

Adventures in cryptology

YARDLEY REVISITED



Herbert Osborne Yardley was born on 13 April 1889 in Worthington, Indiana. With no more than a public school education, he became "the most famous cryptologist in history."¹ Yardley joined the State Department Code Room as a telegraph operator on 1 January 1913. His immediate supervisor was David A. Salmon.² Yardley was amazed at the casual atmosphere of the Code Room: "Daily history passed through their hands in one long stream and they thought less of it than of the baseball scores,"³ he recalled.

At that time the United States did not have much in the way of an intelligence apparatus. In 1915, an Intelligence Service of the United States Army was created with Major Ralph H. Van Deman as head. Van Deman had considerable experience in intelligence work dating back to the Spanish-American War, and was an expert on Japanese affairs. But in 1916, the total appropriations for all aspects of military intelligence was only \$11,000.⁴ All this would change with the declaration of war. The American Military Intelligence Service, under the direction of then Colonel Van Deman, came into being. In addition, a Colonel Dansey of the British Secret Service came to the United States to help with the construction of an intelligence service.⁵

Yardley, working at the State Department, developed an immediate interest in the codes and ciphers that crossed his telegraph lines, even though he was not knowledgeable in the field. He began to wonder if US correspondence was safe from foreign interception, and why the United States had "no bureau for the reading of secret diplomatic code and cipher telegrams of foreign governments."⁶ Spurred by his sense of adventure and flair for intrigue, he set out for answers to his questions.

After teaching himself the basics of cryptography, which included studying copies of codes and ciphers used by various embassies in Washington, he quite by accident intercepted a message from Colonel House to President Wilson. Thinking this would make for excellent practice material, Yardley set out to decode the message. He thought that "surely the President and his trusted agent would be using a difficult code."⁷ But this was not the case. Yardley wrote: "Imagine my amazement when I was able to solve the message in less than two hours."⁸ The fact that House was in Germany at the time simply added to the wonder, for such simple codes would surely be decoded by the British (who had an extensive cryptographic agency) over whose cable the transmission came. In spite of the gravity of the situation, Yardley decided not to inform the President for fear of reprisals for reading the President's secret message. He simply "let the President and his confidential agent continue their comedy."⁹

Yardley made his superiors aware of the situation in another way. After over one thousand hours of work during a two-year period,¹⁰ Yardley produced an exposition on the security of US codes. When Yardley presented the first one hundred pages of this report, entitled "Solution of American Diplomatic Codes," to Salmon, he reported a stunned response: "As I left him, he gave me a queer desperate glance, for he had compiled this code and the responsibility of secret communications rested upon his shoulders."¹¹ But it was upon Yardley's presentation of the second hundred pages of this report that Salmon began to express serious concern. Salmon mentioned to Yardley that he knew Great Britain maintained a large cryptographic bureau, and asked whether the British could solve US codes. Yardley obliquely answered yes. The move to reform US cryptographic abilities was set into motion.

Just before the United States entered the war, Salmon announced that he had devised a new method of encoding messages. Yardley reviewed the code and announced, calmly, that he could solve the system. Evidently things were not moving fast enough for Yardley at this point. In early 1917, Yardley asked for permission to leave the State Department for a post in the War Department. "It had the money, it would soon rule America,"¹² he thought. But he encountered considerable resistance. At first, his supervisor would not write a recommendation for him. And Assistant Secretary of State Phillips would not agree to Yardley's release on the grounds that his talents were needed in the State Department. Instead he gave Yardley a raise. This was not acceptable.

Yardley decided to take matters into his own hands. He decided to get the War Department interested in his plan so that it would press the State Department for his release. So, in April of 1917, Yardley met with Van Deman and convinced him of the need for a military intelligence service with code and cipher capabilities of the kind he envisioned. He told Van Deman that the United States needed a good cipher bureau in order to know who its friends were, and to be able to read German messages. Van Deman agreed. Thus in June Yardley was commissioned, moved to the War College, and began setting up MI-8 with the help of two civilians.

MI-8, first located on the balcony of the War College Library, soon moved to the top floor of a house on F Street in downtown Washington, D.C. Yardley was 28. His top assistant, Dr. John Manly, was 52. Manly had been head of the English Department at the University of Chicago. He took charge of the section of MI-8 that trained American Expeditionary Force cryptanalysts.¹³ Manly brought several other Ph.D.s with him from Chicago, contributing to the rapid growth of MI-8. In all, five subsections would form, usually as a need arose. These five were Code and Cipher Compilation, Communications, Shorthand, the Secret Ink Laboratory, and Code and Cipher Solution.

Shortly after the United States entered the war, London sent a message to the United States stating that Britain considered the War Department's method of coding and ciphering "entirely unsafe and a serious menace to secrecy."¹⁴ Yardley requested help from the Allies in the form of instructors and sample codes in order to remedy this situation. But only codes were sent.

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Despite the lack of Allied help, Yardley was able to rebuild the Code and Cipher Subsection and develop better codes for use by the War Department.

There were also considerable problems with diplomatic codes and ciphers. With the birth of MI-8, all diplomatic correspondence was routed through Yardley for analysis. This led to disclosures of shortcomings. For example, the messages sent by George Creel, Ambassador to Russia, were so simple to solve that they were used as basic examples of codes and ciphers in the training of US cryptographers.¹⁵ Yardley and his staff developed better codes.

Catching Spies by their Codes

But the essence of MI-8 was counterespionage activities at home. Ladislav Farago, author of *The Broken Seal*, said that "Yardley performed brilliantly during the war, mostly catching spies by compromising their codes."¹⁶ His activities were extensive. And connected with some of the most famous spy hunts were the births of two of the subsections: the Shorthand Subsection and the Secret Ink Laboratory.

