stiff as commercial ones. For example, you can stand a spoon upright in most commercial jams, while a spoon in honey jams may slowly tilt over to the side of the jar. Our honey jams are still thick enough to mound on bread without dripping. Jam thickness comes down to personal taste, and we're very happy with honey jams.

As with any new technique, you'll have to start out with a pioneering attitude. When trying new fruits, cook a small test batch, recording proportions of ingredients used. Cool and check taste and texture. If you want the jam stiffer or sweeter, just add more thickener or honey and heat the batch again. With a little practice, you'll get a feel for your ingredients.

For fun, combine different fruits for new flavors, such as blueberry-peach or raspberry-apricot. With these honey jams, you can ignore the cautions on jam recipes that say, "Don't vary ingredients". Play with your jam until it suits you just right, and you'll have a recipe as individual as your taste.

### Fruit Preparation and Canning

Prepare the fruit for honey jam as you would for ordinary jam; cleaning and then cutting. We like to see actual chunks of fruit in our jam and on the bread, so we don't crush our fruit. Instead, we halve most fruit or slice it thinly but leave small berries, such as raspberries, whole.

We work with only a little fruit at a time. The batch size is enough cut-up fruit to pack a 4-cup measure tightly. This amount cooks fast, and we can "feel" what the jam is doing in these small quantities.

When it comes to honey, you have lots of leeway. Try using only 1 tablespoon of honey for each cup of fruit -  $\frac{1}{4}$  cup of honey for a 4-cup batch. If your family hasn't adjusted yet to such little sweetening, you can add up to  $\frac{1}{4}$  cup of honey per cup of fruit - 1 cup per batch. That's still a long way from the traditional 4 or 5 cups of sugar per batch.

Different fruits contain differing amounts of natural acids. Adding lemon juice to low-acid fruits enhances the flavor of your jam, and in some recipes, fruits need lemon juice to jell. For each cup of these fruits, add  $\frac{1}{2}$  to 1 tablespoon of fresh lemon juice.

In traditional recipes, the high concentration of sugar helps protect the jam from microorganism attack. Because you are using such low concentrations of sweetener, it is very important to seal the jars

properly - unless you refrigerate the jam and use it within a few weeks or freeze it immediately. DON'T use a paraffin seal.

You don't have to sterilize the jars first, but clean them thoroughly. Wash the jars, rinse in hot water, and soak in more hot water until you pour in the jam. Put the lids and bands in a saucepan, cover with water, bring to a boil, turn off heat, and leave the lids and bands soaking until you use them. Make sure the jam is boiling when you pour it into the jars. Seal immediately. Immerse the sealed jars in a boiling-water bath for 15 minutes. Processed this way, our jams have kept on the shelf for a couple of weeks with no problem, but they were eaten before we could test long-term storage. Other jam-makers recommend that you refrigerate jams made with low methoxyl pectin, arrow-root or tapioca. If the jam separates into liquid and solid layers, just stir it up.

### Pectin

Pectin is the general name for a group of complex chemicals that occur naturally in the cell walls of certain plant tissues. Commercial pectin is produced from citrus waste or apple pomace. . . . available in almost any grocery store. . . .

Some store-bought pectins (in either bottled liquid or boxed powder form) are made mostly of sugar with small amounts of fruit pectin added. Most brands also include preservatives. Even some sugarless brands contain preservatives.

Commercial pectin, or "high-methoxyl" pectin, requires acid (such as lemon juice) and lots of sugar to jell. To replace the sugar, you can use extra pectin and a bit more honey than in the other methods.

For honey jam, use a powdered pectin because jam is harder to thicken with a liquid pectin.

Mix 4 cups of fruit, 4 tablespoons of lemon juice and 6 tablespoons of pectin in a bowl and let the mixture stand for one hour. Then bring it to a boil in a saucepan. Add 1 to 1½ cups of honey, and bring the mixture to a boil again. Let the jam boil about 5 minutes, stirring continuously. Pour into jars and process. (See canning procedure.)

