

MISSOURI STATE BEEKEEPERS ASSOCIATION
1407 Sneak Road
Foristell, MO 63348

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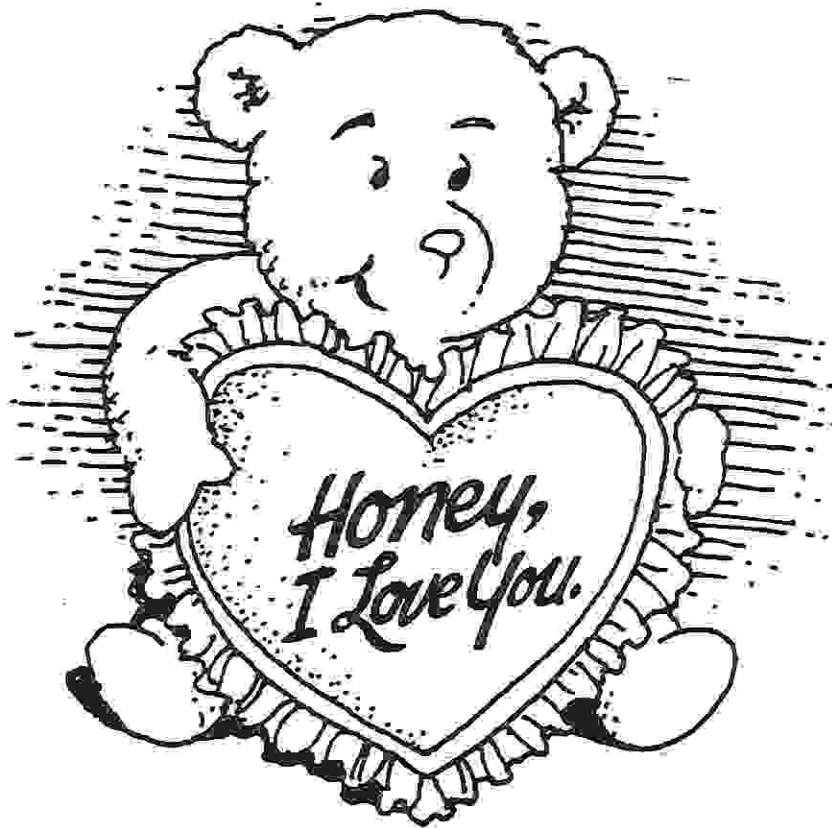


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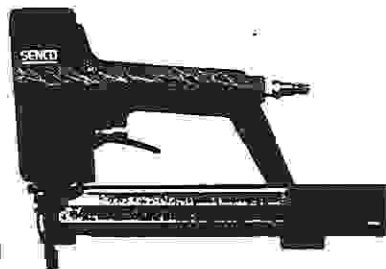
COMING EVENTS

Feb. 23 & 24	Spring Meeting	Larry Hensley	Jefferson City
March 1	Articles for Next Newsletter	Pam Brown	
???	Fair Meeting	Don Reinkemeyer	
Aug. 9-19	State Fair	Art Gelder	Sedalia
Oct. 5 & 6	Fall Meeting	Larry Hensley	Lake of the Ozarks



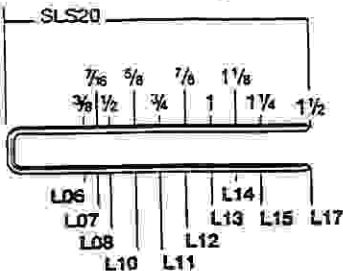
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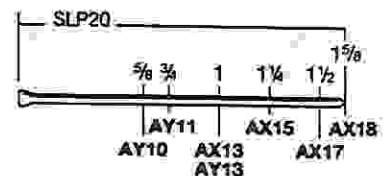
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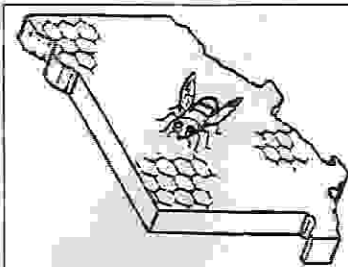


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Missouri State Beekeepers Association January 2000

President's Column

Who would of ever thought, we would be around to see the beekeeping industry move into the 21st century? If you think about it, many changes have occurred. We've gone from the Bee Gum and Straw Skep to the Langstroth hive, from horse and wagon to flatbed trucks to move bees, from manual extractors to electrical powered extractors, from buckets to pumps to move bulk honey. The list could go on and on.

We should take a moment to commit ourselves to the task of promoting the beekeeping industry in the State of Missouri. I don't care if you have one colony or a 1000 colonies, it's up to each and every beekeeper to educate and inform the public about beekeeping and its products. We should contact our legislators and express our wants and desires to help develop the industry by perhaps setting up a full time bee lab for Missouri, to enhance laws to reduce the amount of imported honey, to help honey producers to increase production. To negate the imported honey, these are just examples of what is possible if we are heard.

We should help and encourage younger people to join us in participating in the craft of beekeeping and its rewards.

As you will read later in the newsletter, Mike Brown has informed us that the Section 18 is in place for both CheckMite+ and the Formic Acid Gel Pack. It goes without saying we each need to adhere strictly to directions for

the proper use.

It is a 'neat feeling' to be the first President of the Missouri State Beekeepers of the 21st century. I am looking forward to working for and with you in the year 2000.

Ian



Honey of a Verse

"The secret of my health is applying honey inside and oil outside."

Democritus (lived to be 109)

For Your Funny Bone

An irate visitor dashed angrily up to the beekeeper and complained, "One of your bees stung me, and I want you to do something

about it.”

The beekeeper answered soothingly, “Sure lady, you just show me which one it was and I’ll punish it.”

Copied from the July/Aug. ’99
Kentucky Bee Line
Originally published in the June ’99,
Woodmen magazine.

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Word from the Editor

One of the goals that I set when taking over the position of Newsletter Editor was to have more articles written by our members and share information about our local associations. I have succeeded somewhat; I still want input from YOU, the membership. We all can read the technical journals, books and look up information on the Internet, which is why I feel it is important to hear from you. Please send articles and reports for publication. One more thing, tell our advertisers, that you appreciate their support. Thank you.

Pam

A Bit of History

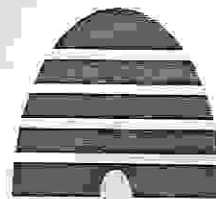
The earliest record of keeping bees in hives was found in the sun temple erected c.2400B.C. by Ne-user-re at Sakhara near Cairo. The museum at Dokki displays two

pots from a thousand years later that still contain honey. Beekeeping as opposed to “hunting” from nests, probably began at different times in different parts of the world.