Colonel Van Deman approached Yardley with a letter, written in shorthand, taken from a German prisoner of war named Werner Tismer.¹⁷ Tismer was interned at Fort Ogelthorpe at the time. Yardley was given until the following morning to solve the letter. Yardley checked a magazine that had run an article on shorthand which described the most common German system, called Gablesberger. In this article were testimonials from students of the system describing their talents. Five happened to have lived in Washington when the article was published, but only one was still there. With this gentleman's help a translation was obtained.¹⁸ In the letter was Tismer's plan for escape through a tunnel he had built. Tismer's attempt failed.

Because of Yardley's success, MI-8 was soon swamped with letters written in shorthand for translation. This necessitated the formation of a special subsection to handle the work, and thus the Shorthand Subsection was born. Yardley said it could solve over thirty shorthand systems in any language.

The events leading to the birth of the Secret Ink Laboratory, and its most famous case, are much more interesting. Yardley himself said that "the really exciting activities came from actual contact with German-spy cipher and secret-ink documents."¹⁹ US agents found a blank piece of paper stuffed in the heel of a shoe of a woman trying to cross the border from Mexico, a known haven for German spies. Van Deman got the paper and asked Yardley to make something of it. "There seemed no limit to the variety of problems I was called on to solve,"²⁰ Yardley wrote.

Yardley knew little about secret ink, other than that heat would bring out elementary formulas. Unsure of himself, Yardley phoned the National Research Council, and within an hour he had the best chemist in Washington in his office. As it turned out, heat did develop this ink, and after photographing the text, it was found to be in modern Greek. Yardley arranged to have it translated, and "within a few hours after Van Deman had handed (him) . . . the mysterious paper (Yardley) . . . was before him with the solution of the problem."²¹

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There was considerable excitement at MI-8 over this solution. Yardley cabled the US Military Attache in London requesting Britain's help in establishing a secret ink lab at MI-8. Britain sent over Dr. S.W. Collins, "England's foremost secret-ink chemist."²² Collins was an analytical chemist in the employ of His Majesty's Postal Censorship, and had "dealt directly with the secret-ink letters of the most daring enemy spies."²³ Yardley rounded up several of the most brilliant chemists he could find, had them commissioned, and set out to establish a secret ink lab under the guidance of Dr. Collins.

The task of developing a secret ink lab was quite difficult. Collins described the immense complexity of the German secret-ink spy network. He told how ink was concealed in toothpaste, soap, and especially in dyes in cloth. "In every possible case German chemists labored to devise an ink which could pass as something else if discovered."²⁴ The task was first to establish that there was secret ink in a letter, and only then could attempts be made to develop the ink.

Development of the secret ink lab was closely tied with the censorship of mail, which provided the letters for analysis. In fact, MI-8 was the official bureau representing postal censorship for the Justice, State, and War departments, according to Yardley. Before the end of the war, the Secret Ink Subsection was analyzing two thousand letters a week for secret ink, and had discovered fifty of major importance.²⁵

But the battle with German chemists still had to be fought. The quest was for a general reagent that would develop all secret inks, thereby making detection and analysis much easier. The first hint that Germany had discovered this general reagent came with a report to Yardley that a German agent had tried to enlist the aid of an American in France. The American was to write a letter using only water, describing the uniforms of French troops he saw. This would provide the German General Staff with information about French troop disposition. Yardley was shocked, and said to Collins: "I am not a chemist, but it appears to me that if the Germans can develop water they can develop anything!"²⁶ The real danger was that with this reagent Germany could read any Allied secret ink letter.

MI-8 soon discovered what the Germans had. Water disturbed paper fibers, and these disturbed fibers would soak up iodine and darken if placed in an iodine vapor.²⁷ This would work for any secret ink, because all such inks were water based. But almost immediately this process no longer worked. Germany had found out about MI-8's discovery, and learned how to nullify it. To prevent development by iodine vapor, the entire paper was wetted and then dried, thereby disturbing all the fibers equally. This would prove to make discovering secret ink letters easier, for the only reason a letter would have been wetted and then dried would be to prevent development by iodine vapor. But the race for the general reagent began anew.

MI-8 did discover the long-sought general reagent. It was such a closely guarded secret that even in 1931 Yardley wrote that "it would be unethical to reveal the nature of this scientific formula. . . ."²⁸ Eventually, though, its formula was revealed. The general reagent contained a ". . . mixture of iodine, potassium iodide, glycerin, and water, dabbed on with cotton."²⁹

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In conjunction with the reading of secret ink letters was the restoration of these letters for eventual delivery. Often it was more desirable to continue to intercept these letters and discover additional information than to move for an immediate arrest. Yardley described in detail the extensive process used by MI-8 to restore letters to their pre-intercept form. For example, if a letter had been sealed, the seal would have to be forged. Great care had to be taken to reclose the envelope. A new envelope would be heated, its gum transferred to the old envelope, and the old envelope closed. In this way, the strength of the seal would be correct.³⁰

By far the most famous spy caught using secret ink was Madame Maria de Victorica, a Prussian whose father was Baron Hans von Kutschman, a famous German general. The British had searched for her since 1914; she was finally arrested on 27 April 1918 on a Presidential warrant. She was found with "... two beautiful white silk scarfs which were impregnated with the now famous German 'F' secret ink."³¹ From secret ink messages sent to her from Germany, US agents learned that German U-boats were using bases off the coast of Spain, thereby increasing their cruising radius.³² And very shortly after she received a message asking for locations for U-boat attack on the United States, "Atlantic seaboard shipping was thrown into a panic by the appearance of German submarines."³³

Victorica was also involved in the "holy-figure plot." She was to import an "alter (sic) containing 3 holy figures, 4 columns about 2 meters in height. . . . These columns and holy figures . . . were to contain the new German high explosive tetra,"³⁴ to be used against US shipping. Her capture was one of the high points of MI-8's activities.

