BEE NEWS & VIEWS

The Mississippi Beekeepers Association Newsletter

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November-December 2015

Milton Henderson
2015 MBA Beekeeper of the Year

By Jeff Harris

Many years ago when I still worked at the ARS Bee Breeding Lab in Baton Rouge, I presented a research summary at an annual convention of the Mississippi Beekeepers Association. While waiting on my turn to present, I had the pleasure of listening to Milton Henderson speak about bees and beekeeping.

I had never met him before this meeting. He spoke with the rhythm of a minister as he related his experiences as a beekeeper to a more general philosophy on life. I do not even remember the details of his major conclusions (reflects my age and not his ability to communicate), but I remember being mesmerized by his combination of folk humor, preaching cadence, and somber reflectance on the travesties of beekeeping in the post-*Varroa* era. His humor was self-deprecating, and his facial expressions swung between smiles and brooding. And he drew me into his conversation, and I had no choice but to listen.

I remember thinking that this guy knows bees and beekeeping. Of course, I have since learned that Milton has had a lifetime of experience with honey bees. He has been rock steady in maintaining hundreds (*ca.* 1,000 colonies at times) of bee colonies for his business over the last 30-35 years.

He has also been a pillar of leadership in the Mississippi beekeeping community. He has served as President of the MBA and the same office in the Southeast Beekeepers Association in the Laurel-Hattiesburg area. I have talked to many folks that range from hobbyists to large commercial beekeepers in scale of operation, and ALL laud the willingness that Milton has in sharing his wealth of beekeeping knowledge with just about anyone who asks. He has helped many beekeepers get started in the enterprise, and he often helps when problems occur or a diagnosis of disease is needed. He has encouraged the beekeeping craft to many people over his life, and I could find no one who did not know who Milton was and of his beekeeping prowess.

Milton Henderson – MBA Beekeeper of the Year

Those who nominated him for MBA Beekeeper of the Year 2015 said that it was long overdue. I agree. Our Mississippi beekeeping community has been blessed to have people like Milton that are generous with both their time and resources. He is a treasure, and he is very deserving of this award.

Wild Bees Disappearing? Another Month, Another Bungled Bee Study

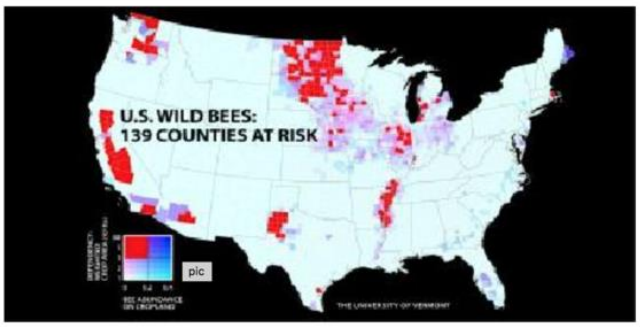
By Jon Entine

As the *Washington Post* headlined in a July (2015) story, "Call off the bee-apocalypse: U.S. honeybee colonies hit a 20-year high." Now that the world entomological community is in general agreement that the United States and global honeybee population is not, and has never been, threatened with extinction by pesticides, the focus of advocacy concern has suddenly shifted to wild bees.

Why wild bees?

This refocusing of concern is intriguing because the wild bee population can't be monitored or as easily estimated as honeybees, so guesses of population numbers and health differ wildly, often based on computer models and/or whether industry or an organization or scientist has a preconceived agenda.

The latest data point in this changing narrative on the 'bee crisis' is the first assessment of the United States wild bee population published late last year in the Proceedings of the National Academy of Sciences. It's bracing conclusion: wild bees may be disappearing in California's Central Valley, the Midwest's Corn Belt, the Mississippi River Valley and other key farm regions.



Credit: PNAS DOI: 10.1073/pnas.1517685113

Ins Koh, an environmental planning professor at the University of Vermont, led a research team that estimated that the mainland US wild bee population declined 23% between 2008 and 2013. They point out that the demand for pollination is sharply rising while their modeling estimates wild bee numbers are falling in some 39% of US croplands. Farmers, they say, could face increasing costs, which could set off a cascading set of events that could dangerously roil the nation's crop production.

Sounds potentially catastrophic. But it takes only a laymen's review of the article to see that the conclusions are little more than speculation, based on sketchy computer projections driven in part by the questionable assumptions of the researchers. The problem with research on wild bees, as noted above, is that there is no way to count them. They are wild, after all.