### Low-Methoxyl Pectin

Low-methoxyl pectin, a pectin derivative with no added sugar or preservatives, does not need sugar to jell. Instead, this pectin reacts with a calcium salt (dicalcium phosphate) that you add during jam preparation. As far as we know, low-methoxyl pectin is not available in grocery stores. Mail-order sources are listed at the end of this article.

There are three steps to jamming with low-methoxyl pectin. First, mix the pectin powder ( $\frac{1}{2}$  teaspoon per cup of fruit) into the honey measured for the jam (1 to 4 tablespoons per cup of fruit). If you pour the pectin directly into the fruit, the pectin will lump. Next, in a storage jar add  $\frac{1}{8}$  teaspoon of dicalcium phosphate to  $\frac{1}{4}$  cup of water. The powder will not dissolve; you'll have to stir it up each time you use it. Finally, bring fruit and lemon juice (if used) to a boil and stir in honey-pectin mix. Blend thoroughly and bring to a

boil again. Now add 1 teaspoon of the calcium solution for each cup of fruit. Stir until mixed and the operation is done.  
(NOTE: Although the article does not so state, be sure to can, freeze, or refrigerate your jam under this method.)

This recipe is not cut-and-dried. Make a small test batch at first. If it's too stiff, try again with less pectin or less calcium next time. If the test batch is too runny, reheat it and add more calcium. Cool and check again. Experiment until you find the right proportions.

### Agar

Agar, a tasteless, colorless extract of sea algae, makes a great jelling agent for jam. Widely used in commercial food preparations, agar can even substitute for gelatin. By adjusting the amount of agar, you can produce any firmness of jam desired.

We've never found it in a regular store. Send for flaked or granulated agar rather than the "stick" kind.

Prepare the agar in your saucepan by mixing 1 tablespoon of water or fruit juice with 1 teaspoon of agar for every cup of fruit. Bring this mixture to a boil, stirring until no more agar will dissolve - the rest will dissolve later. Then add fruit and lemon juice, and bring to a boil once more. Add the honey now, and simmer the mixture gently for about 3 minutes. Process as before. (See canning procedure). The jam will set when cooled below 100 degrees F. but won't liquefy again until heated above 185 degrees F. To vary the thickness, add or subtract about  $\frac{1}{4}$  teaspoon of agar per cup of fruit.

### Arrowroot or Tapioca Flour

Arrowroot and tapioca flour are both starches that swell to form a gel when mixed with liquid and heated. Both come from the roots of tropical plants: tapioca from the root of the cassava plant and arrowroot from the tuberous roots of the maranta plant or its relatives.

Start with  $1\frac{1}{2}$  teaspoons of powder for each cup of fruit. Sprinkle the starch over the mixture of cold fruit and lemon juice. Blend well to avoid lumps. (Never stir the starch into hot fruit, or it will lump into a mess.) Heat the mixture and let it simmer for 2 to 3 minutes, stirring often. Add the honey and simmer for 2 to 3 minutes more, making sure that the milky look from the flour disappears and the jam begins to thicken. Adjust the amount of starch to suit yourself. Then can your jam. (See canning procedure.)

### Apples

Since apples (especially crab apples) contain natural pectin, you can use them to thicken jam, bypassing commercial products. The apples won't dominate the taste of the main fruit but will blend with it. . . .

Chop us very finely or grate enough tart apples - skin and all - to make  $\frac{1}{4}$  cup of apples for each cup of main fruit. Since apples are high in acid, you can reduce the lemon juice you add to the main fruit

by 50 percent. Put the apples and an equal quantity of water or apple juice in a saucepan. Boil this mixture, while stirring, until the apples are very soft and have absorbed the liquid - 5 to 10 minutes. Add the rest of the fruit with lemon juice plus the honey, and simmer gently for 10 minutes. This jam may not be quite as thick as the previous ones, but it continues to jell as it sits in the jar. The change is noticeable but not dramatic. (NOTE: Again the authors do not state that you must can, freeze, or refrigerate this jam.)

### Long-Cook Method

This last jam-making method uses no jelling agent. The long cooking time thickens the fruit by boiling off the water. Combining high pectin and low pectin fruit isn't necessary but will shorten the cooking time. Because the jam cooks so long, this traditional method yields a smooth and tasty preserve, but sacrifices many nutrients.

