

# Secure communications key to American victories

## Coded messages, replies

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Throughout much of the 18th century, Europe seemed immersed in war. Many of the conflicts featured England and France as the chief combatants, but other nations often became involved either willingly or unwillingly.

In an environment almost constantly fashioned by war, the importance of secure communications became very important.

As a result, both the English and the French employed enciphered documents in their diplomatic communications. Consequently, the use of ciphers was common.

With the outbreak of the Revolutionary War in America, the British brought this expertise and practice to their rebellious colonies. The Americans quickly caught on and used ciphers as well.

American cryptology during the revolutionary era was highly individualistic, informal, often unsophisticated, but very effective in contributing to American victories. The potential value of coded messages came to Gen. George Washington's attention in the summer of 1775.

A young girl from Newport, R.I., asked a baker named Godfrey Wenwood if he would help her deliver a sealed message to British officers. After convincing the girl to leave the message with him, Wenwood, a patriot, discovered communications consisted of Greek characters, symbols, num-



*Assembly of a U.S. Army M-94 cypher device.*

bers and letters written neatly along several lines.

Before long, Wenwood turned over the communication to Washington's headquarters.

After intensive interrogation, the young girl admitted that her lover, Dr. Benjamin Church, Washington's own director of hospitals, had written the letter. While guards kept watch over Church, Elbridge Gerry, later a U.S. vice president, worked Col. Elisha Porter to decode the message.

Separately, Reverend Samuel West deciphered the message and all three arrived at the same conclusion. Church was reporting to the British commander, Gen. Thomas Gage, information about American munitions' stores, recruiting, rationing and other sensitive information.

Indeed, information supplied by Church prompted Gage to send troops to Concorde to capture American supplies reported to be there.

Following this move, the historic clash at Lexington produced the "shot heard around the world" and started the American fight for independence.

Church was imprisoned and later died when the ship on which he was sailing disappeared while on its way to the West Indies.

Cryptology also served Benedict Arnold. Letters between Arnold and his British contact, Maj. John Andre, appeared in several

types of code. In one system, the conspirators used a legal classic of the day entitled "Blackstone's Commentaries."

As the basis for coded communications, a sequence of three numbers indicated the page in the text, the line on a particular page, and a word on that page as the basis for conveying information.

Another more complicated system used by Arnold was more secure, but not used for long. The capture of Maj. Andre halted the delivery of future coded messages employing this system. The capture further uncovered Benedict Arnold as a spy.

Two American agents surpassed in sophistication and effectiveness the cryptography used by the British.

Samuel Woodhull of Long

Island and Robert Townsend of New York City supplied Washington with considerable news about the British occupation of New York City in 1779.

Maj. Benjamin Tallmadge, one of Washington's spymasters, constructed the system they used.

Tallmadge took words he thought he would need from a spelling dictionary and assigned numbers to them, and then wrote them in columns.

A typical note read, "Sir: Dqpeu Beyocpu agreeable to 28 met 723 not far from 727 and received a 356..."

Woodhull and Townsend also used invisible ink extensively. Washington supplied the two with a clear ink he had received from John Jay's brother, who had been a physician in England. Once a note had been written in the invisible ink, a second liquid gently brushed over the area uncovered what had been written. Agents composed their invisible ink messages on blank sheets of paper and then inserted them with other letters and messages.

Woodhull and Townsend conveyed nearly all of what Washington knew about the British fortifications in New York City and other issues relating to British military movements in the area. It remains entirely possible that Washington and the future of his forces might have met an early demise had it not been for the invaluable intelligence supplied by these two American cryptographers.

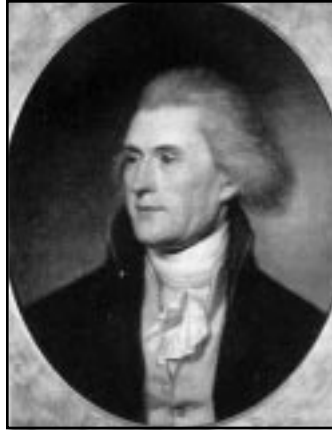
The desirability of a more dependable cryptological system that could be readily used by American agents was an objective not lost upon many of our founding fathers. Its development, however, would not occur until after the American Revolution.

None other than Thomas Jefferson invented a wheel cipher either between 1790 to 1793, or between 1797 to 1800. He found that, as America's first Secretary of State, he needed to protect sensitive communications from

England and France.

Jefferson further felt that such information needed to be kept from a cabinet that was becoming bitterly divided between the federalists and the anti-federalists.

The cylinder, about six inches long, could be comfortably held between the middle finger and thumb of the left hand and



Thomas Jefferson

easily read.

Experts at the time considered the cipher the most advanced then available.

In the early 20th century, it would be used successfully when far more sophisticated equipment was available. Jefferson preferred the cipher invented by Dr. Patterson and recommended it to the Department of State.

Curiously, Jefferson's cipher seemingly vanished. Research librarians from the Library of Congress discovered it while reviewing his papers in 1922.

Jefferson's basic system, even used recently by the U.S. Navy, held the advantage of being nearly impossible to unscramble. Even crypto-analysts in this century failed in efforts to break down Jefferson's codes.

For this invention and its unprecedented longevity, Jefferson acquired the title of "father of American cryptography."

He and others who followed realized the importance of secret communications, produced the means, and devised the procedures to send and receive coded messages at a level of technical sophistication unknown during the American Revolutionary War. ■

## Reflections

### AIA

**Feb. 1, 1980:** The Air Force Cryptologic Depot was redesignated the Air Force Cryptologic Support Center.

**Feb. 10, 1983:** The first TR-1 airframe was deployed to Royal Air Force Alconbury, United Kingdom, and the 6952nd Electronic Security Squadron entered the era of providing direct support to intelligence operations in Europe. Concurrent with the arrival of the TR-1, U-2R operations in the Central European theater ceased and Electronic Security Command U-2R maintenance personnel assigned to the 6988th ESS at RAF Mildenhall, United Kingdom, were transferred to the 6952nd ESS.

### USAF

**Feb. 24, 1966:** Combat crews of the 341st Strategic Missile Wing launched simultaneously two Minuteman "A" intercontinental ballistic missiles from test silos at Vandenberg Air Force Base, Calif. This salvo launch successfully demonstrated multiple countdown and launch techniques that might be used at operational sites under actual combat conditions.

**Feb. 3, 1976:** On this date at 3 p.m. when an EC-135 aircraft landed at Offutt AFB, Neb., it marked the 15th anniversary of the Strategic Air Command Airborne Command Post. Since Feb. 3, 1961, an EC-135 aircraft manned with a battle staff and under the command of a Strategic Air Command general officer, called the airborne emergency action officer, had been maintained in the air continuously. During its first 15 years of continuous operation, the Strategic Air Command Airborne Command Post flew 16,078 sorties and approximately 149,600 accident-free flying hours.

### Cold War

**Feb. 22, 1946:** George F. Kennan, United States charge d'affaires in Moscow, sent the State Department a five-part analysis of Soviet views and actions that later became known as the Long Telegram.