High Arc Messages

Yardley's main interest was not in shorthand or secret inks. He was a cryptanalyst. Two of the most famous events involving cryptanalysis were the interception of German wireless transmissions to Mexico and the capture of the most dangerous German spy operating in the United States.

From the wireless station POZ near Berlin two messages, labeled No. 1 "G" and No. 42 "D" by Yardley, were sent without address or signature day after day.³⁵ The messages were sent on an unusually high arc of 16,200 meters. Such high arcs were used for transmission over great distances, "undoubtedly intended for German secret agents in some hostile or neutral country a great distance from Berlin."³⁶ Yardley believed the message was for Mexico, in response to a message of similar nature coming from an unknown station there.³⁷ His hunch was confirmed and he set out to decipher the messages.

Yardley described in great detail how he deciphered the messages.³⁸ It turned out that the Germans were using a dictionary code,³⁹ and after searching through many dictionaries, Yardley discovered the correct one. He could now read the two mysterious German messages.

Message No. 42 "D" offered Mexico a bribe of 10 million Spanish pesetas to remain neutral.⁴⁰ Message No. 1 "G" spoke of "machinery plans for rifle

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manufactory (sic)⁴¹ to be built in Mexico for shipment to Germany. This sparked great concern about Mexican war aims.

It was common knowledge that German spies operated in Mexico, and this included the most dangerous of all, Lothar Witzke. Witzke, who went by the alias Pablo Waberski, was suspected by the British of "being responsible for the Black Tom explosion in New York Harbor in July, 1916."⁴² It has been said that "perhaps the most important of the MI-8 (cryptographic) solutions was the one that largely resulted in the conviction of the only German spy condemned to death in the United States during World War I."⁴³

US agents captured Witzke in January 1918 in the Central Hotel in Nogales, Mexico. Van Deman received a cipher text that was on Witzke's person and turned it over for solution to Yardley. Van Deman knew that the man calling himself Pablo Waberski was in fact Witzke, but needed evidence if Witzke was to be held. It was thus imperative that the solution to the text be found, and soon. Yardley in his description of the decipherment, seemed to view this as a personal challenge—it was MI-8 against the German cryptographers. MI-8 won. While Yardley takes credit for the solution,⁴⁴ other sources dispute this claim and give the credit to Manly and Edith Rickert.⁴⁵ Regardless, the solution of the ciphertext condemned Witzke. The message read:

To The Imperial Consular Authorities in 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 secret agent.

Please furnish him on request protection and assistance, also advance him on demand up to one thousand pesos of Mexican gold and send his code telegrams to this embassy as official consular dispatches.⁴⁶

Von Eckardt

Van Deman was elated at the solution. He told Yardley, "If for no other reason, the decipherment of this document justifies your bureau."⁴⁷ Witzke was tried in August 1918 and found guilty. He was sentenced to death. His sentence was commuted to life in prison by Wilson. He was released in late November 1923 in conjunction with a worldwide release of prisoners of war.⁴⁸

A European Tour

In July of 1918, Yardley "was close to a breakdown and asked to be relieved."⁴⁹ Captain Manly was given Yardley's position, and Yardley was sent to Europe to visit the British and French cryptographers. Yardley first traveled to London, arriving there in late August 1918.

Upon his arrival, Yardley met Colonel Tolbert, US Military Attache to Copenhagen. The two talked about the security of US codes, and Tolbert told

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of "repeated attempts of the British to plant secret agents in his office."⁵⁰ Later, when Yardley went to the US Embassy to observe the security measures there, a British gentleman led him to the safe, opened it, and handed Yardley the codebook that MI-8 had sent over! Yardley was incensed, and wrote:

. . . I reasoned that as long as we granted British subjects access to our secret means of communication, even in one office, nothing but stupidity could prevent them from reading every message sent and received by our military attaches throughout the world. Sooner or later peace would be declared. There would be a squabble among the powers for the spoils of the war. We would be helpless in our negotiations with our communications compromised.⁵¹

Upon Yardley's report, in every US embassy in the world Americans replaced foreigners in such positions of security.

Even more infuriating for Yardley was the difficult time he had with the British. The British were, initially, not very cooperative in sharing information, for Colonel French of the British War Office had been warned of Yardley's visit and ordered "every obstacle"⁵² placed in Yardley's path. This was to change with the help of Captain Brooke-Hunt of the British War Office. Brooke-Hunt gave Yardley a copy of a cipher that the British were to use on the western front to carry top secret military information. Yardley was to attempt to break it. Yardley thought that if he could break this cipher, he would be accepted by the British and they would help him. He worked for several days and finally solved the cipher. Now, he said, "I could have anything I wanted."⁵³

Yardley spent the rest of his time in the British Military Cipher Bureau, learning British methods for solving codes and ciphers. In addition, Yardley was able to get a copy of the German Naval Code that had "been photographed from the original by an English spy within the German Admiralty."⁵⁴ He learned quite a bit from the British. Most important, Yardley learned that the British cipher bureaus ". . . had a long and dark history, backed by a ruthless and intelligent espionage."⁵⁵ This was the reason Great Britain was a world power, he thought. He became convinced that at the end of the war, MI-8 must not die.

