

UNCLASSIFIED

DAILY ENTERPRISE



(U) HISTORY TODAY - 28 November 2014

Run Date(s): 11/28/2014



(U) Joseph Eachus remembered the scene as he walked into his office in OP-20-G, the Navy's cryptologic organization, for his first day on the job, early in World War II. He was, perhaps, not quite prepared for what he saw: one officer was talking to himself -- actually, he was trying to learn Japanese; another officer was sending Morse code -- to himself; a third was on the phone, trying to get a second phone on his desk to ring -- by routing the call through Alaska! Eachus later said that he decided then that he had found a home.

(U) Originally from Indiana, Eachus earned a BS in mathematics and physics from the University of Miami (Ohio) in 1934. From 1934 to 1936 he was an instructor there in mathematics, physics, and engineering while he earned his MS in mathematics and physics. He earned his PhD from the University of Illinois in 1939.

(U) Dr. Eachus was teaching at Purdue University when, just before the outbreak of World War II, he received a questionnaire from "the government" asking, among other things, his hobbies. His reply mentioned his interest in cryptanalysis, and he soon received a letter from OP-20-G inquiring whether he would like to take the Navy's correspondence course in cryptanalysis.

(U) He began analysis of cryptographic machines. Shortly thereafter, Eachus and LT Robert G. Ely were chosen as the first Americans to study the British methods of cryptanalysis against the German military's principal cipher machine, the ENIGMA, at the Government Code and Cypher School (GC&CS) at Bletchley Park. Eachus and Ely departed for the UK on July 11, 1942; this was the first of three such trips for Eachus. Asked what training he had received for his TDY he replied, "Passport. They showed me where the Passport Office was."

(U) British cryptanalysts were seeking to devise a machine to work against the four-wheel ENIGMA, newly adopted by the German submarine forces which were threatening British lines of communication. Their existing device, the cryptanalytic *bombe*, was effective against the three-rotor ENIGMA, but could not handle the improved model.

(U) Although he was slated to return to the United States in mid-October, GC&CS requested a 2-week extension for Eachus so he might be present for testing of the high-speed *bombe*, a new model of the cryptanalytic machine. GC&CS noted that Eachus was working on a "pattern testing" machine, and had "made significant contributions already." Later, Dr. Alan Turing, a pioneer in computers, noted that Eachus was "working on a resistor board" to aid the British cryptanalytic effort.

(U) Joseph Eachus

(U) Upon his return to the States, from 1942 through 1945, Eachus continued to work against the four-wheel ENIGMA. His early cryptologic experience defined Dr. Eachus's future career -- he would henceforth be associated with Rapid Analytic Machines (RAM).

(U) From 1945 through 1949, Dr. Eachus was a civilian cryptanalyst for the Navy; his specialty became cryptanalytic computer applications. He joined NSA's predecessor, the Armed Forces

Security Agency (AFSA) in 1950 and transitioned to NSA in 1952. Until 1953, Eachus served as chief of NSA's Analytic Equipment Machines Division in the Office of Research and Development. In 1953 he became Assistant Chief for Development, Office of Research and Development.

(U) Joe Eachus left NSA in 1956 to join Research Engineering Associates, a private firm that manufactured cryptologic equipment under exclusive contract to the government. He left, partially due to what might be described as office politics, but also because he received a hefty salary increase, which he characterized as "about 180% more." He continued his association with NSA as a member of the National Security Agency Scientific Advisory Board from 1961 to 1972.

(U) Dr. Louis Tordella, Deputy Director of NSA, called upon Eachus in 1968, then director of advanced development for Honeywell, Inc., in Waltham, Massachusetts, to ask him to chair a committee which was to evaluate NSA's processing of certain high-interest targets. The study was commissioned by the secretary of defense, following an earlier study by the National Intelligence Review Board (NIRB). The NIRB recommended abandoning the processing of some of these targets, which had potential but were currently unproductive, and reallocating personnel and machine resources to other targets of an entirely different nature.

(U) In preparing and guiding other members of the panel, only one of whom had a cryptologic background, Eachus showed his true strengths: management skills and analytic expertise. He arranged for a week of classified briefings and tours to ensure that all members of the panel had a thorough understanding of the targets, processing, and implications of implementing the NIRB's recommendations. The panel concluded that there were no inefficiencies in its work and that NSA was doing all that was possible in analyzing the targets in question. Further, the panel noted that analytical machines and personnel could not readily be transferred to other targets, so important targets would be lost if the NIRB's recommendations were implemented. The secretary of defense accepted the committee's report in its entirety, and the results of much labor and funding were preserved; this later paid off.

(U) Dr. Eachus continued to work in private industry and served on the NSA Scientific Advisory Board through 1972, as well as other special boards. He passed away in 2003.

(U) While at Bletchley Park, Joe Eachus met an English lady, whom he later married. Their romance was related in the [History Today of February 12, 2012](#).

(U) Share historical topics with interesting folks. Visit the Center for Cryptologic History's blog, [History Rocks](#) ("go history rocks").

(U) [Click for larger view](#).

(U) Have a question or comment on History Today? Contact us at DL cch or

Information Owner
Page Publisher
Last Modified: November 25, 2014
Last Reviewed: November 25, 2014

~~DERIVED FROM: NSA/CSSM 1-52, DATED: 20100110, DECLASSIFY ON: 20430110~~

UNCLASSIFIED

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