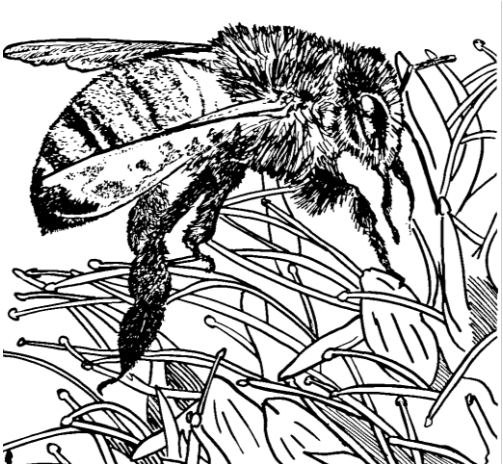

BEE NEWS & VIEWS

Biochemistry, Molecular Biology,
Entomology and Plant Pathology
Mississippi State University, MS 39762

MISSISSIPPI STATE UNIVERSITY EXTENSION SERVICE

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Mississippi Beekeepers Association's Newsletter **September-October 2012**

MBA Convention is Almost Here!

Most of you probably have already registered, but if you have not, there is still time to pre-register for the Mississippi Beekeepers Association annual convention – ***the deadline is October 23, 2012***. There will be an extra $10.00 charged for registration at the door on the days of the event.

The convention will be held at the Bost Center on the campus of M.S.U. in Starkville on October 26-27, 2012. Please contact me (Department of Entomology, 100 Twelve Lane, Mississippi State University, MS 39762; 662.325.2976) or Harry Fulton (2011 Pumpkin Creek Rd., Brooksville, MS 39739; 662.738.4611) for more information.

Zombie Bees Spread to Washington State

By NBC News and the Associated Press

The zombees are spreading.

Or rather, "zombie bees" – honey bees that have been inhabited by tiny flies that cause them to abandon their hive at night and lurch about erratically before dying.

"They basically eat the insides out of the bee," said San Francisco State University biologist John Hafernik. Hafernik first discovered zombie bees in 2008 in California and now uses a website to recruit citizen scientists to track the infection across the country.

The zombee condition recently crept into Washington State. Novice beekeeper Mark Hohn spotted bees jerking about outside his suburban Seattle home.

ZombeeWatch.org, managed by John Hafernik at San Francisco State University, solicits information from citizen scientists, beekeepers and enthusiasts to track zombie bees.

"I joke with my kids that the zombie apocalypse is starting at my house," Hohn said.

Hohn collected several of the corpses and popped them into a plastic bag. About a week later, he had evidence his bees were infected: the pupae of parasitic flies. They were the first to be confirmed in Washington State, The Seattle Times reported.

The infection could be another threat to bees needed to pollinate crops. Hives have been failing in recent years due to a mysterious ailment called colony collapse disorder, which causes all the adult honey bees in a colony to suddenly die.

Still, there's no evidence that the parasitic fly is to blame, said Steve Sheppard, chairman of the entomology department at Washington State University.

Fly parasite turns honeybees into zom-bees

The fly-bee relationship is a strange one: The flies, discovered in Maine in 1924, are native to North America. Honey bees – what scientists call the "beneficial insect" – are not.

So why haven't the flies feasted on honey bees before now?

"We don't really know if this is something the flies have figured out recently or if it's been under the radar," Hafernik told NBC News.

It's possible this behavior has gone undetected – after all, infected bees abandon their hives at night, when beekeepers aren't around to notice.

But Hafernik has trouble believing that dedicated beekeepers and scientists have gone decades without noticing infected bees.

In the San Francisco Bay Area, Hafernik said, up to 78 percent of hives are infected, and a number are infected across the Pacific Northwest. Scientists conducted DNA analysis on bees found traces of parasites in bees in South Dakota; there have also been cases in New York, Minnesota and Colorado.

"It could be that not all honey bee strains are susceptible to the fly at the same rate – there could be some genetics among the honeybees that could be brought to bear," Hafernik said.

He hopes that scientists and beekeepers will send information to his website, ZombeeWatch.org, so that his team may better research the problem.