His experience in France was less fruitful. Yardley had looked forward to meeting Captain Georges Painvin, "the greatest cipher genius in France" and "the most skillful cryptographer in all the Allied Governments."⁵⁶ The two did meet, and Yardley learned much from Painvin. But, when Yardley asked to "study in the department that deciphered diplomatic codes,"⁵⁷ he was given the runaround. While it was true that few people knew of the French La Chambre Noire (Black Chamber), he was kept from it deliberately. Yardley said he was kept out on the grounds that any information he learned "would materially assist (the United States) in breaking the French diplomatic codes."⁵⁸ In spite of this, his ". . . failure impressed upon American officials the absolute necessity for an American Black Chamber even in peace times, if the United States hoped to thwart the machinations of other governments."⁵⁹



Yardley (left) and Painvin in New York. Date unknown. Painvin died in Paris in 1980 at age 94.

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To finish his trip to Europe, Yardley went to the peace negotiations at Versailles. His task was to report to General Bliss and "organize code and cipher communications between the Peace Conference and the Military Intelligence Division at Washington."⁶⁰ Yardley, with Lieutenant J. Rives Childs and Lieutenant Frederik Livesey as assistants, took two rooms at 4 Place de la Concorde, the general offices of the conference. Yardley set up a rotation so that only one man would be on duty at any one time, freeing the other two to spend their time "at the international cocktail parties and dancings that were then the rage of Paris."⁶¹

In addition to the parties, Yardley did engage in some serious work. "... Paris swarmed with Allied and Entente spies,"⁶² he said. He reported uncovering two plots directed against the United States. The first involved a woman who had been involved with one of the United States Peace Commissioners. She was supposedly in the hire of the British for 25,000 pounds sterling until the end of the conference. Her duty was to embarrass the US Commissioner if the proceedings did not go as Great Britain wanted.⁶³

The second plot was discovered in a deciphered telegram that described an "Entente plot to assassinate President Wilson either by administering a slow poison or by giving him the influenza in ice."⁶⁴ While the validity of this cannot be known, Yardley pointed out that Wilson's illness, which became a lingering death, began while he was in Paris.

While the security between the Conference and Washington was good, the security between the Conference and the field agents in Europe was terrible. "The American Commission to Negotiate Peace furnished its field agents . . . with a publicly available commercial code. . . !"⁶⁵

Origin of the Black Chamber

Upon return from Europe, Yardley found MI-8 in a state of disarray. There was no longer money available to keep the bureau operating. Yardley set out to convince officials "... that if the United States was to be placed on an equal footing (with the European powers) it would be necessary to finance a group of skilled cryptographers."⁶⁶

The current director of Military Intelligence, Brigadier General Marlborough Churchill, was of the same mind. He thought that regardless of cost, at least Subsection V, Code and Cipher Solution, had to be saved. Churchill asked Yardley for an estimate of the cost of maintaining such a bureau. Yardley told him he would need \$100,000 per year. This was more than the War Department had in hidden funds, so in conjunction with the State Department (acting Secretary of State Frank L. Polk agreed with Yardley and Churchill), Yardley was given permission to set up the bureau that came to be known as the American Black Chamber. Military Intelligence would pay \$60,000 and State would pay the remaining \$40,000. There was one catch. No State Department money could be spent in Washington, so Yardley moved his bureau to New York.

Yardley settled at 141 East 37th Street, and on 15 July 1919, State Department funds began to arrive.⁶⁷ He gathered a group of very talented

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people, twenty in all. This group included Dr. Charles Mendelsohn, who taught history at the City College in the morning and worked for Yardley in the afternoon; Victor Weiskopf, who had been with Yardley at MI-8 and worked on the side for \$200 per month; Livesey, Yardley's assistant from Paris and a Harvard graduate, for \$3,000 per year; and two Japanese cipher experts, Ruth Willson and Edna Ramsaier. Ramsaier was to become Yardley's second wife.⁶⁸ Military Intelligence received a new director at this time, a General Dennis E. Nolan. And in July of 1919, Nolan gave Yardley an assignment: solve the Japanese diplomatic code.⁶⁹

Yardley was confident, and promised a solution or his resignation within a year. He would later regret the pressure this put upon himself. But the solution was essential. There was considerable anti-Japanese sentiment in both the United States and Europe. US officials deemed it necessary to break the Japanese code in order to better understand what the Japanese were up to.

Yardley goes into great detail about the cracking of the Japanese cipher. It was so difficult that at one point Yardley suggested that a US agent be sent into a Japanese diplomatic office in some foreign country to steal the code.⁷⁰ The difficulty of the code was due in part to the complexities of the language, but also in part due to the fact that the Japanese had hired a Polish cipher expert, Captain Kowalefsky, to help develop secure codes and ciphers.⁷¹ Finally, after months of work, Yardley broke the code. This was not the end of the problem.

Having broken the code, Yardley needed someone to translate the Japanese diplomatic telegrams. The only people who knew Japanese well enough were missionaries who would not involve themselves with the government for fear of being refused entry into Japan or Korea. Japan at the time was also suspicious of the United States. Finally, Yardley managed to hire a 60-year-old retired missionary. He proved to be good.

Yardley reported that in February 1920, "I sent to Washington the first translations of the Japanese decipherments."⁷² General Churchill, still involved with Army intelligence, said this was the greatest "accomplishment in the history of code and cipher work in the United States."⁷³ Then came another problem to solve.