Egyptian hives were of the now familiar straw skep shape – a shape probably dictated by that of the swarm to be captured. Elsewhere in the Middle East hives were more often tubes of sunburned mud, arranged horizontally in stacks. Mud, pottery, wood, and natural objects from logs to gourds are still used as hives in many parts of the world.

In northern Europe, where bees nested in hollow trees in vast forests, bee “hunting” was the common practice. Nests were generally more accessible than those found in rock crevices in southern countries. As a result, a form of beekeeping developed whereby a keeper owned bee colonies in the trees. The practice spread across the continent. Eventually men fixed hollow logs in the trees instead and later similar logs were used upright on the ground.

In Britain, bees were certainly kept during the Bronze Age, when the wax was essential to the then prevalent method of bronze casting. Wax for candles and tapers long remained the most important product from the hive. In medieval times skeps were widely used, then upright wicker models, but hives were not much improved upon until wooden ones were introduced in the 17th century, influenced by advances in cabinet making. Those soon became the most popular type.



The mysterious activity in the bee colony prompted man to make hives in which the bees could be observed. In the 1830s Thomas Nutt – an apiarist – built some surprisingly complex ones, which had turrets and glass domes.

Despite beekeeping's ancient history, it was not until the 1800s that honey production became a serious industry, when a number of improvements at last paved the way for mechanization.

Pages 10-11, *Honey*, Bantam Books

Mike Brown's Comments

State Entomologist

I just found out that "Apicure, Formic Acid Gel Treatment for Honeybee Hives" has been registered for use in Missouri. This product is registered by Apicure, Inc., 8 Meador Rd., Greenwich, NY, 12834. The EPA Registration Number is 72839-1. It apparently gives good control of tracheal mite and is effective in "suppression" of varroa mite. From what I understand at this time, current suppliers are Dadant & Sons, Inc., and Walter T. Kelly. Suggested retail price is \$1.95 per pack.

M.D.A. News Release

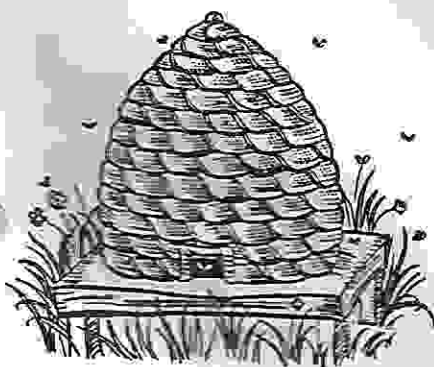
For Immediate Release: Oct. 25, 1999

AGRICULTURE DEPARTMENT RECEIPT FOR PESTICIDE USE

(Jefferson City, MO) The Missouri Department of Agriculture received an emergency exemption from the Environmental Agency that will allow the state's beekeepers to treat with CheckMite+ to control Apistan resistant varroa mites and small hive beetles.

Beekeepers who use CheckMite+ must complete a form and submit it to the Missouri Department of Agriculture.

Mike



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Queen's Piping

Vera Gelder, Queen Chairwoman

For those of you who did not get to attend the fall meeting, our Missouri Honey Queen for the year 2000 is Jessica McNabb from Centralia, MO, daughter of Jackie and Jerry McNabb. She is a lovely young lady with lots of energy, enthusiasm for marketing honey, and a very busy schedule. Here is her brief autobiography:

"My early life was spent on a farm in Paris, MO. I spent time with my baby-sitter, the Troyers on their dairy farm and learned to milk and feed bottle calves. At the age of 4 my family moved to the Nashville, TN area. At this time the foundation of my achievements began. I began participating in various local television commercials and country music videos. My family moved back to Missouri 5 years later. Shortly after the move I became involved in a local 4-H club and am still a member of a Boone County 4-H Club. I have competed on the state and national levels for demonstration, public speaking and judging. I showed horses and raised poultry along with many other various projects. I am a member of the Centralia FFA and have competed in the area, district and state levels of public speaking and judging. I was selected this year to be a member of the National FFA Chorus. I am a member of several school organizations and have performed in the school musicals and madrigal productions. I am a member of the Daybreak Church and youth group in Centralia."

Jessica participated as Missouri Honey Queen at the National Small Farm Show in Columbia and the American Royal in Kansas City this last fall. She already has several honey events

scheduled for this year. She definitely wants to go onto Nationals and would appreciate opportunities to work with your local schools, customers, farmers' markets, special events, etc. Let's help Jessica fill her scrapbook and help ourselves promote honey! If you would like Jessica to be at any of your "happenings" or promotions, let me know:



Vera

News from the Auxiliary

Sharon Gibbons, President

Happy New Year from the MSBA Auxiliary

At the October meeting at Lake Ozark, new officers were elected:

President: Sharon Gibbons - 636-394-5395
Vice-president: Joann Davis - 816-690-8007
Secretary: Judy Levinskas - 636-946-6445
Treasurer: Rose Terrill - 816-697-3434

Dues are \$10 per year and can be sent directly to Ron Vivian, State Treasurer, be sure to indicate that it is for the Auxiliary.

The next meeting will be held in conjunction with the regular State Beekeepers meeting. It will be March 18th at the Runge Center in Jefferson City. We have an excellent program planned. Depending on the content of the beekeepers program, we will start at 9:30 with a business meeting, followed by a program by Brenda Curtice from Moberly. Her topic will be making skin care products using honey and beeswax. She will also cover soap making. We also will have a demonstration by the MO Honey Queen.

We also would like every member attending to bring a couple of jars of honey. We can sell them to make a little money for the Aux. We are also planning a box lunch so we can all eat together, and socialize. We will send out information later.



Sharon

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To Our Health

Charles Mraz, 94, Advocate of Therapeutic Bee Sting, Dies

Charles Mraz, an inventive beekeepers who since the 1930's had been the country's leading evangelist for the therapeutic use of bee stings, still unproven treatment, died on September 13 at his home in Middlebury, VT. He was 94.

Mr. Mraz was widely known among beekeepers for developing a hardy strain of bees well suited to survive in the chilly Champlain Valley in Vermont and for figuring out how to get cranky bees safely out of the way so honey could be harvested more easily.



