

UNITED STATES CRYPTOLOGIC HISTORY



The Dawn of American Cryptology, 1900-1917



SPECIAL SERIES | VOLUME 7
CENTER FOR CRYPTOLOGIC HISTORY

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Cover: Before and during World War I, the United States Army maintained intercept sites along the Mexican border to monitor the Mexican Revolution. Many of the intercept sites consisted of radio-mounted trucks, known as Radio Tractor Units (RTUs). Here, the staff of RTU 33, commanded by Lieutenant Main, on left, pose for a photograph on the US-Mexican border (n.d.).

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Introduction

Americans traditionally have had ambiguous feelings about intelligence work. Often it has been defined only as espionage, or spying, and has been considered inconsistent with the American character. Even though the military learned to appreciate the necessity of intelligence information, for most of the country's existence the military had vigorous intelligence activities only during wartime, and in peacetime most career-minded officers did not go into it.

This attitude began to change, ironically enough, after victory in war. The Spanish-American War is often treated as a sideshow in US history, but it had important effects on the development of the nation as a world power. The weaknesses and problems revealed in this war spurred concerned policymakers to institute reforms in many areas of endeavor, including intelligence.

The period after the war, the first decades of the twentieth century, coincided with the first uses of radio as a means of military communications. Thus, the development of intelligence activities in the United States was closely entwined with the development of radio communications as a medium as well as a secret source of information.

Radio intelligence, which eventually became known as communications intelligence (COMINT)

and, still later, as signals intelligence (SIGINT), was a natural pursuit for Americans. While it necessarily had to remain secret, it did not smack of distasteful spying, and it played to the American people's high interest in technology and science. With radio itself not much more than ten years old, the intercept operators of the pre-World War I period were studying and learning about the characteristics of the medium, even as they were teaching themselves how to exploit target communications.

The development of American COMINT needed not only communications technology and people versed in it but experts in cryptanalysis as well. The US military had conducted intercept and codebreaking in the Revolution and the Civil War, but after that had no cryptanalysts in government employ and did not encourage this skill in either military or civilian employees.

Even though the recognition of the need for cryptanalysts was perceived with the first activities in COMINT collection, it took time to develop expertise in this area. Because the needs were pressing in so many intelligence activities, the "military information," later called "military intelligence," authorities originally had to content themselves with pulling together a network of talented amateurs to satisfy their immediate cryptanalytic

requirements. It was not until after World War I that the United States began to foster development of professional cryptanalysts in continuous government service.

Technology was not the only factor to influence the development of radio intelligence and cryptanalysis. Much of the impetus came from current crises, particularly on the Mexican border in the 1910s, then the growing concern with a threat from Germany.

An article in CIA's journal *Studies in Intelligence* shows how intelligence supported President Woodrow Wilson in his policy problems concerning Mexico.¹ The article, however, concentrates on support to the White House and does not deal with the widespread and vigorous intelligence work that went on during the period of tension along the Mexican border in the "teens." Several chapters in this book relate more of the story.

In the early days, it seems to this author, responses to requirements for tactical support were of major importance in making intelligence important at the national level.

The Dawn of American Cryptology is not intended to be an exhaustive history of the subject matter; rather, it is a group of interlocking articles (chapters) that seek to illuminate the main streams of development for this secret effort in the first years of the twentieth century. There are still enough details left in the US National Archives holdings to support a number of theses, dissertations, and books—at least one per chapter, I would estimate.

This project began as one article with multiple parts, but several portions calved off to form the present collection as I realized that these topics needed individual treatment. Each chapter can be read by itself, which means that each one will contain some duplicative explanatory matter; however, I have tried to keep this to a necessary minimum.

Acknowledgments

I would like to acknowledge my enormous debt to Henry F. Schorreck, my mentor and predecessor as NSA historian. Henry conducted a great deal of research on World War I and the period leading up to it, but, alas, never could bring himself to put pen to paper or finger to keyboard to convey what he knew. I have built upon and extended his initial research and hope that this group of essays is worthy of his vision of the importance of this period in US cryptologic history and his pioneering efforts to gather this knowledge.

My thanks to the staff of the Center for Cryptologic History. Thanks to Dr. William J. Williams, its former chief, for his strong support and to his successor John A. Tokar for support equally strong. Special thanks to the late Barry D. Carleen, whom I consider the best text editor in the world, and the excellent editorial staff, under his terrific successor Pamela Murray, Lula Greenwood, Jennie Reinhardt, and Laura Redcay. Extra special thanks to my colleague, Betsy Rohaly Smoot, whose expertise at the National Archives and whose knowledge of SIGINT in the World War I era contributed significantly to make this volume better. I am also grateful to Dr. David Kahn, the pioneer historian of cryptology, who made many valuable comments on an earlier draft of this material.

Note

1. Mark E. Benbow, " 'All the Brains I Can Borrow': Woodrow Wilson and Intelligence Gathering in Mexico, 1913-15," *Studies in Intelligence* 51, no. 4 (December 2007).

Images

Unless otherwise noted, all images are from the Center for Cryptologic History collection.

The Dawn of American Communications Intelligence

The Spanish-American War

Shortly after the turn of the twentieth century, many nations of the world, including the United States, began to take advantage of the new medium of wireless telegraphy, soon to be known as radio, to increase the flexibility and speed of government communications. Over time, most of these nations also came to realize that eavesdropping on foreign radio communications constituted an invaluable source of military and civil information.

Radio was a new medium. Transmissions were made in Morse code, and the only existing radio stations with regular broadcasts—and they were still few—were the property of governments, businesses, or talented amateurs. These stations were used to send cables to places telegraph lines did not go, usually transmitting official or business communications or, occasionally, distributing press items.

The US Army began using wireless radios for some activities as early as 1903 but began deploying radios regularly for operations around 1910. Even while it was still studying the technology and operational doctrine of radio communications for its own use, it began the practice of intercepting foreign messages, primarily Mexican, for intelligence purposes.

This is the story of the origin of US Army signals intelligence, or radio intelligence as it was called in its infancy. This source was heavily entwined with the development of military intelligence as a profession.

The American Civil War arguably was the world's first information war in the modern sense. Both the Union and Confederacy made extensive and innovative use of the telegraph and tactical signaling on the battlefield for communications and communications intelligence. However, ironically, in the three decades from 1865 to the Spanish-American War, the US government was not a heavy user of telegraphic communications, much less engaged in advancing communications technology.

Neither the US government nor military was much interested in intelligence as an official activity. The only civilian organization engaged in intelligence on behalf of the federal government was the Secret Service. Subordinate to the Treasury Department, agents were concerned primarily with catching counterfeiters.

The US Army and Navy had had intelligence organizations since the 1880s—the Office of Naval Intelligence had been established in March 1882 and the Military Information Division in October 1885—but they served departmental interests exclu-

sively. Moreover, they became repositories of military and naval data but did not do analytic studies or undercover operations.¹ The one truly professional US military intelligence capability in 1898 was a network of military attachés assigned in key foreign locations.

The Spanish-American War, as it changed much in US government and military practices, also changed attitudes and activities in regard to communications and intelligence.

After months of tension between the United States and Spain—primarily over Spanish treatment of its colony, Cuba, exacerbated by a jingoistic press in the United States—the two countries went to war.

The actual conflict lasted only a few months: the summer of 1898. The inept military campaign has been well told elsewhere; this chapter is concerned with the developments in communications intelligence that affected the war and the effect of the war on the practice of intelligence in the United States.

Martin L. Hellings was a long-time employee of Western Union and, in 1897, managed its subsidiary, the International Ocean Telegraph Company—which operated the subsea cables from Havana to Key West to mainland Florida.

In December 1897, President McKinley ordered the battleship *Maine* to stand by in Key West, in case it was needed in Havana to protect Americans there. The captain of the *Maine*, Charles D. Sigsbee, was an old friend of Martin Hellings, and he asked Hellings to notify him if there was any trouble with the Havana-Key West line that would interfere with reception of warnings sent from Havana.

Hellings sent his old friend one or two better. The Havana telegraph office was subordinate to him; its employees would keep him informed of any local developments of interest to the United States. In addition, there was a branch telegraph office in

the Spanish governor-general's palace; its employees would now, secretly, give the United States copies of the highest-level Havana-Madrid communications.

This “second-hand COMINT” played no part in the subsequent tragic history of the *Maine*, which exploded in Havana harbor on February 15, generating great anger at Spain across the United States and putting the country into a situation in which war was nearly inevitable. The secret source provided usable information only in subsequent events.

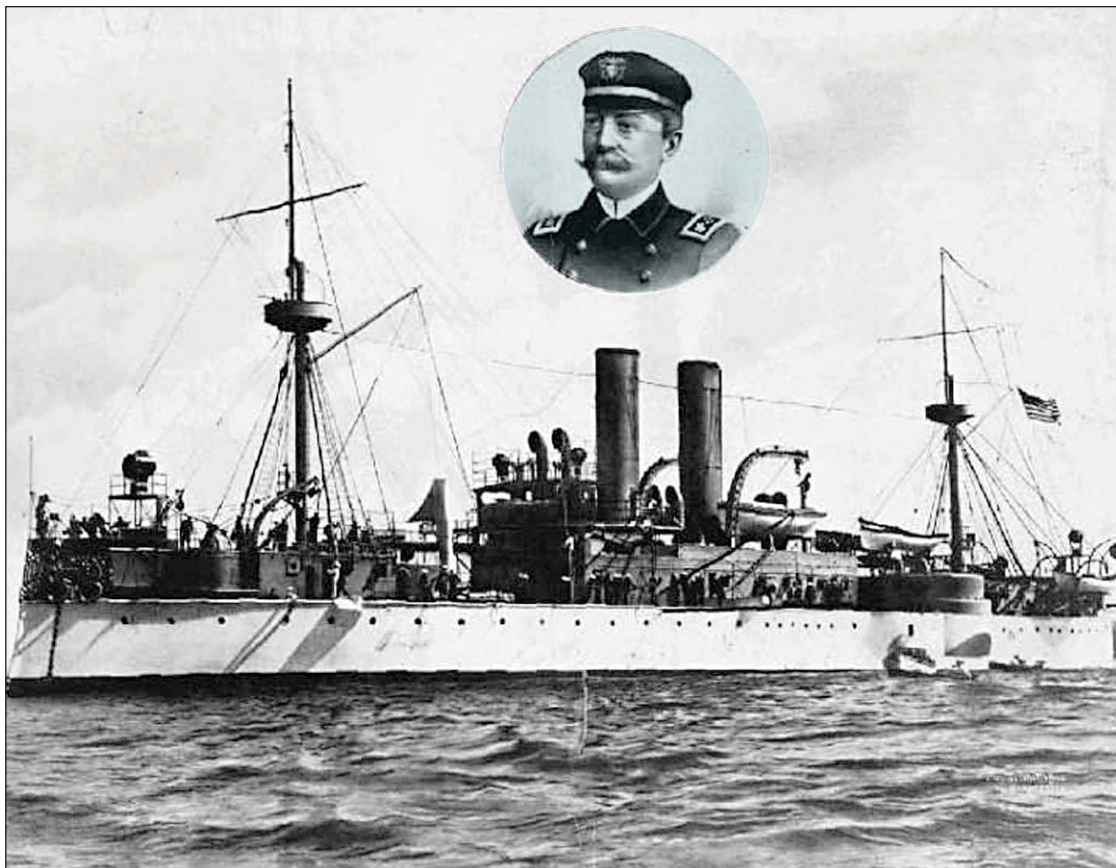
The network of military attachés and its spies reported the assembly of a large Spanish fleet and preparations for its departure across the Atlantic. Part of the fleet, under Admiral Pascual Cervera y Topete, departed the Cape Verde Islands in late April.

The vital question was Cervera's destination. Was it the Philippines, where his fleet outgunned that of Admiral Dewey; Florida, where his fleet could sink the ragtag collection of transport ships the US Army was using to send an expeditionary force to Cuba; or, more frightening, the East Coast of the United States, where it could shell the great urban areas? There was great anxiety among residents of these coastal cities.

In reality, Cervera's fleet was in poor fighting condition and had been ordered to the Caribbean before adequate provisioning had been completed. Cervera barely made it to the Cuban port of Santiago, where the fleet got into harbor unnoticed by the Americans.

His first act upon arrival in Santiago was to telegraph the Spanish governor of the island that he had arrived. The message also was covertly relayed to Martin Hellings in Key West. The Havana-Key West line had continued operation despite the outbreak of war. Hellings had been given a commission in the Volunteer Signal Corps, and the Signal Corps ran his office.

The information about the location of the Spanish fleet was relayed to Washington, where it



USS *Maine*. Retouched photograph by A. Loeffler with an inset of her last commanding officer, Captain Charles D. Sigsbee, USN. This print was published as a memento following the ship's loss on February 15, 1898.

was sent to the White House—only a short time after its reception in Florida. The result of the rapid transmission of this intelligence was a decision for a naval blockade of Santiago de Cuba. In addition, American war plans were changed to send land forces to attack the port from behind, instead of using them in the Havana region as originally planned.

Thus, ironically, although the United States had no official COMINT capability, “second-hand” COMINT proved important in answering one of the most critical questions of the war and determining the direction of the American campaign in Cuba.²

The Spanish-American War in 1898 produced many stirring patriotic images of military action, and the war was won by the valor of the troops. But, to careful observers, the war revealed pervasive American military ineptitude and weakness. From mobilization to transport to equipment to supply to planning to intelligence, the United States had done poorly. Some observers claimed that Spain was probably the only European nation the United States could have whipped.

Much of the failure could be attributed to poor top-level organization. The War Department was divided between the secretary, with hidebound, civilian-controlled bureaus responsible for support

activities subordinate to him, and the commanding general of the army, who controlled troops and issued operational orders. The two halves of the department did not coordinate with each other; there was no formal organization for short- or long-term planning on either side of the department.

The United States had no intelligence organization in the modern sense and little idea what to do with one. While some attempt had been made to collect and disseminate information for combat operations in the Caribbean, the effort was largely a failure. The author of a classic study of American intelligence commented: "Whether the primary fault stemmed from a lack of suitable dissemination procedures or an inability on the part of the individual field commanders themselves to utilize the information properly still remains a moot question."³

Because the United States had not fought a foreign war since 1848 and had not conducted war on a large scale at all since 1865, its military had been able to get along with an inefficient organization. The army was small, parochial, and structured for border or coastal defense and for suppressing Native Americans. As a result of the Spanish-American War, however, the United States had acquired foreign colonial possessions—the Philippines, Guam, Puerto Rico—with the need to defend them; this meant ineffective military organization could no longer be tolerated.

The Origins of Modern Military Intelligence

In 1903, following presidential-level studies generated by the perceptions of poor performance in the war against Spain, Congress approved a general staff for the army, replacing the commanding general with a chief of staff as the senior soldier in the service. However, this reform did not create planning or intelligence functions, and, as it turned out, the general staff spent much of its time on administrative matters that should have been settled at lower levels.

About the same time, however, the army created the War College to develop military education, disseminate military data, and coordinate military administration. Despite its name, military education was only one function of the War College and not the principal one at that. The college was given responsibility for undertaking a number of planning functions on behalf of the general staff.

Although these reforms represented progress, effective military reorganization and strengthening of the general staff did not occur until the eve of World War I. Real reform was prompted only by a second failure and a serious threat: shortcomings revealed in mobilizations along the Mexican border and the threat of involvement in the Great War in Europe.

The US Army had little use for military intelligence as a discipline. Although the Military Information Division (MID) had been founded in 1885, subordinate to the Adjutant General's Office, it was small, passive in character, and usually shunned by career-minded officers. If thought of at all by officers, intelligence likely meant scouting or reports sent from overseas by the newly created group of military attachés.

Most data came from open sources. In one example, when asked by a newly assigned commander in the Philippines for information on the islands to support military operations, MID forwarded an article copied from *Encyclopedia Britannica*.

Since the War College was only secondarily an educational institution and had diverse responsibilities for military planning and staff functions, it made sense to assign the MID to it. Secrecy was not part of its initial fabric. In 1907, the War College president asked the chief of staff to subordinate MI to the college so that faculty and students could have access to its files.

The army chief of staff, General Franklin Bell, who disliked the idea of military intelligence on

principle, designated the War College as G-2; he divided it into the War College Section and Military Information Section.

For most of the next decade, army intelligence activities were carried on as the MI Branch of the War College. Its correspondence was headed “War College Division.” Despite ostensible intelligence functions, it shared responsibility for such general staff activities as planning, monitoring militia affairs, history, and legislative affairs. In fact, a statement by its chief in 1915 indicated that “current General Staff work” was its primary focus.

In 1915, Major Ralph Van Deman was transferred to the general staff. As Captain Van Deman, he had been assigned to the mapping section of MID before the 1898 war and subsequently had created a tactical military intelligence organization to support combat operations in the Philippines. He gained a reputation as being effective in running intelligence operations.

Although assigned to administrative duties, Van Deman retained an interest in intelligence and in 1916 petitioned Chief of Staff Hugh Scott to create a permanent army intelligence organization along European lines. Scott turned the proposal down, but somehow word of it was leaked to the army’s civilian leadership. In early May 1917, Secretary of War Newton Baker issued an order creating the Military Intelligence Division; its chief was Lieutenant Colonel Ralph Van Deman.

It should be noted that in those early days US military personnel referred to “military information.” However, the word “intelligence” increasingly replaced the phrase as the United States came under British influence in World War I.

Modern American Cryptanalysis

Before the twentieth century the US military had engaged in cryptanalysis as a sustained activity only in times of conflict, notably the American Civil War. In the latter half of the nineteenth cen-



Ralph Van Deman, the major figure in the establishment of modern military intelligence

tury, the army had not trained personnel in the skill nor engaged in intercepting foreign communications. There were no organizations established to do cryptanalysis anywhere in the government.

(Until after World War I, when William Friedman coined the term *cryptanalysis*, the process of solving an encrypted message was called *translation*. This chapter will simply use *cryptanalysis* to avoid confusion.)

As will be described in more detail in a companion chapter, the US Army undertook active steps to acquire Mexican communications and cryptographic materials.

Because the medium of wireless radio was so new, one major activity for US Army signal units was research into radio technology. As the same types of radios were used for the military’s own communica-



Colonel Parker Hitt, cryptologic pioneer

tions and for intercept, the Signal Corps required detailed reports about both functions from all radio units on the component equipment used, how and where it was placed, and the results. Since radio was strictly an official business in most countries, there was no central listing of stations, so army signalers also had to compile reference logs of broadcasting stations.

There were no professional cryptanalysts in the military. In fact, those who engaged in it, either from within the military or civilian volunteers, were autodidacts. They lagged well behind European military officers in their understanding of cryptologic developments.

In the beginning, some cryptanalysis was done by Colonel Parker Hitt, some was farmed out. Gen-

evieve Hitt, fascinated by her husband's study of codes, learned cryptanalysis also and solved some messages for the army.

A Shark on Ciphers

Parker Hitt had been born in Indianapolis on August 27, 1878. He studied civil engineering at Purdue University. As the crisis with Spain grew, he joined the army and served as an enlisted man from July 1898 to May 1899; he was commissioned on September 1, 1899.

As an officer he served two tours in the Philippines between 1900 and 1906. During that time he was peripherally involved in the acquisition of an encrypted message that allowed the US military to pinpoint the headquarters of Emiliano Aguinaldo, leader of the Philippine resistance. He later wrote an article on this incident, but it is unclear what impression the action made on him at the time. Given his later interest in cryptology, one can speculate that this incident taught Hitt the importance of cryptanalysis.

As a weapons officer in the infantry, he was assigned to Fort Sam Houston, Texas, after his return from the Philippines. It is not clear how, but during this time he developed an interest in cryptology.

