



Cryptology, Elizebeth Friedman and the United States Coast Guard Thwart the Rumrunners

The 18th Amendment

At the beginning of the Twentieth Century, public opinion in the United States was slowly coming to the conclusion that alcohol abuse in American society had become a major problem. By 1919, public concern had prompted a majority of States to ratify the 18th Amendment, which prohibited the manufacture, sale, and transportation of liquor within the United States. Because the act sought to penalize the seller but not the imbiber of alcohol, many saw an opportunity to make a quick profit by circumventing the law. It was not long before extensive smuggling syndicates—often referred to as rumrunning organizations—came into existence. These syndicates rivaled some of America’s largest corporations in size and scope.¹ Enforcing the 18th Amendment proved to be challenging.

The Challenge



On land, the task of enforcing Prohibition fell to several federal agencies, but on the high seas, the responsibility belonged to the United States Coast Guard (USCG). This new responsibility would severely tax the Coast Guard’s resources. They would have to police 12,000 miles of U.S. coastline with a total of 4,140 personnel and 75 vessels, the majority of which were not designed for law enforcement operations.² Despite the difficulties presented by the mission, the Coast Guard accepted the challenge. The service’s attitude was best expressed in a 25 April 1924



letter by RADM Frederick C. Billard, the USCG Commandant at the time, “The Coast Guard...will not fail in its performance of this... task. You men are the last line of defense...” However, in order to prevail in this effort they would need ingenuity, perseverance, and “a new kind of detective work,” namely the art and science of cryptology.³

A Complexity Never Before Attempted by Any Government

Early on it became apparent that the rumrunners were encrypting their communications to thwart the Coast Guard’s mission, and by 1927, the use of codes and ciphers among rumrunning vessels was commonplace. With this kind of expertise at work, it was not long before the smugglers’ systems grew increasingly complex.⁴ To counter their efforts, the USCG enlisted the help of renowned cryptologist Elizebeth Friedman.

Friedman was considered an expert in the cryptologic realm. She had studied the subject at a Chicago area think tank and had participated in cryptologic work at other federal agencies. Her role was to provide the Coast Guard some measure of forewarning regarding the rumrunners’ operational activities. This was no easy task. The various syndicates took strong measures to protect their communications from the Coast Guard, not the least of which was paying the unheard of sum of \$10,000 a year to a retired Royal Navy lieutenant commander to run their cryptologic operations. Friedman noted in a mid-1930’s report that, “Some of these (meaning the smugglers’ codes) are of a complexity never before attempted by any government...”⁵

The Syndicate

One of the most notorious rumrunning organizations was the Consolidated Exporters Corporation (CEC). The CEC syndicate virtually monopolized rumrunning in the Pacific and the Gulf of Mexico. Over time, the Coast Guard intercept site in Mobile, Alabama, intercepted hundreds of messages concerning CEC rumrunning activities. All of the intercepts were forwarded to Washington, D.C., where the cryptanalytic unit, headed by Friedman, broke them out. The messages contained a wealth of detailed information about CEC’s illegal operations and would be enough for the Department of Justice to press

charges. The work of the cryptanalysts proved to be the smoking gun needed in what would become the famous rumrunning trial.

The Trial

Based largely on the information discovered in the encrypted messages, an indictment was brought against CEC for conspiracy to violate the National Prohibition Act. The trial began on 1 May 1933 in the United States District Court for the Eastern District of Louisiana. When called to the stand, Friedman provided a clear and concise description of her methods in the breaking of the CEC intercepts. The defense consistently objected to each conclusion by Friedman claiming that the witness's testimony "elicits a conclusion and is opinion." Friedman retorted that her conclusions were "...not a matter of opinion," and that "any other experts in the United States would find..., the exact readings I have given..."⁶

In the end, the CEC ringleaders were convicted and sentenced to two years in prison. The chief prosecutor properly concluded in a letter to the Secretary of the Treasury that without Friedman's expert testimony, the case could not have been won.⁷

Final Thoughts

Historians and sociologists are likely to argue for years about the wisdom of trying to enforce Prohibition. What will not be in dispute is the fact that through a combination of teamwork, perseverance, and the prodigious use of cryptology, Elizebeth Friedman and an intrepid band of Coast Guard cryptanalysts were able to turn the tables on a worthy adversary at a crucial time.

--Patrick D. Weadon

¹ Kahn, David. *The Codebreakers*. New York. MacMillian Publishing Co. Inc., 802

² Ensign, Eric S., LT, USCG. *Intelligence in the Rum War at Sea, 1920-1933*. "United States Coast Guard," Washington, D.C., Joint Military Intelligence College., 5-6

³ Kahn, David. *The Codebreakers*. New York. MacMillian Publishing Co. Inc., 802

⁴ *Ibid.*, 804

⁵ *Ibid.*

⁶ *Ibid.*, 811

⁷ *Ibid.*, 813

Additional information regarding the Rumrunners can be found in "Listening to the Rumrunners," written by the National Security Agency's Center for Cryptologic History

Elizebeth Smith Friedman--wife, mother, writer, Shakespeare enthusiast, cryptanalyst, and pioneer in U.S. cryptology--died on 31 October 1980 in Plainfield, New Jersey, at the age of 88. Although she is often referred to as the "wife of William Friedman," she enjoyed many successes in cryptology in her own right. In fact, although her husband is credited with numerous contributions to cryptology, it was Mrs. Friedman who introduced him to the field.

Elizebeth was born in 1892 to John M. Smith and Sopha Strock Smith. The special spelling of her name is attributed to her mother, who held a strong passion against Elizebeth's ever being called "Eliza." After briefly attending Wooster College in Ohio, she graduated from Hillsdale College in Michigan with a major in English literature. Having exhibited her interest in languages, she had also studied Latin, Greek, and German.

In 1916, she was recruited by George Fabyan, a wealthy textile merchant, to work on his 500-acre estate at Riverbank, as part of his private "think tank." Counted among the staff at

Elizebeth S. Friedman 1892 - 1980



Riverbank was the man Miss Smith would marry in May 1917, William F. Friedman. William later played a seminal role in developing the scientific and mathematical aspects of American cryptology and is often called the "Father of American Cryptology."

The newlyweds worked together for the next four years at the cryptologic

laboratory at Riverbank and in 1921, they moved to Washington, D.C., to work for the War Department. Elizebeth's employment as a cryptanalyst for the U.S. Navy followed in 1923. In 1927 she was detailed to the United States Coast Guard. As part of the Coast Guard's Intelligence Unit, she deciphered many encoded messages throughout the Prohibition years and single-handedly solved many notable cases. During the post-World War II period, Elizebeth became a consultant to, and created communications security systems for, the International Monetary Fund.

Following her husband's death in 1969, Elizebeth devoted much of retirement life to compiling a library and bibliography of William's work. This most extensive private collection of cryptologic material in the world would finally be prepared for the George C. Marshall Research Library in Lexington, Virginia.

Elizebeth Smith Friedman, as evidenced by the life she led, was truly a legend in her own time.

For information regarding the history of cryptology, visit the National Security Agency's web site at www.nsa.gov.