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ESS1364: (U) Center for Cryptologic History
 for Cryptologic History
 Date: Fri, 2 Aug 2002 12:56:38 GMT
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 Newsgroups: pubs.history, misc.all

(b)(3)-P.L. 86-36

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(U) Cryptologic Almanac: 50th Anniversary Series

(U) Frank Rowlett

(U) walking through the abbreviated outside passage from Gatehouse 8 to the entrance to the once-named OPS 3 building, you can't miss a large, single-faceted boulder imbedded in the earth to the right of the doors. A 20x24 inch bolted, brass plaque announces not so subtly the rock's sole mission as a marquee:

"This building is dedicated to Frank B. Rowlett-American Cryptologic Pioneer..."

(U) The inscription continues, mentioning his efforts in exploiting PURPLE and in designing SIGABA, now artifacts of cryptanalysis and INFOSEC, but names that still resonate to those who remember or appreciate. Despite the boulder's physical dominance and chiseled features, it is not the stuff from which legends are made; but the man it honors is.

(U) Frank Rowlett's story began in May of 1908 in Rose Hill, Virginia, a barely noticeable dot on the map tucked between Cumberland Mountain and the Powell River. His childhood hero was Thomas Edison, and in high school Rowlett dreamed "...to become the greatest inventor in the world." With that as a vision, he went off to Emory and Henry College in Emory, Virginia, receiving a BA in 1929 in mathematics, chemistry, physics, and Latin! After graduation he took the Civil Service examination, then accepted what was to become a temporary position teaching high school math and chemistry for less than \$1,000 a year.

(U) In March 1930-as a result of the Civil Service exam and his background in math and language-he was offered a job in Washington, DC, as a "junior cryptanalyst" for \$2,000 a year, potentially doubling his salary during the Great Depression! When Rowlett told his wife he had been offered the position in Washington, Edith asked what a cryptanalyst did. His reply? "Honey, I don't know."

(U) Frank Rowlett was a quiet, unimposing man, wrapped in Southern gentility. He was the first member of the legendary triumvirate enlisted by William Friedman as a cryptanalyst for the newly created Army Signal Intelligence Service (SIS). Rowlett was hired on April 1, 1930-April Fool's Day, as he was quick to point out to everyone afterwards. Later the same month, Abraham Sinkov and Solomon Kullback joined him in the SIS.

(U) During the 1930s, Friedman trained Rowlett and his colleagues as both cryptologists and cryptanalysts. Friedman knew that understanding

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cryptographic principles and processes (design and use of cryptosystems) would make them more competent cryptanalysts. The three compiled codes and ciphers for use by the U.S. Army and began solving a number of foreign systems, notably Japanese. They began their analytic assault against Japanese diplomatic communications in 1932. Known to the Americans as RED, the machine system was solved three years later by Rowlett and his cohorts. In 1939 the Japanese replaced RED with a new machine system which the U.S. had dubbed PURPLE. Rowlett led the 18-month effort by Army codebreakers to solve this much more sophisticated Japanese diplomatic cipher machine. Success came in 1940, providing the U.S. and its allies with critical high-level Japanese diplomatic and military intelligence throughout the war. This was even more remarkable because they succeeded by applying cryptographic principles without an actual machine or other assistance. When asked what his greatest contribution to this effort was, Rowlett once said, "I was the one who believed it could be done."

(U) Despite his high-profile successes against RED, PURPLE, and other systems, Frank Rowlett always believed that a good defense was better than a good offense. In the mid-1930s, Friedman and Rowlett began working on a machine to encipher military traffic. These efforts proved crucial in protecting American communications during World War II. Rowlett designed a revolutionary algorithm, producing random rotor motion. Although three men (Navy captain Laurance Safford, William Friedman and Rowlett) shared in the invention of SIGABA, the cryptographic algorithm that guaranteed the impenetrability of the system was designed by Rowlett. SIGABA was used on leadership and command-level circuits for the duration of the war. The device proved invulnerable to cryptanalytic exploitation by the Germans or Japanese. No proof exists that even a single SIGABA-produced message was read by the Axis. The security of this machine was essential in saving untold American lives in combat. SIGABA proved so successful that it continued in use until about 1960. (In 1964, Congress awarded Rowlett \$100,000 as partial compensation for his classified cryptologic inventions.)

(U) With the outbreak of World War II, the U.S. Army activated Frank Rowlett in 1942; he rose to the rank of colonel before his discharge in 1946. From 1943 to 1945, he was chief of the General Cryptanalytic Branch, and for the next two years, he was chief of the Intelligence Division of an SIS successor, the Army Security Agency. From 1949 to 1952, he was technical director of the Office of Operations of the Armed Forces Security Agency, the predecessor to NSA. Rowlett differed with General Ralph Canine, the first director of NSA, over personnel movements, including his own. Acting on these differences, Rowlett went to the Central Intelligence Agency in 1952 where he served as a senior staff officer and advisor to the director. CIA director Allen Dulles wanted Rowlett to establish a COMINT program so CIA could effectively run its own COMINT operations, which Rowlett did.

(U) Rowlett returned to NSA in 1958 as special assistant to the director, where he served four DIRNSAs. He chaired the study group that essentially chartered the National Cryptologic School. He became its first commandant in 1965, his last position at the Agency before he retired from federal service in December of that same year.

(U) Frank Rowlett passed away on June 29, 1998, in Gaithersburg, Maryland, at the age of 90. Among the myriad awards and honors he accumulated during his sparkling 35-year cryptologic career were the NSA Exceptional Civilian Service Medal, the National Intelligence Distinguished Service Medal, the President's Award for Distinguished Federal Civilian Service, the National Security Medal, the Legion of Merit and the Order of the British Empire. NSA's highest award for achievement by a person or organization in INFOSEC was named in honor of Frank Rowlett in 1990.

(U) In 1999 the Agency changed the name of the OPS 3 Building to the

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Frank B. Rowlett Building to recognize his singular achievements in communications security. This was the first time NSA actually changed the name of one of its buildings, and only the second time a building was named after a person, the first being the supercomputer building honoring Dr. Louis W. Tordella in 1997.

(U) Frank Rowlett's enormous talents and incalculable worth to America can best be summed up by the citation accompanying the President's Award for Distinguished Service presented by President Lyndon Johnson to Rowlett at the white House in June 1965:

"A pioneer in modern cryptology, he has, by his inventive genius and managerial skill, contributed profoundly to the security of the Nation. His innovations have insured the protection of the United States' communications for the past three decades. His brilliant achievements, ranging from analyses of enemy codes to technological advances in cryptology, have become milestones in the history of our Nation's security."

(U) Thomas Edison would have been proud.

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