On 12 June 1920, the missionary decoded a Japanese message describing Japanese Army plans in the Far East. The last line of the message read: "A partial leakage to foreign governments about these proceedings might produce complications for the whole plan. . . ."⁷⁴ Finally realizing the nature of his work, the missionary asked to resign on moral grounds. As luck would have it, Manly had mastered Japanese by this time (after only six months of training) and he took over the responsibility of translation.

Early in 1921, there were hints in Japanese messages and in US government circles of an upcoming armaments conference. The first obvious hint from the Japanese came on 5 July 1921, in a telegram from the Japanese Ambassador in London to Tokyo. On 10 July the Japanese Ambassador in Washington telegraphed home that the US Secretary of State would participate. The Japanese were hesitant. A telegram dated 13 July, from Tokyo to Washington, stated that "the Japanese Government . . . considers it appropriate that the discussion be limited to the limitation of armaments. . . ."⁷⁵

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Sensing the gravity of the upcoming talks, the Japanese introduced a new code on that same day.

Yardley had great difficulty in breaking this new code. It was given the name "Jp."⁶⁶ The difficulty in this code was that the code word was of two lengths, not the usual one. After breaking Jp, the Black Chamber went into full gear.

In the few months preceding the Washington Arms Conference of November, 1921, "daily courier service was set up between the Black Chamber and the State Department."⁷⁷ The courier was a young Foreign Service officer named Tracy Lay. Lay would take the "locked diplomatic pouch"⁷⁸ every day from New York to John McMurray, Chief of the State Department's Far East Division.⁷⁹

By reading the messages of the Japanese, the United States was able to learn the true feelings of the Japanese and, surprisingly, also the British. In a telegram from London to Tokyo, the Japanese Ambassador noted that "... although the British have indulged in more or less sarcasm about the American proposal, they have not opposed it."⁸⁰ More important, the US delegation knew that Japan would most likely give in to US pressure and accept the American proposal of a 10:10:6 balance in capital ships for the United States, Great Britain, and Japan, respectively. Thus, Secretary of State Charles Evans Hughes would not budge.

The conference opened on 11 November. Everyone headed for Washington, including "spies from the four corners of the globe."⁸¹ On 28 November, the Black Chamber deciphered what Yardley considered "the most important and far reaching telegram that ever passed through its doors."⁸² This telegram contained the first official hint of weakening by the Japanese. The telegram instructed the Japanese delegate, Kato, to push for a 10:7 ratio with America, but to accept a 10:6 ratio. Finally, after the United States had stonewalled for days, on 10 December Tokyo ordered Kato to accept the 10:6 ratio. This was a victory for the United States, but also for the Black Chamber, for during the course of the Conference the members of Yardley's team had deciphered over 5,000 messages.⁸³

The United States Government was very pleased with Yardley's work. In June of 1922, General Stuart Heintzelman, the new director of Military Intelligence, notified Yardley that he would be receiving the Distinguished Service Medal for his work during the Conference.⁸⁴ Yardley wrote his own citation, but was not allowed to mention the real reason he was getting the award.

It was about this time that things began to go sour for the Black Chamber. Yardley's appropriations were "severely cut"⁸⁵ in 1924 and his staff was halved. There was less and less work for the Black Chamber to do. Yardley himself describes no work of any importance in international affairs that the Black Chamber undertook after the Washington Conference. Yardley at one point began preliminary work on the cipher of the Vatican, but this offended one of his Catholic superiors and Yardley was forced to abandon the project. He also worked on solving the ciphers of Peru during a dispute between Peru and Chile.

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It was during his work on the Peruvian cipher that he met with State Department officials to discuss the safety of US codes. Yardley was asked to write a memorandum describing how to solve the codes. Yardley was growing cynical by this time, and said that such an expose of the inadequacy of current codes would disturb the entire department. He said the "basic method of communication is the same as when I (Yardley) was a youngster in the Code Room."⁸⁶ He also said that US "codes . . . belonged to the sixteenth century."⁸⁷ After more discussion he finally said that the State Department was too inert to change its ways.⁸⁸

Enter Henry L. Stimson

In 1928 there was rumor of an arms conference to be held in 1929. Yardley wanted to prepare for this as he had done in 1921 prior to the Washington Conference. At this time, there was a new Secretary of State, Henry L. Stimson, and Yardley thought it appropriate to show him what the Black Chamber could do. (Stimson was not yet aware of the Black Chamber's existence. The usual practice was to allow a Secretary to get the feel of the office before informing him of the Black Chamber.) Informing Stimson would prove to be the undoing of the Black Chamber.

Stimson was shocked when he found out about the Black Chamber and its activities. "He took the position that we should not supervise the telegrams of foreign governments,"⁸⁹ Yardley said. Stimson himself said that "gentlemen do not read each other's mail."⁹⁰ The very next day Yardley received the official notice to close down the Black Chamber.

When, on 31 October 1929, the Black Chamber closed its doors, the total cost of operations during its lifetime came to \$230,404 for the State Department and \$98,808.49 for the War Department.⁹¹ This was "just under a third of a million dollars for a decade of cryptanalysis."⁹² Neither the National Archives nor the State Department seems to have any records of the Black Chamber or its dissolution.⁹³ It is also interesting that in the conference on disarmament, which was held in London in 1929, the United States lost its positions and the Japanese won theirs.