He applied for and received a temporary assignment to the Army Service Schools in Fort Leavenworth, Kansas, in 1911. In the Signal Corps School, he saw the need for and got approval to compose a manual on cryptology for the army. He had some ability to read French and Spanish, which would abet his work on the manual. From 1912 he served as chief instructor in the Army Signal School and from time to time as acting director of the school.⁴

Lieutenant Colonel Samuel Rebar, acting chief of the US Army Signal Corps, sent Hitt some Mexican messages that the army had acquired. The messages had been transmitted to New York from Pancho Villa's agent in Ciudad Juárez a few days after the Mexican faction leader had captured the city.

Rebar said he was sending them because he knew Hitt was a “shark” on ciphers.⁵

In preparing his manual on cryptologic work, Hitt took European texts as one model for his opus. In January 1915 Hitt, in a letter, noted familiarity with a Belgian text on cryptology entitled *Étude sur la Cryptographie*, which appeared in *Revue de l'Armée Belge*; the War College Library had a copy. Hitt told Rebar that he hoped to finish the pamphlet before he departed the signal school.⁶

In mid-February 1915, with a month left on his temporary assignment to the Army Signal Corps at Fort Leavenworth, Hitt asked the director of the Army Signal School to forward to him copies of any enciphered messages in his possession. Hitt explained that he was preparing a pamphlet on ciphers in English and Spanish, and he believed the Army Signal School had a number of enciphered Mexican messages that had passed through the Vera Cruz cable office. Hitt noted that he was not interested in the content of the messages but merely wanted to have examples of different types of ciphers and to show how they could be solved.⁷

The director of the Army Signal School, Major Leonard Wildman, endorsed this request in a memo to the chief signal officer of the army. He called Hitt the “best cipher expert” in the army, with “the possible exception of Lt. Maubourgne,” and advised taking advantage of Hitt’s knowledge, particularly so the Army Signal School could lay a foundation for future cipher experts that might be needed in time of war.⁸

The acting commander of the Signal Corps endorsed Hitt’s request and asked that the adjutant general of the army send the material on, “under such seal of secrecy as may be desired.”⁹ The adjutant general replied that the Mexican ciphers requested by Captain Hitt were not in the records of the general staff.¹⁰

The War College Division acknowledged the request for copies of Mexican secret codes but said

it was not in possession of any. However, officials believed such materials were held by the Secret Service and the Department of Justice, so the War College Division sent them a memorandum asking for copies.¹¹

Eventually Hitt, by then teaching in the musketry school at Fort Sill, Oklahoma, did receive ciphers from Lieutenant Colonel Rebar in Washington. He found, however, that these same cipher messages were also held by the Second Division.¹²

Hitt’s work, not only in cryptanalysis but in cryptography, was acknowledged in practice. An aide to the chief of the Signal Corps wrote Hitt in August 1915: “I am directed by the Chief Signal Officer of the Army to acknowledge with thanks a cipher system for use in the preamble, address, and signature in military radio messages devised by you. This system has been tested with good results by Field Company A, Signal Corps, and the card and instructions covering it are in course of preparation for issue to the Signal Corps at large.”¹³

As intercepts became a larger part of the national intelligence effort, the MID in Washington made increasing use of Parker Hitt’s skills. For example, on April 21, 1917, Van Deman forwarded an encrypted message to Hitt and asked to have the “translation” as soon as practicable. Hitt sent the decrypt on the 26th. The Mexican message referred to a radio operating near the Arizona border.¹⁴

Hitt received encrypted messages from many disparate sources. A Signal Corps officer from Kentucky, who had collected a message while deployed along the Mexican border, sent it to Hitt from home. Hitt returned it with the explanation that it was too short to solve at that time, but he would keep it on file against the time when it might be decipherable.¹⁵

Units deployed along the border often sent intercepts directly to Hitt. In 1916 and 1917, officers in the 19th Infantry and 12th Cavalry did so. In

one case a captain in the 12th reported that a solution based on Hitt's principles, presumably from the manual Hitt had authored, had already been tried but without success. The captain promised Hitt the credit would be his should it be solved.¹⁶

The subjects contained in the intercepted messages are no longer known but were not necessarily military. For example, Hitt sent a solution of two out of three messages believed to be in a new cipher used by the Mexican consulate system. In another instance, the encrypted text sent to Hitt was from the Mexican ambassador in Washington to the Mexican consulate in Nogales, Arizona.¹⁷

Details are not well known, but Hitt's wife, Genevieve, also developed an interest and expertise in cryptanalysis—and intercepts were sent directly to her for solution. The amount of work she did is unknown, but four examples have survived. In August 1917 an intercepted radiogram sent from San Francisco to Santa Rosalia was forwarded to Mrs. Parker Hitt.¹⁸ An encrypted message was sent from Sergeant Clark, operator in charge, Brownsville, Texas, to Mrs. Parker Hitt, Fort Sam Houston, in September 1917.¹⁹ A corporal at Fort Brown sent an encrypted telegram to Mrs. Parker Hitt at Fort Sam Houston in October.²⁰ In the last extant example, in September 1918 the departmental engineer of the army's Southern Department forwarded a transposition cipher to Mrs. G. Y. Hitt.²¹ (She was officially appointed to perform the Southern Department's code work in April 1918.)

Early in his endeavors, Hitt had expressed surprise to Lieutenant Colonel Rebar that Mexican agents used quite simple ciphers, particularly transposition ciphers.²²

In March 1917, about two years after the letter quoted above, Hitt informed Rebar that he and Mrs. Hitt had “done a fair amount of work on [a particular message] and we think we begin to see

the system behind it,” but it had not been solved. The problem was that cryptanalysis was not his regular duty. Hitt said he was “fairly swamped” with cipher work, but it was done in addition to his regular duty as company commander and instructor in the army's weaponry school. He said that cipher work required a person's full attention, but he was teaching machine guns to a class of 150 noncommissioned officers from the army at large, using intensive methods, “which have little consideration for the instructed and none whatever for the instructors.”²³

Later, Hitt served as chief signal officer for the First Army in the American Expeditionary Force (AEF); his commanding officer, Brigadier General Hugh Drum, recommended him for promotion in his efficiency report.²⁴ However, Hitt never achieved general officer rank. In World War I, he often served as a consultant on cryptologic matters. He was recalled to duty in 1940.

The Creation of a Professional Organization

Up through at least mid-1917, still lacking professional cryptanalysts in government employ, Military Intelligence in Washington served as a hub, or a clearinghouse, for encrypted messages. Encrypted intercept was sent by Van Deman—or on his behalf—to a stable of part-time cryptanalysts for solution. This included both Mexican and German encrypted cables.

Military Intelligence made arrangements with Riverbank Laboratories, a private think tank near Chicago that had a cryptologic section, to perform cryptanalysis on selected messages. Messages also were worked by a talented amateur, Dr. John Manly, chairman of the English Department at the University of Chicago.

Van Deman tried to achieve better cooperation within his network of cryptanalytic talent. In May he relayed to Hitt an invitation from Fabyan to visit

Riverbank Laboratories. Hitt replied that he could not accept due to the pressure of classes in which he was teaching machine guns at the Fort Sill School of Musketry in addition to after-hours cryptologic work.²⁵

In early April 1917, Van Deman sent duplicate copies of a German encrypted message to Manly in Chicago and Hitt in Kansas. He said that these were of interest to the Department of Justice. He advised them to keep the messages confidential and under lock and key when not being studied.²⁶

Van Deman forwarded information about a German message that had been obtained in San Francisco to Manly in Chicago. He noted that the message also was being worked by Colonel Joseph Mauborgne at Fort Leavenworth and Parker Hitt at Fort Sill. Manly was given permission to contact both of them about the message. Probably unaware of the considerable interaction between the two, Van Deman also referred Manly to a fellow Chicagoan, George Fabyan, at 160 West Jackson Block, who “seems to know a good deal about cipher work.”²⁷ [This interaction and Riverbank’s cipher work are discussed in “The Baconian Cipher” chapter.]

In May, the State Department gave Van Deman copies of messages that had passed between the Austrian consul general in New York and the Austrian minister in Mexico City. Van Deman sent duplicate copies to Hitt, Fabyan, and Mauborgne, with the thought that the messages were in code rather than cipher.²⁸

Van Deman also asked to have Hitt detailed to the general staff in Washington to work in the Military Intelligence Section.²⁹ However, Hitt was never released from his duties teaching weaponry.

As late as August 1917, MI forwarded an encrypted telegram—intercepted at Nogales—to Fabyan in Chicago. Fabyan was asked to furnish a copy of the deciphered message with the key and keyword, if any. Presumably, Fabyan further delegat-

ed the task to William and Elizebeth Friedman, two civilian cryptologists at Riverbank.³⁰

As the army prepared to deploy troops overseas for the great war in Europe, Riverbank Laboratories endeavored to train selected members of the Army Signal Corps in compiling cryptosystems for its own use and solving those of others. The training was conducted by the Friedmans. William was shortly to accept a commission and leave for France to support the AEF with his cryptanalytic skills.

Dr. Manly also accepted a commission and worked in military intelligence for the duration of the war.

These arrangements continued until June 1917, when a smooth-talking code clerk from the State Department with a flair for cryptanalysis met with Van Deman and convinced him Military Intelligence needed its own organic cryptanalytic service. After further discussions, Van Deman agreed and arranged a direct commission for the code clerk.

Thus, Herbert O. Yardley began his service a month later. Although he had a number of distractions before he began assembling a staff and working messages, increasingly MI began to perform cryptanalysis in-house.³¹ The designation MI-8 for this organization became official in December 1917.

This series of steps put Yardley in charge of MI-8, the nation’s first modern, sustained military cryptanalytic organization.

It is hard not to view American military intelligence in this period as a child taking its first steps. The first efforts were shaky, but gradually the child built up strength and confidence.

In more realistic terms, US military intelligence emerged from its haphazard existence as it responded to perceived needs. The leadership did the best it could to acquire expertise and, eventually, a modern organization with committed personnel began to develop.

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THE DAWN OF AMERICAN CRYPTOLOGY, 1900-1917

2

The Baconian Cipher

A Modern Theory about an Elizabethan Cipher

The most dogged proponent of the theory was a wealthy industrialist who manipulated people like the commodities he traded on Chicago's exchanges. Its chief researcher was dismissed from an international society for persisting in her errors about the theory. A consultant from a major university called the underlying theory a "delusion."

Despite this, the pursuit of the solution to a historical mystery produced three important figures in US cryptology and thus indirectly changed modern American history.

The mystery was the Bacon Biliteral Cipher.

The cipher itself was real. The problem with it stemmed from preconceptions brought to it by historians and literary scholars in later years.

Sir Francis Bacon described the features of the Biliteral Cipher in his 1623 book *De Augmentis Scientiarum*, which was based on a binary system of letters. Using, for example, five-group combinations of As and Bs, each letter of the alphabet could be represented. Using letters as cipher characters would allow for a secret message to be hidden within a longer and seemingly innocuous text.¹



Sir Francis Bacon, c. 1622, British School.
Dulwich Picture Gallery, London



George Fabyan, Chicago industrialist and proprietor of Riverbank Laboratories in Geneva, Illinois

Bacon designed his cipher at a time when many educated people used personal ciphers to protect private correspondence.

Bacon's lifetime was a "golden age" of English literature and publishing, and thus was minutely studied in later centuries. Because there are major gaps in data about those years, however, students of the period often were led to speculate about the personalities, events, and writings. Speculation, or sometimes the inability to separate surmises from facts, led to misconceptions and arguments.

A Modern Think Tank Considers the Elizabethan Cipher

In the early "nineteen teens," wealthy Chicago businessman George Fabyan established a private think tank, principally to make money through applied research but also to indulge his desire to be seen as a patron of scholarship. Riverbank Laboratories was located on his spacious estate along the Fox River in Geneva, Illinois. In addition to research, from time to time Riverbank published scholarly works under its own imprint.

Fabyan was progressive. As one example, his estate included an old farmhouse he wanted as his principal residence; from among a spectrum of schools of architecture available in Chicago, Fabyan had his house redesigned by the then-controversial Frank Lloyd Wright.

Fabyan was an honorary colonel who liked to be called by the rank although he had never served in the military. At his estate, he wore a riding costume but never was seen astride a horse. He was described as "a large man, bearded, which was very unusual in those days, not too well dressed, but with a dashing, imperious manner."²

At Riverbank he hired scientists to pursue pure research in several fields, including acoustics and crop improvement. For the latter, in 1915 Fabyan hired a graduate student from Cornell University's biology department: William F. Friedman. As an inducement, Fabyan outfitted a genetics research facility to Friedman's specifications.

Fabyan ran Riverbank like a fiefdom. His employees resided in cottages on the grounds and took some of their meals in common. He often opened their mail and interfered with their personal lives, sometimes sending them into debt to buy the clothes he wanted them to wear. Authors of books published under the Riverbank imprint often did not get proper credit. The pay, nevertheless, was good and the research facilities first-class.

In some later promotional material, the think tank described itself—without regard to proper grammar or punctuation—this way: “Riverbank Laboratories are a group of serious, earnest, researchers digging for facts. It is supported by Colonel Fabyan at his country home in Geneva, for his own information and amusement.”³

Elizabeth Wells Gallup, born in New York State in 1848, completed coursework in modern languages and literatures at Michigan State Normal College. She studied briefly at the Sorbonne and at the University of Marburg but did not earn a degree at either. She taught in public schools in the Detroit area and was a high school principal for six years.

After hours, her primary interest was Elizabethan literature. She recalled that Shakespeare’s plays “gave me my greatest enjoyment.” Studying the First Folio, however, she found what to her were striking differences in capital letters, then more subtle distinctions in small letters, in italic type. When no other explanation could be found, she equated the differences in printing to the Biliteral Cipher invented by Sir Francis Bacon in the early years of the seventeenth century.⁴

She wrote a book on the subject which went through two revisions and expansions. The book, however, had only two effects, the first of which was to get Mrs. Gallup dismissed from the International Bacon Society in 1900 because of her strong statements about her conclusions and the fact that she could not prove them.



The home of George Fabyan along the Fox River adjacent to Riverbank Laboratories, Geneva, Illinois

The second effect, however, was more far reaching. Her book came to the attention of George Fabyan. Fabyan, who saw this as an opportunity to earn a reputation as a patron of scholarship by settling the Baconian controversy about Shakespeare—and, possibly, make a little money through publications and lecturing about the controversy—brought Mrs. Gallup to Riverbank to conduct further research. Mrs. Gallup’s sister, Miss Kate Wells, came along as a researcher.

Mrs. Gallup, who at the time she came to Riverbank had not worked on the manuscripts for about ten years, argued that a message in the Biliteral Cipher proving Bacon’s authorship had been inserted in the original printing of Shakespeare’s works, the First Folio. Her theory claimed that subtle differences in the typeface used in printing the First Folio in 1623 constituted the As and Bs of Bacon’s cipher.

She planned to train researchers in her methods; they would confirm her original assertions and go



Staff hired by Riverbank Laboratories to examine early manuscripts for a possible code system in the printing. Elizabeth Wells Gallup is seated at far left; her sister is next to her. Elizebeth Friedman is in the second row, center.

on to find ciphers hidden in other Elizabethan literature—she also believed Bacon had written many other important works not attributed to him. These assistants would examine key passages in the early books and “mark” letters as A or B.

It should be noted that efforts at Riverbank were not concentrated on proving the Baconian authorship of Shakespeare’s plays. This was a side issue, and, in its promotional material, Riverbank described the controversy as “useless.” The Riverbank research sought to uncover the wide use of a cryptographic system, with many hidden messages,

first in Bacon’s works and then in literary efforts by other Elizabethan figures.⁵

To support Mrs. Gallup in her studies, Fabyan hired several research assistants. Among them was Elizebeth Smith, a young librarian originally from Indiana, who was interviewed by personnel at the Newberry Library in Chicago. She visited Riverbank and impressed the colonel, sassing him in their initial interviews; he hired her as an assistant for the project.

Although Riverbank felt restrictive to many, it seems to have been liberating for the young librarian. Smith, as she remembered it, enjoyed social activities with many of the young men who had been hired as scientific researchers at Riverbank. She recalled dips in Fabyan’s Roman-style swimming pool, bicycling over country roads, and riding around in a Stutz Bearcat.

Smith may have been satisfied with Riverbank but was less so with Mrs. Gallup. She perceived from conversations that Mrs. Gallup, who told everyone of her travels and visits with distinguished families, had dealt principally with those who supported her views, and had had little contact with any who opposed them.⁶

Fabyan, taking his cue from Mrs. Gallup, found to his own satisfaction that the letters on the title page of the First Folio of Shakespeare could be marked consistently, and that they produced “an intelligent, signed statement” when done correctly. He believed that, just as a young person could be trained quickly in Morse code, people could be trained to mark letters in the First Folio according to the hidden meaning.

The Effort Widens

Despite this assertion, Fabyan was not confident that Mrs. Gallup could do an accurate job in analyzing and marking typefaces after an interval of a decade, so he consulted an authority on early English literature, Dr. John Matthew Manly of the Uni-

versity of Chicago. Fabyan did this despite the fact that some professors at the Department of English told him that Manly had already studied the question and found nothing in it.

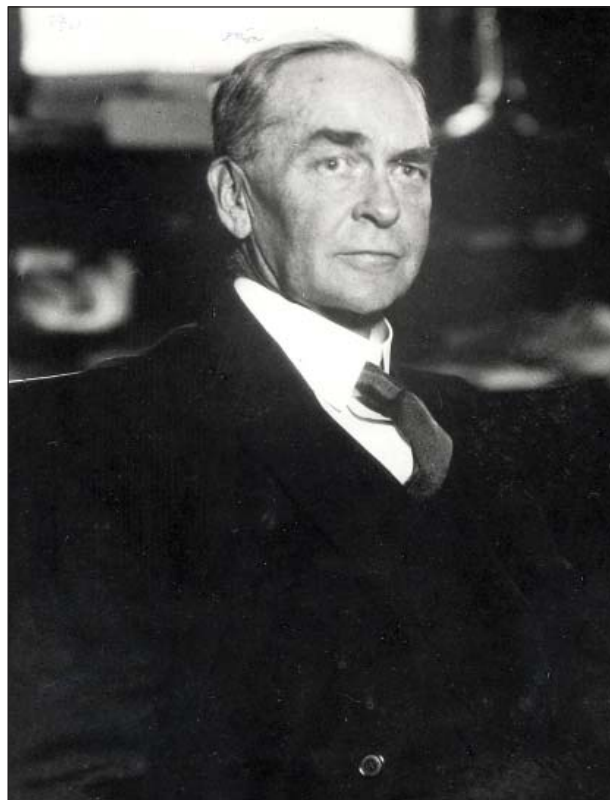
Manly had received his A.M. from Furman University in 1883 and a Ph.D. from Harvard in 1890. It is not clear when he became interested in cryptology as an avocation, but it complemented and supported his academic studies of old English manuscripts as well as studies in philology.

Manly was a man of strong will; certainly, as it turned out, he was the equal of Fabyan. When, for example, in 1898, as a young professor of English, he was recruited for the new university at Chicago, he negotiated and held out until he was offered the department's chairmanship (he would serve in that capacity until 1933). He was positive in telling Fabyan that the notion of the Baconian cipher in Shakespeare's works was false.

Fabyan told Manly that he believed in the Baconian cipher and would pursue it for "a year, two years, or ten years," whatever was necessary. If Manly would not help, Fabyan declared his intention to get the head of some other English department in the United States or, failing that, to seek assistance from foreign universities.

Manly visited Riverbank in the early fall of 1916 and informed Fabyan he was the wrong person for the job, that the industrialist needed the services of a typographer—a word that, surprisingly, Fabyan had never heard. As a result, Fabyan hired Mr. J. A. Powell, a professional printer, to work at Riverbank.⁷

The typographer had little knowledge of Elizabethan literature, as might be expected, and Fabyan continued to pepper Manly with requests for information. In November, for example, he asked the straightforward question about who had first printed and published Shakespeare,⁸ something that one might think was elementary to the entire pursuit.