But many thousand of people with chronic diseases knew him for his campaign to have bee venom and other bee products accepted as medical therapies in the United States – a quest that began when he deliberately bared his own arthritic knees for bee stings. His proselytizing prompted people from all over the world to seek his advice on treatment.

"Letters mailed to The Bee Man, Middlebury, VT, would make it to his house," said Mitchell Kurker, his son-in-law.

A federally supervised clinical trial of the safety of such treatments is only now being undertaken.

For decades, many sick people made pilgrimages to Middlebury for bee sting therapy, for which Mr. Marz never charged. He would pluck a bee after a bee from a jar, holding each one with forceps as it sank its stinger into the visitor's skin, then crushing the mortally wounded bee.

Mr. Marz was convinced that the venom in bee stings could relieve the symptoms of autoimmune diseases like multiple sclerosis and rheumatoid arthritis by, among things, triggering an anti-inflammatory response. Though that idea is not accepted by a vast majority of doctors, many people with such diseases heard his message and came to believe that it offered them hope.

Now the treatment could be moving closer to respectability. In a few weeks, the first clinical study of bee venom injections under the supervision of the FDA will begin at Georgetown University. The research is sponsored by the Multiple Sclerosis Association of America. Based in Cherry Hill, NJ. The year-long study will examine safety; if the treatment clears that hurdle, the next step will be to find out whether it works.

Mr. Mraz tried to encourage research during the decades he promoted bee sting therapy. He was a founding member and a director of the American Apitherapy Society, which was set up in 1998 to promote research and education. And he helped any researcher who asked.

"He used a technique developed at Cornell in the 1960's to collect sterile venom," said Roger Morse, a retired professor of apiculture at Cornell who was a friend of Mr. Mraz for 50 years but disagreed with him about whether bee venom has medicinal properties. "He would collect and supply venom free of charge to anyone who was doing research with it, no matter what kind of research was being done. He was a very unusual man who wanted to help society — both preacher and practitioner."

Mr. Marz was enthralled by bees at an early age. He was born on July 26, 1905, in Queens and set up his first beehives at age 14, while he still lived in the city. After working for other beekeepers in the Finger Lakes region of New York, he moved to Middlebury in 1928 and started Champlain Valley Apiaries in 1931.

His beekeeping business became one of the largest in New England. At one point, he had a thousand bee colonies, each with a population of 30,000 to 60,000. He ran the business for more than 60 years, until he turned it over to his son William.

He discovered that the fumes of carbolic acid would prompt the bees to take cover in the bottom of the hive, leaving their honey unprotected. "that was a very significant advance," said Kirk Webster, owner of Champlain Valley Bees and Queens in Middlebury. "It enabled one person to harvest much more honey than possible before."

That technique is now widely used, and it brought Mr. Marz an award from the American Beekeeping Federation in 1992.

The strain of bees developed by Mr. Mraz were disease-resistant and adapted to the local climate. "That's become almost the native bee of the Champlain Valley," Mr. Webster said. "They produce a very light clover honey, the standard for very light honeys in the United States." He also designed new kinds of equipment for processing honey, Dr. Morse said.

His passion for what came to be called apitherapy came when painful arthritis threatened his ability to do the heavy work around an apiary.

Mr. Marz described the episode in his book, *Health and the Honeybee*, which was published in 1995 by Honeybee Health Products, owned by his daughter Michelle Mraz and her husband, Mr. Kurker.

He had heard about bee sting therapy as a folk remedy in many cultures but initially considered that "an old wives' tale," Mr. Kurker said. But the pain drove him to try bee stings on both knees.

"I wonder if there is anything to that damned nonsense about bee stings for arthritis," Mr. Marz thought, according to his book.

The next day, he wrote, the pain was gone. "I couldn't believe it," he said. "There wasn't a trace of pain or stiffness in my knees."

His second patient was not long in coming. A neighbor had arthritic hands that were bringing tears to his eyes during the twice-a-day milking on his dairy farm, and Mr. Mraz offered to help, he wrote. After a regimen of bee stings over several weeks, the dairy farmer's hands opened and closed easily and

were no longer swollen, Mr. Mraz said.

He said he had become more confident about the bee sting technique when he found out that a doctor in midtown Manhattan, Dr. B. F. Beck, was using the same therapy. Mr. Mraz visited Dr. Beck's office, which had a beehive on the windowsill. The bees flew to Central Park for pollen, Mr. Mraz said, and Dr. Beck used them to sting patients.

As an expert on beekeeping techniques, Mr. Mraz lectured and consulted all over the world, especially in Mexico, and he frequently published in industry journals. At the same time, he spread the word about bee venom therapy, undeterred by the resistance he encountered.

Most people would look at me as if I was some kind of nut," he wrote. Mr. Mraz also promoted what he contended were the medical effects of honey, pollen, royal jelly and a bee resin called propolis.

He considered stings from living bees superior to injections of purified bee venom, although he would provide the venom to researchers if they wished. Some multiple sclerosis patients treat themselves with dozens of stings a day.

Michelle remembers growing up with a jar of bees always on the table ready to go. "Mr. Kurker said. "He'd treat people and send them away with a jar of bees so they could treat themselves."

Besides Michelle Mraz, of Burlington, VT, Mr. Mraz is survived by his wife, Pamela. His first wife, Letitia, died in 1948, and his second wife, Margaret, died in 1992. Other survivors include his daughters, Marna Ehreck of Shelburne, VT and Laurie Zwaan of Exeter, NH, his sons, William, of Middlebury and Charles of Destin, FL; 13 grandchildren and 7 great-grandchildren.

While Mr. Mraz started cutting down on his work at his apiary in the 1980's he remained an active proponent and practitioner of apitherapy for the rest of his life.

"People were still coming to see him for treatment," Mr. Kurker said. "Somebody came to the house on the morning he died for bee stings."

Karen Freeman, *The New York Times*
Obituaries, Sunday, September 19, 1999

Bees – Latest Weapon In Cancer Fight

The sting of a bee may soon be used to kill cancer cells

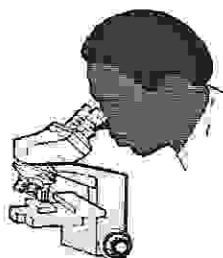
Scientists at CSIRO Molecular Science are modifying bee venom to develop cancer treatments that should have fewer side effects than other drugs used to fight the disease.