Hafernik said that those suspecting zombie bees should isolate the bee for about a week as Hohn did – the bee will die within a day or two if infected. After five to seven days, maggots will have finished their feeding and emerge from the bee's head – those look like small, brown, crystal-shaped pupae. Take photos, he asks, and send them along.

Hafernik will also be taking notes. After a recent vacation, he found that a colony of infected bees had moved into a crevice next to his house.

"They're now living between the walls of my house," he said. "I decided to leave them. For the moment, we're coexisting peacefully."

NBC's Isolde Raftery contributed reporting.

Cathead Distillery Seeks Honey Varieties

We are the first LEGAL distillery in the State of Mississippi, based in Gluckstadt.

We currently produce Cathead Vodka, Cathead Honeysuckle Vodka, Gold Coast White Whiskey, and Bristow Gin.

We are looking at making some honey based liqueurs and spirits and would truly appreciate you asking your members if they would provide us with different varieties of honey. We would like to source Mississippi Honey Varietals of ANY type, such as cotton and/or soybean or other unique floral sources.

If there are any Beekeepers that have distinct Honey Varietals, especially those types of honey that are unique to Mississippi, I would really like to speak with them and get some honey from them to try.

Phillip Ladner
Distiller
CATHEAD DISTILLERY
BOTTLE TREE BEVERAGE COMPANY
www.catheadvodka.com
www.bottletreebeverage.com
office: (601) 667-3038

Mailing Address:
P. O. BOX 4917
Jackson MS 39296-4917

Supplier of Breeder Queens Retires

By Tom and Suki Glenn

This is to announce that Tom and Suki Glenn are retiring at the end of the 2012 season, and that Glenn Apiaries will no longer be selling breeder queens. We and the USDA bee lab in Baton Rouge are working with several others who are planning on gearing up to fill the need for VSH breeding stock next year. We have been distributing our stock to those who can put it to the best use, so no important genetics will be lost. We will continue to maintain a list of sources of disease resistant queens on our website to help the transition go smoothly.

Our decision to retire is based primarily on family circumstances that require our attention. Early this year Tom lost his father at age 87. Thankfully, his older brother was able to take care of our ailing mother while we attended the queen operation this spring and summer. But, unfortunately later this summer he also fell ill from a brain tumor and passed away after a rapid decline, at

just 61. Tom was able to take care of him for the last month of his life, and is grateful for the time he could spend with his brother. But of course these events have left the family devastated, especially our mother whose emotional and physical needs we are making our priority.

Glenn Apiaries has been selling queens for 35 years, and we have enjoyed serving the beekeeping industry and working with so many wonderful beekeepers and scientists. Though we are hanging up our hive tools for now, we hope to again use our skills to work on worthwhile bee projects.

Thank you for all your support over the years, we wish you all well.

Judging Honey Quality

By J. W. White, Jr.

This newsletter comes too late to influence the results of this year's honey judging at the Mississippi State Fair, which will occur in Jackson, MS on Friday, October 5, 2012. However, my judging style and protocols used at the State Fair follow closely those outlined by this old presentation. It is a good idea for participants in these contests to understand that it becomes a game of deductions – whoever gets penalized the least wins!

Excerpt from a talk for a meeting of the Apiary Inspectors of America, College Park, MD 1/13/78

First, may I thank Gerald Stevens for asking me to be here today. I rarely have the opportunity to visit the Inspectors since I deal with the finished product, honey, while you are principally involved with problems at the "manufacturing" end of the fascinating process. If you have any problems with my selection of subject matter, just take them up with Gerald -- he asked me to deal with honey judging.

Although years ago I was involved several times a year in judging honey shows, it has been a long time; I hope to pass on a few ideas that should help to make your task easier. Maybe things are different now than in the old days. I know that it is a difficult and usually thankless job to judge a honey show -- nearly as tough as to judge a show of honeys -- honey queens, that is.

If what I tell you is all old stuff, I apologize in advance. It should be helpful anyhow to get it all together. The first rule when asked to judge is to remember a previous engagement for that date. This is very effective, and eventually you won't be asked again. Also, alas, those who are not as fast on their feet will agree to judge and the result may not be very good. Seriously, it really is a part of our jobs, and can be interesting if approached constructively and with the right equipment, and with some willing helpers for the routine work.