Dr. John Matthew Manly, chairman of the English Department, University of Chicago

Fabyan and Powell also sought to establish the "American Academy of Baconian Literature" to serve as a clearinghouse for publications on the subject and to hold scholarly meetings. It is likely the idea derived from Mrs. Gallup's low standing with the existing national Bacon Society; the new society never actually functioned.

Powell apparently thought Manly's attitude toward him patronizing. He said as much in a letter, suggesting the professor take the "commendably scholarly attitude of the open-minded inquirer" and examine proofs of the Riverbank assertions. Showing himself as snarky as he believed Manly to be, Powell invited Manly to give a children's book on ciphers to his son to see how quickly children could learn to distinguish cipher characters and noted that

finding the Biliteral Cipher might not be as difficult as Manly presumed.⁹ Manly, by the way, was a life-long bachelor.

By February Powell was admitting mistakes to Manly. The typographer said it had been an error to use the First Folio to seek the Baconian cipher, since the Folio's printing was inferior to other books of the time. He also admitted that using the First Folio diverted attention from proving the cipher existed in published works into questions of the authorship of the Shakespearean dramas. Powell and Fabyan also were beginning to believe a secret society, similar to the Rosicrucians, if not them, had decorated early books with secret symbols that would help uncover the cipher.¹⁰ Fabyan seconded the notion of finding a book that had nothing to do with either Bacon or Shakespeare in order to demonstrate the cipher's widespread use.¹¹

In order to simplify the task of marking the perceived cipher text, Fabyan decided to have the manuscripts photographed and enlarged. Finding that his geneticist also was a fine photographer, Fabyan drafted William Friedman to do the work. Friedman, who was becoming interested in cryptology, not to mention one of the cryptologic researchers, readily complied.

Thrown together for the project, William Friedman and Elizebeth Smith fell in love, and they married within a year.¹²

During courtship and after their marriage, William began to take an interest in Elizebeth's work in cryptology. He shared Manly's doubts about Mrs. Gallup's solutions and became friends with the Chicago professor, a friendship that would continue for decades. He began to develop his own expertise in the subject of cryptology, the genesis of a lifelong pursuit.

The assistants, including Elizebeth Smith, marked and collated what they perceived as cipher groups in the early texts and took them to Mrs. Gal-

lup. The students usually would discover one or two words, but Mrs. Gallup would find extensive passages of meaningful text. She would explain this disparity by asserting that the students had failed to note small differences such as dots or accent marks in the printed material.¹³

To help settle manuscript questions, perhaps to relieve the pressure he was feeling from Riverbank, Manly forwarded a number of Fabyan's questions about the printing and publishing of the First Folio to a contact of his at the British Museum. The bill for research time would be paid by Fabyan.¹⁴ In a follow-up letter to Alfred Pollard, assistant keeper of printed books, Manly admitted that he had disbelieved in the cipher before his relationship with Fabyan began, and nothing he had seen of Riverbank's research had convinced him otherwise. However, he said, Fabyan continued to believe, and "if we can convince him of the error of his ways, I think we shall put an end to what is now the most active form of the Baconian delusion."¹⁵

Throughout their relationship, Fabyan sought to draw Manly closer by dangling access to first editions in front of him. Fabyan purchased quite a number of rare books for the project and used them in unconventional ways, as he did many of his possessions. According to a local story, a neighbor's child shocked her teacher in Geneva by taking an original First Folio to school for "show and tell" on Shakespeare. In March 1917, for example, Fabyan wrote Manly, "We have some corking books for you just as soon as you are ready for them. Among them is another edition of Trithemius."¹⁶ The "corking" *Polygraphia* by Trithemius was the first book on codes published in Europe, dating from 1517.

Whatever his involvement with cryptology before getting drawn into the Riverbank project, by 1917 Manly was reading, possibly rereading, basic texts on the subject. This included some of the rare books available through Fabyan but also more modern texts procured through book dealers.¹⁷

In some moments, Fabyan showed his need of recourse to a recognized authority. In a March 1917 letter to Manly, he expressed his desire to prove exhaustively, “leaving no loopholes,” that the biliteral cipher theory was correct. “Damn it,” he exploded, “I can get all the people I want to make an affidavit [*sic*] in regard to some phases of the cipher,” but if the work was not performed to recognizable standards, the affidavits “are not worth a damn.”¹⁸

Fabyan also tried to get Manly to write a general history of ciphers that Riverbank could publish. He told Manly the existence of such a book was a necessary precursor to public acceptance of the Biliteral Cipher. Fabyan was afraid “some aenemic [*sic*] professor in the scholarly world [would] write a half-thought paper” that would take the edge off a worthwhile volume by Manly. In response, Manly said his study of ciphers would continue, but he was “entirely unwilling” to write a book on the subject.¹⁹

In that letter, Manly also expressed a thought that would lead him to important contributions to the coming US war effort. “I wonder,” he wrote, “if it is possible to get at any information as to the forms of cipher used in recent years by governments and their agents.” He admitted this had no connection to the Biliteral Cipher, but it greatly interested him. Manly mentioned the recent episode of the Zimmermann telegram as an instance where a government cipher had been solved.²⁰

Fabyan responded tepidly that he would try to get Manly a book on the subject.

Manly, however, acting on his curiosity, exchanged letters with Major Ralph Van Deman, the staff officer responsible for America’s nascent military intelligence effort. In late March, Van Deman sent Manly a package with examples of fourteen coded messages.²¹ Van Deman followed this up with the loan of a number of books on ciphers; he also put Manly in touch with Captain Parker Hitt, at Fort Sill, Oklahoma, and Captain Joseph Mauborgne

at the Army Service Schools in Fort Leavenworth, part-time cryptanalysts for the army.²²

Eventually, needing cryptanalytic support for current events, Van Deman from early 1917 arranged to send Manly encrypted intercepts for analysis. Manly had success against ciphers but not against those in code.²³

Alfred Pollard, from the British Museum, in June 1917 submitted his report on the early manuscripts. He noted that “A cipher might be constructed with the variants, but if anyone goes a hunting for it he must go to work scientifically, and if he goes to work scientifically, I’d give heavy odds against his finding it.”²⁴ In his report Pollard granted that a cipher message indeed could have been hidden in the fonts of a book during Elizabethan times. However, he found none and questioned why anyone would want to construct such a cipher.²⁵

The British report apparently left the proponents unfazed at Riverbank. First, Fabyan, true to form, noted that Pollard’s conclusions did not jibe with Powell’s and hoped that “it will be consistent to show Mr. Pollard the error of his conclusions, and have him consider the matter further...”²⁶

Next, disregarding the report from London, Powell applied to a local university to present a slide show on the Biliteral Cipher, cheekily citing Manly as a character reference. Manly told both the lecture coordinator and Powell that he disagreed with Riverbank’s conclusions, but his belief in freedom of speech led him to support the public appearance.²⁷

The Great War

The early phase of the investigation into the Biliteral Cipher began to wind down as the United States became involved in the Great War in Europe. Fabyan in June conceded to Manly that “events are moving in such a way today as to leave no room for the study of antique ciphers”; however, he said, “we are pounding away doing the best we can from day to day.”²⁸



Elizebeth and William Friedman during his military service in World War I

In fact, Manly had volunteered his full-time services to Van Deman in March and was in uniform by October.²⁹ Van Deman wanted a cryptologic expert in his organization and arranged to have Parker Hitt detailed to military intelligence (MI) for the war. However, after arriving in Washington, Hitt encountered General Pershing, who knew Hitt's

abilities as a staff officer; Hitt went to France instead of MI. Consequently, Van Deman offered Manly a commission as a captain. Manly then arranged with the university administration for a leave of absence to support the nation's war effort.³⁰

Finally, before he went into military service, Manly let Riverbank know what he really thought. Manly told Powell bluntly in a letter that "[t]he last visit I made to Riverbank indicated very clearly that the process of assignment [of letter values in a supposed printed cipher] is always a tentative one which depends for its success not upon the possibility of clearly recognizing the classification of letters independently of what they are expected to spell but upon repeated trial classifications directed to making them spell intelligibly." That is, he charged, Riverbank was cheating.³¹

Manly served in MI-8 of the Military Intelligence Division during the Great War, and he briefly became the section's chief when its first chief, Herbert Yardley, was given an overseas assignment. He solved an important cipher message that resulted in the capture of a German spy, although others received public credit for it.³² Manly and Yardley produced a history of the MI-8 effort, and the director of Military Intelligence, after the war, gave Manly equal credit with Yardley for building up MI-8.³³ Although he kept a reserve commission in military intelligence, Manly never again engaged in official cryptanalysis.³⁴

In the period before World War I, the United States began for the first time in the modern era to engage in communications intelligence. With an effort directed primarily at Mexico, secondarily toward Germany, American intelligence was good at intercept of cables and radio messages but had no official cryptanalytic personnel. Learning this, Fabyan placed his private cryptologic capabilities at the disposal of his country and assisted the government in cryptanalysis. He also volunteered the Friedmans, who had developed some expertise in cryptology,

to train Army Signal Corps personnel in codes and ciphers.

Elizbeth Friedman felt they were pioneers. Examinations of literary codes and ciphers had given them a generic understanding of cryptology, but this was not adequate preparation for military work. “We therefore became the learners or students,” she recalled, “the teachers and the workers all at once.”³⁵

Within a year, however, William Friedman passed the required tests, was commissioned, and in May 1918 was assigned to the military intelligence component supporting the American Expeditionary Forces in France. His commission had been held up for almost a year due to Fabyan’s conniving; Fabyan had wanted to retain some control over American codebreaking, and, to use Friedman as bait, he had intercepted and withheld official mail to Friedman concerning his commission.

Elizbeth Friedman, though convinced of Mrs. Gallup’s sincerity about the Biliteral Cipher, believed her wrong and did not feel she could continue to work at Riverbank in those circumstances. In addition, her father, in ill health, needed her at home. She left Riverbank and spent the year of her husband’s military service in her hometown, Huntington, Indiana.

Looking back at the camaraderie with a nostalgia that affected many ex-soldiers, Manly wrote in 1919, “My association with the officers of M.I.D. and particularly the opportunity to work with you [General Marlborough Churchill] and Colonel Van Deman in such an organization as you created, is one of the incidents in my life upon which I set the highest value.”³⁶

After the War

The Friedmans, upon William’s return from France, discussed their plans for peacetime. William decided to look for a position in industry and actu-

ally interviewed several places as a geneticist. Fabyan, however, wanted them back and made promises that they could conduct a less partisan examination of the Baconian ciphers; he also dangled money in front of them, telling William he had continued his salary during Friedman’s military service. The Friedmans also demanded the right to live off Riverbank premises so Fabyan could no longer interfere in their private lives.³⁷

When Fabyan agreed to all these conditions, the Friedmans returned to Riverbank in May 1919.³⁸ However, despite his promises, Fabyan continued to pursue the Baconian cipher in accordance with Mrs. Gallup’s methods. He also ignored or forgot what he had said about Friedman’s back salary.

Particularly galling to William was Fabyan’s insistence that Friedman accompany him to lectures on the Biliteral Cipher and run the “lantern” for his slide show. In the course of these presentations, Fabyan would tell about Friedman’s cryptologic service during the war and use this to lend authority to the Riverbank version of the Baconian theory. Friedman told Manly in retrospect that he had always had doubts about the biliteral theory and resented the way Fabyan manipulated him. However, Friedman, again economically dependent on Fabyan, was unwilling to risk Fabyan’s wrath by challenging him on the matter and had to put up with that kind of treatment.³⁹

The army came to Friedman’s rescue. He was asked first to accept a commission in the Signal Corps, then the offer was changed to a civilian contract; Friedman accepted a position as consultant on compiling codes for army use. The Friedmans delayed informing Fabyan until a few days before their departure from Illinois so that he could do nothing about it. Friedman—gently—told Fabyan off about the Baconian cipher when he handed in his resignation; he would not accuse Mrs. Gallup of “conscious fraud” but told Fabyan he would never

succeed in his endeavor until he found scholars other than Mrs. Gallup who could discover a cipher system in the old books.⁴⁰

The couple left during the Christmas holidays of 1920 and began work in Washington on January 2. Fabyan, as Elizebeth remembered it, accepted the departure “not in a very gracious manner.”⁴¹

Both Friedmans worked for the army for a year. William continued on contract through the 1920s, while Elizebeth took a position with the navy, which was short-lived due to her pregnancy with the couple’s first child. In the late 1920s she went to the Treasury Department as a cryptanalyst. In 1930 William was called on to establish the Signals Intelligence Service, a generic cryptologic organization for the army. Arguably, more than anyone, he put US cryptology on a scientific basis and prepared the army organization and personnel for the efforts needed in the Second World War.

Friedman and Manly corresponded throughout the 1920s. The professor in Chicago wrote a series of articles about historical cryptology and appreciated Friedman’s willingness to get copies of documents for him at the Library of Congress. In the 1920s, as part of his effort to reform the army’s cryptologic practice, Friedman sought to regularize the vocabulary of cryptology and had to coin a few terms himself; since he respected Manly’s expertise both in philology and cryptology, Friedman sent his draft vocabulary list to Chicago for Manly’s approval before promulgating it.

Elizabeth Wells Gallup passed away in 1934. Colonel George Fabyan died two years later.

John Manly and a sometime colleague at the University of Chicago, Edith Rickert, completed and published an eight-volume edition of Chaucer in 1940, considered the definitive edition of Chaucer’s works. She died about a year before its publication, he just after, in April of that year.

In 1957, after both Friedmans had retired, they came full circle and published a book entitled *The Shakespearean Ciphers Examined*. In it, they demolish the concept of a cipher in the first folio.

William Friedman retired from government service in 1955 and passed away in 1969. Elizebeth died in 1980.

Conclusions

In their book on the Shakespearean ciphers, the Friedmans acknowledged that they were making critical remarks about Colonel George Fabyan but noted that, despite them, they would “acknowledge with gratitude our debt to him for introducing us to Elizabeth Wells Gallup, whose work on the question of Shakespearean authorship aroused our life-long interest in the subject.”⁴²

George Fabyan was obsessed with the Biliteral Cipher. He found, however, that methods he used in business—huge investments of money, bullying employees, and “booming” success—were of little avail in academic literary studies.

In Manly, Fabyan found a person he could not manipulate. Manly had his own high status and was not dependent on Fabyan for either his income or “psychic rewards.” This was not the case with the Friedmans, at least until the government offered them jobs after World War I.

It is not clear what motivated Manly to continue working for such a long time with an unscholarly and demanding person like Fabyan. It is possible he enjoyed the intellectual challenge of the puzzle. It is more likely he saw an opportunity to keep apprised of progress on a potential source of academic trouble, along with the opportunity to refute and thus end it.

The government’s poor state of military readiness in the decade before World War I was reflected in the state of affairs in the Military Intelligence Division. Although Major Ralph Van Deman had made considerable progress in establishing an intel-

ligence capability, he had no resources in cryptology. This forced the army to “outsource” its cryptanalytic work to talented and unofficial amateurs, such as Manly or the Riverbank staff.

Inadvertently, the work on the Biliteral Cipher, together with the background research in cryptology done by Manly and the Friedmans, had prepared them for important service to their country in time of war.

Acknowledgments

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The “Hindu Conspiracy” Trials

Introduction

The two Hindu conspiracy trials of 1917-1918 are remembered in different ways by different groups.

Immigrants from India, even today, view them as a betrayal of the ideals of justice and tolerance espoused by the United States. They see the trials as instances in which the United States served as a tool of the British Empire against a people struggling for liberation.

Some military historians filter them through the perspective of World War I, as an early example of US-British cooperation against the common enemy, Germany.

Devotees of sensationalism remember them for the gunplay that occurred near the conclusion of the second trial.

For historians of intelligence, the cases shed light on the development of US intelligence agencies and cryptology, in general. In the background is a good deal of US-British cooperation in cryptologic matters, a much more extensive relationship than generally assumed.

For American cryptologists, the trial marked the public debut of William Friedman, the most influential US cryptologist of the twentieth century.

The story also involves the other Zimmermann telegrams.

The International Background

Although the waves of immigrants who came to the United States in the late nineteenth and early twentieth centuries were primarily from Eastern Europe, there were enough immigrants from India to form several expatriate colonies. Located primarily on the West Coast, in the twentieth century there were among them an increasing number of activists who strove to liberate India from British rule.

To many Americans of the time, these immigrants were known as “East Indians” or simply as “Hindus,” without regard to their actual ethnicity, religion, or place of origin in South Asia.

Advocates of Indian liberation organized societies in the United States to raise the consciousness of their fellow countrymen and distributed anti-British propaganda; organizers in California became known as the Ghadr party. As was common with many expatriate groups, there was considerable internal factionalism, as members debated options for action.

After 1915 Great Britain asked the United States to suppress the activities of Indian revolu-

tionaries on American territory, but the Department of Justice declined to do so. The Indians' activities had not violated American law.

The British government, anxious to protect "the crown jewel" of the empire—British India encompassed today's nations of India, Pakistan, Bangladesh, and Myanmar—could do little more than keep watch on the activists and wait.

After the Great War began in August 1914, struggles between Germany and Great Britain occurred also in the United States, as both sought to influence American policy and actions. British efforts were largely confined to propaganda; as much as possible, the British portrayed Germany as a nation of barbarians, with an army that committed atrocities in occupied areas of Western Europe.

Although there were many German cultural communities across the United States, the policy of the US government seemed to tilt in favor of the British. Understanding this, the Germans, in addition to propaganda, conducted espionage and occasional sabotage along the East Coast. The most famous of these overt acts occurred on July 30, 1916, when German agents blew up a munitions depot and railroad yard in New York Harbor—the Black Tom explosion.

The Germans secretly conspired with some of the Indians residing in the United States, as they also conspired with Irish liberationists. The Indians saw the Germans as a source of badly needed support for their struggle to liberate their homeland. The Germans hoped to take advantage of the movement to stir up revolt in India.

As Franz von Papen, German military attaché in Washington, who was heavily involved in espionage and subversion in the United States, recalled, "We did not go so far as to suppose that there was any hope of India achieving her independence through our assistance, but if there was any chance of fomenting local disorders, we felt it might lim-

it the number of Indian troops who could be sent to France and other theaters of war."¹ Disorder or revolt might even force Great Britain to withdraw troops from European battlegrounds to protect its important colony.

This German-Indian conspiracy gave Britain its chance to suppress the liberation activities on US soil.

When it developed intelligence information that Indian nationalists on American soil had accepted financial aid from Germany for transporting arms overseas, the British government had a tool to prompt the United States to take official action. The US neutrality law forbade various types of military action within its territory against a nation with which the United States was at peace.

Starting with seizures of documents and then police interrogations, the US government learned that Germany had been paying travel expenses for Indians considered revolutionaries and paid for the printing of anti-UK tracts.

The legal concept of conspiracy required only that the government prove that two or more people had discussed an illegal act and one of them had taken a positive step to carry it out.

The German-Indian plotting had been discovered by British intelligence, and much of the US federal case against the "conspirators" was fed by British intelligence working behind the scenes.

British Intelligence

In August 1914, in the British Navy, Rear Admiral H. F. Oliver was appointed director of the intelligence division of the naval staff. During the process of building his staff, Oliver met an old friend, the director of naval education, Sir Alfred Ewing. Oliver knew Ewing had an interest in cryptology and broached the idea of having Ewing establish a codebreaking organization. Ewing agreed, under the

misimpression that the coming war would be short and he would be able to handle both jobs.

Ewing initially hired "Masters": teachers at the naval colleges at Osborne and Dartmouth who were proficient in German. Room 40 was on the first floor (US second floor) of the Old Admiralty Building.