Yardley, out of work now, went home to Worthington. Hurt by the depression, he toyed with the idea of writing about the Black Chamber. He began to write in the spring of 1931. First, he wrote three articles for the *Saturday Evening Post* in which he laid the foundation for his book, *American Black Chamber*.⁹⁴ Then, on 1 June 1931, Bobbs-Merrill Publishing Company, which had earlier advanced him one thousand dollars on just an outline, published his book. It was an immediate hit. Critic W.A. Roberts, writing for *Booklist*, summed up the tone of the time:

I think it is the most sensational contribution to the secret history of the war which has yet been written by an American. Its deliberate indiscretions exceed any to be found in the recent memoirs of European secret agents.⁹⁵

The government took a different attitude. In general, "officials said they were sure there had been no such practice."⁹⁶ State Department officials tried

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to discredit Yardley with "diplomatic double-talk,"⁹⁷ while War Department officials "lied straightforwardly,"⁹⁸ denying outright that there had ever been such an organization. Secretary Stimson, who disbanded the operation, was reported to have said "that he had never heard of any such organization."⁹⁹ And to Yardley's claim that the United States read dispatches of the Japanese during the Washington Conference, ". . . officials of the (State) department were inclined to be indignant. . . . Nothing of the sort happened, they said, and denied that any such practice had ever been sanctioned."¹⁰⁰

While a hit in the United States, selling 17,931 copies, *American Black Chamber* was a bigger hit in Japan, selling 33,119 copies.¹⁰¹ But the reaction there was almost entirely negative. Tokyo's major daily, *Nichi Nichi*, said that this would serve as a lesson to Japan in future international conferences.¹⁰² The paper tried to discredit Yardley by painting him as a traitor who had sold Japan translations of *Black Chamber* decipherments of Japanese correspondence.¹⁰³ One recent author even goes so far as to pin the fall of Japan's moderate government in 1931 to Yardley's expose, thereby permitting the hardliners to step into power, setting Japan "on the road to Pearl Harbor."¹⁰⁴ One Japanese newspaper, the *Japan Times*, did say that espionage was just part of the international game, and that the Americans had done nothing wrong.

Seizure of a Manuscript

Soon after the publication of *American Black Chamber*, word spread that Yardley had begun to work on a second book, entitled *Japanese Diplomatic Secrets*. When Stanley Hornbeck, Far Eastern expert in the State Department, learned of the impending publication of the book, he feared that another book like *American Black Chamber* would further fuel the growing Japanese dislike of America. He urged that "every possible effort should be made to prevent the appearance of this book." (Quoted from Kahn, David, "A New Source for Historians: Yardley's Seized Manuscript," *Cryptologia*, April 1982, p. 115.) After the exchange of several memorandums between Washington and New York, Assistant US Attorney Thomas E. Dewey arranged for the seizure of the manuscript from Macmillan Company, Yardley's new publisher. Thus, on 20 February 1933, federal marshals seized the manuscript.¹⁰⁵ There was no criminal prosecution.

To prevent any further embarrassment, the government "sought to pass a law in Congress aimed straight at Yardley."¹⁰⁶ The law made it illegal for any US agent to pass on secret information to which he had access while working for the government. Public Law 37, Section 952 of Title 18, United States Code, became known as the "Yardley Law of 1933."¹⁰⁷

The story does not end there. Historians studying Japanese-American relations of the 1920's and 1930's and the Washington Disarmament Conference sought the manuscript, which had apparently disappeared. No information was found at the Department of State, and nothing was found in the papers of Charles Evans Hughes, the Secretary of State at the time of the conference. It was David Kahn, author of *The Codebreakers*, who located the Yardley manuscript at the Department of Justice. But the author of the manuscript was a woman named Marie Stuart Klooz, not Yardley.

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Yardley believed, according to Klooz, that because he lacked university schooling, he would be unable to "place this story in its proper historical context," Kahn reported. Kahn describes the manuscript as informative but dry, lacking the excitement of *American Black Chamber*. Miss Klooz may have been an historian, but she was not a captivating author. The manuscript contains 920 typewritten pages in 19 chapters divided into seven parts. The text is filled with solved Japanese messages, but none bears any dates or information on which code was employed. The text is, as Kahn describes it, "little more than connective between the intercepts." Kahn concluded that the text adds nothing important to the history of cryptology and that it is not worthy of publication.

Effectively barred from writing any more about his work in the government, Yardley began to move around. He was hired by Northwestern University to "fight crime by cracking gangsters' codes."¹⁰⁸ He found this work very easy. He also wrote some fiction, but it lacked the spirit that his previous work contained.

Yardley was then hired by Chiang Kai-shek to help in his war against Japan by deciphering Japanese messages. In 1939, a young American in China named Theodore H. White came to be good friends with Yardley. White described Yardley as ". . . the most amusing of the American advisory corps . . . who purported to be a merchant of leather and hides."¹⁰⁹ Yardley was forever into cloak-and-dagger.

Upon his return to America, Yardley wrote a final book, on playing poker. This rather elementary analysis of the game was well received. When he died of a stroke in 1958 at the age of 69, the *New York Times* obituary ran under the headline: "Herbert Yardley, Cryptographer, Dies; Broke Japan's Diplomatic Code in 1921."¹¹⁰ It described his life briefly, and mentioned that he was opening a restaurant in Washington at the time of Pearl Harbor. The final line: "It was the opinion of some political columnists that had he still been in the code bureau the attack might never have occurred."¹¹¹

To the end, Yardley had maintained that his goal in publishing *American Black Chamber* was to shock the United States into improving its code capabilities. He was not alone in his assessment. A 1937 author wrote:

The weakness of the United States both then (1914-1917) and now (1937) is that there was, and still is, no American counterespionage service. . . . Foreign spies can operate here in comparative safety.¹¹²

For an annual expenditure of less than one percent of what we lost from German sabotage during the neutrality period we could maintain a secret service and counterespionage organization the par of any in the world. This indeed seems a low rate of insurance to pay for rendering the country safe from military surprise and from the ravages of subversive agents. . . .¹¹³

It would take another world war to bring into existence what Yardley had seen as necessary all along.