Judges for honey shows must have three main attributes -- they must be fair-minded, hard-nosed, and know their honey -- the honey of the region from which the entries come. They must recognize flavors and aromas so they can know if they are tainted by smoke or chemicals or heating or too-long storage. A fourth characteristic of a good judge is that when the chips are down he be an accomplished nitpicker.

A score sheet is absolutely essential and the competitors must have it beforehand, so they know what they are up against. The entry rules must be clear, because any entries not conforming will be disqualified at the start, even though they may be high-quality honey.

Where there are a large number of entries, it is useful to have several judges. It is probably better to divide up the judging so that each judge goes over all entries but only for one or two of the aspects being judged, then to combine the score sheets for the final ranking. If single judges go over all of the aspects for a part of the entries, there is always the possibility that some will be more lenient than others, in general. The final rankings should reflect the combined opinions of the judges. The chief judge should break any ties with a re-examination of the tied entries.

There are two principal kinds of judgment for honey: first, the objective, about which there can be no argument, for it is based on mechanical aids. The other is the subjective judgment where experience and personal judgment must enter. This is the hard part.

You who have judged shows know that often the same beekeeper will win year after year. He has not trained his bees to do prize-winning work. He wins because he knows what the entry requirements are, knows what the judges expect, and because he gives meticulous attention to details. He may know a few little tricks of the trade, also. But what I am trying to say is that the judges must give attention to minute detail, most especially when making selections among the top few.

Because the subjective tests are the most difficult, and are subject to increasing fatigue as the judging goes on, a strong effort must be made to find any entries that do not qualify, and to eliminate them. Qualifying rules must be clear, understood, and enforced. If four jars are required and 3 are submitted, disqualify. I would favor the same if too many are entered, but this could be controlled by letting it be known that the 4 that superficially seem

lowest would be judged. The size of the jars must be specified, and any with labels or molded identification must be disqualified.

There are three mechanical aids that are essential to good judging. They cannot be argued with; decisions based on their use are well-founded. If a serious job of honey judging is to be done, all three should be used. I will describe them in the order in which they should be applied to the entries.

Firstly, any honey competition will have a number of classes, categories or groups. They may be commercial, hobbyist, 4-H, or vocational or any other recognized category, and if so divided, a sweepstakes or grand champion competition should be for first prize winners in each kind of exhibit: comb, extracted or crystallized honey, and beeswax. This size of show is usually possible only on a State basis: The Pennsylvania Farm Show had 30 classes in several categories when I judged it some years ago.

I have prepared a handout giving information on the manufacture, use, availability of parts and equipment that I will be describing, so any of you that are serious about honey judging or want more detail need not take notes but can pick them up at the coffee break. If the supply runs out, I can mail them to you if you provide names and addresses on the paper provided.

Honey shows are commonly divided into classes based on the U.S. color grades for honey. This is logical but does require that the entries be properly assigned to one of the seven color classes. It is not realistic to expect the beekeeper to assign his entry to the proper class, since many probably do not have access to the USDA color classifier. It is therefore the responsibility of the judges (or management) to assign the entries to the class. Once in a class, no points are given for relative position within the color class. To do this right, the USDA color classifier must be used. To get it done in a reasonable time, a supply of the correct bottles must be available, one for each entry. The bottles are commercially available by the case of 20 dozen, for about $20. The source' is given in the handout. It is important to use these specific bottles, since the classifier color glasses are made for the thickness of the layer of honey they contain. Whether it would be preferable for the show management to supply one 2-oz. bottle (in addition to the regular entry) for each entry to save the time of the judges is a matter to be considered. This is the only equitable way to insure that all competitors are in the correct classes. Eyeballing different types of jars won't do it.

Since the moisture content of honey is a most important property, its importance is properly reflected in the scoring system. Here again, it cannot be judged by inverting the bottle and watching the balloon rise -- it must be measured with a hand refractometer. There is a payoff here -- any sample with more than 18.6% moisture should be disqualified. In order to eliminate any temptation for the entrant to reduce moisture excessively or artificially, some sort of varying point scale may be used, but only to a reasonable low value, with no further increase below about 16%. In fact, an argument could be made for imposing some penalty below this point -- extra thick honey is too hard to handle, and leads to giving the product away commercially. A suggested scoring sheet is included in the handout. Properly speaking, a refractometer calibrated for honey should be used. Many hand refractometers have a sugar (sucrose) scale which does not give correct values for honey. They can be used, of course, but must be corrected to give honey solids or moisture. A correction table is given.in the hand-out.