Prepare your fruit as usual, and add lemon juice to aid jelling. To shorten the cooking time, add a high-pectin fruit like crab apples, red currants, gooseberries, sour plums and quinces. Mix the fruit with honey and simmer for 30 to 45 minutes. The exact cooking time depends on the amount of natural pectin in the fruit and on how thick you want the jam. For a chunky texture, add some pieces of fruit to the jam about 5 minutes before removing it from the heat. Can as usual. (See canning procedure.)

BY RONA FINMAN AND WARREN

BY RONA FINMAN AND WARREN PALMER

\* \* \* \* \*

Taken from a July issue of THE WALL STREET JOURNAL.

### "The Angry Victims of the Latest Sting Are the Beekeepers"

By Jane Juffer

Bee rustling can be risky business. You can land in jail, of course - or in the hospital if your booty turns on you. But at some fearless and adept criminals, the risks are worth taking.

In fact, there is something of a bee crime wave in California and Florida, the top honey-producing states, where 92 major bee thefts have been reported this year. Many more thefts go unreported, beekeepers say, because the victims feel that the police, treating them like class-B citizens, are indifferent. Insurance companies, however, aren't indifferent; they have reacted by raising premiums and deductibles.

Even more galling to beekeepers is the apparent fact that they are being victimized primarily by other beekeepers. Who else, they ask, would risk the wrath of an angry mob of bees? "It's like a novice stealing nitroglycerin," California beekeeper Joseph Wright says. "If you don't know how to handle it, you'll have some dire circumstances."

The motivation for the thievery, as with most thievery, is profit. The average price for a pound of honey increased almost 200% in the



past decade; the 200 million pounds of honey produced nationwide last year brought in \$117.5 million, or 172% more than the \$43.1 million earned by the smaller 1971 crop.

### Like Finding Car Gone

After some lean years recently, beekeepers expect a bumper crop in 1982 - and with it, more thefts. A bee hive can be worth as much as \$250. Having 50 of them stolen, which isn't unusual, is like "walking out and finding your automobile gone," says Robert Koehnen, a California beekeeper.

Deft beeknappers are tough to stop. They work at night, like a good many criminals but not entirely for the same reasons. Bees, it seems, are less likely to sting you at night, because they need sunlight to direct their flight at you. And if the thief uses smoke for further safety's sake, bees become downright stuporous. The smoke producing devices apparently trigger an instinctive reaction to have a good meal and leave the hive. So the bee gorges himself on honey. Now he is too full and lazy to leave or to worry about what's going on. And if he does arouse himself, it's too late: Like a fat man trying to tie his shoes, he can't bend into the proper stinging position.

With the bees thus incapacitated, a couple of rustlers can round up several 200-pound wood hives and their 75,000 or so occupants in a matter of minutes and be gone. Or they can leave the hives where they were after sticking them into shaking devices, causing the rattled bees to plummet into a wire-screen cage.

### Identification Problem

Once off the property, bee thieves who get the hives can easily chip the original owner's brand off and substitute their own. And, just in case you hadn't noticed, individual bees are impossible to identify.

Even if the culprits are spotted, beekeepers complain, law-enforcement officials are leery of stopping the perpetrator. "They don't want to get out of the car," says Jerry Latner, a Florida beekeeper. "They are afraid of being stung." Police laughed at Michael Connor, a Michigan bee-equipment supplier who reported the theft of some of his hives. They didn't believe that anyone would steal a beehive, he says.

No wonder, then, that emotions are running high in bee country. "Stealing a man's bees is like taking his living from him," says Florida chief apiary inspector, James Herndon. "If the beekeepers catch somebody, I'm afraid they'd take the law into their own hands."

James Willis has already done that. Angered by a series of thefts from his Riverside, Calif., apiary, Mr. Willis hid with a shotgun. He ended up filling Scott Collins and David Allred with buckshot. Even though Mr. Allred is a convicted bee rustler, the pair weren't arrested. Mr. Collins, a beekeeper, said he was merely snooping around for some of his own stolen hives. He is considering suing Mr. Willis, charging assault and battery and mental distress. Mr. Willis seems unconcerned.