In October 1914, Captain William Reginald Hall (later Admiral Hall) was named director of the intelligence division of the Royal Navy. Although known as Reggie to his friends, Captain Hall was called "Blinker" by the rest of the navy, from a nervous tic he had. Hall had had a distinguished naval career, but by mid-1914, his health had worsened, and he asked to be relieved of active command.

Hall greatly impressed at least one of his American contacts. The US ambassador, Dr. Walter Page, described Captain Hall as a "genius." Page gushed: "I shall never meet another man like him.... Hall can look through you and see the very muscular movements of your immortal soul while he is talking to you. Such eyes as the man has! My Lord!"

Officially the intelligence division, the code-breaking organization, became better known then and now by a nickname based on its location: it was called "Room 40" or "Room 40 OB" [old building]. Among the staff recruited for Room 40 were government officials as well as schoolmasters and students, including R. D. Norton, a former member of the Foreign Office; Charles Godfrey, a school headmaster; and Alastair Denniston, a teacher of German. Many of them were neophytes, but they learned quickly and developed into a truly professional staff.²

US Intelligence

With the beginning of the Great War in Europe, officials in the Department of State attempted to bring together the few secret agencies of the government but succeeded only in setting off turf battles among them. This effort, though it failed in its objectives, did result, eventually, in better circula-



Leland Harrison, head of the Bureau of Secret Intelligence in the State Department, 1915.
Library of Congress

tion of information among departments, although nothing like coordination emerged. The concept of a central government agency for intelligence was a couple of generations away.

The US Army and Navy had had intelligence organizations since the 1880s—the Office of Naval Intelligence had been established in March 1882 and the Military Information Division in October 1885—but they served primarily departmental interests. They served as repositories of military and naval data, but did not do analytic studies, undercover operations, or communications intelligence.³

At that time, the Department of State had no organic intelligence organization, although it had on occasion borrowed operatives from the Treasury Department's Secret Service for specific tasks.

In April 1916, the State Department organized a secret intelligence bureau under the direction of Leland Harrison, a career diplomat.⁴ Harrison had been educated at Eton and Harvard. Before his

assignment at the State Department, he had been second secretary in London and first secretary in Chile.

Herbert O. Yardley⁵ worked with him a few years later and described Harrison (without naming him) in *The American Black Chamber*: “He was positively the most mysterious and secretive man I have ever known in my sixteen years of experience with the United States government. Although I dealt personally with him for several years, I know less about the man now than I did the first day I saw him. He was almost a human sphinx and when he did talk his voice was so low that I had to strain my ears to catch the words.”⁶

The Bureau of Secret Intelligence was somewhat independent, although nominally subordinate to the Division of Information, one of the standing divisions of the State Department. The Bureau was relatively small and frequently had to depend on assistance from the secret services of other cabinet departments.

Riverbank and the Friedmans

George Fabyan, a wealthy Chicago industrialist, had set up a private “think tank,” Riverbank Laboratories, near his home in Geneva, a bucolic town a short distance west of Chicago. He pursued scientific research that he expected would make money for him, particularly in agriculture and acoustics. But he also sponsored research in other areas that he hoped would win him prestige as a patron of scholarship.

In June 1915, as part of his plan to establish a research facility in genetics, Fabyan interviewed a graduate student from Cornell University. Impressed, he hired William F. Friedman and, as an employment inducement, built a laboratory to Friedman’s specifications. The young geneticist completed a teaching assignment at Cornell and joined Riverbank in September 1917.⁷

Riverbank Laboratories also had a research area devoted to Elizabethan-era literary codes; this

endeavor employed a number of young ladies with college educations. Friedman worked with Elizebeth Smith, one of the ladies occupied in studying the literary codes, and the two married.

Friedman became interested in cryptology through knowledge of his wife’s work and transferred to Riverbank’s cryptologic section. As he studied cryptology, with his scientific background, Friedman had the insight that work in modern ciphers required knowledge of advanced mathematics.

At the beginning of World War I, the US Army had little experience in modern cryptology, either in solving enemy systems or in protecting its own communications. Fabyan, therefore, volunteered the services of Riverbank to the government to do both and to teach both, gratis. The cryptologic section at the institution actually performed cryptanalysis on some intercepted messages, but, more importantly, it conducted mass training in essential cryptology for US Army Signal Corps personnel.

In early 1918, Fabyan designated the Friedmans to conduct the training, forcing the husband and wife team to go even deeper in their study of all aspects of cryptology in preparation for teaching. With his scientific education and hers in social science, the pair of them went well beyond existing knowledge of cryptology and struck out in new directions.

Eventually, Friedman took a commission in the Signal Corps in June and left for France. Before that, however, he made his first public appearance as a cryptanalyst.

According to an unfinished and unpublished memoir by Elizebeth Friedman,⁸ an agent of Scotland Yard carried an attaché case containing dozens of intercepted letters to Riverbank. These encrypted letters contained details of plotting between Indian residents in the United States and Germany. As part of Fabyan’s support to the government, the Friedmans were put to work on the letters.

It cannot be determined today whether the story about a Scotland Yard official visiting Riverbank is actually true. As far as is known, Scotland Yard at that time did not operate extensively in North America. It seems more likely the person who met the Friedmans was a representative of British intelligence (perhaps the same one who performed liaison with the Justice Department), since Britain's intelligence organizations took the lead in activities to counter the Indian revolutionaries. He might have passed himself off to them as coming from Scotland Yard because the law enforcement agency was well known and would be more likely to impress a young Midwestern couple unschooled in international affairs.⁹

Examining the letters, Friedman found that the author of one of them, Heramba Lal Gupta, had enciphered only important words in the text, providing clues in the context for the solution.

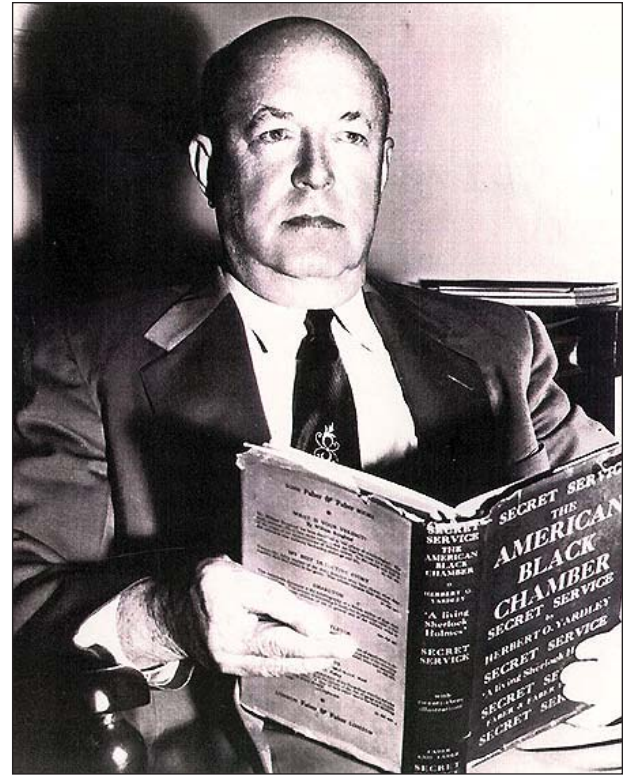
The Zimmermann Telegram

As the Great War in Europe settled into a stalemate, the German government decided that its best hope for victory was to wage "unrestricted submarine warfare." By sinking ships sailing to the British Isles, Germany could starve Britain out of the war.

However, the Wilson administration was on record favoring freedom of navigation of the seas and against such submarine warfare.

Therefore, to keep the United States out of the war, the Germans developed a plan to keep the American military too busy to intervene in Europe.

German Foreign Minister Arthur Zimmermann had a telegram drafted for the government of Mexico. In it, Zimmermann asked the Mexican military to keep the American army tied down on the border. "When" the Central Powers won the war, the Mexicans would be rewarded financially, and Germany would support the country's claims to the southwestern US states lost as a result of the Mexican War.



Herbert O. Yardley with his memoir, *The American Black Chamber*

Because the British had cut Germany's direct telegraphic communications with North America, the German Foreign Ministry persuaded the Americans to transmit German encrypted diplomatic message inside an American transatlantic diplomatic cable.

The British intercepted this message, as well as a retransmission between the German embassies in Washington and Mexico City. Room 40 was able to solve the message, giving the British an immensely powerful tool against its enemy.¹⁰

The decrypted version was passed to the United States through Edward Bell, second secretary at the US embassy in London. The British, of course, did not tell the Americans that the German message had been discovered inside one of their own cables!

The Wilson administration released the text of the message to the press, causing a sensation across the country. The message did not bring the United States immediately into the European War, as is sometimes said, but did create anger against the Germans that helped prepare the nation for war. This was particularly important because many parts of the United States were neutral about the war or even pro-German.

The Other Telegrams

Most histories of UK-US cryptologic cooperation in World War I end with the Zimmermann telegram, but this famous cable was only one facet of vigorous but secret bilateral interaction on cryptologic matters. The messages concerning the Hindu conspirators were another.

As it had with the Zimmermann telegram, the British government decided that, in the case of the Indian revolutionaries, the benefit to be gained from releases of decrypts outweighed any damage such releases might cause.

When the British government authorized Admiral Hall to release decrypted cables regarding the Indian conspirators to the Americans, he approached Edward Bell, second secretary of the US embassy in London.¹¹ Bell had worked with British intelligence previously and had established ties to Hall as they worked out the problems related to release of the Zimmermann Telegram and later decrypts.

According to his biographer, Admiral Hall would not have had the Indians arrested; he believed they were more interested in funds than revolution, and their communications, once decrypted, contained a good deal of useful information about German activities in other matters.¹²

In addition, a British agent approached John W. Preston, US attorney in San Francisco, and gave him copies of nine decrypted messages exchanged by the Foreign Office in Berlin and the German embas-

sy in Washington. These messages clearly showed German money paid to Indian activists, particularly Taraknath Das, for travel and fomenting revolution in India. They implicated Foreign Minister Zimmermann and his ambassador to the United States, Count von Bernstorff, in many transactions.

Preston, naturally anxious to use these cables as evidence since they greatly strengthened his case, contacted the attorney general about this development in late November 1917. Preston asked the attorney general to find out whether the Department of State had copies of the same cables and if the department was willing to have them used in a court case.¹³

This stimulated negotiations over the cables between Leland Harrison¹⁴ in the State Department and British intelligence (called “the Admiralty” in US messages), using Edward Bell from the embassy in London as intermediary.

Harrison recapped the situation for Bell and asked Bell to ascertain whether the British government still wished to maintain the secret source of the messages. If the answer was no, the attorney needed proof admissible in court that the telegrams had been delivered to any of the conspirators.¹⁵

The following day, Bell responded that British authorities were as “anxious as ever” to keep the source of the telegrams secret. Their agents in the United States had been instructed to say, if asked about them, that the British government had received them from the American government in the first place, compared them with information obtained from other sources, and then sent them back to America for use in prosecuting the conspirators.¹⁶

Harrison reassured Bell that the department would endeavor to follow the guidance from the Admiralty, but the case in San Francisco could fail if the prosecutor did not produce evidence of the delivery method of these telegrams. Telegraph

offices in the United States were in the habit of destroying their records after twelve months. Harrison recommended that the British furnish copies by mail of the messages, along with copies of the ciphers and German text, since copies could not be obtained locally.¹⁷

The British did furnish copies of the cables requested by Harrison, but he found discrepancies between the dates of these and copies given earlier to the prosecutor on the West Coast. Bell explained that the discrepancies derived from the use of two different versions. The British versions bore the original dates of dispatch, while the Americans had the dates on which the messages were relayed by the international telegraph system from Buenos Aires or Stockholm.¹⁸

Apparently after consultation with the British, Bell asked Harrison whether proof that the messages from Berlin had been retransmitted from Buenos Aires could be used in court as reasonable proof that the telegrams had actually been delivered.¹⁹

Unfortunately, Harrison told Bell, time was too short to obtain proof from Buenos Aires about the telegrams. Moreover, there were discrepancies not only in the dates of the cables, but in the texts. He spotted differences in the text of the copies he got from San Francisco and those copies sent from London to the State Department.²⁰

Some discrepancies had occurred, Bell replied, because of word choices by different translators of German. Further, the serial numbers on some telegrams were not decipherable. He volunteered to forward the German text of the most important telegrams so the State Department could make its own translations.²¹

On December 7, Assistant Attorney General Charles Warren forwarded two encrypted messages, dated October 1916, exchanged between Bernstorff and Germany's ambassador in Peking. They had been obtained through unspecified means by John

Preston, the US attorney in San Francisco; Warren asked if Harrison could provide decryption for them.²²

Bell, who already knew of the existence of these messages, agreed to pass them to the British. A solution was "uncertain," however, because the British had had little practice with codes used between Germany and Peking.²³

A week later, Bell confirmed the British could not solve the Peking cryptograms. He suggested trying to obtain the cipher text of a Bernstorff message to Berlin that repeated the Peking text. Since the British already had solved that system, it might help with the other cables.²⁴ As it turned out, even a parallel text, taken from a message obtained from other sources, was no help in getting a solution.²⁵

On January 1, 1918, Bell sent Harrison a letter that provided more detail on the Admiralty's involvement in the West Coast trial. The Admiralty originally had sent its agents in San Francisco a number of decrypted messages for use at the trial. There would now be no reason to keep secret that the British had solved them as that had already been compromised by this action.

The Admiralty, Bell said, was forwarding fourteen additional messages, together with solutions, that had passed between a suspect named Chakravarty and Berlin, through the German foreign office or the German ambassador in Washington. The British hoped that Harrison would turn these over to the Justice Department, telling Justice that the Department of State had been supplied with the original telegrams from London and that it had, with its "well known acumen," solved them and returned the originals to the British.

Many messages concerned the transfer of funds from German sources to the Indians. Some reported the movement of revolutionaries or plans to trans-

port weaponry in Japanese ships. One message talked about a plan to stimulate a convict revolt in the Andaman Islands.²⁶

Bell sent Harrison the text of one of the latest decrypts on April 9. Bernstorff had telegraphed Berlin on February 3 or 4, 1915, that Ram Chandra in San Francisco had suggested inducing the government of Afghanistan to invade the Punjab, part of northern India.²⁷

If the messages were used, Harrison would have to tell in court why action had not been taken before. Bell suggested a "reason" might be that the United States could not heretofore let it be known the State Department was able to decipher this particular code; otherwise some unspecified advantage would have accrued to the enemy.

Further, Bell, possibly with tongue in cheek, suggested that Harrison explain the British spelling of some words in the translations by the fact that Harrison had studied at Eton and had been unable to get the "cruel and unusual spelling" out of his system.²⁸

Meanwhile, on December 5, 1917, Secretary of State Lansing directed the American minister in Panama to obtain copies of all messages between the Germans in Buenos Aires and the German embassy in Washington during May 1916. This was a priority, but afterward, according to the instructions, the minister should endeavor to find other German messages from Buenos Aires to Washington dated December 18, 1916, and January 11, 1917. About two weeks later, on December 17, 1917, the American minister in Panama informed the secretary of state he was sending copies of the three cablegrams desired.²⁹

Harrison informed Bell the Department of State had given the attorney general copies of seven of the nine telegrams that passed between Buenos Aires and Washington, and the Justice Department would send them to San Francisco. The State Department

also had informed the attorney general that it would not explain where or how they had obtained copies of the encoded messages since they were obtained outside the United States, except for two. Further, the State Department was not prepared at that time to send a representative to appear in court to explain how the messages were deciphered. Harrison remarked that it was not clear whether, on this basis, the federal attorney in San Francisco could have the cables admitted as evidence.³⁰

In early January, Harrison and Bell sought to clarify some basic problems in the international cooperation. Apparently, Harrison had complained about the profusion of players in the case because Bell gave him assurances from the Admiralty that the British in the future would deal only with the State Department on these encrypted telegrams.³¹

Bell had been informed that the conspirators used nine codes. Among these were a spelling code, a dictionary code, and a book by Price Collier.³² Harrison told Bell these codes were known; the dictionary code had been learned from the defendant Chakravarty, possibly in his interrogation by police or by search of his residence. The Price Collier book code had been worked out in the United States independently of the British. All three codes had been produced as evidence in the trial in San Francisco.³³

Harrison, for unspecified reasons, was interested in obtaining a copy of a codebook known as "55515." Bell told him that Admiral Hall promised a photostatic copy, but on the understanding that it was for Harrison's use only and the State Department would never make public the contents of any telegram in the code without consulting Hall first.³⁴ Harrison wired Bell that he accepted the Admiral's condition and asked him to express thanks.³⁵

In a new development, the federal attorney in San Francisco asked for certificates showing that the letters had been obtained by the British censorship

office. Bell told Harrison the certificates were being prepared and would be forwarded shortly.³⁶

It would not be difficult to state how the British obtained the correspondence, since it was well known publicly that they maintained a censorship office for the mails.

The Justice Department request actually went well beyond this. Justice asked, first, that the State Department request the original documents from the British. Second, Justice asked that an appropriate British official certify each letter, stating they were originals with the envelope taken from the mail by the British. Justice also wanted, if possible, the steamer name and place of "pillaging" the mail. The American embassy in London was to certify that they had received the material from the British and the authenticity of the British certifications.³⁷

In response, Bell said British authorities were reluctant to incur the risk involved in sending the original letters overseas under wartime conditions. British authorities, however, had already prepared photostats, with certificates indicating where and when each letter had been removed, as well as the original addressee and date postmark. The certificates were issued by the chief postal censor and authenticated by the British Foreign Office.³⁸ These were sent from the British embassy in Washington to Harrison on April 8.

The Department of Justice agreed to the proposal for certification by photostat. It asked, moreover, that the destination of the steamer be stated, to bring out the fact that the letter in question had been destined for either Europe or the United States.³⁹

Before this process could be completed, however, the trial ended with the conviction of most defendants. The British asked whether the certification would then be needed.⁴⁰ Harrison relayed the US attorney's feeling that the defense in San Francisco might reopen the case by claiming vio-

lence at the end of the trial had had an adverse effect on the jury. He suggested the British prepare the documents as requested, as they might still be necessary for the prosecution, should the appeal go forward.⁴¹

The Trials

The trials were intriguing, but, cryptologically speaking, were an anticlimax.

In early 1917, authorities in the United States began indicting and arresting Indian immigrants and a few Germans for violation of the US neutrality laws. Arrests of the Indians and some others were carried out in Chicago and on the West Coast. Eventually, thirty-five were tried for conspiracy, including nine Germans, nine Americans, and seventeen Indians.

In Chicago, ten Indians and five Germans were indicted on June 2; the trial commenced on October 17, 1917.

William Friedman was called to testify against Heramba Lal Gupta and three German defendants, and was examined by Mr. Joseph B. Fleming, assistant United States attorney. It is worth quoting the transcript of this examination.

Excerpted Text from the Trial Transcript⁴²

Direct examination by Mr. Fleming:

My name is William F. Friedman. I live at Geneva, Illinois. I am on the staff of the Riverbank Laboratories; one of the departments thereof studies ciphers and codes. I have been connected with those laboratories two and a half years. The letter handed me I have seen before.

Said document was thereupon marked for identification Government's Exhibit "Code."

Friedman: I first saw this document three weeks ago. We have decoded that letter. The decipherment is a true and correct decipherment of this letter.

Q: Will you read it?

[Defense counsel, Mr. William S. Forrest, immediately objected. He asked Fleming a number of questions about the authorship, address, and timing of the letter. The judge overruled all defense objections, but adjourned for the day before Friedman could continue. Friedman took the stand again the next day.]