The last objective test that may be used for extracted honey judging is the polariscope, or crystal detector. We wrote a paper describing this device in 1951. At that time we were using it to demonstrate the presence in honey of fine "seed" crystals that would lead to premature granulation. We had a lot of inquiries about it and I have used it and recommended it for honey judging for many years. The hand-out has information on its construction and use. By using this device a jar of honey can easily be examined for the presence of crystals and dust particles. Even pollen grains can be seen. The presence of a few crystals in one of two otherwise identical entries can make their proper ranking easy. So freedom from crystals and degree of cleanliness are easy to measure. It is routine also to remove and examine the interior of the cap of all jars entered for fine particles, of course, and at the same time look for evidence of foam or bubble accumulation on the surface where honey touches glass. Other physical aspects that must be examined are absolute uniformity of fill, absence of defects in the cap itself and glass of the jar, and cleanliness of both. Of course, care must always be taken that the judges' handling and manipulation do not contribute any defects.

The jar that was opened for moisture testing (and if necessary color grading) may be used for judging of aroma and flavor.

We have now come to the subjective part of judging. Aroma and flavor are extremely important, and will be the most difficult to judge. Any true honey flavor should be acceptable, but taints like smoke, caramelization, fermentation, or chemical must be

completely absent (some beekeepers still use carbolic acid). A case could be made for penalizing the presence in a honey of a disagreeable bad-tasting minor floral source. But some people may prefer the more strongly or different-tasting honeys.

The problem with tasting honeys is that the senses quickly become overloaded and pretty much conk out. It helps to rinse out the mouth each time with lukewarm water. Tasting (and smelling) should be divided among the judges available, with all judges examining given sample only as a tie-breaker, or to rank the top three of a class.

So much for extracted honey. I will say a little about finely-granulated honey. This is considerably easier because one cannot see through it, but some thought must be given to some of the judging factors.

The most important single characteristic in my opinion is texture. This covers several of the judging factors size of crystals, uniformity, and optimum firmness. Since this product is intended to be spreadable, it cannot be so hard that it would crumble a tender biscuit. It may not drip from a knife. Ideally it must have no grain or crystals detectable by the tongue, certainly no gritty crystals. When some is scooped from the jar, the sides of the "excavation" should remain fairly firm, certainly not slump together.

The surface should be free of any foam or bubbles; this is a difficult thing to achieve, reflected in the small score total on this point. Cleanliness is another matter, and of course can be judged only by examining the jar lid inside, the surface, or the bottom of the jar. Flavor judgment is the same as for liquid honey. I have made some changes in my suggested score sheet from that published in "The Hive & the Honeybee".

I do not feel the necessity to make any comments on the scoring of section or bulk honey frame. The quality attributes are self-explanatory. For chunk honey pack, the polariscope device can be most useful in examining the entries for that common problem of chunk pack early crystallization.

So, to summarize -- judging honey is a necessary, sometimes thankless, task. To do it right requires planning, organization, time lots of time, and as much help - in one form or another - as you can get. A judge in a show always looks for perfection, and never finds it. But sometimes he comes close.

One point I did not make is so obvious that perhaps it need not be mentioned, but I will mention it anyhow: judges need plenty of time to do their work, and they must, and I emphasize must, be allowed to do it without the general public or the exhibitors looking over their shoulders.