So what did Koh *et al.* do? They assembled fourteen people, identified without independent input, to review land use data culled from federal land databases. They were looking for such subjective information as the "quality" for nesting and feeding from flowers. They then collected their information, came up with formulas that gave it objective weights, and created a computer model to guess the relative abundance of bees in each of the 45 land use areas that they had identified.

So let's be clear about the science involved here: In their process of coming up with an analysis that led to the public issuing of hard statistical bee decline percentages, such as 23% and 39%, Koh and colleagues made at least five subjective assumptions-which databases to use; which "experts" to choose; what information to ask the experts to collect; how to weight their subjective findings to give them an objective gloss; and then formatting that data to create a computer model that would make a guesstimate based on the estimated bee populations in every plot of crop land in the US.

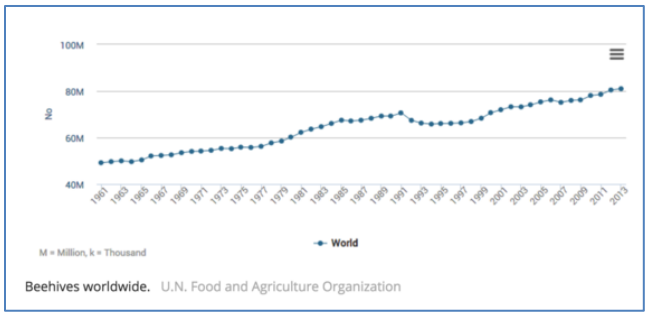
That's not hard science; it's called Ouija board science. As Science 2.0 recently noted in its review of the study:

In other words, they created an academic model that would get them fired from every single company in existence for being wildly suspect and based on too many assumptions. ... The authors then claim the decline they don't know is happening must be due to pesticides, global warming and farmers.

These kinds of claims should sound sadly familiar. As recently as 2013, in a dramatic 2013 cover story, *Time* warned of "A World Without Bees," subtitled "The price we'll pay if we don't figure out what's killing the honeybee."

Its author argued that the class of agricultural pesticides know as neonicotinoids was killing the honeybee and that the planet would starve unless we banned these chemicals immediately. He said this because, he claimed, "1 in every 3 mouthfuls you'll eat today depends on bee pollination." In short: no bees, no food.

The science website that I edit, the Genetic Literacy Project (GLP), examined that 1-in-3 claim in a previous article—it's just not accurate. Soon after the *Time* article appeared, emerging facts about the health of the global bee population began changing our understanding about pollinators and food. Rather than a decline, the data show clearly growth in the number of commercial hives throughout the world.



In America, after a sharp decline in bee health during the 1980s linked to various diseases, since neonicotinoids came into widespread in American agriculture in the mid-1990s, commercial honeybee numbers have held steady at the level of 2.4 to 2.6 million hives. They recently reached a two-decade high of 2.7 million—the exact opposite of the misleading narrative still being promoted by some advocacy groups.

Wild bees pivot

Simply said, there is no honey bee crisis—even such environmental publications such as *Grist*, after it carefully reviewed the data, made a point of noting the "crisis" has been widely misreported.

But even as the empirical data underscoring the fact that world farming is not facing a beemageddon has strengthened, anti-pesticide activists have attempted to shift public focus away from commercial bees, which are more than holding their own, to wild bees. Bee health is an issue that resonates with concerned citizens: because our food supply is so dependent on bee pollination, the disappearance of wild bees would also necessarily impact our crop production. No wild bees, no food.

This transfigured narrative also offers its purveyors a unique ideological benefit: there are no reliable counts for wild bee populations, so any claim of imminent danger can stand unchallenged by the facts. But that narrative does not survive scrutiny either.

In a groundbreaking study published in June in *Nature Communications*, 58 scientists from around the world found that the vast majority of wild bee species that they examined are prospering.

Activists insist wild bees are being killed by neonicotinoid insecticides. But as the research paper noted: "[T]he species that are the dominant crop pollinators are the most widespread and abundant species in agricultural landscapes in general." The variety of wild species that forage on commercial crops is limited, but in terms of population, those species are everywhere. They are by far the most commonly encountered type of wild bee. The study found that, in 99.7 percent of the cases, the wild bees

that come into contact with crops (and neonics) are not in decline.

"Threatened species are rarely observed on crops," the authors concluded. So why would banning pesticides help preserve any particular wild bee species or wild bees in general? There is no generalized wild bee problem; there are some wild bees that are not fairing as well as others, and those species are not linked, directly or indirectly, to neonics or any particular pesticide. A solution to a wild bee problem depends on the particular species of concern. There's no one-size-fits-all fix.