A research project to utilize an active ingredient from bee venom as a potential cure for cancer has been funded by a \$670,000 grant from the Commonwealth Government's Industry Research and Development Board. Participants in the project, CSIRO, the Oncology Research Center at the Prince of Wales Hospital (POWH) and CSL, will contribute further funds towards the \$1.3 million project.

The venom in the bee sting contains a number of active ingredients, the main one being melittin, a molecule that kills cells by slicing through the cell walls, destroying the cells.

"What we have done is to modify the structure of the mellitin molecule to remove the part that causes the allergic reaction while still maintaining its ability to kill cells," CSIRO scientists Dr. Werkmeister and Dr. Hewish say.

One problem the researchers have to get around is targeting the killing activity of mel-litin to cancer cells only and not to normal healthy cells. They plan to achieve this by attaching the modified mellitin to an antibody molecule that specifically recognizes cancer cells. This combination of a toxin and an anti-body is known as an immunotoxin. The re-search team at CSIRO and POWH aims to produce immunotoxins as new cancer drugs that can attack a wide range of cancer cells. This approach should overcome the major drawbacks of chemotherapy treatment.



"Chemotherapy drugs are not specific; they attack normal cells thereby causing unwanted side effects such as hair loss, vomiting and weight loss. Such symptoms limit the amount of drug that can be administered and hence its effectiveness," Dr. Hewish says.

The concept of using molecules such as immunotoxins as "magic bullets" for cancer treatment is not new and scientists have created a number of immunotoxin drugs with toxins derived from plants and bacteria. These immunotoxins, however, are extremely toxic and produce a number of serious side effects that limit their clinical application.

Dr. Werkmeister points out that mellitin is far less toxic than the plant and bacterial toxins used in earlier work and thus new immuno-toxin drugs from it may reduce potential side effects while still retaining the specific killing of target cancers.

"This is a fantastic opportunity to take some fundamental research observations and develop them into a potential drug to treat a major disease, such as cancer. It is especially pleasing to see an Australian innovation being supported by companies such as CSL Limited and the IR&D Board," said Dr. Simon Carroll,

the divisional commercial development manager.

"We still have a fairly long way to go with this research. We are still some time from clinical application, but we are very optimistic," Dr. Werkmeister concludes.

Note: This story has been adapted from a news release issued by CSIRO Australia for journalists and other members of the public. If you wish to quote from any part of this story, please credit CSIRO Australia as the original source. You may also wish to include the following link in any citation:

<http://www.sciencedaily.com/releases/1999/03/990303200507.htm>

Sweet Relief for Hay Fever

Honey may help prevent certain seasonal allergy symptoms, according to an ongoing study at the University of Connecticut Health Center in Farmington. During allergy season, about half of 50 hay fever sufferers doses themselves daily with a tablespoon of local honey while the others didn't. Those who took honey reported significantly greater relief from watery, red, itchy eyes. Local honey — found at farmers' markets and health food stores — contains local pollens; researchers theorize that regular exposure to small amounts of an allergen can build up the body's tolerance to it. **ONE CAUTION:** Honey of any kind can cause the food poisoning botulism, so children under a year old should not eat it

Redbook, September 1999



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Midwestern

In December the Midwestern Beekeepers held their annual banquet and awarded Joanne Davis, Beekeeper of the Year Award, Carol Kjelshus, Lifetime Member Award and Appreciation Award to Kathie Scott.

A Beekeeping Class will be offered at Mid-Con. beginning January 31st. All registration is through Johnson County Park and Recreation @ 913-831-3359.

Missouri Valley

Educational sessions regarding Family Farm 2000, Direct Marketing and Enterprise Diversification will include a beekeeping session. Saturday, March 25, at the Silex School, Silex, MO. For information call 573-485-7261 or 636-745-3808.



Eastern

Will be holding their Beekeeper of the Year banquet, March 2nd. For more information contact, Joy Stinger, 314-739-1819.

Member's Editorial

Leon Moyer, Rogersville, MO

As many of you are aware, every five years there is a vote taken to determine if the National Honey Board is approved to continue the assessment of honey. But there is an exception.

Having spent some time today reading the Agricultural research, extension, and education reform Act of 1998, it was with great dismay that I learned for the first time,

that if the referendum to be held in the near future should pass, we will not get to vote on terminating the Honey Board for another five years after the date of this election referendum. The elect wording is found in section 14 of the congressional Act, under IMPLEMENTATION OF AMENDMENTS MADE BY AGRICULTURAL RESEARCH, EXTENSION, AND EDUCATION REFORM ACT OF 1998, subsection (g), the very last paragraph of the act. It reads:

"Effects on Periodic Referenda—If the amended order becomes effective, any referendum otherwise required to be conducted under section 13© shall not be held before the date that is 5 years after the date of the referendum conducted under this section.

Section 13 c is the part that requires a vote be taken every five years to allow the NHB to continue to collect the assessment, so if the upcoming vote to increase the assessment to a penny and a half a pound is approved, then we will not get to vote on dissolving the NHB for another five years!

Do you want to continue to fund the NHB with a 50% increase in assessment rate for another five years, just to see how much more of a demand for honey can be created by the NHB, only to be filled by the packers buying foreign honey instead of yours, since the world market is so much cheaper in price? Those of you who think the a NHB is nice to have around just in case the honey industry needs a spokesperson, ought to be able to find a public relations person who will work for less than the current \$3million plus a year paid in assessments to the NHB. Also, the basic concept of using government to force every beekeeper to either pay the assessment or file an exemption paper, runs counter to the freedom this country was founded on, where individual freedom to choose which programs

and organizations a person wished to support with their money was paramount. I will gladly give the freedom to other beekeepers to pay any amount of money they desire, if they would only give me the freedom to not be covered under the act of Congress that established the NHB. For these reasons and others, I ask that you vote to not approve the increase in the assessment rate, and then next year, in 2001, it will be time for the regular five year periodic referendum on keeping the NHB, and hopefully it can and will be dumped, in favor of individual freedom and voluntary associations that you may join if you so choose to do, to promote honey any way you wish.

Leon

Director's Digest

Ted Jansen, Directorship Expires 2002

When we purchased the three acres in Chesterfield in 1958, half was woods and half was open land. The wooded area had three colonies of bees in trees. A few years passed and one of the trees blew down and left the bees exposed to the elements. Trying to find someone who had bees was quite a chore. There are no names in the telephone book. None of the farmers knew of anyone. Finally, I talked to the volunteer fire department and they gave me the name of someone who had a couple of colonies. I called him and he put parts of it together in a hive body and that was the beginning, building up to 60 colonies. I called him after I became ill and had to have by-pass surgery and I sold all the colonies but 10. I was planning not to exceed that due to heavy lifting. However, by 1989 when I retired from my job, we were close to 100 colonies, which we still have now.

