



NATIONAL SECURITY AGENCY  
WASHINGTON 25, D. C.

20 April 1955

Major General Frank E. Stoner, USA, Ret.  
Varian Associates  
611 Hansen Way  
Palo Alto, California

Dear Frank:

Here is the follow-up on my letter of 1 April in connection with the cryptosystem you sent me via Colonel Brown recently. As I indicated we would in my letter, we gave the thing a pretty thorough scrutiny.

Unfortunately, the system designed by Mr. Smith does not exemplify any cryptographic principles not already known to us, and it has certain major disadvantages, compared to systems in current use. Although the combination of basic principles shows a keen and facile mind, and a flair for cryptographic manipulation on the part of the designer, several deterrents to its operational feasibility, for our purposes, may be cited. The inherent requirement that each cipher message be twice the length of the corresponding plain language is an uneconomical feature for large volume traffic. The fact that a single discrepancy between the correct cipher text and the version received may affect the intelligibility of the remainder of the message also introduces a highly undesirable factor. It is recognized that such errors may be corrected readily enough in hand operation of such a system; however, in electro-mechanical and electronic adaptations, present criteria require that automatic equipment be permitted to operate unattended, without the likelihood of unpredictably long stretches of unintelligible plain text resulting. I feel sure that your long background of practical experience in electrical communication technology will serve to corroborate the emphasis we lay upon the disadvantages of Mr. Smith's system for extensive official telecommunications.

It is interesting to note the thorough analysis, by the authors of the brochure, of the potential weaknesses of this system; their independently conceived methods for averting these weaknesses represent a commendable achievement. I trust you will express our appreciation to Mr. Smith, and to his associate Mr. Lewis, for their patriotic interest and expenditure of time and effort in this matter.

At the moment I am recovering from a minor heart attack but they put me in the hospital nevertheless, where I have already been

for over two weeks. However, I'm making good progress and should be  
out of here in a couple of hundred years -- at least it will seem that  
long.

Sincerely,

WILLIAM F. FRIEDMAN  
Special Assistant

1 April 1955

Major General Frank E. Stoner, USA, Rtd.  
Varian Associates  
611 Hansen Way  
Palo Alto, California

Dear Frank:

I was highly pleased to have a telephone call from Colonel Brown and to have news about you and Mrs. Stoner, for I had been wondering about how you are and what you are now doing.

This letter will be but a brief acknowledgment of receipt of your letter and its inclosure dealing with a cryptographic system proposed by Mr. Howard N. Smith of your organization.

You flatter me by your characterization of my judgment in matters of this nature but I will be glad, of course, to give my own attention to Mr. Smith's proposal after a thorough study and an appraisal of it has been made by our very competent technical staff and certain other of my associates.

Just as soon as possible I will write you of the results of our study and I hope both Mr. Smith and you will not be too impatient. From your own experience of former days you certainly are well aware of the fact that proposals of this sort come to us in a steady stream from patriotic citizens and inventors who find this field fascinating. Unfortunately, because they do not have access to the extensive but usually classified literature that exists in this field, the chances of their inventing something really new and useful are rather small. Nevertheless, because there is always some chance of this, we try to look at each proposal in as objective a manner as possible, and this does take time.

Your letter finds both Mrs. Friedman and myself in good health. I have just returned from over a month's absence in Europe on official business, to find that a manuscript we wrote on Shakespeare-Bacon cryptography was awarded the \$1,000 Folger Shakespeare Library literary prize. We hope to see it published very soon.

Sincerely,

WILLIAM F. FRIEDMAN