In many cases a particular species faces hard times because it's being pushed out of its preferred habitat by changing land use patterns. If a new housing development goes up and kicks a particular type of bumblebee out of its home, another species might move in. It has nothing to do with chemicals sprayed on crops that they never even visit.

A team of entomologists, writing in 2012 in the Proceedings of the National Academy of Sciences, explained how this situation plays out in the real world. The authors found some declines in a few species of bumblebee, which scientists sometimes refer to as *Bombus*, the genus of bumblebee. They pointed out that it's an exaggeration to look at the decline of one type of bee and jump to the conclusion that wild bees in general are dying off.

Environmental change affects species differentially, creating "losers" that decline with increased human activity, but also "winners" that thrive in human-altered environments. ... Thus, the existence of a widespread crisis in pollinator declines, as often portrayed in the media and elsewhere, rests on data of limited taxonomic or geographic scope.

The team tried to remedy the situation by taking a closer look at a species-by-species level. Again, there was no reason for alarm.

Of 187 native species analyzed individually, only three declined steeply, all of these in the genus Bombus.

In fact, the problems of those few wild bumblebee species may in fact be caused by commercial beekeepers introducing deadly diseases.

Furthermore, Bombus may not be representative of the world's 442 other bee genera because they may have been impacted by recent pathogen introductions from managed Bombus colonies.

For example, the introduction of the *Nosema* parasite from commercial bee populations was thought to have wiped out the rusty-patched bumblebee, which hadn't been seen on the East coast since 2009 and was presumed extinct. The bee recently made a comeback, having been spotted in a Virginia park about 50 miles from Washington, D.C.

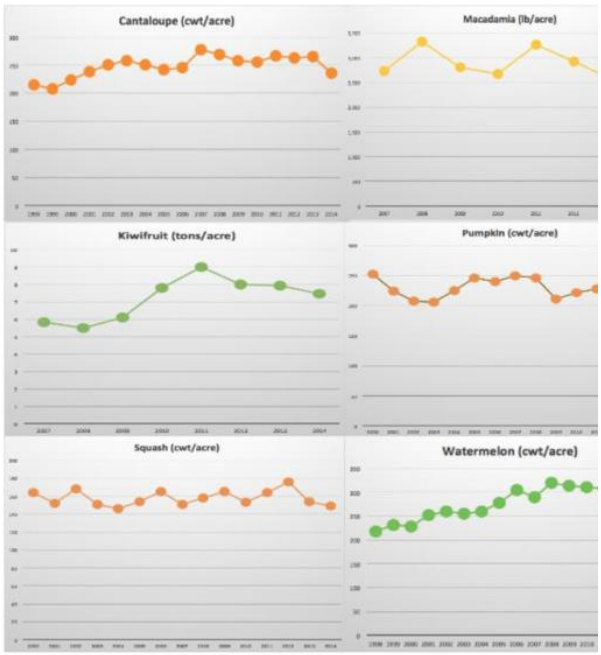
The situation is much the same in Europe. According to the best available studies, certain species of bumblebees that saw declines in the 1990s have rebounded in the past few years. At the same time, the species richness of other wild bees has increased significantly. In other words, nature tends to reach an equilibrium.

Some species of wild pollinators face challenges and must fight for their survival, which just happens to be true of all wild animals and insects. With respect to wild bees, however, the best available scientific evidence suggests that these creatures are extremely resilient.