Second Excerpted Text from the Trial Transcript

Friedman: I was sworn yesterday. I have had occasion to make an examination of the typewriting of this letter and to compare it with the typewriting of the words "Mr. Chatterjee and Mr. Albourne, Hotel Des Alpes" on the envelope. There is similarity; it is written on the same machine. I testified yesterday that my decodement of the letter was a true and correct decodement. I deciphered the letter in two ways. The first was an incomplete decipherment, based upon all the rules of deciphering and decoding. The second was a complete and absolute proof of the partial decipherment; and the remaining words which were necessary for a complete decodement or decipherment. [Correctness of decodement and signature admitted by counsel for defendants.] The second method was obtained through the book by means of which the decodement was made, said book having been obtained, the entire decipherment or decodement being achieved by means of this said book. The second method—merely the one by means of the book—being absolute and

correct. The book is by Price Collier, entitled *Germany and the Germans* Edition of 1914.

MR. FLEMING: Your honor, I am going to submit to counsel and the jury ---

MR. FORREST: We object to the record being lumbered up with all this. [portion omitted]

The defense counsel objected to the letter as evidence on the grounds that it was stolen, that it had been written well before the time of the criminal activity alleged, and that it involved only one of the defendants. Their objections were to no avail.

The trial continued until the 20th, when all defendants were found guilty. The verdicts were upheld on appeal. Many of the convicted were pardoned or had their sentences commuted in the early 1920s when the passions of World War I had subsided.

Alas, Friedman did not get to continue his testimony and, as far as is known, was not subjected to cross-examination. His first appearance in public was short, measured in minutes only, but everyone must start somewhere. As a result of his testimony in Chicago and at a similar trial in San Francisco, Friedman was identified as an expert on cryptology from coast to coast.⁴³

Later, Friedman, while working for the army Signal Corps Code Compiling Section, was able to expand on the matter. He published an article showing in detail how one of the cipher messages was solved and noting that there could be no question about the authenticity of the analyses of the messages, for they were all "scientifically demonstrated and proved themselves."⁴⁴

In San Francisco, eight Indians and some others were indicted by a federal grand jury in April 1917, the same day President Woodrow Wilson signed the declaration of war against Germany. The charge was conspiracy to form a military enterprise against

MR. FLEMING: I offer in evidence this book, and more particularly the page bearing the address, M. Albourge, Hotel DesAlpes, Territal, Montreau, Switzerland. *(On which said page appears written in long hand in ink the words and figures following, to-wit)*
~~Page from book~~ Mr. Albourge
Hotel Des Alpes
Territal
Montreau Switzerland

W I L L I A M F. F R I E D M A N

Direct examination by Mr. Fleming.

My name is William F. Friedman. I live at Geneva, Illinois. I am on the staff of the River ^{bank} Laboratories; one of the departments thereof studies ciphers and codes. I have been connected with those laboratories two and a half years. The letter handed me I have seen before.

Said document was thereupon marked for identification Government's Exhibit "Code"

I first saw this document three weeks ago. We have decoded that letter. The decipherment is a true and correct decipherment of this letter.

Q: Will you read it?

Excerpt from transcript of 1917 trial in which cryptanalyst William Friedman testified against four people accused of violating US neutrality laws

Great Britain. The trial lasted from November 20, 1917, to April 24, 1918.

At the trial's beginning, the defendants appealed to the court in the name of justice and asked the United States to live up to its anticolonial and revolutionary ideals by dismissing the indictment. This appeal was to no avail.

Among the indicted was Taraknath Das, from Bengal, who edited an anti-British newspaper published in Canada; he had also worked as an immigration interpreter in Vancouver for the United States. Another defendant was Ram Chandra, editor of the newspaper *Ghadr* in San Francisco.

On February 27, the US attorney produced the cables in court, identifying them as intercepted German diplomatic correspondence that showed how the Germans had plotted with the Indians to foment revolution in India. In addition to information about the indicted men on trial, the cables also purported to show Sir Rabindranath Tagore, the famous poet, plotting with the Japanese as well as the Germans against the British.

The *Washington Post* commented that some aspects of these documents remained a mystery: one message was headed "very secret"; others contained references to people identified only by initials or the word "sister."⁴⁵

Dr. Das, a US citizen, was among those convicted. He served about one and one-half years in federal prison.

Near the trial's end, one defendant, Ram Singh, rose, drew a pistol, and put three shots into fellow defendant Ram Chandra. The shooter was immediately killed by US marshals, who fired across the room over the heads of trial participants.

At the end of the trial, twenty-nine defendants were found guilty: fifteen Indians, fourteen German-Americans or Germans. Among them was Franz von Popp, German consul in San Francisco.

Discrepancies in the Stories

As Elizebeth Friedman recalled it, the husband and wife codebreaking team perceived that the writer of the letters they were given originally had used a book code, and they quickly solved it. In fact, they did so without having the underlying book on hand. According to his wife, Friedman made some inquiries at a number of shops in the Chicago area but did not find the actual volume in use. Eventually, it was determined that one of the books used for the code was Price Collier's *Germany and the Germans*.

When Friedman visited San Francisco to testify at the trial, he stopped at a university bookstore in Berkeley and described to the proprietor what he was seeking. Eventually the bookseller produced the second volume of a German-English dictionary published in 1880. This proved to be the other book used for the secret correspondence.

In his trial testimony, Friedman under oath gave the name of the book used for the code as Collier's tome.

The suspicion lingers that William Friedman had been used as a front-man for British intelligence, and had been provided with this information by his foreign contacts. This cannot be proved or disproved from the available materials.

A Sequel

The US-British exchanges on cryptologic matters had a small sequel.

In a letter from Paris on May 9, 1919, Harrison, by then secretary to the American Commission to Negotiate Peace at the end of World War I, asked Bell about a pair of code books with red covers the British had sent "many moons ago," probably the "55515." An intermediary had asked Harrison to lend them to the Cipher Bureau, but Harrison had honored his promise with the British not to allow the books out of his control by keeping them in his own safe. Harrison, however, felt the situation had changed: first, the British were no longer

as cooperative now that the war was over. Also, since the war was over, the importance of keeping the possession of those books secret from the enemy had diminished. Harrison also argued that the Cipher Bureau might properly be considered part of his office.

Harrison therefore asked whether Bell could see any objection to letting the books out of his physical possession and permitting the Cipher Bureau to use them, with the strict understanding copies were not to be made.⁴⁶

The "Cipher Bureau," of course, was the new cryptanalytic organization, subordinate to the State Department and headed by Herbert Yardley. It later became known as "The Black Chamber."

In a letter from London on May 12, Bell said he could see no objection to lending the books to the Cipher Bureau for work on the conditions that Harrison had stated. He accepted the argument that the Cipher Bureau was actually part of Harrison's office, and therefore this loan would still be in the spirit of the promise made to Admiral Hall.

Bell also pointed out that it was still necessary to keep possession of the code books secret, even though the war was over. The manner of their acquisition might cause unpleasant consequences to some unspecified people if their existence became known.⁴⁷

A Second Sequel

The term "decodement," which William Friedman used in his trial testimony, must have grated on his sensibilities almost as much as it does on contemporary readers.

In 1922, Friedman, by then a government cryptologist, coined the word "cryptanalysis," which is in common use today. Friedman had kept up correspondence with Professor John Manly of the University of Chicago, with whom he had worked on the Baconian cipher at Riverbank Laboratories before the war. In a handwritten postscript on the

margin of a typewritten letter to Manly, Friedman asked, "By the way, do you approve of the term 'cryptanalysis' to cover the science of the analysis of codes and ciphers? You know, we have no word that exactly conveys the meaning."⁴⁸

Manly's response to this question, if he sent one, has not survived.

Conclusions

The story of the Hindu conspiracy trials reveals the important fact that US-UK cryptologic interchanges were earlier and much more extensive than scholars have previously realized.

The knowledge of this exchange was shared by several high cabinet officials, including the secretary of state and the attorney general. The secretary was even willing to intervene in the matter to obtain needed materials through a third country.

The flow of decrypts was all one way, from Britain to the United States. Given the nonexistence of a US cryptanalytic organization, this is not surprising. However, it also reveals that the British were eager to do whatever it took to convict the Indians, including expose some of their most secret intelligence activities.

The US organizational deficiency led to a somewhat scattershot approach to intelligence sharing in the beginning. There were no special channels for handling of cryptanalytic material, so British decrypts were provided to senior US officials and line officers, such as the federal attorneys. This practice ended only when it became unwieldy for the recipients and the principal US official involved complained.

William Friedman's first public appearance was short, but it helped make him a noted figure in the field of cryptology.

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Notes

1. Quoted in G. J. A. O'Toole, *Honorable Treachery: A History of US Intelligence, Espionage, and Covert Action from the American Revolution to the CIA* (New York: Atlantic Monthly Press, 1991), 230.
2. Patrick Beesley, *Room 40: British Naval Intelligence, 1914-1918* (New York: Harcourt Brace Jovanovich, 1982), 8-20.
3. O'Toole, *Honorable Treachery*, 177-81.

4. Leland Harrison (1883-1951). Harrison in 1918 served as secretary to the US Commission to Negotiate Peace. He left the Foreign Service in 1930 but was recalled to serve as minister to Switzerland in 1937; he stayed in that position through the end of World War II. Over his career in the State Department, Harrison was US minister to Sweden, Uruguay, and Romania. He died in 1951.
5. Herbert O. Yardley began his career as a code clerk with the State Department and then became a cryptanalyst for the army in World War I. After the war, he was chief of the first civilian cryptanalytic organization in the United States. In 1931, he published a tell-all memoir, *The American Black Chamber*.
6. *Ibid.*, 172.
7. William F. Friedman, letter to former Congressman Swagar Sherley, March 19, 1924. A copy is in the collection of Riverbank Laboratories in Geneva, Illinois. Sherley (D-KY) served in the US Congress from 1902 to 1918.
8. In the David Kahn Collection, National Cryptologic Museum Library.
9. Or, of course, the memoir dated from the 1950s, and Elizebeth Friedman might simply have misremembered the visitor.
10. The version sent initially was in a newer German diplomatic code, which Room 40 had not yet solved. When the German embassy in Washington retransmitted the cable to Mexico, it was reencoded in an older system, since the Germans in Mexico City did not yet have the newer ones. The British had solved much of the older codebook—and now had a good crib to help cryptanalyze the newer ones.
11. Edward Bell, second secretary of the US embassy in London, was a graduate of Harvard. He had been assigned to the UK in 1913. Bell died in an accident in 1924 while serving as counselor at the American embassy in China. He was forty-two years of age.
12. Admiral Sir William James, *The Code Breakers of Room 40* (New York: St. Martin's Press, 1986), 155-56.

13. John W. Preston, cable to attorney general, November 22. The cable did not have a year date as sent, but according to a phrase in the message, it was dispatched the date trial testimony began. NARA, Harrison file.
14. Yet, according to a May 1916 note in Harrison's file, now held by NARA, the Department of Justice had sent photostatic copies of cipher messages and decrypts between one of the Indians and Berlin. No further information on these messages is available at this time.
15. Department of State to American Embassy, London (November 23, 1917, 4:00 p.m., #5887), NARA, Bell confidential file.
16. American Embassy, London, to Department of State (November 24, 1917, 3:00 p.m., #7807), NARA, Bell confidential file.
17. Department of State to American Embassy, London (November 28, 1917, 10:00 p.m., #5927), NARA, Bell confidential file.
18. American Embassy, London, to Department of State (November 26, 1917, 4:00 p.m., #7813), NARA, Bell confidential file.
19. American Embassy, London, to Department of State (November 29, 1917, 5:00 p.m., #7839), NARA, Bell confidential file.
20. Department of State to American Embassy, London (December 1, 1917, 7:00 p.m., #5941), NARA, Bell confidential file.
21. American Embassy, London, to Department of State (December 3, 1917, 12:00 p.m., #7856), NARA, Bell confidential file.
22. Charles Warren, note to Harrison, December 7, 1917, NARA, Harrison File.
23. American Embassy, London, to Department of State (December 3 1917, 12:00 p.m., #7856), NARA, Bell confidential file.
24. American Embassy, London, to Department of State (December 9, 1917, 12:00 p.m., #7912), NARA, Bell confidential file.
25. American Embassy, London, to Department of State (December 13, 1917, 12:00 p.m., #7958), NARA, Bell confidential file.
26. James, *The Code Breakers of Room 40*, 156.
27. American Embassy, London, to Department of State (April 9, 1918, 11:00 p.m., #9420), NARA, Bell confidential file.
28. Bell, unnumbered letter to Harrison, January 1, 1918, NARA, Bell confidential file.
29. NARA, Harrison file.
30. Department of State to American Embassy, London (January 8, 1918, 8:00 p.m., #6199), NARA, Bell confidential file.
31. American Embassy, London, to Department of State (January 10, 1918, 9:00 p.m., #8226), NARA, Bell confidential file.
32. American Embassy, London, to Department of State (January 12, 1918, 7:00 p.m., #8251), NARA, Bell confidential file.
33. Department of State to American Embassy, London (January 16, 1918, 8:00 p.m., #6272), NARA, Bell confidential file.
34. American Embassy, London, to Department of State (January 18, 1918, 11:00 a.m., #8293), NARA, Bell confidential file.
35. Department of State to American Embassy, London (January 19, 3:00 p.m., #6301), NARA, Bell confidential file.
36. American Embassy, London, to Department of State (March 8, 1918, 7:00 p.m., #2981), NARA, Bell confidential file.
37. Department of State to American Embassy, London (March 11, 1918, 4:00 p.m., #6838), NARA, Bell confidential file.
38. American Embassy, London, to Department of State (March 13, 1918, 11:00 p.m., #9043), NARA, Bell confidential file.
39. Department of State to American Embassy, London (March 15, 1918, 8:00 p.m., #6909), NARA, Bell confidential file.
40. American Embassy, London, to Department of State (April 27, 1918, 9:00 p.m., #9758), NARA, Bell confidential file.
41. Department of State to American Embassy, London (April 30, 1918, 6:00 p.m., #7506), NARA, Bell confidential file.
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43. "Kaiser Seeks Aid of China in Revolutionary Plot: Attempt at Secret Pact Revealed Code Letters Seized at Home of Chakravarty Expose Perfidy," *San Francisco Chronicle*, December 19, 1917, accessed May 31, 2019, <https://search.proquest.com/docview/576677319>; "Sought to Mix China in Indian Revolt," *New York Times*, December 19, 1917, accessed June 3, 2019.
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 45. "Huns Back Hindu Plot," *Washington Post*, February 28, 1918. Clipping in Harrison file.
 46. Harrison, letter to Bell (#89), May 9, 1919, NARA, Bell confidential file.
 47. Bell, letter to Harrison (#227), May 12, 1919, NARA, Bell confidential file.
 48. W. F. Friedman, letter to John M. Manly, January 8, 1922, The University of Chicago Library, Special Collections Research Center, John M. Manly Papers, Box II.

The Secret War with Mexico

The Mexican Revolution

The classic description summing up Mexico's misfortunes goes, "So far from God, so close to the United States of America."

The two countries had been in conflict over various issues, often land and immigrants, almost since their people had first encountered each other. The United States invaded Mexico in 1848 and, as a result of the war, gained considerable expanses of territory at Mexico's expense. In the six decades afterward, the countries officially were at peace with each other, but tension or unease was never absent on either side of the border.

Among the measures the United States took as it sought to modernize its military in the first years of the twentieth century were test mobilizations of reserve army units. It often happened that the units called to duty were deployed in the American southwest near the international border.

Long-time Mexican president Porfirio Díaz was forced to resign and flee the country in 1911. The factions that forced him out, several of them leaders of private armies, could not agree on which of their number would replace him, and the next decade in Mexico was characterized by assassinations and civil war.

At first, it appeared that an armed group led by Francisco "Pancho" Villa would succeed in taking national power. President Woodrow Wilson even sent a representative to open dialogue with him. However, after Villa suffered a series of military reverses, Wilson broke off talks.

Venustiano Carranza, another faction leader, emerged as provisional president of the preconstitutional government in 1915, at the same time promulgating a new constitution for the nation (which continues to this day). He encountered continued opposition to his rule, including armed resistance by Villa. Carranza was no friend of the United States, and the Wilson administration would do no more than recognize Carranza's regime as the de facto government of the country.

In revenge for what he considered Wilson's insult to him, Villa murdered some American mining engineers working in Mexico. Next, in March 1916, he attacked a US Army post outside Columbus, New Mexico, and shot up the nearby town.

The United States deployed army units from its Southern Department along the border with Mexico to support a punitive expedition and guard against further Mexican incursions into US territory. The military began to collect information in anticipation

of general war with Mexico. Among the sources were intercepts and decrypts of Mexican communications.

On March 15, barely a week after Villa's raid on Columbus, an expedition 15,000 strong, under General John J. Pershing, entered Mexico with orders to get Villa, dead or alive. Pershing had seen combat both in the Spanish-American War and the pacification of the Philippines; he drove himself and his men equally hard.

US Border Communications

Frederick Funston, commanding general of the US Army's Southern Department, reminded the adjutant general in May 1916 that he had a "total exposed border" of 1,739 miles. The demand for troops by General Pershing's expeditionary force left him with only five regiments on the border, with one in reserve. The easy movement of Mexicans across the border left his troop dispositions vulnerable to observation in advance of any raid. Limited means of communications meant that it would take six to twelve hours for news of any important developments to reach him.¹

An effort was already under way to remedy the situation. The army's chief signal officer reported that all mobile radios, represented by wagons and tractors (trucks, in modern parlance) available in the United States were now in the Southern Department. The secretary of war had approved purchase of six more wagon or tractor sets in the open market; these would be available in about four months.²

In March, the chief signal officer had estimated that \$60,000 would be required to purchase and install additional radio stations along the Mexican border at Fort McIntosh, Texas, and Fort Huachuca, Arizona. These installations would give the War Department reliable radio communications along the border, as well as solve the problem of communication with the expeditionary forces up to 200 miles into northern Mexico.³

A contemporary article described the radio tractor: "The instruments and switchboards are installed in a specially designed covered body, which is mounted on the chassis of a commercial truck. Sufficient space is available for the transportation of a crew of ten men. By means of a special clutch and gear the engine is made to drive an alternator for furnishing the necessary electrical energy."

The troops could raise an umbrella-type antenna in an average of eight minutes. The apparatus would transmit messages for one hundred miles, although, on occasion, twice that distance had been achieved.⁴

The article did not mention the fact, but these communications tractors could also be put to use for radio intercept.

Lieutenant Frank E. Lankford of the Office of Chief Signal Officer was sent on temporary duty to install the receiving stations in the Southern Department.⁵

Government Activities on the Border

As Washington became more concerned with developments in Mexico, all departments with assets in the country or along the border began collecting information about this potential adversary.

Captain Parker Hitt, a full-time infantry officer and part-time cryptologist, was composing a manual on codes and ciphers for general army use. To support the current crisis, he worked through the War College Division, which served as US Army intelligence, and the army's adjutant general to obtain samples of Mexican codes and ciphers.

Due to the continuing revolution in Mexico, the border area was awash in US government operatives of all types. The War College Division request therefore resulted in a torrent of captured cipher messages and cryptographic material from State, Justice, and Treasury Department sources, as well as army posts. Encrypted telegrams from Mexican officials and businessmen were collected through

radio intercept and by tapping telegraph lines. Supporting material such as keying documents, cipher disks, and enciphering instructions were obtained through customs inspections, purchase, capture, and theft.