In the beginning years we didn't belong to any

association – I didn't know there were any. I sort of improvised all sorts of practices that worked for me and our honey yield average steadily increased – even so after the mites. We now make more honey than ever.

Raising bees is really a lot of heavy, hard work, a lot of disappointments, a lot of stings. Getting stuck and having to have a farmer and tractor to get you on the road again. The most disgusting thing that can happen to you is going to a bee yard and finding it was vandalized or burned, and finding colonies dead and full of wax moths. People complaining your bees are bothering them, and so on.

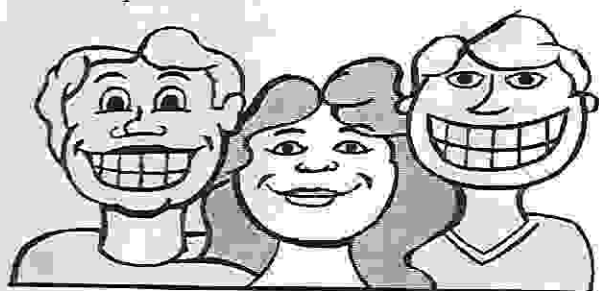
But there are so many more joyful occasions; finding a queen, hiving a swarm, seeing bees bringing in pollen, seeing a bee on a flower, smelling the aroma of a honey flow, walking under a basswood tree and hearing the hum of the bees working, walking into a field of clover or other crops and seeing bees collect-ing nectar and pollen, removing the top cover of a colony and seeing white wax – a sign to put on more supers. When extracting, the first taste of new honey and the different colors and flavors are exciting. Raising queens and then to see her brood pattern, her color, her size – to hold her and mark her and then to take off thousands of pounds of honey from these little creatures. And what a joy after all the honey and wax you have – to get paid for this happiness!



Then when fall arrives to see they have lots of store of honey for winter. All the work in the bee yard is over for now until early spring so we spend time traveling and attending meetings which is such great fun, meeting and talking to beekeepers from all over Missouri and also around the world.

In the beginning, when I started with bees, Marlene had very little interest, but as time went by she now knows a lot about the occupation.

The ten plus years of my retirement have been the happiest of my life, not only from the added income but also for all the great friendships.



Here in the valleys and hills of the mighty Mississippi and Missouri rivers, the honey produced is the finest in the world. Only one year in the early eighties did we have a bad year and that because of early drought. That year the honey was dark and strong.

It is unknown what plants our honey comes from, but we have flows from April 15th to August 15th and sometimes later. The color can be from water white to coal black, depending on the amount of sunshine and rain.



Don't think beekeeping is a get-rich-quick endeavor. It takes years of hand-on training and a very deep love for bees. I often say I would take care of them if there were no product involved! There is so much to learn about honeybees – so much is written, but so much more can be learned by talking with other beekeepers.

That's why it is important that each beekeeper join their local association, their state organization and perhaps some national or other regional associations, just to share ideas and knowledge. It is important to take an active

role in your association and keep yourself up-to-date.

Beekeeping is a great hobby. It has been such a great therapy for me, both mentally and physically. Hopefully, I will be able to enjoy it a few more years.

EDITORS NOTE: Ted and Marlene Jansen were featured in an article in the Nov/Dec. issue of "St. Louis Homes and Lifestyles". The article is called "A Honey of a Hobby", pages 48-52.

Ted

EDITORS MESSAGE TO DIRECTORS & MEMBER AT LARGE: Each director is asked to submit a newsletter article. The schedule is:



March – Ruben Carter
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Pollination



Pollination on Mars

By Anton G. Branz
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A manned mission to Mars (including landing) will take about 2 years. A one way trip will take about 8 months, but depends heavily on the trajectory flown. The length of stay on Mars might take one to three months. The crew consists of two to three members. The crew needs among other things, food, oxygen, and water.

The freshness of the food decreases certainly over time. To eat canned food for duration of two or three years is not only a matter of taste, but can cause physical as well as mental health problems.

The weight represents the mass of the food plus packaging/containment are to be transported, the needed oxygen plus containment as well. The required water quantity is somewhat less because of its potential to be recycled. The biological waste can be entrusted to the infinite deepness of space as a hidden message from Earth.

Biological Cycles



A reduction of the masses as planned in this first version can be reduced by usage of three biological cycles, which have food plants as a central point.

The first loop is the oxygen- carbon dioxide loop: Humans breathe in oxygen (O₂) and exhale Carbon dioxide. Plants take in this carbon dioxide and release oxygen. A sufficiently large quantity of plants can be used as oxygen generators, which reduces the required amount of oxygen and related containers considerably.

The second loop is the fruit-compost loop: Humans eat the fruits of plants and leave digested "compost" as fertilizer for the plants. A sufficiently large quantity of plants can be used not only for oxygen production but also as food producers, which would reduce the quantity of food to be transported.

These two loops reduce waste to a minimum. The exhaled carbon dioxide is taken by the plants and oxygen is released. Similarly, compost is converted by the plants to appetizing tidbits such as cabbage, spinach, radish, onion, dry bean, rice, carrot, chard, tomato, sweet and white potato, peanut, lettuce, wheat, or soy-bean. And by the way, everything is quite fresh.



The third loop is the water loop: Used water can be cleaned and used for watering plants. Plant soil can do the cleaning to a certain extent as happens here on the ground as and it becomes drinking water. Part of the water is taken from the plant's roots and released via the leaves (as oxygen is released). That water can be condensed (and after mineral enrichment of course) and used as drinking water as well. Here we make use of the symbiosis of plants and humans.

But why does a little beekeeper take a remote interest in something like a trip to Mars?

Pollination

When plants bear fruits they must first bloom and get pollinated. Originally, this was done by the wind. Some plants are wind pollinated which needs a fan when they are grown in a closed space as in a greenhouse. Some plants need other means to be pollinated such as insects, hummingbirds or humans. Pollination by humans can be done by using a small brush from bloom to bloom or by applying vibrations which make the pollen float and let them find their way to their destination (bloom ...).



Nowadays it can be even more modern: Bumblebees can be bought in a cardboard box and put into a greenhouse to do their job. Bumblebees are more cost effective and reliable than human pollinators.