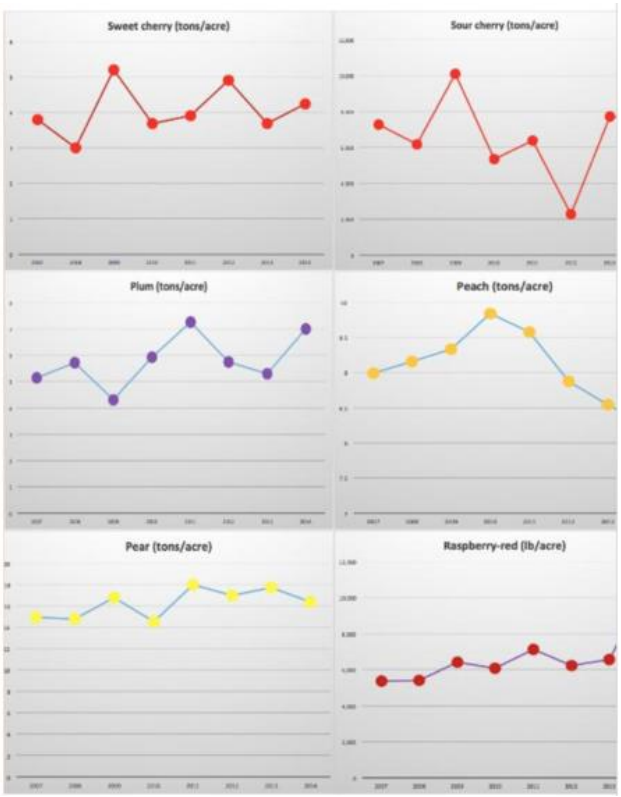
Wild bees and agricultural productivity

There is some clarifying data on wild bee populations and agricultural productivity. The USDA keeps detailed statistics on all the most important crops pollinated by bees. Many factors can affect a crop's output, particularly the weather, but it's clear that yields are not decreasing and bee-pollinated crops have not fallen upon hard times.

Crops in which bee pollination is essential



Crops in which bee pollination has great influence



The lone exception is the peach, where bee pollination is important but not essential, which has seen declines in yield. But USDA's explanation of the situation has nothing to do with bees:

The California peach crop, accounting for 74 percent of the United States utilized peach production, is down 5 percent from 2013... Growers reported the drought situation remained a concern, however many of them were able to offset reduced irrigation district water deliveries by utilizing wells to pump groundwater.

California fields have been parched for the past four years, but even a record-breaking drought hasn't been enough to depress productivity. Since the beginning of the supposed bee crisis that began with Colony Collapse Disorder in 2006, farm productivity in the US has actually increased among America's bee-pollinated crops. Agriculture Secretary Tom Vilsack:

In the six years I have been secretary, we have seen a vigorous expansion of our agricultural sector. As much as an enterprise dependent on the forces of nature can be described as robust, American agriculture is robust and growing. Farms are more productive today than ever before.

Jon Entine, executive director of the Genetic Literacy Project, is a Senior Fellow at the World Food Center's Institute for Food and Agricultural Literacy, University of California-Davis. Originally published in *The Huffington Post*.

Annual MBA Convention in Ellisville, MS

By Jeff Harris

The annual MBA convention was during the first week of November at the Advanced Technology Center on the campus of Jones County Junior College in Ellisville, MS. The main auditorium was an awesome venue for holding such a meeting, and we owe great thanks to Austin Smith for securing the facility for our meeting. We also need to thank the Southeast Beekeepers Association for everything they did with local arrangements that led to a smooth running affair. They also provided many homemade baked goods for our enjoyment during breaks at the conference. They worked really hard getting ready

for the meeting, and their efforts clearly enabled the conference to unfold without any major problems.

Speakers included our local MBA speakers, Dr. Clarence Collison (retired, living in Tennessee), Dr. Larry Connor (living in Michigan) and Carl & Virginia Webb (from Georgia). In particular, Virginia was a hit with her how to work with beeswax session, her judging of the honey and wax contest, and her philosophy of running a business related to beekeeping products. She was always so cheerful, and many folks told me that they really enjoyed her sessions.

Beginners Workshop in Philadelphia, MS

By Jeff Harris

Johnny Thompson and I hosted about 30 people at his farm in early December. Most of these folks were brand new beekeepers, and most did not have any honey bees yet. The goal of the workshop was to introduce them to basic beekeeping and to give them instructions on how to order equipment prior to actually hiving honey bees.

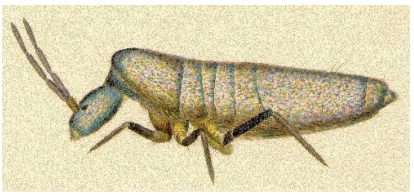
Johnny asked that we do this workshop as an exercise to help circumvent some of the problems that new beekeepers encounter when getting started. We addressed everything from mismatched frames to size of the boxes, types of foundation, styles of bottom boards, failing to install bees properly, the need to feed bees and get combs drawn, and many of the commonly seen problems or headaches of the beginner in his or her first year. Another goal was to show the sticker shock of the price of beekeeping equipment so that the newbies were not blind-sided by the costs.

Sharon Thompson had prepared a nice lunch, and I felt like folks enjoyed the event. Of course, I let Johnny do all of the talking – at least until his voice got hoarse. I did interject here or there, and I tried to give an overview of seasonal management and what a beekeeper should expect over the first 2-3 years of learning to keep bees. I suspect that we are likely to do this kind of workshop again next year. It makes sense to reach newbies early – before they actually buy their bees.