Brigadier General George P. Scriven, chief signal officer, on May 9, 1916, said he believed that the Mexican government was using a number code similar to a word code used by the US War Department. Since messages in this system could not be read without the codebook, he requested that the War College Division (WCD) ask the department signal officer in the Southern Department for copies of any Mexican codebooks it might possess. If none existed, the WCD should be directed to procure them from the Secret Service or the Treasury Department, among others.⁶

On May 22, the army chief of staff's office, brokering a response, informed the chief signal officer that the War College Division held a single enciphered message in a Mexican system—a “figure” cipher telegram from the former governor of Sonora to Pancho Villa. The message, together with a cipher disk that enabled its solution, had been found in Villa's correspondence captured after the raid at Columbus, New Mexico. The War College Division had no Mexican codebooks at all, but would take steps to find out if the United States possessed any such thing. The chief of staff at this time issued a general direction that all cipher messages coming into the hands of military personnel should be forwarded to the intelligence section of the general staff.⁷

The military, as it turned out, did have some papers and “blanks” taken from Mexicans killed in the Columbus raid. These were forwarded from the Southern Department by registered mail to the adjutant general in April 1916. The material included a letter from the commanding general of Mexico's northern department, which quoted the plaintext of an encrypted cable he had sent to Sonora; a hand-

written copy of an encrypted message, bearing the seal of the Sonora telegraph office; three disks used for enciphering; and many related noncryptologic materials.⁸

In mid-May 1916, the secretary of war told the secretary of the treasury that it was “most important” that the War Department be able to decrypt Mexican cipher messages promptly. Secretary Newton Baker therefore requested that any codebooks or keys that were in the possession of the Secret Service be sent to the War Department for its use. The attorney general noted that he had instructed the special agent in charge of the Texas division of the Bureau of Investigation (predecessor to the FBI) to forward immediately any copies of Mexican secret codes or ciphers that he obtained. At the same time, the secretary of the treasury informed Baker that the Secret Service did not possess any Mexican codebooks or cipher keys.⁹

On May 26, the army chief of staff's office in Washington sent a request to the Southern Department's chief of staff at Fort Sam Houston, Texas, asking that copies of all known Mexican cipher codes and disks, together with copies of enciphered telegrams, possessed by the Southern Department be sent to the War College Division. Further, the office requested that positive action be taken to secure copies of “all” Mexican cipher codes and disks. Any such materials obtained were to be forwarded to the War College Division.¹⁰

As it turned out, the Department of Justice had some examples on hand, and it forwarded copies of Mexican codes used by various factions. These included five different codes found among the effects of one of the followers of faction leader Victoriano Huerta; the ciphers originally had been passed to the State Department, not War.¹¹ These had been obtained by the US attorney in Los Angeles, Albert Schoonover, as a result of the arrest—in connection with a shooting incident—of Adolfo Pecina, inspector of immigration in Calexico.

Among Pecina's effects was a "dial code," the key to decrypting a telegram to Pecina from Huerta.¹²

Other Mexican cryptologic materials were found, some in unusual ways. A local agent forwarded a copy of a new code being distributed to Mexican consuls along the border. He reported to the chief of the Bureau of Investigation that a man named Arriola, an American citizen but a "Secret Service agent of the de facto government" had registered at the St. Anthony Hotel in San Antonio, allegedly to recruit a number of Mexicans to assist Mexico in case of trouble with the United States. The code was obtained by a man named Levi, who picked Arriola's pocket; Arriola and Levi had gone out with "fast women," giving Levi this opportunity.¹³

The American consul in Guyana reported that two men, one of them probably an American citizen, were operating with the German consular agent in his locality. They had both taken German sounding names, passed themselves off as electrical engineers, and were quite active in Sonora and Lower California. The two men sent encrypted telegrams to Mexico City, and the consul forwarded copies to the American embassy there and the army intelligence office at Nogales, Arizona. The method of acquisition was not mentioned, but the consul did say that "It is occasionally necessary to disburse small sums in the pursuit of information of this nature."¹⁴

Radio intercept was performed by line units such as the 12th Infantry Division, conducting ad hoc radio monitoring along the border.¹⁵ Telegrams collected by these line units were relayed to the War College Division in Washington.¹⁶

Since virtually all Mexican radio broadcasts were for official business, no public listing of stations existed, and it became necessary to compile basic information to support the intercept activities. It was painstaking work. Hundreds of individual reports had to be collated.

A good deal of technical data was obtained by military units deployed on the border. For example, the commander of the 12th Infantry Division forwarded a copy of the Mexican version of Morse code to the War College Division, noting that it differed from the international version.¹⁷ The 12th Infantry Division also forwarded the keys to several Mexican ciphers, including Clave Especial (with comma), Clave Relaciones, and keys to ciphers similar to Clave Marin to his department. The intelligence officer commented helpfully that the principle involved in enciphering messages was explained in Captain Parker Hitt's *Manual for the Solution of Military Ciphers*, page 41.¹⁸

In addition to notes on schedules for use in intercept were such items as an intercept that indicated a wireless station had been established at Álamos, Sonora; Mexican operators were reported to be able to speak English.¹⁹ According to information from Fort Bliss obtained from the New Orleans superintendent of a sales project, a radio telegraph installation was being placed in Juárez.²⁰ A US station at Nogales intercepted a request by an operator from a Mexicali station that another station—identified only by the call letters NAL—change frequencies, as its broadcasts were interfering with the Mexicali station.²¹

Based on considerable effort, a composite listing for Mexican wireless stations and their call letters was sent from the Nogales intercept site in June 1918.²²

The Customs Service reported that Salvador Ballesteros, operator in charge of the wireless station at Chihuahua, gave an American contact information about equipment used at the station. He also told the contact that he regularly intercepted American stations at Arlington [probably Texas] and San Francisco.²³

Information came from nongovernment sources as well. The army's chief signal officer sent a note of appreciation to the vice president of the Marconi

wireless telegraph company for information on the sale of radio equipment to the Mexican government. He promised that the information would be considered “strictly confidential.”²⁴

Tapping

In addition to intercepting broadcast messages from Mexican sources, as discussed in more detail below, the United States engaged in considerable tapping of telegraph lines, as well as bribing Mexican sources.

Colonel W. H. Sage, commanding officer of the 12th Infantry, reported on tapping telegraph wires of the Mexican federal telegraph lines near his district. Three wires were tapped in the railroad yards at Nogales, Sonora, done in such a way that they would offer no resistance or disturbance on the line, hence were unlikely to be detected. The report included copious details of the technology involved in placing the actual tap. The colonel recommended that the Signal Corps manufacture a field kit for this type of work, since such tools would prove valuable in case of threatened hostilities or actual fighting.²⁵

Colonel Sage passed his opinion up the chain of command that the cost of installing the taps, largely hiring labor, was “out of all proportion to the service obtained.” Part of the labor cost was employing a civilian telegraph operator; his normal salary of \$80 per month ran in excess of \$120 a month due to overtime costs. Despite his second thoughts, however, the colonel did also say that the potential value of the work could not be estimated in money, and although the cost might seem excessive, he believed the information to be of extreme value.²⁶

Sage not only complained about cost, he also cited other difficulties: “Mexican jefes” continually changed ciphers; they were not hard to solve, but spelling was bad and it took time. In passing a decrypt of a message in Clavo Especial, worked out by Captain Parker Hitt and Lt. E. L. Hooper of the 12th Infantry, Sage explained: “It is hard for

one not up on Spanish and Mexican to make out the meaning of military messages as the senders are ignorant, can’t spell or express themselves properly, so only those familiar with this class of people can get their meaning.”²⁷

The line taps were disconnected in early May 1916 because of reports that a Mexican federal lineman was working his way north, looking for trouble on the telegraph. As it happened, the tap wires ran through a culvert under a bridge; the Mexican inspector happened to glance into the culvert and discover the wires; he jumped to the erroneous conclusion that the bridge was mined and quickly reported this to Mexican military authorities, who took the matter up with the railroad division. The American tappers rapidly dismantled it and returned to the United States. Local military officers decided it was not advisable to reconnect a discontinued tap in the Nogales railroad yard until the excitement subsided.²⁸

The tap eventually was reestablished, but it remained vulnerable. Americans in Nogales, Sonora, in March 1917 intercepted two telegrams which indicated Mexico realized the United States was tapping its telegraph lines. The Mexican government issued orders for linemen to climb and inspect every telephone pole along the line. As a result of this information, authorities in Nogales arrested the Southern Pacific Railroad agent, J. L. Pope, an American railroad dispatcher, and a Mexican colleague. They were held all afternoon for investigation, but eventually exonerated and released. While Pope was held in General Calles’s railroad car, Calles told him he had been given reliable information that a telegram addressed to him in Nogales had been read by American military authorities before he himself had received it.

The American intelligence officer reporting this doubted General Calles’s statement, particularly since no important cable had been intercepted recently. The intelligence officer also said that

the resumption of tapping Mexican federal wires was “problematical,” but he would “leave no stone unturned” to do so again.²⁹

E. L. Cobb, collector of customs at El Paso, Texas, reported to Frank Polk at the State Department in March 1917 that a direct telegraph line was about to be established between Chihuahua and El Paso. Cobb’s “friends” in the “industrial office” promised to give him confidential access to all information coming in on that line. About a year later, Cobb sent Polk a rundown on Chihuahua’s wireless station and equipment. Cobb’s report on Mexican wireless stations was passed to Captain Edward McCauley, Jr., in the Office of Naval Intelligence and Ralph Van Deman in MID.³⁰

The Radio Tractor Units

As it happened, due to continuing unrest, Mexican telegraph wires were frequently cut, forcing the Mexican government and Mexican commercial interests to transact business by radio. This provided a splendid opportunity for American intercept.

The establishment of intercept stations for radio traffic proceeded in the midst of the ongoing effort against Mexican communications. In the fall of 1917, equipment was sent and tests to sample the air waves were conducted at Fort Brown, Brownsville, Texas; Fort McIntosh in Laredo, Texas; Fort Sam Houston in San Antonio; Fort Bliss, Texas/New Mexico; and Fort McArthur in California. Part of this work was to determine if secret broadcasting stations existed in the United States.

The operations of the radio tractors were not to be discussed by officers or operators with either army personnel or civilians other than those specified for access to the information. Any infraction of the rule was to be reported at once.³¹

In January 1918, this operation was inspected, and it was found that since operators were not under immediate supervision by officers, the work had become fragmentary and most of the posts were aban-

doned. No radio communications from unknown stations in United States had been detected.

In the wake of these tests, however, it was decided to organize a radio intelligence service to obtain copies of all messages originating in Mexican stations with sufficient power for transatlantic communications and to continue to seek unauthorized stations along the border that could transmit radio messages into Mexico.

On March 10, 1918, the army general staff authorized establishment of radio listening-in stations along the southern border under the direction of the Military Intelligence Branch. Captain Carl Kinsley of the Signal Corps Reserve was detailed to the MIB to organize the radio service. Stations would be equipped and operated to copy messages, particularly code messages, originating in Mexico and the southern United States; locate the point of origin for these messages, with particular attention to unauthorized stations; locate radio leakage across the border which might be a problem as telephone and mail censorship was tightened; and solve problems connected with transmission and static.

Although called “stations,” intercept was performed in specially equipped trucks, designated radio tractor units (RTUs), that originally had been intended to facilitate the army’s own communications in the field. The vehicles were also nicknamed “the White Tractors” because they had been manufactured by the White Motor Company. Sometimes shacks were built or tents erected adjacent to the tractors for additional work spaces.

The advantage of using “tractor” units was their mobility. It was decided, therefore, that the initial effort would be made with fourteen radio tractor units equipped with the most modern radio apparatus for intercepting messages.³²

The fourteen listening-in stations along the Mexican border were to be staffed by fourteen first

lieutenants and eighty-four enlisted men. The personnel were to be furnished by the chief signal officer to the Military Intelligence Branch. In March MIB requested that First Lieutenant Frank E. Lankford be detailed for radio intelligence service.³³

Lieutenant Colonel Ralph Van Deman noted that the paperwork for Lieutenant Lankford had been finished, and orders for Fort Sam Houston would be sent as rapidly as possible. He said that when the work was extended beyond the present station at Fort Sam Houston, the striking designation "listening-in stations" should be dropped. He thought it better to have the movable radio tractor troops considered a specialized unit of the regular service engaged in intensive training and radio operations.³⁴

For this reason, Van Deman asked that those officers in the Southern Department who were aware of the program call the radio tractors "radio training units," instead of listening-in stations. The Southern Department had no objections. The abbreviation RTU thus could stand for either "radio tractor unit" or "radio training unit."³⁵

Van Deman and other senior officers repeatedly emphasized that the nature, purpose, and methods of the Radio Intelligence Service were confidential and not to be discussed outside the small circle that had to have knowledge of it. In the Southern Department, those knowledgeable about the program included the commanding general, department intelligence and signal officers, and district intelligence and signal officers.

If there were a legitimate inquiry from outside the small group, the reply was to be this: "The radio operations are for the purpose of perfecting radio methods and training radio operators for regular military duties, but the operators are forbidden to discuss or to disclose any detail in regard to their duties or the radio apparatus."

This security prohibition even affected drawing supplies locally. Officers in charge of the RTUs were told to maintain harmony with local Signal Corps officers, and to take pains to avoid interfering with local radio operations.

The worries about security were well founded. Second Lieutenant Main, in charge of Tractor Unit 33 outside Fort Brown, found local signals interfering with his reception and requested a multiplex radio from the Signal Corps office to deal with it. In the process, he talked too much about the purpose of his unit.³⁶

The MI Branch ordered the Southern Department intelligence officer to get a personal interview with the local signal officer and impress on him the need for security about what he had just learned. Lieutenant Main was warned he had risked putting his targets on notice that their communications were studied.³⁷ As far as is known, no other adverse actions were taken against him.

The Radio Intelligence Service was authorized because it was understood that Mexico offered "an open gateway" for communications to and from the United States. There were over seventy radio stations in Mexico, and the Mexicans transacted "a great deal of business" on them because of the impossibility of keeping the telegraph service open. US authorities also believed that much of that business was unfriendly to the United States. Washington knew the Mexicans had a plan to increase power at the Chapultepec station, which would make it possible for Mexico to communicate directly with Europe or with German submarines in the Atlantic.

The Radio Intelligence Service was also organized with flexibility to enable it to meet any emergency. The service had four main purposes: copying radio messages sent out by Mexican stations, in code or not, to either known or unknown recipients; locating unknown and unauthorized radio stations; suppressing any radio station sending information to Mexico unfriendly to Ameri-

ca; and supplying radio information to any mobile operating force.

The mission of the service made it necessary to have special radio equipment and more highly trained personnel than required for other army activities. Trained personnel, however, were scarce, particularly after the US intervention in the Great War in Europe. General Pershing had requested seventy-five expert radio operators for intelligence duty in France, but only about fifty could be found.³⁸

It was fortunate that equipment necessary for immediate operation was readily available, including direction-finding equipment. Radio apparatus would be obtained from the signal supply officer of each army post and would remain the property of the Signal Corps. Each of the fourteen stations would have a radio tractor and tractor tender equipped for operations.

Although the Signal Corps had been directed to furnish the personnel, the Corps found it impossible to do so without harm to its own field operations. The army then sought to enlist trained radio operators; this effort was successful, and the Radio Intelligence Service was organized without significant disturbances to Signal Corps personnel tables.³⁹

Colonel Marlborough Churchill, a branch chief in MIB, in explaining the Radio Intelligence Service to its personnel, noted that it was organized under the authority of the secretary of war, and all reports were to be addressed to the Chief, Military Intelligence Branch, Executive Division, General Staff. The Radio Intelligence Service was strictly confidential; its nature, purpose, and method of operation were not to be discussed with unauthorized personnel, and with authorized personnel only with the understanding that the information was to be treated as confidential. Every officer was expected to see that no one under his command would discuss with any outsider his own particular unit or any matter pertaining to the radio tractor units.

Churchill also explained that since the main purpose of the radio tractor units was to receive Mexican messages, the unit's transmitter should be operated only often enough to ensure that it would be ready for use in an emergency. The unit was to maintain as cordial relations as possible with the department signal officer and assist in an emergency if called on to do so. The mission was to be conducted in such a way so as not to interfere "in the slightest degree" with the operations of regular radio stations at army posts where they might be located.⁴⁰

Van Deman from MIB wanted regular reports from each radio tractor unit, showing the hours in which various personnel were on duty, stations heard, samples of all Mexican transmissions, and copies of all messages containing code. It was important for working on enciphered messages that breaks in text or static or interference should be indicated, and, if possible, the length of the break should be shown.⁴¹

Van Deman also ordered that the code used between the radio tractors and Washington be a "special one" already discussed. He said it was undesirable to send written instructions in regard to this code as the users were to leave no written evidence of its nature or its key.⁴²

Commissioned personnel in Washington who managed the effort were Major Carl Kinsley, MIB's radio officer; Captain Albert Sobey; and Second Lieutenant Lee Sutherlin.⁴³

Lieutenant Frank Lankford, who had been involved in setting up tractor stations for the army's own communications, was tasked with establishing the actual intercept sites. Initially, three enlisted men—Sergeant Charles G. Clarke at Fort Brown; Corporal Mark Meister, Fort Bliss; and PFC Woodrow B. Demelian—were detailed to Lankford at Fort Sam Houston.⁴⁴

Tractor units were located at Fort Brown, Brownsville, Texas; Fort McIntosh, Laredo, Texas; Fort Sam Houston, San Antonio; Fort Bliss, El

Paso, Texas; and Fort Huachuca, Arizona. Later, stations were established at Nogales, Arizona, and Fort McIntosh.⁴⁵ Later, one of the units was moved to Tucson, Arizona.⁴⁶

Instructions stipulated that operations were to be conducted approximately one mile from the radio units at the nearest military post. In at least one instance, at Fort Bliss, the officer in charge of the RTU was told to move farther from the nearby military post in order to reduce interference between the radio tractor and the post radio station.⁴⁷

At first, for smoother administration, it was decided that personnel matters for the radio tractor units on the Mexican border be administered by the intelligence officer of the Southern Department. However, Van Deman arranged for the commanding officer of the Signal Corps Seventh Service Company at Fort Sam Houston to hold the personnel records for the radio intelligence work in the Southern Department. This was the most convenient way to handle payment and other personnel matters for the deployed personnel.⁴⁸

Van Deman sent confidential orders in May 1918 to Lieutenant Lankford, saying operations could begin at once with an RTU at Fort Huachuca. A number of radio operators there had been given preliminary training by the Western Electric Company, and it was thought they had obtained the best results of any operators along the border; Van Deman recommended they spend their time exclusively on "listening-in work." Van Deman expected it would soon be possible to move from Fort Huachuca toward Tucson and find a semi-permanent location at a place where living conditions would be satisfactory, but there would not be "many distractions which will interfere with the main business."⁴⁹

The experience of tractor unit 43 in Pecos, Texas, might be considered typical. An officer picked a site about one mile from town, near a good gravel road, and where they could obtain water from an

artesian well. Enlisted personnel arrived at Pecos in early October 1918 and began to build a camp, with board walks to connect tents, station, and the latrine. They procured electric current for lights in their tents and the company street. The intercept station was built 100 yards from the camp.

The first unit members were trained at Fort Bliss; new arrivals were given on-the-job training. Each person would stand a four-hour watch, requiring six men. They experimented with different types of radio equipment.

Both fatigue work and calisthenics were held mornings, if possible, because of intense heat in the afternoons. In off hours the men were allowed to go on duck hunting trips and sightseeing trips to the mountains, fifty miles away, or to visit a nearby ranch. Afternoons, all but the one man on duty would go to the swimming hole.⁵⁰

One operator assigned to McAllen, Texas, remembered that the site had plenty of rattlesnakes. In fact, he remembered going on duty late one night and finding practical jokers in his outfit had placed one right under his feet at the intercept position. He dispatched it with a pistol kept at the position.

Not all took to the life. When First Lieutenant Lankford, one of the first officers tasked with intercept operations, was given his assignment, Captain Kinsley told him this opportunity for independent work was "very unusual" and hoped he would spare no personal effort to get results.⁵¹ However, within a few months of commencing work, Lankford applied for a transfer back to the Signal Corps Aviation Section. His letter to Kinsley said "I believe my maker designed me for outdoor life and an active one." He felt RTU operations were too much like "laboratory practice," with too much down time.⁵² He eventually got his transfer.