SUGGESTED SCORE SHEET FOR JUDGING HONEY

Extracted Honey

1.	Degree of Density	(20 points)
	above 18.6% moisture	0 or disqualify
	18.2 - 18.6	10
	17.5 - 18.1	15
	16.0 – 17.4	20
	15.0 – 15.9	15
	below 15	10
2.	Freedom from crystals	(10 points)
3.	Degree of cleanliness, freedom from foam, clarity	(30 points)
4.	Cleanliness and neatness of containers	(10 points)
5.	Flavor (absence of off-flavor, overheating, and fermentation)	(30 points)
		100 points

Finely Granulated Honey

1.	Fineness of crystals	(30 points)
2.	Degree of uniformity and firmness	(25 points)
3.	Degree of cleanliness	(10 points)
4.	Absence of foam	(10 points)
5.	Flavor (absence of off-flavor, overheating, and fermentation)	(25 points)
		100 points

Comb Honey and Bulk Honey Frame

1.	Uniformity of appearance	(20 points)
2.	Absence of uncapped cells	(10 points)
3.	Uniformity of color	(15 points)
4.	Absence of watery cappings	(10 points)
5.	Cleanliness of section and frame	(15 points)
6.	Freedom from granulation and pollen	(5 points)
7.	Uniformity of weight	(15 points)
8.	Total weight of entry	(10 points)
		100 points

Chunk Honey

1.	Neatness of cut *Ragged edges, parallel cuts, four-sided cut, and uniformity of size of cut*	(20 points)
2.	Absence of watery cappings, uncapped cells, and pollen cells	(20 points)
3.	Cleanliness of produce *No travel stain, specks of foreign matter, flakes of wax, foam and crystallization*	(20 points)
4.	Uniformity of appearance *Uniformity of capping structure, color, and thickness of comb*	(30 points)
5.	Density and flavor of liquid part	(10 points)
		100 points

Philosophy of Science and Honey Bees

By Jeff Harris

Dance Language versus Odor-Search

Before I describe the debate about two major ideas concerning the recruitment of hive mates to a food source by forager bees, let's consider the relative importance of this issue to all of science. Essentially, whether bees use a language or not is not that important to anyone but bee scientists and animal behaviorists. The "truth" of the matter is not likely to dramatically change the quality of the average person's life.

However, I think that Adrian Wenner and Patrick Wells (1990) have found value in this episode of scientific inquiry in their book *Anatomy of a Controversy, The Question of a "Language" Among Bees*. They use their own lives as a model of the socio-political forces that can temporarily and chronically drive scientific investigations.

The overwhelming acceptance of a hypothesis, and the condemnation of those scientists that opposed the popular notion are not uncommon. Many of us may have the naïve belief that science and scientists are part of a higher social institution that finds the truth of things in the world. Science may ultimately progress toward truth, but scientists do not always move in the same direction.

The episode in bee science described by Wenner and Wells provides personal testimonial about negativity in the scientific process. A friend of mine once stated that scientists spend 1% of their time being objective and 99% of their time protecting fragile egos and theories attached to these egos. I tend to be less cynical about these matters, but I do admit that scientists are humans like everyone else. It is my sincere hope that in most cases, the "truth" will prevail.

I am probably going out on a limb, but I am using science related to honey bees as an example of epistemology (philosophy of science). One concept essential to this discussion is whether or not objective knowledge or truth even exists.

Realists are philosophers who believe that objective knowledge does exist. The most famous realist in contemporary times is Sir Karl Popper. His book *Objective Knowledge* is the cornerstone of modern realism. He believes that although man may never be able to know the truth, he can present the best model of the truth by attempts to falsify a major theory. His idea is that although you can never prove a theory, you can certainly falsify one.

Only the simplest theories that have survived major attempts at falsification should be retained until new evidence suggests further testing. The Popperian philosopher would view any negative evidence against a major scientific theory as a welcome sight, and perhaps the beginning of a new scientific revolution. Usually, a theory is not totally falsified; only parts of it. The new theory must explain all old information and any new facts that have been discovered. Often the new theory is a modified version of the old theory that better explains all known data.

The other school of thought in realism is verification, which was developed by Rudolf Carnap. These philosophers also admit that objective knowledge exists, but they believe that mounting evidence in support of an idea is enough to justify belief in the idea. In other words, they search for evidence to verify an existing theory.

The major problem with the verification approach is that anyone can find evidence to support just about any reasonable idea. Volumes of circumstantial evidence would be enough to support a scientific theory. The tendency is for evidence against the idea to be ignored, or at least not sought after.

At the other philosophical pole are the relativists. These philosophers do not believe that objective truths exist. Instead, they feel that acquired subjective knowledge is useful and necessary.