Geological History of Bees

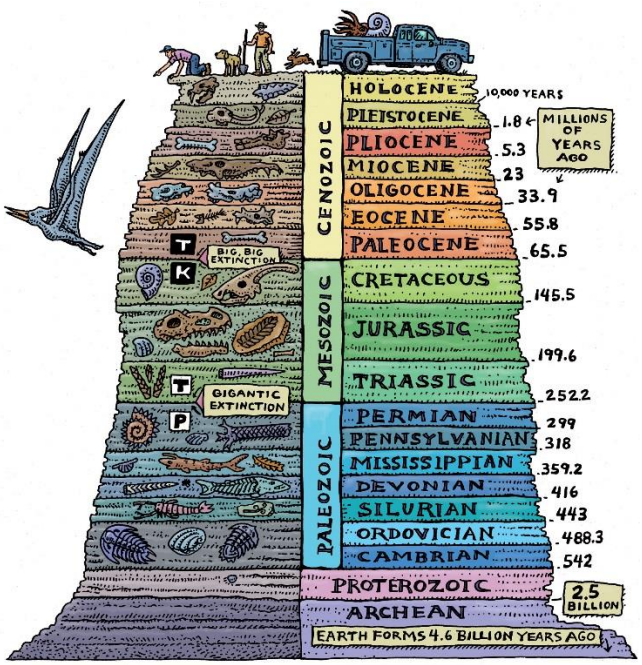
By Jeff Harris

The oldest fossil evidence of an insect comes from sediment of the Devonian perio. This fossil appears to be a fragment of the chitinous exoskeleton of an insect believed to be a Collembolan (unsure?). It is dated to about 380 million years ago (mya).



Collembalan-like insect

The oldest fossils that are absolutely known to be insects come from the Pennsylvanain period (300 mya). Many of the modern insect orders are represented in these fossils. A rapid evolution of all insect orders occurred during the subsequent Permian period into the early Mesozoic era.



Geologic History of Earth

Flowering angiosperms became the dominant plant during the Cretaceous period between 100-125 mya. Most sphecid wasps (*e.g.* Cicada Killer) were predacious before the evolution of flowering plants. It is believed that a sphecid-like wasp was the evolutionary ancestor of all bees. The sphecoid ancestor to the Apoidea probably occurred in the Cretaceous period, although there is no absolute record of it. This wasp probably evolved longer

mouthparts, plumose hair and some primitive enlargement of the hind tibia for pollen storage.

The coevolution of bees and plants became fast paced after the initial utilization of pollen and nectar for food. The result of this process are the highly successful modern bees of today. The evolutionary record of this process is sketchy - insects do not make good fossils. Fortunately, many fossilized saps (ambers) that contain insects have been found. Who has not seen "Jurassic Park?"

The oldest evidence of a social insect was of an ant colony from the Miocene epoch (20 mya). The oldest known honey bee from Baltic amber in upper Eocene epoch (40 mya). This bee had characters of Meliponi and Apini. Several Apoidea families have been recorded from amber in Chiapas, Mexico that dates to the Oligocene epoch (30-40 mya). Families included Andrenidae, Megachilidae, Apidae and Meliponidae.

Honey bees in Baltic amber

Apis-like bees with less sophisticated corbicula than modern honey bees was found in amber from Germany that dates to the upper Miocene epoch (15 mya). Bees from African amber of the upper Pleistocene (100,000 years ago) cannot be differentiated from modern bees in the same area. All honey bee species probably radiated from India and surrounding area during the Tertiary period. Our European honey bees probably radiated from the subtropics of Africa.

Descriptions of Modern Honey Bee Species

The Giant Honey Bee = *Apis dorsata*; colony with a single comb; nest is exposed; tend to be defensive; colonies often aggregate in large trees; colonies have up to 20,000 members; dance vertically on combs; large sized bee. Found throughout Asia. *A. d. laboriosa* are the cliff-dwelling honey bees of the Himalayans that was made famous by a National Geographic documentary many years ago.

The Eastern Honey Bee (or Indian Honey Bee) = *Apis cerana*; colony with multiple combs; usually nest in a cavity; colonies have up to 10,000 members; dance vertically on combs; medium size bees. There are at least two other eastern honey bee species. One is called *Apis nigrocincta,* and it is found in the Philippines. The other is *Apis koschevnikovi* found in Borneo.

