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## HEADQUARTERS ARMY SERVICE FORCES

WASHINGTON 25, D. C.

SPINT-S

21 December 1945

MEMORANDUM FOR COLONEL JAMES M. ROAMER: *JWR - to Col Martin*SUBJECT: Investigation of Work Done by Mr. William F. Friedman

1. In accordance with your verbal instructions, I have investigated the case of Mr. William F. Friedman, and the following information was obtained from Brigadier General Corderman of the Army Security Agency, Arlington Hall:

a. General Corderman stated that the information contained in the inclosed paper is true and that Mr. Friedman has done much more in the cryptographic field than is listed in the attached paper.

b. In August 1944, a recommendation was submitted by the Army Security Agency through the Chief Signal Officer and Headquarters, Army Service Forces, recommending that Mr. Friedman be awarded the "Medal for Merit". However, by letter dated 16 October 1945, from the Adjutant General's Office, the Commanding General, Army Security Agency was notified that the recommendation for this award was not favorably considered.

c. A new letter of recommendation has been written during the past few days, again recommending that Mr. Friedman be awarded the "Medal for Merit" and General Corderman advised me that this letter would be forwarded through channels to the Assistant Chief of Staff, G-2, War Department General Staff within the next few days.

d. General Corderman feels that Mr. Friedman has been very valuable to the Army in his work in the cryptographic field and he feels that he should be given the highest possible award, in recognition of his services.

2. Inasmuch as the Army Security Agency is no longer under the Army Service Forces, it is suggested that you recommend to General Somervell that he do everything possible to have the recommendation which is being submitted by the Army Security Agency, approved when it reaches the War Department.

SECURITY CLASSIFICATION NOT RECORDED  
REVIEW FOR STAFF OFFICERS

*Henry H. Rankin*

HENRY H. RANKIN

Major, AGD

Asst. Chief, Security Branch  
Intelligence Division, ASF

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Synopsis of work accomplished  
by Mr. Friedman.~~CONFIDENTIAL~~

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CRYPTOGRAPHIS

The four cryptographic security equipments which played so large a part in winning the war, and which were the mainstay and backbone of classified communications for the entire Army, the Navy, and in large part the State Department, are the developments of William F. Friedman. In addition the communications security equipment known as the Crypto-Net is also his development. All patents in connection with the aforementioned are filed with the War Department in the Secret Category (two of the patents carry the name of a joint inventor.)

M-134A; Patent filed in secret category in 1933. First machines built and placed in effect by Army about 1937. This machine was the most important development of the rapid communications field, in that it was an automatic electric cipher machine which for the first time employed electrical control, as distinguished from mechanical control, of cipher rotors in cascade. This machine has been and still is, employed for highest-classified messages between Washington and Embassies abroad. It was the system employed between President Roosevelt and Prime Minister Churchill in 1941.

M-134C: Friedman and Rowlett, patentees, 1936. This machine known as the SIGABA by Army and the ECM by Navy, was manufactured under a joint contract and was the Secret system employed by both throughout the war. At least 5000 were employed by Army, and a larger number by Navy.

M-228: application of secret principles to teletype. Patented 1942. Probably the most important step forward in the field of communications for speed combined with security.

Strip Cipher: This is the most secure of all hand-operated cipher devices known to the science. Although the cipher principle is very old, the present day form with variable alphabets (security feature) and speed-up methods of use, and other special features, comprise developments patented by Friedman. This system is almost world-wide in its use. In addition to many thousands of them being in use ~~xxx~~ by the Army, Navy, Marine Corps and Coast Guard, it is very widely used by the State Department, and has been employed for special purposes by the British, French, Italians, and Russians in the later phases of the war.\*

Crypto-Net: Method developed by Friedman whereby echelons of different grade may employ different keying system within the same general system--a tremendous advance in security, and never used previous to this war. This development permitted isolation of secret communications within each group of stations.

It is believed that there is ample and incontrovertible evidence that the Secret and Confidential communications of the United States were never read by the enemy. (It is possible that some occasional messages were read by the Germans, in the lowest category or classification)

\*Method of printing and cutting strips by rotary cutter also developed by Friedman.

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