Some of the Take

The intercept stations apparently collected large numbers of intercepts. Figures are not available for

the entire period of the activity, but some data have come down to us.

From January 1, 1919, to February 27, 1919, the service intercepted 33,018 telegrams; those considered of military or political importance numbered 551; those of commercial importance numbered 2,278. Of these, 226 were cipher messages that were decrypted; 42 cipher messages were being worked on. In addition, 519 cipher messages were in systems not solved, but it was expected when sufficient material was on hand the ciphers would be broken. Most of the ciphers not broken were German.

Information obtained through intercept was furnished to Military Intelligence itself and, through liaison officers, to the State, Treasury, Justice, and Navy Departments, and the War Trade Board. In addition to military data, the intercept contained information on which the government could act concerning American oil taxes, mining property, export taxes on cotton, and other goods.⁵³

The intercepts sometimes revealed sidelights about Mexico's troubles. For example, the Americans learned that at the same time the Mexicans were fighting amongst themselves and coping with an American incursion, some local military figures had to deploy troops to suppress a rebellion by Yaqui Indians.⁵⁴

Occasionally, the Americans intercepted telegrams containing important political or military information.

For example, a May 1917 deciphered cable from General Herrano, commanding Sonora troops, to General Calles, another Sonora strongman, informed him of the resignation from the Carranza cabinet of General Álvaro Obregón.⁵⁵ (Obregón became a serious rival to Carranza and later was elected president.) A report of March 13 passed along intercepted telegrams giving preliminary results in the Sonora elections, although it was

impossible at that time to determine which candidate had won.⁵⁶

An intercepted telegram of September 14, 1917, showed W. Centu advising the subsecretary of state, Mexico City, that rumors that his district was in rebellion against the central government were wrong. He assured Mexico City that he was loyal and upholding the respectability of the legitimate government of the republic.⁵⁷

Three intercepted telegrams on November 24 suggested that a party of unidentified revolutionaries would cross from the American side, proceed south, and seek to burn railroad bridges or dynamite the northbound train on which General Calles and the district governor were supposed to be traveling.⁵⁸

The El Paso Customs Office decrypted and translated a telegram from the Mexican consul at Douglas, Texas, to Mexico's ambassador in Washington. According to the consul, when two American army officers were arrested by Mexican customs guards south of the border in Sonora, American troops invaded Mexican territory, shot two unarmed Mexican guards, and captured two others. They freed the American officers.

The US Customs officer, in forwarding the decrypt, commented that the Mexican consul was lying in saying the Mexican guards were unarmed. He suggested also that it was a lie that the Americans had been captured south of the border.⁵⁹

A good deal of the intelligence obtained, however, was low-level information.

The office in Nogales, Arizona, forwarded a free translation of the Spanish portion of an intercept sent by the brother of the governor of Lower California to President Carranza's private secretary, introducing an American banker to the president. The message was accompanied by an encrypted section, which the officers in Nogales were unable to solve.⁶⁰

A decrypt of November 24, 1918, quoted one Mexican official in Mérida informing another in Vera Cruz that the government had authorized “gratuities” to be paid to federal troops garrisoning towns.⁶¹

A number of intercepts contained reports on mining operations in Mexico.⁶²

Birthday greetings from Carranza to one of his officials were intercepted.⁶³ A decrypt of April 1918 was nothing more than a Mexican provincial governor drawing attention to newspaper articles that favored the government.⁶⁴

Communications intelligence has always involved separating intercepted wheat from intercepted chaff. This was no less true on the Mexican border than it was in later COMINT work, but the operations gave Americans access to reliable information about a potentially dangerous neighbor.

Germany in the Messages

In addition to information about the internal fighting in Mexico, and any warnings that might be gleaned about intentions to invade the United States, Washington wanted to know about German activities south of its borders, whether sabotage or military-related. Some US officials believed Mexican radio stations were passing messages to German spies or saboteurs north of the border.

Just before the US entry into the Great War, and during it, the situation south of the border was seen in Washington as an extension of the struggle in Europe. Fueled by the shocking revelations in the Zimmermann telegram, in which the Germans actively sought to bring Mexico into the war on its side, Washington feared Mexico might allow use of its territory by powers unfriendly to the United States. Some of this apprehension was fueled by press speculations.⁶⁵

Information from intercepts never provided clear-cut answers to the questions about Germany;

rather, intercepts generally showed a lot of mundane activities and only occasionally suspicious goings-on. The intercepts must have raised as many questions as they answered.

For example, in 1917 intercepted cables from Mexico to Guyana reported the arrival of a German diplomat as a visitor to the Mexican Congress. It was reported that a large crowd, including senators, greeted him with “continued and impetuous” cheers for the Kaiser; at the same time, the American ambassador was greeted with hisses.⁶⁶

Two messages, simply general news relating to German activity, were passed from Nogales to the Southern Department intelligence officer on October 9.⁶⁷

The 38th Division had investigated the possibility that German spies were using radio stations along the west coast of Mexico to transmit military information to Germany. Two US Army agents had been sent out, without knowledge of each other, and had turned in reports that agreed, giving the commanding general confidence their reports were correct. The agents could find no credible evidence the Germans were actually using the Mexican stations for transmitting information.⁶⁸

The commanding officer of the Nogales District reported that the Mexican government had adopted a new cipher, said to have been prepared by a German army captain and based on German military ciphers. Though the US Army detachment in Nogales had seen it in use, it had been unable to solve the new code.⁶⁹

One regular intercept target was a powerful broadcasting station at Chapultepec in Mexico City. American officers feared it could be communicating across the Atlantic with German spymasters or, possibly, with German submarines in the Gulf of Mexico.

An intercept of a message from the Chapultepec station on November 9, 1918, showed the sta-

tion using the callsign PQZ, which also was used in Nauen, Germany. While no relationship between the station and German sources could be proved, many Americans considered it “not unlikely” that there was a direct connection between the Mexican government and Germany.⁷⁰

A report of July 1918 from one of the RTUs noted that no transatlantic wireless messages had yet been sent from Chapultepec; the station was finishing installation of equipment needed to do that. The station at Iztapalapa, however, had received wireless messages for Germans; the messages started with press items but were followed by encrypted messages. According to an informant, the daily changing key was based on sentences from the novel *Don Quixote*.⁷¹

An anomaly in a radio transmission from Chapultepec was noted in mid-November 1918. On November 16, the radio station as usual repeated the same message three different times. The message sent the first time was the same as that sent on the same date the previous month, but the text was reversed.⁷²

A month later, the station at Chapultepec sought multiple times to establish direct wireless communications with Buenos Aires, Argentina. This prompted the acting director of Military Intelligence to ask the State Department to confirm whether or not the signals had been received in Argentina.⁷³

None of this was inherently suspicious or indicative of hostile purposes toward the United States—except to people who were already worried about the prospects. Many businesses and individuals used different types of cipher or code systems to protect financial or family data in international cables, and in this era broadcasting stations in many parts of the world were seeking to expand their communications capabilities.

In the City

In mid-1917, Military Intelligence in Washington began thinking about collection from deep within Mexico.

The chief of the Military Intelligence Section asked the chief signal officer in September to select a competent radio operator for duty in Mexico City.⁷⁴

Thus, in 1918 the United States established an intercept station “under cover” at the embassy in Mexico City. The station may have been established as early as May, when Lieutenant Roy D. Carrier was transferred from intelligence work in Laredo, Texas, to the attaché office in the embassy in the Mexican capital.⁷⁵ Carrier was experienced. He had been employed as a telegrapher by Western Union before he entered the military and had served in the navy for two and one-half years.⁷⁶

Carrier was joined later in the year by two additional operators, Lieutenant Charlie R. Sullivan and Lieutenant Palmer B. Rawley. Their official designation was “Assistant to the Military Attaché” in the embassy. Rawley particularly was experienced: he had been an instructor at the US Radio School at College Park, Maryland, and had been a radioman aboard a commercial liner.

When Carrier reported for duty in Mexico City on May 19, 1918, he found that the antenna and intercept radios were inadequate. He reported that it was possible to intercept broadcasts from stations about a mile distant, and stations farther away could sometimes be heard but not copied regularly. Carrier constructed two antennas himself, enabling intercept from stations hundreds of miles distant. He admitted it might be difficult to conceal their purpose.⁷⁷

Each operator was to stand an eight-hour shift to maintain twenty-four-hour collection service; normal US Army radio operators spent only four hours on duty. The shifts were arranged to eliminate the necessity for relieving an operator for mealtimes,

and to avoid their entering or leaving the embassy after midnight.⁷⁸

The station intercepted radio broadcasts not only from Chapultepec, but also from Vera Cruz, Acapulco, and Tampico.

Weekly activity reports on the intercept work showed total messages intercepted as over one hundred through 1918, and often over two hundred. A report on the operation in January 1919 noted that during the last two weeks of December the site had intercepted 516 plaintext and 129 cipher messages. Many of the encrypted messages had been decrypted and “found to be of very great interest,” especially to the State Department.

Intercepted messages included promotions of government personnel, money transfers, weather reports, steamer shipments, import duties, and the movements of medical supplies. It is unclear how much, if any, decryption was accomplished at the Mexico City site; reports of undecipherable messages were frequent.⁷⁹

The topics intercepted were not likely to be of prime interest to the US Army, and there may have been complaints about return on investment. In July 1918, Lieutenant Carrier defended his actions since receiving the assignment in Mexico City. He admitted he had not accomplished as much as he had anticipated but believed that he had covered all technical points required. He noted that he was receiving cooperation from everyone at the embassy and had been given a free hand.

Carrier stated incidentally that Mexico is “an ideal place to live”; the climate was the best he had ever experienced, and he was acquiring knowledge of the Spanish language in his off-duty time. Although not required to make official calls, he had joined “some of the best clubs” and met a number of good people.⁸⁰

Carrier was able to compile important technical information about Mexican official radio communi-

cations. He and a corporal visited Iztapalapa in early July 1918 and provided a detailed description of the telephone line and radio antenna there. Carrier believed messages from the antenna could be intercepted, although none had been obtained thus far.⁸¹ He made a survey of the towers and antenna at the radio station in Chapultepec, which was of prime concern to US authorities because of its possible use by Germans.⁸² Carrier prepared a list showing the radio stations through which messages originating in Mexico, the United States, Cuba, or South America were routed into Mexico.⁸³

As far as can be determined, the station closed at that time. The chief signal officer and the secretary of war concurred. Lieutenant Charlie Sullivan was ordered to report to the army’s Southern Department for discharge.⁸⁴ Lieutenant Palmer Rawley was transferred to the border, where he was commanding officer for radio tractor units in the Las Cruces, New Mexico, region and then RTUs outside Tucson. He mustered out of the service in October 1919.⁸⁵

Coda

As the army began rapid demobilization after participation in the war in Europe, and as the sense of emergency on the southern border dissipated, the radio tractor units were slated for retirement.

Washington fixed August 31, 1919, as the date on or before which radio tractor units would be demobilized. With the satisfactory results in the current work, it was expected that the regular army would create a permanent organization for radio intelligence work, although no plan had been approved by the end of August. It was expected Congress would authorize a permanent organization shortly. Several officers who had led the effort were asked to remain in the service and continue radio intelligence work in peacetime.⁸⁶

Washington requested retention of the following officers in the radio intelligence service until

the end of June 1920: Captain James Ives, Tucson; First Lieutenant Johnston, Washington; First Lieutenant Boeder, Houlton, Maine⁸⁷; First Lieutenant Campbell, Del Rio, Texas; First Lieutenant Parrish, Fort Sam Houston; First Lieutenant Main, McAllen, Texas; and First Lieutenant Pierri, Tucson. Ives, Campbell, Main, and Pierri were to be assigned to the Southern Department for duties at intercept stations along the border.⁸⁸

Military Intelligence was considering, for peacetime, storing radio apparatus at convenient points in three places so that it would be available to begin intercept operations on short notice in case of emergency.⁸⁹

By early 1920, Washington recommended that the RTUs on the border be administered by the Southern Department's intelligence officer, not MID. Even with this arrangement, intercept would still be forwarded promptly to MID and Major Yardley, who was performing cryptanalysis on the texts.⁹⁰

By late 1922, three radio intercept stations were again active: McAllen (moved from Fort Ringgold) and Del Rio, Texas, and Nogales, Arizona. These stations had more stable installations; only the Arizona station used a radio tractor.⁹¹

Comments

In most cases, it does not seem that the Mexican government or military was aware that its ciphers had been solved by its northern neighbor. It continued to use the same systems and devices over time. On several occasions, however, Mexican officials discovered physical taps on telegraph lines and lodged their protests in Washington.

Carl Kinsley summed up the Radio Intelligence Service. Overhead costs were low. The funding total for the service was \$816.67 for a month, including translators, stenographers, and filing clerks. The radio equipment had been obtained from Signal Corps funds, about \$300,000, and would be returned when no longer needed. Both commissioned and

enlisted personnel were obtained from the Signal Corps and detailed to military intelligence. Many were drawn from civilian life through the efforts of the Military Intelligence Division in order not to put any strain on resources of the Signal Corps.

The Southern Department of the US Army, headquartered in San Antonio, expressed its appreciation for the information derived from intercepted messages and from decrypts. This material assisted senior officers in understanding the organization and movement of the Mexican Army. Since it was uncertain whether fighting between the two nations would again occur, the continual flow of information helped the United States prepare for that possibility.

Although the information was also filed at the War College Division in Washington, it is unlikely the material was used in reports or assisted policymakers. Mexico no doubt remained a threat in the Division's estimation, but, with the US entry into the European war, Germany became the principal focus of national-level attention as an enemy.

Thus, the importance of this intelligence activity is now hard to judge, and it is unclear what effect it had on national policy. It is impossible at this time to identify with any certainty any policy or military decisions taken on the basis of the intercepts from Mexico. The best that can be said now is that the recipients of this intelligence expressed satisfaction with it.

However, the collection of the Mexican information did give America's nascent intelligence service experience in collecting and handling classified information. This was, after all, likely the first sustained effort to regularly acquire secret information from signals intelligence about a potential adversary in US history.

The units also evolved into the Signal Service Companies, which performed intercept for the army through World War II.

Until rather late in the effort, there was no system for obtaining cryptanalytic support, just an informal network of talented amateurs. Those who performed cryptanalysis on behalf of the army did not yet have a separate institutional identity. That would come with participation in World War I.

There appears to have been no formal structure for seeking or granting clearances to those engaged in this work.

Ralph Van Deman is regarded by historians as the “father of American military intelligence.” His reputation has dimmed somewhat in recent years as his aggressive role in deploying MI resources to spy on American dissidents in the post-World War I era has become better known.

Historians have tended to limit Van Deman’s role in signals intelligence to hiring Herbert O. Yardley and to creating MI-8 to make a place for him. However, both before and after the coming of Yardley, Van Deman was very active in managing signals collection resources and coordinating such cryptanalytic resources as could be found in the US government. It is not too much to say, therefore, that Ralph Van Deman is the “father of American signals intelligence” as well as MI.

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 15. Commanding officer, 12th US Infantry Division, Camp Stephen Little, memorandum for commanding general, Southern Department (“Mexican Situation”), May 14, 1916. Commanding officer, 12th Infantry, memorandum to commanding general, Southern Department, May 22, 1916. Commanding officer, 12th Infantry, memorandum to commanding general, Southern Department (“border conditions”), May 18, 1916. Commanding officer, 12th Infantry, to commanding officer, Southern Department, May 26, 1916. Commanding officer, 12th Infantry, to commanding general, Southern Department, May 25, 1916. Commanding officer, 12th Infantry, to commanding general, Southern Department, May 24, 1916. For all, NARA, RG 165, Box 2392.
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 30. E. L. Cobb, US Customs Office, El Paso, letter to Frank L. Polk, State Department, March 8, 1917. US Customs Service, Collector of Customs, El Paso, memorandum for secretary of state, February 9, 1918. Two unsigned desk notes, February 14, 1918. For all, NARA, RG 59, Box 217.
 31. COL R. H. Van Deman, chief, Military Intelligence Branch, memorandum for the commanding general, Southern Department (“Radio Intelligence Service”), May 9, 1918, NARA, RG 111, Box 1759.
 32. COL R. H. Van Deman, chief, Military Intelligence Branch, executive division, memorandum to chief signal officer (“officers for radio duty”), March 21, 1918, NARA, RG 111, Box 344.
 33. COL R. H. Van Deman, chief, Military Intelligence Branch, memorandum to First Lieutenant Frank E. Lankford (“Listening-in stations”), March 26, 1918, NARA, RG 111, Box 1759.
 34. COL R. H. Van Deman, chief, Military Intelligence Branch, executive division, memorandum for department signal officer, Southern Department, Fort Sam Houston (“listening-in stations”), April 17, 1918, NARA, RG 111, Box 1759.
 35. Colonel D. K. Carr, department signal officer, Southern Department, memorandum to chief, Military Intelligence Branch, executive division (“listening-in stations”), April 23, 1918, NARA, RG 165, Box 9.
 36. Captain Carl Kinsley, memorandum for Major M. H. Mauborgne, June 20 7, 1918, NARA, RG 165, Box 60.
 37. Colonel M. Churchill, chief, Military Intelligence Branch, executive division, memorandum to First Lieutenant Wesley M. Way, Falls City, Texas (“Radio Operations”), June 28, 1918. COL Churchill, memorandum to First Lieutenant James K. [unintelligible] (“Radio Intelligence Service”), June 19, 1918. COL Churchill, memorandum to department intelligence officer, Southern Department (“radio intelligence

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38. Acting chief signal officer, memorandum for the adjutant general of the army (“radio operators”), November 1917, NARA, RG 165, Box 60.
 39. CPT C. Kinsley, War Department, memorandum to the Office of the Chief Military Censor (“Radio Intelligence”). CPT Kinsley, enclosure in memorandum to chief military censor (“Military Censorship along the Mexican Border”), September 4, 1918. For both, NARA, RG 111, Box 1759.
 40. COL M. Churchill, chief, Military Intelligence Branch, executive division, memorandum for First Lieutenant G. A. Costes, Radio Tractor Unit 47, Tucson (“instructions”), August 16, 1918, NARA, RG 165, Box 61.
 41. COL R. H. Van Deman, chief, Military Intelligence Branch, executive division, confidential memorandum for 1LT F. E. Lankford, Fort Sam Houston (“Transfer to Ft. Huachuca”), May 1, 1918, NARA, RG 165, Box 60.
 42. COL R. H. Van Deman, chief, Military Intelligence Branch, executive division, memorandum for Lieutenant Frank E. Lankford, Fort Huachuca, Arizona (“radio operations”), May 18, 1918, NARA, RG 165, Box 60.
 43. Major Carl Kinsley, undated memorandum (“radio intelligence service”), NARA, RG 165, Box 10.
 44. First Lieutenant J. R. Whitehead, Office of the Chief Signal Officer, memorandum for land division, January 28, 1918, NARA, RG 111, Box 691.
 45. Brigadier General M. Churchill, director of Military Intelligence, chief military center, memorandum to Second Lieutenant Fred H. Parish, Laredo, Texas (“radio apparatus RTU 31 and 32”), October 28, 1918, NARA, RG 165, Box 61.
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 51. CPT C. Kinsley, chief signal officer, memorandum to 1LT F. A. Lankford, Fort Sam Houston (“listening-in stations”), January 23, 1918, NARA, RG 165, Box 60. Middle initial as given in memorandum.
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 53. MAJ C. Kinsley, undated memorandum (“radio intelligence service”), NARA, RG 165, Box 10.
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60. Captain Joel A. Lipscomb, acting intelligence officer, memorandum to the Department Intelligence Officer, Fort Sam Houston, (“mission of Luis J. Wildes to Washington”), February 26, 1918, NARA, RG 165, Box E70, File 61.
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62. Intelligence officer, headquarters Arizona district, Douglas, Arizona, memorandum to the commanding general, Arizona district (“Special Report”), March 12, 1917. Intelligence officer, memorandum for commanding officer, Douglas, Southern District (“Special Report on Mexican Border Conditions”), June 25, 1917, NARA, RG 165, Box 2391.
63. Weekly border report (“miscellaneous”), September 13, 1917, NARA, RG 165, Box 2394.
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70. MAJ Carl Kinsley, Signal Corps, memorandum for Major Hughes (“Chapultepec code messages”), November 21, 1918, NARA, RG 165, Box E70, File 61.
71. Chief, Military Intelligence Branch, executive division, memorandum for CPT C. Kinsley, Fort Bliss, (“Code Messages”), July 23, 1918, NARA, RG 165, Box 61.
72. Captain Albert Sobey, memorandum for Mr. Booth (“Chapultepec message of November 16, 1918”), November 18, 1918, NARA, RG 165, Box 61.
73. Acting director of Military Intelligence, letter to Leland Harrison, Department of State, December 27, 1918, NARA, RG 165, Box 61.
74. Chief, Military Intelligence Section, letter to chief signal officer, September 1917, NARA, RG 323.
75. Lieutenant Roy D. Carrier, memorandum of encrypted message from Laredo, May 21, 1918, NARA, RG 165, Box E70, File 47.
76. Draft registration card for Roy D. Carrier, ancestry.com/Browseprint.aspx?dbid=6482&iid=KY-1643957-4192.
77. First Lieutenant R. D. Carrier, memorandum for the military attaché (“Radio Receiving Apparatus”), June 10, 1918, NARA, RG 165, Box E70, File 47.
78. MAJ C. Kinsley, Signal Corps, memorandum for Lieutenant W. J. Davis, M.I.5 (“Radio Service”), January 22, 1919, NARA, RG 165, Entry 70, Box 47, MID# 65-50B(28). 1LT R. D. Carrier, American Embassy, Office of the Military Attaché, City of Mexico, “Weekly Radio Report, December 11-17, 1918, inclusive,” NARA, RG 165, Box E17, File 47.

