

Portions omitted from
first draft and original
pages of first draft which
were retyped. Believe
all these can be destroyed.

I am going to say a few words about Egyptian hieroglyphics for the reason that I think that that represents the next and a great landmark in the history of cryptography. About 1821 a Frenchman, Champolion, startled the world by beginning to publish translations of Egyptian hieroglyphics. Here's a picture of the gentleman and here's a picture of the great Napoleonic find that made Champollion's solution possible--the Rosetta Stone. It is a tri-lingual inscription: Egyptian hieroglyphics, followed by Egyptian script called "Demotic", and then Greek. All three texts were assumed to say the same thing, of course. It was by means of this tri-lingual inscription that the Egyptian hieroglyphic writing was finally solved, a feat which represented the successful solution to a problem the major part of which was linguistic in character, for the cryptanalytic part was relatively simple. In the hieroglyphics there are things that we call cartouches, that is, characters enclosed in a rectangle marked by a graven line. Here are some examples. This one was on an obelisk, and was suspected of representing the name Cleopatra. I suppose the reason for that assumption was the repetition here of two characters at a proper distance to represent the two A's of Cleopatra. By taking the various cartouches, writing them out carefully, studying them on the basis that this cartouche was Cleopatra, it turns out that by taking the characters in the cartouches, substituting their equivalent Roman letters and putting them in the proper places in other cartouches, bit by bit Champolion was able to establish names other than Cleopatra, such as Ptolemy, Alexander, and

so on. That's the way in which a start or initial break was made with respect to the Rosetta Stone, and Egyptian hieroglyphics were finally read. It was very fortunate that the early students of Egyptology didn't know that the Egyptians also used cryptography! Some of their writings are not only "plain-text hieroglyphics," but they also had "cryptographic hieroglyphics"! Here, for instance, is an example of substitution. That character in place of this one means "to speak". You see the finger pointing to the mouth, and so on.

There is one person I should mention before coming to the Civil War period. Edgar Allan Poe, in 1842 or thereabouts, kindled an interest in cryptography by his famous story of "The Gold Bug", and by some articles on cryptography in newspapers and journals of the period. For his day he was the best informed person in the U.S. on cryptologic matters.

The period of the Civil War or the "War Between the States", in U.S. history saw the use of cryptology in a large way. Here is a picture of a cipher device used by the Confederate Army, captured at Vicksburg, one of our Museum treasures. The device is a cylinder covered with a sheet of paper bearing alphabets, the alphabets of the Vigenere table, in other words, a pointer that you could slide, and a thumb knob with which you could turn the cylinder according to the key letters. You might like to know two of the keys they used with this system and device: COMPLETE VICTORY was the first; and COME RETRIBUTION the second.

Here is a picture of a message, authentic without question, which was sent by President Lincoln to General Burnside. It's very simple. It reads this

idea being to cause withdrawal of British troops from the Western Front. One such case wound up in dramatic fashion.

Now I am coming to a very interesting example of the use of ciphers by German agents in the World War I period. Here is a cipher message which was found on a German spy in the United States soon after he crossed the Mexican border into Texas. After some weeks it was deciphered by G-2's code-solving organization in Washington, MI-8, as it was called. Here is the deciphered German text, and this is what it said: "To the Imperial Consular officials of the Republic of Mexico. Strictly Secret! The bearer of this is a subject of the Empire who travels as a Russian under the name of Pablo Waberski. He is a German agent " And so forth. The Court sentenced him to be shot, President Wilson commuted it to life imprisonment, and he was out of the pokey after only one year! We're a bit more severe these days.

Now I come to a rather interesting case in which I happened to play a minor role. In 1916-17 the Germans financed a large number of Hindus in their attempts to stir up a rebellion in India, the idea being to cause so much trouble in India that the British would be forced to withdraw troops from the Western Front to quell disturbances in India. These Hindus were negotiating for the purchase of arms and ammunition in the United States and sending them over to India. Since the U.S. was neutral, it was against our own laws to permit such undertakings against a friendly nation. So the business had to be conducted secretly and that is how cryptograms entered into the picture. Here

"the Zimmermann Telegram", which was the straw that broke the camel's back and brought the United States into World War I, on the side of the Allies. From the beginning of that war until the end of 1916 it was questionable as to which side the Americans were going to join. Our British friends, later our allies, did certain things that we didn't like, and there was a good deal of talk about their nefarious behavior with our mail and our merchant ships. But this message, solved by the British, brought us in on their side. It was the straw that broke the camel's back. It is known as "the Zimmermann Telegram". It went to the German legation in Mexico City from Count Von Bernstorff, the German Ambassador in Washington. The method of solution I won't go into.