Pollination does not necessarily have a binary result: Pollinated or not. There can also be an intermediate result: poorly pollinated by too little pollen. A prerequisite for proper fruit production is a proper pollination. Insects do this quite well in nature.

During a long distance and long duration space flight one might use astronauts with a little brush in their hand as pollinators of their own food to avoid not undangerous boredom. Pollination by bees in a closed green house with transparent walls and ceiling is apparently not possible. A larger experiment of this kind was done by the American Biosphere II test installation. In a bee flight room (BFR) with non-transparent walls and artificial illumination, bees can do their job very well.

First Steps Towards a Mars Mission

Survival in a closed bee flight room (BFR). Successful experiments on the survival of bees in a separate, from nature disclosed bee flight room over a longer time were done by the Niedersächsischen Landesinstitut für Bienenkunde in Celle, Lower Saxony, Germany, by J.P. van Praagh. Bees were fed with sugar solution, plain water and fine ground pollen outside the hive. The harvest was done by the bees directly. A high air humidity caused a high brood rate. Swarming impulse was low. Experiment duration was 18 months.

At the Research Center for Insect Pollination and Beekeeping, "Ambrosiushoeve", in Hilvarenbeek, Netherlands, similar experiments were done with bumblebees by Ing. J. van den Eijnde. Here bumblebees are reared for pollination in greenhouses.

Survival of Bees Under Micro Gravity

The influence of the absence of gravity on the survival, behavior, and comb building capability of bees was already researched during the NASA Space Shuttle Mission STS-13 in April 1984.

For this purpose, two identical bee hives were made: one for the actual shuttle flight and one as reference model on the ground. These bee-tight hives had an aluminum case and a transparent cover. The size was 12x38x46cm. Three wooden frames were contained, one with a 7.5x7.5cm drawn-out comb, two with comb foundation of the same size but without imprinted cell pattern (with a smooth surface). At the one side of the hive there where the 3 frames, on the other side a feeder (with sugar syrup). The space in between served as flight room. Additionally there were two ventilation holes, a fan and two thermometers. Beside the queen there were 3400 worker bees. About

200cm² comb were built during this space flight and part of the sugar syrup was gathered. The queen filled the comb with 35 eggs. They tried to rear these eggs later on the ground but without success. During the total flight duration only a few bees died.

The cell densities of newly built combs were 860 cells per 100cm² in orbit, 800 cells per 100cm² at ground.

After first trials under micro gravity conditions the bees learned to take off properly, fly and land between the feeder and frames.

Next Steps to be Taken Towards Mars

For bumblebees such experiments are still to be conducted. Pollination under micro gravity conditions. As well as pure survival in orbit, pollination of blooms by bees or bumblebees, under micro gravity conditions has yet to be researched.

Propolis

In a bee flight room no propolis can be collected when the necessary plants or special trees are not present. Maybe a new breed of such trees such as bonsai types or bonsai size might be a solution.

Duration

A survival and active duration of three years is not a problem for a queen bee. A bumblebee colony has a lifetime of several months. How an overlapping running of several bumblebee colonies over such a time duration can be achieved needs to be found out.

Plants/Crop Rearing Tests.

Presently tests with the following plants, as mentioned already before, are going on at NASA: cabbage, spinach, radish, onion, dry bean, rice, carrot, chard, tomato, sweet and

white potato, peanut, lettuce, wheat, and soybean.

Mission constraints are: crew time, shelf life, safety, storage, power, and food processing like flour grinding, baking bread, pressing oil from soybeans.

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Apimondia '99

Marlene Jansen

Ted and I were fortunate to attend Apimondia '99 in Vancouver, B. C. in September. We flew into Seattle and drove up to Vancouver. We only registered for two days of the program, planning to do some sightseeing while we were there.



We chose Monday and Tuesday for our days at the conferences, and the talks we went to were very good. Since there was no way you could get to all those you wanted to go to, a book was available that contains all the presentations that were made at the conference. Beekeepers all over the world are having problems with the mites and many of the talks were about controlling them. The small hive beetle also was discussed. We listened to speakers talking about breeding queens that may produce some resistance to mites.

The exhibit hall was the visual highlight of the conference. So many countries were represented and the displays were awesome. Mid-Con had a great booth. Dadant was there, Mann Lake and several others from the states, as well as representatives from all over the world. It was fun to taste the different honey and compare it to our own - which of course tastes best!

One thing we were introduced to was a product called liquid smoke. We had some samples and Ted has tried it and likes it. You mix it with water and use a spray bottle instead of a smoker.

Wednesday there were no conferences - technical tours had been arranged. Over a

dozen tours were offered - it was difficult to make a choice. We chose to go to Vancouver island where we visited the Butchart Gardens, the city of Victoria and stopped at a place where local beekeepers had set up displays. We saw a sign on the way to the ferry that said that no honeybees could be transported beyond that point. This is done to keep the gene pool for the Victorian queens pure.

On Thursday we took a trolley tour of Vancouver City. This was so neat. The trolley makes about 14 stops during the tour. You may get off anytime you wish and spend time there and then get back on the next trolley and continue your tour. A trolley comes along every half hour. A really nice way to see a new city. We did the same thing on Saturday in Seattle. Really fun.

Friday we drove back to Seattle, spent Saturday with the tour and went up in the Space Needle. Sunday we flew home again. It was a wonderful trip.

Marlene

Iowa Honey Producers

Art Gelder, Vice President

Vera and I attended the Iowa Honey Producers Assoc. annual meeting held in Marshalltown, Iowa, on November 19 & 20. We received a very warm welcome from everyone that we met and had a wonderful time.

Lawrence Cutts, an apiary inspector from the State of Florida, spoke on the small hive beetle, fluvalinate resistant Varroa, and beekeeping in the Sunshine State. He was also the speaker at their evening banquet where he gave us renditions of songs and poetry which he composed himself. He is a very talented

man and very knowledgeable about beekeeping.

Wally Diehnelt from Honey Acres spoke on value-added marketing.

A slide presentation on beekeeping in the Ukraine, given by one of the Iowa beekeepers, Paul Goossen, was very interesting.

Carol Fassbinder gave a report on her study at Iowa State University on her discovery of a miticide made only from natural products. This was very informative and appears to be a new alternative to mite control without using harmful toxic chemicals.

Several of the other presentations were: varroa-resistant Russian bees, a marketing panel discussion, a profitability panel discussion and the honey board report.