"If everyone would get together and start shooting more of these thieves, there would be less of it," he says.

The California Beekeepers Association has a less violent remedy: a \$10,000 reward for information leading to the arrest of bee desperadoes. The association hopes the reward will make snitching more profitable than stealing. And there has been at least one bust resulting from the program. "The person who made the call was the thief's girlfriend," says Mr. Wright, chairman of the reward program. "He had done her wrong."

But Iva Knoefler, co-owner of Riverside-based Knoefler Honey Farms, points out that the reward hasn't stopped the theft of almost 400 hives from her farm. Even though she thinks she knows the evil-doer - another beekeeper - Mrs. Knoefler hasn't been able to prove it. "What good is suspicion if you don't actually catch them?" she says. Likewise, Michigan beekeeper Craig Hannar believes that 75% of the thefts in southwest Michigan can be traced to one beekeeper. The suspect has many hives and no record of purchasing equipment, Mr. Hannar says, but nobody has been able to pin any thefts on him.

Bee thieves are "usually smaller beekeepers who want to get larger without investing any money," says Herndon, the Florida bee official, who doubts even 25% of the state's bee rustlers are ever caught.

The economic losses are souring a lot of beekeepers on the business, and the diehards bemoan the declines of a hardy American breed. People from all walks of life have honey hives, from the "top of the penthouse on Park Avenue to the farmer's backyard," says Charles Dadant, the owner of Dadant & Sons, Inc., a Hamilton, Ill. bee-equipment supplier. Add John Root, the editor of the newsletter "Gleanings in Bee Culture": "Beekeepers are the type of people who built America from the beginning. They're the rugged pioneer type, and they get upset if people steal their bees."

Sentimental beekeepers see their bees in much the same way. "Bees remind you of the good old days when Americans worked and didn't depend on anyone else," says Mr. Hannar, the Michigan beekeeper. "They wear their wings off flying back and forth."

\* \* \* \* \*

### QUESTIONS AND ANSWERS

1. Instead of wintering bees in a two-story hive, would it not be better to have the upper body filled with early-gathered honey, then in the fall reduce to one story, leaving the upper story, thus making a smaller room to heat during cold weather?

If the colony is strong better leave on the upper story. The bees will then cluster in the space between the two stories. Removing one story and then putting it back involves a lot of work that would be of doubtful value. The great value of the second story or food chamber is that it supplies an abundance of stores during the two critical brood rearing periods in the year, namely, that

of the late summer and fall when young bees for the winter are reared, and that of the spring preceding the main honey flow when the workers are reared that gather the crop of honey.

2. Some of my colonies are going into the winter with little or no pollen, while others have a good supply. Does this make any difference?

Late work on the part of scientific men in the Bee Culture Laboratories at various points in the United States, show that brood rearing in small patches under the cluster is not only normal but a desirable condition and, of course, brood can not be reared without pollen. The same workers show that a large amount of natural pollen is a prime requisite for wintering along with plenty of honey well ripened and sealed in the cells. Brood rearing, unless the winter is too cold, may start in January. The amount of brood will then normally increase in February and in March. Bees, of course, cannot gather pollen in mid-winter but if there is plenty of it in the combs brood rearing can progress until May or June when the hive will have a large force of bees old enough to go to the fields.

3. Last winter I fixed my colonies in the attic with a wire screen over the entrances inside for ventilation but closed from out of doors. In December they became quite restless and the dead bees nearly closed the entrance. What was the cause of their restlessness?

The bees were restless because they were imprisoned within the hive. The entrance cannot be safely closed in this way during the winter even when the bees do not fly, because as soon as they discover that they cannot escape from the hive they become greatly excited and soon die in great numbers from exhaustion. It is necessary to leave a small opening at the entrance during the winter.

4. What is the lowest temperature the bees can stand without perishing?

Individual bees become chilled and unable to move if exposed long to a temperature of 45 degrees. Many bees become chilled in this way during a winter cleansing flight. They become helpless in a few minutes if exposed to a temperature of 35 to 40 degrees, but will revive if warmed up later. They will live for several days at a temperature of 40 degrees, although stiff with cold and apparently dead. Often an entire cluster becomes thus chilled when no more food is available in the hive but if found in time such a colony, apparently dead, can be revived by taking the hive into a warm room and feeding the bees as soon as some of them revive. They can not live longer than a few days in this chilled condition.

