



A LITHOPOLIS HONEYFEST TRIBUTE
to OHIO PIONEERS in
BEEKEEPING & HONEY BEES

CHARLES HENRY TURNER, B.S. M.S., PH.D.

Feb. 3, 1867-Feb. 14, 1923

Born in Cincinnati, OH

*Initiated the first controlled studies of color vision,
pattern vision and principles of behavior
in honey bees.*

A note from Honeyfest Chair Ginger Brenning: I requested permission to source copyrighted content from author, Charles Abramson, Regent's Professor of Psychology at Oklahoma State University. Thank you so much, Dr. Abramson, for consent to publish from your website and your email message for our purposes and mission at the Lithopolis Honeyfest. To our readers and visitors – we are, as always, glad to share more information with you about the honey bee.

Sept. 3, 2012 10:08 AM. Dear Ms. Brenning: Thank you for your e-mail. Your event sounds wonderful and I wish I could be there. Certainly you have my permission to use anything from the website and from my published work for your event. I have attached one of the articles I wrote about Dr. Turner and another that shows a "Turner Stamp." For a number of years, I have been trying to get the government to issue a commemorative stamp in honor of Dr. Turner. No luck thus far, but I recently published a paper making my own stamp. Would it be possible to obtain a copy of the souvenir program? I would be glad to purchase it. PS: On a side note, I edited a book about Dr. Turner that has much more material than can be included in an article. The book also contains selected papers and an article written by his grandson. Best wishes, Charles Abramson (Attachments: Turner Annual Review paper.pdf; Zazzle Abramson and Long.pdf)

Charles Henry Turner – A Brief Biography

<http://psychology.okstate.edu/museum/turner/turnerbio.html> The information on this webpage originally appeared in the article: Abramson, C. I. (2003). Charles Henry Turner: Contributions of a Forgotten African American to Honey Bee Research. *American Bee Journal*, 143, 643-644.

Charles Henry Turner, was born two years after the Civil War, and was raised and attended school in Cincinnati. His father was a church custodian; his mother, a freed slave, was a practical nurse. Charles was high school valedictorian and earned his B.S. and M.S. from the Univ. of Cincinnati. In 1907, upon earning his Ph.D. in Zoology from the Univ. of Chicago, he became the first African-American to earn these advanced degrees from each of these institutions. These were Dr. Turner's first steps living a life as a scientific pioneer. He then broke ground with his research in comparative psychology and animal behavior, notably in the area of honey bees. He is the first African-American to be published in academic journals on insect behavior, navigation and animal physiology, including the prestigious journal *Science*. One of the best examples of Turner's behavior work is his studies of color and pattern vision in the honey bee. Regrettably, today it is all but forgotten in the honey bee literature. For his work, elaborate apparatus was constructed and controls were implemented that conclusively showed that honey bees can perceive both color and pattern. His groundbreaking research on memory, color vision ability, communication and navigation of the honey bee was conducted mostly at O'Fallon Park in north St. Louis, MO, starting in 1910. He designed various colored disks and colored boxes into which the bees were trained to fly. Thirty-two experiments were designed, and controls for the influence of odor and brightness were used. The results showed that honey bees see colors and discriminate among them. In his experiments on pattern vision of the honey bee, Prof. Turner summarized his results, "There was much in the behavior of these bees to indicate that, in their ability to distinguish minute details, they are near sighted. On examining the artifacts, either when searching for an artifact or in making its flight of orientation, the bee always hovered within about a centimeter of the object examined."

Any casual observer of a honey bee will notice this type of close scrutiny and "hang time" hovering prior to landing on an object (photographers especially use this to their advantage). Prof. Turner's belief that honey bees were creating what he called "memory pictures" of their surroundings was unheard of at the time. As we know today, honey bees very accurately communicate location, distance, and quality of pollen sources by at least one method – the "waggle dance." What is disheartening is that very few animal behavioral scientists are aware of these honey bee studies or make mention of Dr. Turner and his pioneering contributions. Likely, most beekeepers have never heard of him or his work. There is actual historical literature on honey bee behavior which gives Karl von Frisch credit (the "von Frisch technique") for training honey bees to fly to a specific target. In fact, on the contrary, it was Dr. Turner who first developed the technique a full decade earlier. At age 41, he began teaching at Sumner H.S. in St. Louis, where he pioneered the use of honey bees as a teaching tool to demonstrate their behavioral patterns. Jam was put out three times a day to attract and study honey bee behavior. Commenting on the results, a former student wrote "The bees appeared at the table at all three meals. Then Dr. Turner put jam only at breakfast daily. They still came to each meal but found no jam at noon and night. Soon they stopped coming. This shows they have some idea of time." Over time, leaders and students in the animal behavior sciences area have re-discovered Dr. Turner's invaluable work, and he has received some of the credit that he earned and duly deserves.