They had several workshops to choose from on Saturday afternoon, honey plants, using bees as pollinators, showing apiary products at the fair, control of diseases and pests, managing bees in the spring, and several others. Most of these were given by Iowa beekeepers themselves.

A couple of interesting items on their agenda were wine and cheese hour just before the banquet and a cooking and photo contest with prizes given to the winners.

One of the most interesting things was at their annual business meeting, they were able to give donations totaling around \$7,000 to various worthy causes related to beekeeping such as: research programs at the Universities of Nebraska, Minnesota and Iowa State, the national honey queen program, etc. Their state fair report showed a gross profit of \$16,000 + and \$7,000+ after expenses on the sale of honey lemonade alone. Makes you do some thinking.

Over all Vera and I both learned a lot and thought they had some very interesting items for the Missouri Beekeepers to consider for their future meetings. Let us know if you are interested in making some changes to our meetings.

Art

Thank You

We wish to extend our thanks to the following dealers that make donations to our fall meeting. We raised over \$300 with the raffle.

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Pierco Inc., Div. Of Cal-Mold
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Draper's Super Bee

Larry



Introducing Queens

As a general rule, it is easier to get a queen accepted by a colony during a nectar flow. If no nectar is being brought in, acceptance will be helped by a feed. Other considerations must be borne in mind, in particular: first, make sure that the hive has in fact been orphaned (and of course, is without a virgin queen); give the bees the time and opportunity to get used to their new queen. She herself should be protected by a mesh allowing her to maintain 'physical' contact with the workers (by exuding royal pheromones at the heart of the colony).

Many beekeepers introduce the queens directly, without any protective devices, if laying has not stopped. This can also be done with incubator-born virgin queens: they are exposed directly to an artificial swarm provoked three hours earlier. But things are different for queens which have spent several days in a transit cage. Although no method is perfect, acceptance of these queens is best after imprisoning a queen on a broodcomb with a wire mesh press-on cage measuring 10 cm x 8 cm by 1.5 cm deep.

Select a broodcomb with emerging brood. This will allow the queen to surround herself rapidly with her 'court' and to lay in the cells as births take place. Before opening the transit cage we recommend dipping it in water in order to wet the queen and thus prevent her from flying. The longer her laying has been halted, the greater the risk of her flying off (on the other hand, a queen in full laying activity is more or less incapable of flying). The escort bees are destroyed. The queen is then introduced on her own, under the wire mesh. Two or three crosswires on the sides of the mesh should be removed beforehand.

This makes it easier to push the cage into the comb. Free her three days later by removing the cage, under which she will already have

started laying.

Introduction cages made entirely of plastic (Nicot brand) are now available in retail outlets. They are more sturdy than wire mesh cages and can be re-used many times.

Another method, using the same mesh cage, is to allow the queen to free herself through a little metal tube placed in the corner of the cage once the bees have consumed all the candy it contained (generally in 2 or 3 days).

Introduction in a bag made of newspaper gives excellent results. Place 35 to 50 bees in a bag 20 x 15 cm in size, and shake briskly for 30 seconds. This makes this micro-colony buzz like an orphan colony. Then put the queen in with them and close the bag, placing it between two frames. The bees will nibble away the paper, freeing the prisoners, and the queen, within a few hours.

It is also possible to use the transit cage to introduce a queen. In this case, remove the escort bees and the cork stopper on the candy side. Fix the cage between two Norbroodcomb frames after piercing a small hole (1 or 2 mm) through the candy reserves. The bees will help to free the queen by nibbling the candy. The cage can be removed when inspecting to check acceptance.

Some Canadian beekeepers make direct use of mating mini-hives to renew their queens. This is possible so long as the same type of frame is used, that is, if the hives and the mini-hives take the same size of frame. The old queen is eliminated half an hour before introduction. This is in fact a union, since it means introducing the whole contents of the mini-hive (frames, bees and the new queen) into the hive that needs the new queen. The population of the original hive is shaken just beforehand, in order to disorganize the colony as much as possible and to disturb the pheromones. This process is followed by a feed.

One careful but tedious method of introduction consists of caging the queen to be changed and, the next day, removing her and putting the new queen in her place so that she will assume the scent of the old one. Take care to remove the escort bees and to pierce the candy so that she frees herself after a few hours.

Many European beekeepers who only change a few queens each year adopt the following method which consists of creating a mini-hive, after finding the queen in a strong colony, populate a mini-hive with five frames, as for the production of an artificial swarm, in three broodcomb frames with bees of all ages and two frames of honey and pollen at the sides. Placed a few meters from the donor colony for 24 hours, the mini-hive will lose its old bees. Then the young queen is given directly to the very young population which will generally accept her quite readily.

The Scrive method consists of coating the new queen with royal jelly at the very moment of introduction. This method would also be effective for the introduction of a virgin queen.

In Australia, some beekeepers systematically change their queens simply by introducing a royal cell at the top of the honey super. During an abundant nectar flow, and with a particularly 'easy' bee, this method will cause the old queen to be superseded by the new one.

On the other hand, we ourselves found systematic rejection of young queens from broodstocks with problems of cleanliness.

Finally, it must be acknowledged that rejection behavior is much more common with the introduction of a queen of a different race from that of the colony. Consequently, if you receive queens from abroad, or 'yellow' bees which you want to use with your stock of local bees, be careful and take every possible

precaution to achieve success. In particular, use artificial swarming or packages of bees so as to eliminate the old bees, which are often the cause of failure.

What is the Difference Between Honeybees, Wasps and Bumble Bees?

Honeybees are the highest forms of insect life; they live in a well-organized colony that does not need to hibernate. They produce honey and store it in wax comb and use the same hive from one year to the next. Typical max population 35,000-50,000.

Wasps start in the spring with a single queen wasp that has hibernated under leaves or in cracks. The queen wasp builds a new hive constructed from paper and about the size of a golf ball. This hive (bice) builds up through the summer, however no honey is stored. In the autumn the colony organization breaks down, with homeless wasps becoming an increasing nuisance around bins and rubbish. Typical max population 10,000.

Bumble Bees or as the Victorians called them 'Humble bees' like wasps, only the queen hibernates and survives the winter. In the spring the queen bumble bee seeks an old mouse or mole hole and builds within it a nest of leaves and moss. She constructs nodular wax cells and incubates her young as a bird would. As her first offspring hatch and begin to fly the queen increasingly stays within the hive to produce young. Bumblebees do make a small amount of honey and store it in one special cup like cell. There is no more than a tablespoon at any time. Typical max population only 40-60.