I include in this group Thomas Kuhn (even though Wells and Wenner do not). Thomas Kuhn wrote a very famous book, *The Structure of Scientific Revolutions*, in which he presents the ideas of relativism. I am grossly paraphrasing the idea when I say, "He who carries the biggest stick is heard over the rest." However, this summarizes the general notion that knowledge is subjective and controlled by social and political events. There is no real truth, only what is perceived as truth by the masses.

According to relativists, the perception of truth in a person is controlled by rose-colored glasses called paradigms. A paradigm is a ruling idea that controls subsequent ideas about science. A person may have a paradigm without knowing it. For example, you may have been raised to believe that the Theory of Natural Selection is a true scientific explanation of biological speciation. Acceptance of this theory may have affected your views on many other ideas without you even knowing it. However, a person can change the paradigm when mounting crisis in a scientific community occurs.

Kuhn describes two types of scientific activities: (1) normal science, which occurs in non-crisis periods, and (2) revolutionary science which occurs during crisis periods. The strange and flawed component of Kuhn's ideas is that during normal science, negative evidence toward a ruling paradigm is the result of faulty scientific practice (criticism is aimed at the experimenter). However, during the crisis phase, negative evidence is used to generate the new paradigm (criticism is aimed at the theory). Kuhn fails to delineate just how one knows when he's operating in a "normal" phase versus a "revolutionary" phase. This theory leads to the cynical interpretation that force or persuasion control what we call knowledge.

Even stranger is how the paradigm changes within the mind of someone. According to Kuhn, the paradigm shift is a gestalt switch, an instantaneous change in perspective that is not mediated by logic. Simply, the person wears a new pair of glasses having a different color (rose-colored to green-colored glasses). Kuhn says that a single person cannot consider the merits of competing theories because the languages of two theories are not compatible. The change in perspective is a lot like the light bulb going "ON" in the brain of a cartoon caricature.

As evidence against this idea, many physicists at the turn of the century were interviewed and asked how they switched from thoughts of classical mechanics to quantum mechanics. Most of them acknowledged that they had considered the merits of both theories simultaneously and chose the theory that explained the most data.

The Honey Bee Debate

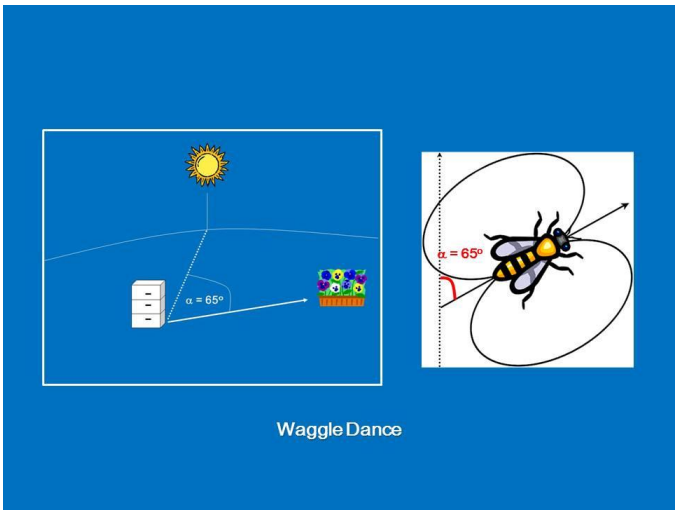
Karl von Frisch (1886-1982), an Austrian zoologist born in Vienna, discovered how honey bees orient themselves and communicate. He began his research on honey bees in 1919 when he found that their sense of smell was similar to that of humans, and that they could distinguish all flower colors except red. He later discovered that bees use the sun as a compass.

Karl von Frisch initially supported an odor-search model of recruitment during 1938-1939. The odor search hypothesis states that bees recruit nestmates to food sources with odors adhering to their bodies. Recruited bees leave the colony and fly upwind and follow a concentration gradient of the floral odor to locate the food. This is the same way that a male moth is attracted to the sex pheromones of female moths.