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1. David Kahn, *The Codebreakers, the Story of Secret Writing* (New York: Macmillan, 1967), p. 351.
2. Ladislav Farago, *The Broken Seal* (New York: Random House, 1967), p. 14. It should be noted that several authors, notably Kahn, expressed doubt about the accuracy of Farago's information. Much of the information cited here from Farago was found only in his book. I make no judgment on his accuracy.
3. Herbert O. Yardley, *American Black Chamber* (Indianapolis: Bobbs-Merrill, 1931), p. 18. Henceforth this text will be referred to simply as "Yardley." Also, references in the text to something Yardley said refer to this book.
4. Captain Henry Landau, *The Enemy Within* (New York: G.P. Putnam's Sons, 1937), p. 113. Landau, in the British Secret Service during World War I, assisted United States claimants in their investigation of the Black Tom and Krugslund sabotage cases.
5. *Ibid.* Dansey was reported to have arrived with "... large funds and carte blanche in selecting an extensive personnel."
6. Yardley, p. 20.
7. Yardley, p. 21.
8. *Ibid.*, p. 22. This was not the only amazing practice Yardley was aware of. Yardley mentions that Secretary of State William Jennings Bryan would at times stop in a telegraph office and simply send a message to an ambassador. Yardley would find a follow-up message reading, "Just received uncoded undated telegram signed Bryan. Advise if authentic." From Yardley, p. 25.
9. *Ibid.*, p. 22.
10. No dates were mentioned by Yardley as to when this work took place. It is likely that it was from late 1914 to late 1916.
11. Yardley, p. 27.
12. *Ibid.*, p. 32.
13. Cryptanalysis involves the breaking of codes and ciphers, while cryptology per se involves the compilation of codes and ciphers. Cryptology is used as a generic term to mean either.
14. Yardley, p. 39. As an example, one deciphered telegram (solved by a student) contained "the disposition of troops along the St. Mihiel salient, the number and names of our divisions, and finally, the actual hour at which the great American offensive would be launched." When this offensive was launched on 12 September 1918, the enemy had already begun to retreat. From page 44.
15. George Creel was the subject of considerable controversy during 1918. He stated that "to have been prepared for war would have been a contradiction of all our ideals of government in this country." While he meant only that a standing army was incompatible with democracy, his words were thought seditious and the Congress passed an act to punish just such "seditious acts and utterances." From the *Congressional Record LVI* (Washington: Government Printing Office, 1918), p. 4841, 4824.
16. Farago, *Broken Seal*, p. 16.
17. Again, Yardley mentions no date in conjunction with Tisler's capture. It was probably in early 1918.
18. Yardley did not mention the missionary's name and mention of this man was not found in any other source.

19. Yardley, p. 55.
20. Ibid.
21. Ibid., p. 59.
22. Ibid., p. 60.
23. Ibid., p. 61.
24. Ibid., p. 64.
25. Kahn, *Codebreakers*, p. 353. Yardley also had to beat the censor. The United States Government used cloak addresses to elude enemy interception. As an example, on 29 June 1918, the Censorship Board was notified that the following was a cover address used by Military Intelligence agents for contacting Yardley:

Mr. C. E. Whitehead
1323 Vermont Avenue
Washington, D.C.

All mail addressed to this location was to be rerouted to Yardley at Military Intelligence. From James R. Mock, *Censorship 1917* (Princeton: Princeton University Press, 1941), pp. 115-116.

26. Yardley, p. 75.
27. Ibid., p. 78.
28. Ibid., p. 82.
29. Kahn, *Codebreakers*, p. 353.
30. Yardley, p. 87.
31. Ibid., p. 117.
32. Ibid., p. 107.
33. Ibid.
34. Ibid., p. 109.
35. Again, Yardley failed to mention a date. Most likely this took place during the middle of 1918.
36. Yardley, p. 123.
37. Ibid., p. 125. Yardley describes the process by which the location of the Mexican transmitter was found. They simply measured the strength of the radio waves from several different locations and, using geometry, found the station to be at Chapultepec.
38. See Yardley, pages 125-134, for an excellent description of the decipherment process.
39. In a dictionary code, or any other book code, a number represented a word on a particular page. For example, the number 123-45-6 could represent word 6 in line 45 on page 123. These codes are inherently difficult to solve due to the vast numbers of books available from which to choose the code.
40. Yardley, p. 138.
41. Ibid., p. 139.
42. Ibid., p. 153.
43. Kahn, *Codebreakers*, pp. 353-354.
44. Yardley, p. 169.
45. Kahn, *Codebreakers*, p. 354.
46. Yardley, p. 169.

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47. Ibid., p. 170.
48. Kahn, *Codebreakers*, p. 354. An article in the *New York Times* of 21 November 1923 reported that Witzke had been a model prisoner, and "through an act of unusual heroism he saved the lives of several prisoners when a boiler in the prison power plant exploded."
49. Yardley, p. 207.
50. Ibid., p. 211.
51. Ibid., p. 214. The reader should remember this statement during the discussion of the Washington Conference of 1921 and during the discussion of the final days of the Black Chamber, including the London Conference of 1929.
52. Ibid., p. 211.
53. Ibid., p. 216.
54. Ibid., p. 218. Yardley mentions that the British thought this the ultimate of gifts to the Americans.
55. Ibid., p. 219.
56. Ibid., p. 223. Painvin became most famous when he cracked the most difficult German code of the war, called the "ADFGVX" code because these were the only letters appearing in the text. These letters were chosen because their International Morse symbols were quite distinct, therefore hard to garble. These symbols were:

A · - D - · · · F · · · G — · V · · · X · · ·

The necessity to crack this code became paramount when the Germans used it to shroud their massive 6,000-gun assault on the Allied front on 21 March 1918. In a week, 62 German divisions had pushed 38 miles into Allied lines. From Kahn, *Codebreakers*, pp. 340-341.

