

The Angel's Glow

There are many strange and interesting stories from the War of Northern Aggression. Rooted in truth and embellished by the horrors of war, most became folklore and continue to be told even today. But there are a few that have been proven to be more than just a story. One of these is the legend of "The Angel's Glow".

In April of 1862, the Battle of Shiloh became the largest engagement of the war. Over 70,000 fought for two days. The result was 23,000 casualties. Neither side was prepared to take care of the wounded. Medical personnel were few and supplies even less. Contamination from dirt and shrapnel would lead to infection, loss of limbs and in most cases—death. The first antibiotics would not be discovered until 1929.



Over 16,000 lay on the battlefield at Shiloh for two days in the rain and mud before anyone came to their aid. So, imagine the feeling when some looked at their wounds and there was a faint blue glow. And not only did they survive the wound, but did so in record time without much scarring. Thinking this must be some type of divine intervention, the soldiers were sure they had been touched by an angel.

For almost 140 years, this phenomenon was told and retold with little or no one to believe it. In 2001, Bill Martin, a seventeen year old Maryland high school student, visited the Shiloh Battlefield Park. He heard the story about the glowing wounds and was intrigued. His mother, a microbiologist for the USDA Agricultural Research Service, had been studying a bacterium that was luminescent. So, Bill asked for her opinion. Her advice was "research and experiment" to find the answer.

Bill teamed up with another student, Jon Curtis, and began research on the bacteria, *Photobacterium luminescens*. It is a bacterium that lives in the digestive system of parasitic worms called nematodes. These little nematodes live in soil and feed on insect larvae, burrowing into their blood vessels. The *P. luminescens* bacteria are then released gradually killing the insect and any other bacteria that it may carry. When it is present, it emits a soft blue glow.

The experiments in the lab soon determined that *P. luminescens* could not live at normal body temperature. So, Bill and Jon studied the historical records of 1862. The weather in April at Shiloh was very wet with cold nights. After two days of exposure, the injured soldiers on the field would be in or near hypothermia. This lower body temperature would allow the *P. luminescens* bacteria to live in the open wounds.

The project proved that *P. luminescens* could be introduced into the flesh of soldiers from insects carrying nematodes from the soil. It also proved that the rain and cold nights of April 1862 would create the right conditions for the bacteria to thrive by a lowering of body temperature. And since *P. luminescens* isn't harmful to humans, it would only kill harmful bacteria invading the injury which would stop infection from forming. An increase in body temperature would then kill *P. luminescens* and the immune system would eradicate the nematodes. In conclusion, *P. luminescens* in the right conditions was a natural occurring antibiotic that glowed when it is present.

The study of "The Angel's Glow" phenomenon earned Bill and Jon first place in the team competition of the 2001 Intel International Science and Engineering Fair. It was also mentioned by the Smithsonian Institute on their web page of "*8 Obscure Facts You Didn't Know about the Civil War*".

Researched and written by Ella Hanna, Bossier City, LA