Two species comprise the Dwarf Honey Bees = *Apis florea* and *Apis andreniformis*; colony with single comb; nest is exposed; colonies have about 5,000 members; horizontal dance platform; small sized bee. They are also found in Asia. The stings are barely felt in humans because the bees cannot penetrate the skin with the shaft of the sting.

The Western Honey Bee = *Apis mellifera* L.; colony with multiple combs; usually nest in a cavity; colonies up to 100,000 members; dance vertically on a comb; medium sized bees. Almost 30 subspecies are found in Europe, Africa and the Middle East.

Eva Crane, English Expert on World's Bees, Dies at 95

By Douglas Martin
September 16, 2007

Eva Crane, who earned a doctorate in nuclear physics and then abandoned the field to devote herself to expanding and spreading knowledge about bees as a researcher, historian, archivist, editor and author, died on Sept. 6 in Slough, England.

She was 95, 57 years shy of the reputed life span of the 17th-century English farmer Thomas Parr who, she suggested in one of her books, owed his longevity to eating honey that she said he produced as a beekeeper. The International Bee Research

Association, which she founded in 1949, announced her death.
For more than a half-century Dr. Crane worked in more than 60 countries to learn more and more about honeybees, sometimes traveling by dugout canoe or dog sled to document the human use of bees from prehistoric times to the present. She found that ancient Babylonians used honey to preserve corpses, that bees were effectively used as military weapons by the Viet Cong, and that beekeepers in a remote corner of Pakistan use the same kind of hives found in excavations of ancient Greece.

The usefulness of her findings was apparent in 2001 when an official of the United States Department of Agriculture in Louisiana read about Russian bees in one of her books. They had developed a resistance to mites, which had been devastating local bees, The Sunday Advocate of Baton Rouge reported. The agency imported some Russian bees, and the Louisiana bees were soon mite-resistant.

Dr. Crane wrote some of the most important books on bees and apiculture, including "The World History of Beekeeping and Honey Hunting" (1999). In a review in The Guardian, the author Paul Theroux, himself a beekeeper, called the book a masterwork "for its enormous scope and exhaustiveness, for being an up-to-date treasure house of apiaristic facts."

In an obituary published Friday, the British newspaper The Independent said Dr. Crane published more than 180 papers, articles and books. It noted that she wrote most of them when she was in her 70s and 80s, after stepping down in 1984 from the day-to-day running of the association.
The Times of London in 1999 called her the "queen bee among bee experts."

Ethel Eva Widdowson was born in London on June 12, 1912. Her older sister, Elsie Widdowson, who never retired either, helped revolutionize the field of nutrition, showing similar energy chasing seals on ice floes to study their eating habits.
Elsie died in 2000. The bee association did not list any survivors for Dr. Crane.

Both sisters attended Sydenham, a girls' school known for having dedicated women as teachers, The Independent reported in 2000. Eva moved on to King's College London, where she was one of only two women then studying mathematics at the University of London, of which King's College is a part. She completed her degree in two years, then earned master's degree in quantum mechanics and a doctorate in nuclear physics.

She took a post lecturing on nuclear physics at Sheffield University in 1941. The next year she married James Crane, a stockbroker serving in the Royal Navy Volunteer Reserve. He died in 1978.
One of their wedding presents was a box containing a swarm of bees, which the giver thought might be useful in supplementing their meager wartime sugar ration. Dr. Crane soon became fascinated with the hive, subscribed to a bee magazine and joined a local bee club, The Independent reported.

She became secretary of the research committee of the British Beekeepers Association. In 1949, she founded the Bee Research Association, which adopted its present name in 1976. For 20 years beginning in 1962, Dr. Crane edited the association's Journal of Apicultural Research, as well as editing Bee World from 1949 until 1984. (The two merged in 2006.)

The meticulousness of Dr. Crane's research showed in her examination of ancient rock images involving bees and honey. She studied 152 sites in 17 countries from a register of rock art she established herself for her book "The Rock Art of Honey Hunters" (2001). Her goal was to show how ancient ways of cultivating bees persisted in still-used, but disappearing, methods. She called her generation the last that would be "able to see the world's rich variety of traditional beekeeping."

Dr. Crane also offered advice on how to use honey as a cosmetic. She advised dissolving two tablespoons of honey in two tablespoons of water, then adding six more tablespoons of water to concoct an excellent facial cleanser.

Note: I just wanted to remind folks of who Dr. Eva Crane was. Her books on the history of beekeeping are the best ever written on the subject.

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MISSISSIPPI STATE UNIVERSITY EXTENSION