5. Stored honey is said to show a decrease in enzyme levels. Does this affect the quality?

No. From a nutritional point of view no relation was found between enzymic activity and quality.

6. How much wax does it require to hold a pound of honey as we find it in comb honey?

It requires about one ounce of wax to hold a pound of honey as the comb is usually built in comb-honey sections. Of course, where full sheets of foundation are used in the sections this foundation weighs about one-seventh of an ounce, thus supply one-seventh of the wax necessary to hold a pound of honey.

7. How many worker cells are there to the square inch of foundation?

Today foundation is made on the basis of 4.83 cells to the inch. This has been the standard of brood foundation in the United States for the last 70 years.

8. How acid is honey?

This question was answered a few years ago by H. A. Schuette and F. J. Schubert, chemists at the University of Wisconsin, who investigated the acidity of honey.

The Wisconsin scientists found that the range of acidity (pH) of honey based on samples from 48 different sources, was between 3.1 and 4.5 with an average of 3.5. See how this compares with the average acidity (pH) of the following foods: Orange juice, 3.7; Tomato juice (red), 4.2; Apple juice, 3.3; Dill pickles, 3.1; Sweet pickles, 2.7. (The lower the figure the greater the acidity.)

9. How can the waxy taste in the honey from cappings when melted be prevented? After acquiring this state can it be removed in any way?

The waxy taste is brought about by heating the honey and wax together. After the honey has acquired this taste there is no way of removing it. It is important to drain as much honey out of the cappings as can well be done before melting, so that but little honey will have its flavor injured in this way. It is also important to use only as much heat as is necessary to melt the cappings, then the honey should be separated from the wax as soon as possible after melting to prevent this waxy flavor.

NOTE: The nine questions and their answers were taken from the book 500 ANSWERS TO BEE QUESTIONS, 7th Edition, published by the A. I. Root Company, Medina, Ohio, 1978.

## MISSOURI STATE BEEKEEPERS' FALL MEETING

University of Missouri - St. Louis

J. C. Penney Auditorium

Saturday, October 23, 1982

~~A.M.~~

- 8:30 - 9:00 Registration - \$1.00 per person
- 9:00 - 9:05 Meeting called to order by President Boeckmann
- 9:05 - 9:10 Invocation
- 9:10 - 9:15 Welcome
- 9:15 - 9:45 MAKING BEESWAX CANDLES - Larry Hensley
- 9:50 - 10:40 BEE VENOM THERAPY by Charles Mraz
- 10:40 - 11:00 Coffee
- 11:00 - 12:00 BUSINESS SIDE OF BEEKEEPING - Dr. Larry Connor

## P.M.

- 12:00 - 1:30 Lunch (On your own)
- 1:30 - 2:30 BEEKEEPING AND OBSERVATIONS ON RESISTANCE TO BEE DISEASES IN MEXICO by Charles Mraz
- 2:30 - 3:30 THE POLLEN INDUSTRY by Dr. Larry Connor
- 3:30 - 4:30 "BEEKEEPER OF THE YEAR AWARD" - Mr. George VanArsdall  
Business session  
Attendance prizes

ARTS AND CRAFT DISPLAY - Bring an item for the display. Be sure to  
Mark the item with your name and local association.

## TOTAL EXPENSES

4173.42

## Less Remaining Inventory

Labels - approx one-third of total	69.88
58 Kelley - How To books	61.19
72 Root - Starting Right	91.44
4 Jaycox H.B. Beekeeping	13.44
400 Kelley - Honey recipes	46.72
13 Amana - Honey Recipes	11.99
134 B.C. Gourmet Honey Recipes	113.90
24 Clear plastic servers	11.09

Stock after sales 419.65

ADJUSTED EXPENSES 3753.77

## TOTAL SALES AND MONEY DEPOSITED

5368.72

Less starting cash

105.00

TOTAL SALES 5263.72

ADJUSTED EXPENSES 3753.77

 \$1509.95

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