In the mid-1940's von Frisch switched beliefs to the idea that bees use dances to communicate the location of food. He proposed that the dance behaviors of forager bees actually provided information on distance and direction of a food source from a hive. The dances were a set of instructions communicated from one bee to another. This was truly shocking to many folks who had assumed that language was only found in higher animals like humans.

In 1973 Frisch shared the Nobel Prize in physiology or medicine with Dutch zoologist Nikolaas Tinbergen and Austrian zoologist Konrad Lorenz, who were cited for their individual studies in animal behavior.

Historically, the dance language hypothesis gained much popularity in scientific and non-scientific communities, and it has succeeded in nudging out of public view the odor-search model of honey bee recruitment to food sources. The "dance language" hypothesis implies that forager bees can communicate information about a food resource to recruited hive mates. The odor-search hypothesis states that the different dances of the bee are stimuli that trigger recruitment, but the actual food-finding behavior of recruits is dependent on chemical gradients or odor cues



Karl von Frisch and most of his supporters used the verification method of scientific inquiry; they sought evidence to support their ideas. These experiments often did not have the appropriate controls to eliminate the possibility of odor search. Many subsequent experiments were mere copies of von Frisch's original experiments.

For twenty years, the language hypothesis became a ruling paradigm in the world of animal behaviorists, but only one group of scientists actually tried to challenge the basic hypothesis. These guys (including Wenner and Wells) generated evidence against the dance language notion, but they became ostracized for their suggestions

that the odor-search model might be a better explanation. They were squeezed out of scientific meetings and funding for their research disappeared!

In the 1970s, James L. Gould conducted experiments that tried to disprove the dance language hypothesis. Although still argued, most scientists believe that the design of his tests were not mere attempts to find data to support the hypothesis. He seriously challenged whether or not bees could communicate by doing carefully controlled experiments that became known as misdirection experiments.

Without too many details, he developed ways of training foragers to a food location, and he could do things experimentally to make them tell their sisters the wrong location of the food (he tricked them with strong light bulbs to confuse their orientation to the sun). He literally had foragers tell a lie about where the food was. The recruited bees went to the location told to them by the "dishonest" bees. However, his experiments also showed that odor-search is used when the recruited bees get within close range of the food location.

His experiments showed that bees utilize both odor-search and dance language concurrently. I know this seems like an attempt to pacify both sides, but the maneuvers that we call dancing could be used to misdirect recruited bees to a wrong location. However, if given time, the recruited bees could utilize their keen sense of smell to orient and find the original food sources. Most other non-dancing social insects find food using olfaction, even when recruited to a source by nest mates.

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Electronic Versus Hardcopy Newsletter

I know that many of you like to receive a hardcopy of the newsletter in the mail, and I understand that many folks do not have a home computer. However, there are some that may prefer to receive the newsletter electronically – as a PDF file attached to an email. If you are in this second group, please send me an email with the subject line "electronic newsletter", and I will send your next issue via email. My email address is JHarris@entomology.msstate.edu.

Test Your Knowledge of Honey Bees
(True or False)

_____ The original host for *Varroa jacobsoni* is *Apis mellifera ligustica*.

_____ Probably the best subspecies of honey bee for beginning beekeepers to use in the U.S. would be Italian honey bees (*Apis mellifera ligustica*).

_____ The major honey flow in central Mississippi comes from the corn.

_____ There is no significant difference in honey yield between top-supering and bottom-supering.

_____ Each normal honey bee colony should be given a minimum of 60 lbs. of honey as winter food.

_____ Granulation is a form of honey spoilage that is particularly disliked by most consumers.

_____ Unmanaged, feral honey bee colonies routinely yield 100 lbs. of honey surplus per year.

_____ Parasitic mite syndrome is a collective group of viral diseases intimately associated with infestation of honey bees by tracheal mites.

_____ Terramycin (or oxytetracycline hydrochloride) cannot reverse the bacterial disease American foulbrood.

_____ Vegetable oil is an effective treatment for tracheal mites.

Answers to these questions and a new set of questions will be provided in the November 2012 newsletter.

Request for Submissions

Please contribute articles, stories, book reviews or news items that might interest your fellow beekeepers to my email (jharris@entomology.msstate.edu). If it interests you as a beekeeper, it will interest others.

Enjoy beekeeping!

Jeff Harris