57. Yardley, p. 225.
58. Ibid., p. 228.
59. Ibid., p. 230.
60. Ibid., p. 232.
61. Kahn, *Codebreakers*, p. 355.
62. Yardley, p. 235.
63. Ibid.
64. Ibid., p. 237.
65. Kahn, *Codebreakers*, p. 490.
66. Yardley, p. 239.
67. Kahn, *Codebreakers*, p. 355.
68. Ibid., pp. 355-356.
69. While this was Yardley's first official assignment, he had done some decipherment of Soviet codes. He said: "I have always regretted that I was not employed by a government, such as the Soviet Government, that understood and practiced espionage in the same ruthless and intelligent manner." From Yardley, p. 247. In addition, after describing a document with instructions for Soviet agents to follow in hiring spies, and after mentioning that he had seen documents containing "instructions for the massacre of foreign nationals," he put a footnote immediately at the end of the text. It read:

Soviet agents, please note. Yes, I once had copies of these documents, but I don't care to have my throat cut and do not plan to publish them. In fact they have been destroyed. So be reasonable.

From Yardley, pp. 248-249, italics in original. He had quite a flair for the outrageous.

70. Yardley, p. 264. His request was not followed up.
71. Kahn, *Codebreakers*, p. 357.
72. Yardley, p. 277. Farago, however, lists the date of first translation as 12 January 1920. From Farago, *Broken Seal*, p. 22.
73. Yardley, p. 277.
74. *Ibid.*, p. 278.
75. *Ibid.*, pp. 288-289.
76. *Ibid.*, p. 290. The name "Jp" broke down as follows: "J" was for Japan; "p", the sixteenth letter of the alphabet, was for the sixteenth code broken.
77. Kahn, *Codebreakers*, p. 358. The quote continued: "An official grinningly remarked that State's upper echelons were delighted with the cryptanalysts' work and read the solutions every morning with their orange juice and coffee."
78. Farago, *Broken Seal*, p. 26.
79. *Ibid.*, p. 27. As mentioned earlier, Farago's accuracy in terms of this kind of detail may be suspect.
80. Yardley, p. 301.
81. *Ibid.*, p. 306.
82. *Ibid.*, p. 312.
83. *Ibid.*, p. 318.
84. *Ibid.*, p. 321. Farago evidently does not believe Yardley, for he lists this day of notification as 7 January 1923. From Farago, *Broken Seal*, p. 32.
85. Yardley, p. 359.
86. *Ibid.*, p. 362.
87. *Ibid.*
88. The State Department is often the target of such criticism.
89. Yardley, p. 370.
90. Kahn, *Codebreakers*, p. 360.
91. *Ibid.*
92. *Ibid.*
93. *Ibid.*, p. 1039. From a footnote to p. 359 of the text.
94. The three articles he wrote in the spring of 1931 were entitled "Secret Inks," from 4 April; "Codes," from 18 April; and "Ciphers," from 9 May. These contained, almost word for word, the material he would use in *American Black Chamber*. He wrote one more article in 1931 entitled "Cryptograms and Their Solution," printed in the 21 November *Post*. This was after *American Black Chamber* was published. The *Post* editors considered his name well-known enough to put it on the cover of the magazine.
95. Quoted from Kahn, *Codebreakers*, p. 361.
96. *New York Times*, 2 June 1931, p. 18.
97. Kahn, *Codebreakers*, p. 361.
98. *Ibid.*
99. *New York Times*, 2 June 1931, p. 18.

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100. Ibid.
101. Kahn, *Codebreakers*, p. 363.
102. Ibid.
103. Ibid. Kahn says flatly that the charge is false. Farago says that "the Japanese knew all about Yardley's activities because none other than Herbert O. Yardley had sold its (the Black Chamber) secrets to them." From Farago, *Broken Seal*, p. 56. But in a review of Farago's book in David Shulman, *An Annotated Bibliography of Cryptography* (New York: Garland, 1976), the author writes on p. 141:
- The author (Farago) asserts that H. O. Yardley was a traitor who sold out to the Japanese. He cites Japanese documents to prove his claim, which on actual examination state nothing of the kind. . . . This book must be regarded, therefore, with great skepticism.
104. Farago, *Broken Seal*, p. 72. This interpretation must be taken with a grain of salt.
105. Kahn, *Codebreakers*, p. 364.
106. Ibid.
107. Ibid., p. 687. The law is Public Law 37, Section 952 of Title 18, United States Code.
108. Farago, *Broken Seal*, p. 69.
109. Theodore H. White, *In Search of History* (New York: Harper & Row, 1978), p. 75. White goes on to describe Yardley's enthusiasm for "drink, gambling and women." Yardley also felt it his obligation to introduce the young White to the joys of sex, and tried to persuade him "to sample that experience by inviting some of the choicest ladies he knew to a banquet in his house."
110. *The New York Times*, 8 August 1958, p. 17.
111. Ibid.
112. Landau, *Enemy Within*, p. 300.
113. Ibid., p. 303.

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