



The Heliograph



Introduction

In April 1886, Brigadier General Nelson Miles was assigned the command of the Department of Arizona replacing Brigadier General George Crook. Miles' first assignment was to capture or secure the surrender of the Apache leader and holy man, Geronimo. By utilizing troops in the field, and a new instrument – the heliograph – Miles hoped to succeed where his predecessor failed.

How Does the Heliograph Work?

Through advancement in the field of communication, the U.S. Army Signal Corps adapted inventions such as the telegraph for military uses. One such device that saw prominent use in the southwest was the heliograph.

The heliograph was the invention of a British engineer who attached a mirror to surveying equipment in order to redirect a beam of light on distant points. Through the use of sunlight, mirrors, and a keying system to interrupt the signal, flashes could be thrown on and off a receiving station. The duration of flashes corresponded to the dots and dashes used in Morse Code.

The American version of the heliograph differed from the British in that the Americans favored a fixed, square mirror, and the British used a tilting, round mirror to produce the 'flash'. The square mirror created 25% more reflecting surface (creating a brighter flash) for the same amount of packing weight.

If needed the heliograph could also reflect moonlight, but were generally closed at nightfall. The device also saw intermittent use during the monsoon seasons. The greatest distance recorded between points utilizing the heliograph was 183 miles between mountains in Colorado and Utah.

The Heliograph in the 1886 Campaign

General Miles first used the heliograph in Montana in 1878, and realized mountainous terrain, clear atmosphere, and plenty of sunlight would make it easily adaptable in his pursuit of Geronimo.

By August of 1886, Miles was utilizing 23 heliograph stations in Arizona and New Mexico, with each station approximately 25 miles apart. The Bowie Peak Station kept a camp of five men: three operators and two guards. The crews were rotated periodically to, "...reduce monotony and promote

efficiency..." and were supplied by pack mules over a 2.5 mile trail.

The Fort Bowie (#1) and Bowie Peak (#2) stations were headquarters of the system, as they were centrally located. In addition to relaying messages to other stations, a telegraph line ran down to the Adjunct's Office at the fort. When a message was received of a logistical nature, resupply, etc. its contents would be telegraphed to the fort for action. During the final campaign against Geronimo, station #2 dispatched 334 messages.

Was it Successful or Not?

In 1886, Captain Henry Lawton left Fort Huachuca and entered Mexico on May 8, but returned within a month when he was informed that the Apaches were north of the border.

On June 5, the heliograph station at Antelope Springs observed and reported the Apaches moving south toward Mexico. The message was transmitted to Forts Bowie and Huachuca and relayed to Lawton's command, via courier, who was currently at Calabasas. Lawton sent four detachments in pursuit. Lt. Robert Walsh, 4th Cavalry, surprised the raiders in their camp in the Patagonia Mountains, capturing their stock and

equipment. This was the last Apache raid into the United States, and the only time the heliograph system intercepted a party of warriors.

As Apaches were reluctant to travel at night, the heliograph provided a barrier to mobility. The effectiveness of the heliograph was best stated by Lt. Stephen Fuller, architect and engineer of the system: "From the time that the heliograph was put into a particular section of the country, it was noticed that the Indians were never again seen in the vicinity..."