



LW1 Were Moses and Aaron the First Bioterrorists?

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After attending this presentation, attendees will better understand the history of the Ten Plagues of Egypt described in the Bible, specifically, the causes of plagues five and six, and their interrelationship.

This presentation will impact the forensic science community by demonstrating the importance of critical thinking, the use of primary source materials, and the application of contemporary scientific knowledge to explain remote historical events.

The exodus of the Israelite slaves from Egypt was momentous in religious history. The Pharaoh had refused to free them from bondage until a series of ten plagues occurred. Biblical and scientific scholars have been fascinated by these events and numerous theories have been proposed.¹⁻⁵ Theologians believe the cause of the plagues was the supernatural power of God, while Sigmund Freud called the Passover story “a pious myth.”⁶ Scientists offer more naturalistic mechanisms. In *Miracles: A Preliminary Study*, C.S. Lewis wrote that the cause of a miracle is the activity of God, but its results follow according to natural law. During the fifth plague, death of livestock occurred from an unnamed infectious disease and during the sixth, boils appeared on humans and animals. A variety of infections have been suggested as the causes of plagues five and six, including, but not necessarily limited to: malaria, cholera, glanders, African horse sickness, bluetongue disease, West Nile fever, Rift Valley fever, and anthrax. Exodus 9:3 states, “Behold, the hand of the Lord is upon thy cattle which *is* in the field, upon the horses, upon the asses, upon the camels, upon the oxen, and upon the sheep: *there shall be* a very grievous murrain (plague).”⁷ Most warm-blooded animals, especially hooved herbivores, are susceptible to anthrax. Exodus 9:6 reads, “And the Lord did that thing on the morrow, and all the cattle (livestock) of Egypt died.....”⁷ Presumably, the dead animals were either buried or burned.

During WWII, Winston Churchill ordered the development of tens of thousands of anthrax bombs, to be dropped over every city and town in Germany in the event of an invasion of Great Britain. A small anthrax bomb was tested on Gruinard Island, in the Hebrides, off the northwest coast of Scotland. Thirty sheep were taken to the island and tethered. A 25-pound bomb was dropped and all the sheep died within a week. The project was stopped after an anthrax outbreak in cattle and sheep occurred on the Scottish coast that directly faced Gruinard Island. This small island was contaminated with anthrax until 1986, when tons of topsoil were removed and incinerated. Because the highly heat-resistant spores persisted, formaldehyde mixed with sea water was then used to complete the cleanup. Thus, anthrax spores are not eliminated with burning.

Exodus 9:8 declares, “And the Lord said unto Moses and unto Aaron, Take to you handfuls of ashes of the furnace, and let Moses sprinkle it toward the heaven in the sight of Pharaoh.”⁷ The carcasses of the animals that died during the fifth plague were probably incinerated in a “furnace” with resultant “ashes.” The blood of the animals would have contained as many as one billion bacilli/ml, which sporulate on exposure to air. Thus, the “ashes” would have contained countless anthrax spores. Exodus 9:9 states, “And it (the anthrax-contaminated ashes) shall become small dust in all the land of Egypt, and shall be a boil breaking forth *with* blains (sores) upon man, and upon beast, throughout all the land of Egypt.”⁷ Cutaneous anthrax is described as a “boil-like” lesion that ruptures (i.e., breaks forth) into an ulcer (i.e., sore), affecting humans and animals.



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In conclusion, this study agrees that anthrax was the most probable cause of the fifth and sixth plagues of Egypt and suggests a novel interrelationship and transmission mechanism between the two plagues.

Reference(s):

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