Honey Tarts

This recipe is from a Jewish lady from Romania. It is somewhat similar to American Pecan tarts, but the flavor is a little different. I do not know the origin of the recipe.

Dough

- 2 cups flour
- 3 tsp. baking powder
- 1/4 tsp. salt
- 3 tbs. brown sugar
- 1 cup Pareve margarine
- 1/2 cup water
- 1 tsp. vanilla
- 1/2 tsp. almond extract or almond flavoring
- 1/2 cup orange juice

Blend margarine flour, baking powder, sugar and salt together until the dough forms little balls. Add the orange juice and flavorings. Mix thoroughly until the dough is soft.

Transfer the dough to a lightly floured pastry board. Roll out the dough until it is less than 1/4 inch thick. With a wavy edged cookie cutter about 5 inches in diameter, cut out the dough.

Place each piece of dough into WELL GREASED tart forms. The ones I use are about 3 1/2 inches in diameter.

You can bake these as empty tart shells or fill them first and bake later depending on the recipe you use.

Filling

- 3 large eggs
- 1/2 cup honey
- 1/4 cup brown or light brown sugar
- 1 tsp. vanilla
- 1/2 tsp. almond flavoring
- 3/4 cup pecan pieces


Beat the eggs until light and foamy. Add the other ingredients stirring the mixture constantly.

Fill tart shells about 3/4 full.

Bake at 400F for about 15 minutes. Cool before serving.


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Study Sheds Light on Behavior of Middle-Age 'Undertaker' Bees

CHAMPAIGN, Ill. - It's a dirty job and only about 1 percent do it at any one time. But middle-aged honeybees that serve as undertakers -- removing dead bees from the hive -- appear to be a distinct cadre of workers that are developmentally ahead of their peers. In this social world known for its division of labor, there also were unexpected discoveries by researchers: Undertakers don't get better with experience, and they don't do well working together.

The findings are detailed in papers by Gene E. Robinson, a University of Illinois entomologist, and his former postdoctoral researcher Stephen T. Trumbo, now a professor at the University of Connecticut in Waterbury, Conn. The study on development, also written by U. of IL. entomologist Zhi-Yong Huang, appears in the September issue of *Behavioral Ecology and Sociobiology*. The research on the undertakers' learning, or lack thereof, will be published in the fall in the journal *Ethology*.

The work -- which involved identifying the undertakers, marking them with tiny, colored and numbered plastic tags, and following them closely through middle age -- provides the first close look at undertakers. Since bees' nests are built in cavities, such a specialty is important for keeping the nests clean.

"Undertakers had very similar activity levels as other bees," Trumbo said. "They just do a little bit less of the other middle-aged tasks, like building the comb and storing food brought in by older foragers. They also remove debris, which fits in nicely with undertaking."

Undertakers also develop slightly faster than other middle-aged bees, moving on to foraging before food storers and hive builders. Middle age lasts about 10 days. Undertakers usually removed dead bees for a day or two, but "one extraordinary bee remained at the task for 13 days," Trumbo said.

Undertakers respond to the odor of the dead, locating the bodies and carrying them out of the hive for 50 to 100 meters before dropping them. The researchers also monitored how swiftly undertakers worked.

"We didn't find any evidence for learning for this particular task," Trumbo said. "This rules out one of the major hypotheses that has been put forward for middle-aged specialization: That social insects will get better and better at what they do."

Previous research had shown that learning is important for the older foragers, who get more efficient as they learn what flowers are producing nectar at what time. Not only did undertakers not improve in efficiency, Trumbo said, they also got in each other's way and slowed their efficiency.

Robinson had shown previously that some bees are genetically inclined to be undertakers. "We're beginning to get a clearer picture of the behavioral profiles of interesting types of specialist bees, such as undertakers," Robinson said. "Understanding the career choices of bees is a useful model for understanding behavior in general. This new information should enable us to develop new hypotheses about how neurons and genes in the brain function to produce the marvelously complex behavior seen in honey bee society."

Note: This story has been adapted from a news release issued by University Of Illinois At Urbana-Champaign for journalists and other members of the public. If you wish to quote from any part of this story, please credit

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2000 SPRING MEETING NOTICE

THE 2000 SPRING MEETING WILL BE HELD AT THE RUNGE CONSERVATION NATURE CENTER IN JEFFERSON CITY, MISSOURI ON MARCH 18. WE HAVE A LARGE BLOCK OF ROOMS RESERVED AT THE FAIRFIELD INN. THE PHONE NUMBER IS (573) 761-0400 AND THE RATE IS \$69 FOR DOUBLE/SINGLE. WHEN YOU CALL THE FAIRFIELD INN PLEASE IDENTIFY YOURSELF AS A BEEKEEPER. THE SOONER YOU CALL THE BETTER. IF YOU WAIT TOO LONG ALL THE ROOMS WILL BE TAKEN.

OUR MAIN SPEAKERS FOR THE SPRING PROGRAM WILL BE MR. DAVID VINCENT, AND MR. JERRY HAYES.

MR. VINCENT IS A SUPPORT SCIENTIST AT THE BEE RESEARCH LABATORY FOR THE USDA AT BELTSVILLE, MARYLAND. MR. VINCENT IS FROM BOLIVAR, MISSOURI. HE HAS A BS DEGREE IN WILDLIFE CONSERVATION FROM THE UNIVERSITY OF MISSOURI AND A MASTERS DEGREE IN ENTOMOLOGY FROM THE UNIVERSITY OF MISSOURI.

MR. HAYES IS DIRECTOR OF MARKETING FOR DADANT & SONS. HE HAS BEEN WITH DADANT & SONS FOR FOURTEEN YEARS. MR. HAYES ALSO WRITES A ARTICLE EACH MONTH FOR THE AMERICAN BEE JOURNAL TITLED, "THE CLASSROOM". THE ARTICLES HAVE BEEN CONSOLATED INTO A BOOK BY THE SAME TITLE. THE BOOK SERVES AS A VERY GOOD TEXT BOOK FOR BEEKEEPERS AT ALL LEVELS.

EVERYONE IS INVITED TO ATTEND THE EXECUTIVE BOARD MEETING AT 7:30 P.M. ON FRIDAY, MARCH 17, 2000 AT THE FAIRFIELD IN AT JEFFERSON CITY. THE FAIRFIELD INN IS LOCATED AT 3621 WEST TRUMAN BOULEVARD.



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