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Communications in a Flash

It is the stuff of innumerable cavalry movies—blue-shirted troopers with mirrors reflecting sunlight in dots and dashes to flash messages over the long distances of the American West, calling for help in a tense situation or promising rescue to beleaguered patrols.

In addition to tales generated in movie and novels, the story of mirror signalling has been distorted by misinformation or legend. General Nelson Miles, for example, in his autobiography describes (incorrectly) how the Apache warrior Geronimo was induced to surrender when he saw how the flashing messages were speedier than his horses.

The heliograph was actually a European invention. The first heliograph was devised in the French Army about 1870. The British modified the device a couple of years later. The U.S. Army Signal Corps experimented with the heliograph in 1877, but it was not adopted for widespread use until the mid-1880s. By 1886, the U.S. Army had modest networks of heliograph stations in New Mexico and Arizona.

The usual range for a heliograph was about 50 to 60 miles, although there was one instance recorded in which 100 miles were covered. There were both fixed sites, in which mirrors were placed on posts implanted in the ground, and portable variations. Sometimes there also were problems in contacting stations over long distances.

Heliograph messages were sent by combinations of dots and dashes. A dash was supposed to be three times as long as a dot, but there often were problems differentiating between the two, particularly in times of poor visibility. The rate of transmission for messages varied greatly according to conditions and the training of operators—as an example of the capacity of the heliograph, a U.S. Army station in New Mexico in July and August of 1886 transmitted 1,829 messages, totalling 35,727 words.

When Brigadier General Nelson Miles assumed command in the struggle to capture the Apache warrior Geronimo, he had networks of heliograph stations established in the southwest to supplement the existing telegraph lines. Sometimes messages were sent in encrypted form, more often in plain text. The heliograph proved useful for rapid transmission of reports, but there is no evidence that any heliograph message resulted in military action against Geronimo.

In his autobiography, General Miles reported meeting Geronimo at a parley and convincing him that resistance was futile because of the rapidity with which messages could be transmitted over long distance. Miles said that the Apache warrior attributed this capability to magic, and it played a major role in his decision to surrender.

A recent historian of the campaign calls this story a "lie" and the "product of Miles's imagination." According to the historian, the Apaches had long understood long-distance signalling, and, while they did not use the heliograph, were sophisticated at sending messages over great distances at night, using torches.

In the 1880s, in addition to the United States, the heliograph was in use in the military services of Great Britain, France, Spain, Switzerland, Holland, Austria-Hungary, Algeria, Egypt, and Afghanistan.

The British Army used it to good effect in India during many campaigns and also found it quite useful in the Boer War.

One British subaltern who accompanied a punitive expedition to India's northwest frontier in 1897 was impressed with the instrument. He observed its use as a journalist/soldier accompanying Sir Bindon Blood.

> Signalling by heliograph was throughout the operations of the greatest value. I had always realised the advantages of a semi-permanent line of signal stations along the communications to the telegraph, but I had doubted the practicability of using such complicated arrangements in action. In this torrid country, where the sun is always shining, the heliograph is always useful.... In a country intersected by frequent ravines, over which a horse can move but slowly and painfully, it is the surest, the quickest, and indeed the only means of intercommunication. I am delighted to testify to these things, because I had formerly been a scoffer.
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> — Lt. Winston Churchill

The heliograph fell into disuse after the turn of the twentieth century as other communications systems, particularly wireless radio, improved. However, the heliograph was still in the inventory of U.S. and British forces at the time of World War I.

[Sources: Winston Churchill, *The Story of the Malakand Field Force*; Odie B. Faulk, *The Geronimo Campaign* (Oxford University Press, 1969); Peter Warnock, "The Heliograph," *Command*, May-June 1991.]