79. Telegram, Mexico City, to War Department, Washington, DC, July 29, 1918, NARA, RG 165, Box E70, File 47.
80. R. D. Carrier, letter to CPT C. Kinsley, Washington DC, July 23, 1918, NARA, RG 165, Box E70, File 47.
81. 1LT R. D. Carrier, military attaché's office, Mexico City, memorandum for the military attaché ("Radio Antenna at Ixtapalapa"), July 1918, NARA, RG 165, Box E70, File 47.
82. 1LT R. D. Carrier, military attaché office, Mexico City, memorandum for the military attaché ("Towers and antenna, Chapultepec radio station"), July 9, 1918, NARA, RG 165, Box E70, File 47.
83. 1LT R. D. Carrier, memorandum for the military attaché ("Routing of Messages"), July 1, 1918, NARA, RG 165, Box E70, File 47.
84. Colonel John M. Dunn, acting director of Military Intelligence, memorandum for the chief of staff ("Relief, Second Lieutenant Charles R. Sullivan, S.C., US Army, as Assistant to the Military Attaché, Mexico"), February 14, 1919, NARA, RG 165, Box E70, File 47.
85. Colonel Palmer B. Rawley, Signal Corps Reserve, interoffice communication to Major Litchenstein ("Recent work sheet for 201 File"), November 4, 1949, Center for Cryptologic History Series File, Box 54. Rawley had been recalled to active duty for the Second World War and was updating his personnel record.
86. MAJ C. Kinsley, director of Military Intelligence, memorandum to LT F. H. Parish, Fort Sam Houston ("Permanent Radio Intelligence Organization"), June 17, 1919, NARA, RG 165, Box 26.
87. The US Army's first fixed field site for intercept work was in a rented farmhouse at Houlton, Maine. Operations were conducted there from October 1918 to June 1920.
88. Major Albert Sobey, director of military intelligence, memorandum to 1LT D. Pieri, Pecos, ("History and Recommendations"), July 26, 1919, NSA Archives accession 8548. Paper copy in historian's CCH source file.
89. First Lieutenant F. H. Johnston, memorandum for Major Thomas Wylie, Office of Chief Signal Officer, September 23, 1919, NARA, RG 165, Box 9.
90. Colonel A. B. Coxe, general staff, memorandum for the director, Military Intelligence ("radio tractor units"), February 6, 1920, NARA, RG 165, Box 60.
91. Roy A. Coles, signal officer, Eighth Corps Area, Fort Sam Houston, memorandum for chief signal officer of the army ("Radio Intercept Units"), October 13, 1922, NARA, RG 111, Box 45.

The Punitive Expedition

Military Reform and Communications Intelligence

Shortly after the turn of the twentieth century, many nations of the world, including the United States, began to take advantage of radio to increase the flexibility and speed of their communications. Over time, most of these nations also realized that eavesdropping on foreign radio communications constituted an invaluable source of military and civil information.

Radio, sometimes called “wireless telegraph,” was a new medium. Transmissions were in Morse code, and the few existing stations with regular broadcasts—the property of governments and businesses—were used to send cables to places telegraph lines did not go.

The US military undertook extensive reforms of most aspects of its organization and operations in the wake of the Spanish-American War. Despite victory, close observers understood the war revealed serious shortcomings in almost all aspects of US military endeavor.

One of the many deficiencies under scrutiny was intelligence. The United States had no intelligence organization in the modern sense, and little idea what

to do with one. The author of a classic study of American intelligence commented: “Whether the primary fault stemmed from a lack of suitable dissemination procedures or an inability on the part of the individual field commanders themselves to utilize the information properly still remains a moot question.”¹

In 1915, Major Ralph Van Deman was transferred to the general staff. As Captain Van Deman, he had been involved in mapping before the 1898 war, and subsequently had created a military intelligence organization for combat support in the Philippines. In early May 1917, Secretary of War Newton Baker issued an order creating the Military Intelligence Division; its chief was Lieutenant Colonel Ralph Van Deman.

Before the twentieth century, the US military had engaged in cryptanalysis as a sustained activity only in times of conflict, notably the Civil War. In the latter half of the nineteenth century, the army did not train personnel in cryptanalysis nor in the intercept of foreign communications. There were, in fact, no organizations established to do cryptanalysis anywhere in the government. When the need arose early in the twentieth century, the government took halting steps to create a group of people with the necessary skills.

In the early twentieth century, those encrypted messages that could not be solved locally were sent on to higher levels. Van Deman arranged an unofficial network of talented individuals to work them. One was Colonel Parker Hitt, an infantry officer at Fort Sill, Oklahoma, with an interest in cryptology, who had composed the army's first manual on military ciphers. His wife, Genevieve Hitt, fascinated by her husband's study of codes, learned cryptanalysis also and solved some messages on behalf of the army.

Van Deman made arrangements with Riverbank Laboratories, a private think tank near Chicago that had a cryptologic section, to perform cryptanalysis on selected messages. Encrypted messages also were sent to Dr. John Manly at the University of Chicago. These arrangements continued until the spring of 1917, when Van Deman commissioned a code clerk from the State Department, Herbert O. Yardley, and charged him with establishing MI-8, the nation's first modern, sustained military cryptanalytic organization.

Long-time Mexican president Porfirio Díaz was forced to resign and flee the country in 1911. The factions that forced him out, several of them with private armies, could not agree on a succession, and the next ten years in Mexico were characterized by assassinations and civil war.

The United States deployed army units from its Southern Department along the Mexican border to guard against possible incursions into American territory. The army also began to collect information about Mexico against the possibility that war might occur between the two countries. Among the sources were intercepts of Mexican communications.

The Military Intelligence Division, supported by the army general staff, sent notes to all government departments, asking them to forward encrypted telegrams from Mexico that might come into their possession as well as any captured cipher key or cipher devices. The US Army also undertook active

steps to intercept Mexican communications by radio eavesdropping or tapping telegraph lines.

The Punitive Expedition

Venustiano Carranza, leader of one of the contending factions, became president of Mexico in 1917. He promulgated a new constitution for the nation and was recognized by the United States as the de facto leader of the country.

Before Carranza consolidated his rule, however, it looked as if an armed group led by Francisco "Pancho" Villa would succeed in taking national power. President Woodrow Wilson even sent a representative to talk with him. However, after Villa suffered a series of military defeats, Wilson began supporting Carranza.

In revenge, Villa murdered some Americans working in Mexico. Next, in March 1916 he attacked a US Army post outside Columbus, New Mexico, and shot up the nearby town.

General Frederick Funston, commander of the US Army's Southern Department, might have been a logical choice to lead the chase after Villa. He had been something of an adventurer during the Philippine Insurrection. However, one of his key subordinates was selected instead to lead the American response.

On March 15, barely a week after Villa's raid on Columbus, an expedition, 15,000 strong, under General John J. Pershing entered Mexico with orders to get Villa, dead or alive. Pershing had seen combat both in the Spanish-American War and the pacification of the Philippines; he drove himself and his men equally hard. Pershing established his headquarters about a mile from a Mormon missionary outpost known as Colonia Dublan, roughly one hundred miles south of the US border.

The expedition symbolized the transition period that characterized the US military. The troops had units of horse cavalry and a long caravan of trucks.



Generals Pershing and Bliss inspect an infantry camp during the Punitive Expedition

This was the last US Army campaign to use Native American scouts, and the first to use airplanes. The unit communicated by radio and intercepted the radio communications of others.

The expedition entered Mexico with assurances from Washington that the country's "de facto" government had acquiesced in the incursion and would provide intelligence support. This quickly proved untrue—not only did the units not get information from President Carranza's army, Carranzistas actively resisted the US penetration.

In hunting a highly mobile enemy force, one that was familiar with the region and had a good deal of local support, good intelligence was a must for the US units. Although the US punitive force

obtained information from its own scouts, local residents—often labeled "vaqueros" by American officers—and spies, none of it proved satisfactory.

This brought about another transition point. For the first time, at least in the twentieth century, an American campaign had indigenous communications intelligence (COMINT) support. Among the motor vehicles accompanying the expeditionary force were trucks, radio tractors in the terminology of the day, to provide communications with the Southern Department at Fort Sam Houston, Texas. At least one of these tractors was put to intercepting Mexican official radio broadcasts. US units tapped Mexican telegraph wires at various places.

This activity was under the supervision of the expedition's Information Department, run by Pershing's assistant chief of staff, Captain William Reed, and Captain Nicholas W. Campanole, a staff officer from the 6th Infantry.

The intercepted communications, it should be noted, did not come from Villa's forces. Villa did not use radios. The intercepts were of the de facto government's messages and were important in two ways—since the Carranzistas were turning out to be hostile, the intercepts sometimes helped Pershing avoid direct conflict with them; the messages also often told him where the government thought Villa was located.

It was not always possible to avoid conflict with the federal forces. An intercepted message of June 17 indicated Villa was in the vicinity of Villa Ahunda, so US forces undertook a reconnaissance in that direction. Unfortunately, the Americans ran into Carranzista forces, leading to a firefight in which four American officers were killed; the US units retreated precipitously.

For the most part, the Mexican government seemed unaware that its communications were being monitored by the Punitive Expedition.

With the lack of success in Mexico and the decision in Washington to go to war against Germany, Pershing was ordered to leave Mexico in late January 1917. The president appointed him commander of the American Expeditionary Force destined for France.

Pershing's expedition into Mexico failed in its main objective, capturing or killing Villa. However, clashes between the forces had left Villa greatly weakened, and he ceased to be a major threat to either country.

Intercept Support at Dublan

As it happened, due to continued fighting in Mexico, telegraph wires there were frequently cut,

forcing the Mexican government and Mexican commercial interests to transact business by radio. This provided a splendid opportunity for American intercept. It is not clear when intercept activities began, but the earliest extant in the expedition's records were in June.

The facility in Dublan intercepted daily messages with personnel information and data about the deployment of Mexican officers and troops. It is not clear that all of it went directly to Pershing, but at least some of the intercept was given to him. For example, in October 1916 a colonel from the 16th Infantry sent intercept to Pershing with a handwritten cover note. The message itself was an order from General Gonzalez to one of his subordinates, telling him to prepare all detachments immediately for movement.²

Pershing occasionally levied requirements on radio collection. For example, Lieutenant Campanole informed an operator at a site in New Mexico that the commanding general had directed them to send him any messages intercepted on the nights of January 4 and 5. An important message was expected at 1:00 a.m. that night.³

Mexican radio stations usually hewed to scheduled times and frequencies but, because of the lack of other communications methods, often notified each other when they intended to make unexpected changes. This was as handy for American intercept operators as for the intended receivers.

For example, a station in Chihuahua on December 19 indicated that the volume of messages on hand would require the station to keep working through the night. Intercept operators in Dublan took down what were deemed important cipher messages between midnight and dawn.⁴

Intercept in December indicated that the Mexican secretary of war had directed Mexican stations to operate throughout the night as well as during the

day because of the US operations inside the country. Already “important messages” had been intercepted between 1:00 and 4:00 a.m., reported the intercept facility in Dublin.⁵

Lieutenant (later Captain) Campanole, the assistant intelligence officer, in January 1917 tipped off intercept sites in US territory that the station in Chihuahua was changing wavelengths for transmitting encrypted messages, and reminded them that cipher messages were more desirable than all other intercept. The sites were to “tune” for them at the expense of all other messages, if necessary.⁶

Pershing’s intelligence officer was Major James A. Ryan, 13th Cavalry; his assistant was Lieutenant Campanole. Ryan was relieved on April 30, replaced by Captain W. O. Reed, who had been assigned to the department on April 7. He served until October 10, when he was assigned to special work at El Paso, leaving Campanole to finish up.⁷ In May, Campanole, described as speaking Spanish, French, and Japanese, was recommended for intelligence work with Van Deman. Campanole, for the record, served in the American Expeditionary Force in France as head of the G-2 Secret Service Section; he retired in 1937 as a colonel but was recalled for service in World War II.⁸

For the record, among those assigned to intelligence duties with the expedition were Captain William S. MacKinley, 11th Cavalry, and Second Lieutenant Walter F. Winton, 6th Field Artillery. Second Lieutenant James A. Ord, 12th Cavalry interpreter, also worked with the intelligence section.

Intelligence about Villa

The majority of intercepted telegrams were between the Mexican secretary of war, Álvaro Obregón, and his generals, as well as a few cables among the generals themselves. Many messages gave personnel levels and the supply situation for

Mexican government forces. They also indicated the lack of enthusiasm many generals had for taking the field against Villa.

Status reports from the Ministry of War to the generals, and back, contained details about Villa’s operations; they also gave the federal response, as shown below.

Given the vast distances over which the Mexican conflict was fought and the inadequate resources for supporting large mobile forces, the existing railroads were important to both the government and the rebels.

Toward the end of 1916, intercepts told that Villa had captured six trains from the Carranzistas and was operating trains between San Ysidro and Santa Ysabel. General Herrera was prevented from moving north from Jiménez because of destruction on the Durango railroad.⁹

A few days later the central government gave a much direr picture. Villa had captured several trains and locomotives and now controlled the railroad south of Chihuahua. To reduce the rolling stock vulnerable to him, Carranza ordered locomotives and material at intermediate points centralized at Torreón. Railroad traffic was suspended between Chihuahua and Torreón. Garrisons south of Chihuahua were not strong enough to protect the system.¹⁰ Later in the year, messages told of the government recapture of some of this equipment.

The most sustained action reported to General Pershing by intercepts occurred at the end of 1916. The intercepts showed a series of military actions involving cities and small towns in the states of Chihuahua and Durango.

An intercepted telegram of late October indicated a fight between Carranzistas and Villistas at Santa Ysabel, both sides holding their ground.¹¹ In this case, no outcome was heard.

A late October intercept from General Treviño in Chihuahua City to General Obregón in Mexico City reported the movement of Villistas to the city of Camargo and that 500 Carranzistas under General Herrera were ordered there from Jiménez to attack.¹² A later intercept from Obregón to Treviño reported that Villistas attacked Camargo on the 27th but suffered a loss of 25 killed and 135 missing.¹³

Following this, an intercept correctly reported that Villa had moved to San Ysidro. Treviño, commanding in Chihuahua, reported that his soldiers were badly in need of blankets and clothing.¹⁴

Radio intercept of December 16 was garbled but indicated that a force of Villistas had been defeated near a place called Bachimba.¹⁵

An intercepted telegram of November 11 from General Treviño at Chihuahua to General Murguía at Torreón claimed that 3-4,000 troops were ready to take to the field. Treviño claimed to be constantly in touch with Villa's movements and only waiting for a link-up with Murguía's forces to begin.¹⁶ Treviño expected the link-up in a few days and expected the enemy to retreat rather than fight.¹⁷

Intercepted telegrams from three Mexican generals indicated they were intending to join forces and prevent Villa from attacking the city of Torreón. General Treviño said he was ready to move but feared to leave his city exposed to surprise attack, prompting a "very urgent" response ordering him to join with another force twenty-five miles northwest of his last reported position.¹⁸ Treviño, however, claimed that his advance units had clashed with the enemy at Bachimba. He concluded that the enemy was making forced marches to attack Chihuahua, and therefore he (Treviño) was falling back to the city. He urged Murguía to attack Villa from the rear.¹⁹

An intercepted message from Treviño told of fighting at Chihuahua from noon to 6:00 p.m. Six

attacks from Villistas had been repulsed. Carranzista casualties were high.²⁰ Treviño reported to Obregón that his forces had "behaved splendidly" and repulsed repeated cavalry attacks. The enemy was retreating to the north.²¹ Minister Obregón congratulated Treviño for defending Chihuahua, as its loss would have had serious consequences. He was directed to hold it "at all hazards."²²

There must have been some dissatisfactions, however, as an intercepted order in December from the minister of war relieved General Treviño and placed his forces and those of another officer under Murguía.²³

Obregón told the governor of Chihuahua that he had been unable to contact General Murguía and requested any information available. General Telemante said the enemy was moving against Torreón but that several federal columns were going to coalesce on the city.²⁴

Telemante thought it improbable that Villa would attack Torreón, and told Murguía so.²⁵ Obregón, however, ordered Murguía to prepare for the defense of Torreón. He said that Villa had occupied the town of Bermejillo and was moving south; Murguía should pursue him with cavalry, not using the railroad.²⁶

Intercepted messages from the governor reported that Villa had captured the city of Gómez Palacio, near Torreón, and was threatening Torreón itself. The governor asked General Murguía to attack Villa's rear guard.²⁷ A decrypted cipher message confirmed that Villa was attacking Torreón; the governor requested Murguía's cavalry immediately.²⁸

Murguía responded to the governor, according to an intercept, that it would be impossible to send the requested forces to Torreón because "the effort alone would destroy the cavalry." He had disposed his troops in blocking positions at three locations to catch Villa when he retreated from Torreón.²⁹ At



US infantry marching back from Mexico at the conclusion of the Punitive Expedition

the same time, intercepts revealed that the central government was sending 400,000 rounds of ammunition to Murguía.³⁰

Operators with Pershing reported no broadcasts by radio stations in Torreón since December 23, which indicated to them that Villa had captured the city.³¹ This was confirmed later by intercepted messages from Minister of War Obregón to Murguía, who said that Carranzistas had evacuated Torreón on December 22 and 23.³²

Conversations between Mexican operators in Mexico City and Saltillo indicated Villa was moving toward Durango. It was said General Telemante had committed suicide because of his defeat at Torreón. There were unconfirmed reports that the ammunition train from Mexico City to Chihuahua was in Torreón when Villa attacked.³³

However, within a month, matters improved for the federal forces. In early January, Obregón congratulated General Murguía on recapturing a town from the Villistas and ordered him to move cavalry north to reinforce other government forces engaged in preventing the Villistas from fleeing to the mountains. In addition, Villistas had been defeated in the south, with the recapture of three locomotives and 100 railroad cars.³⁴

While General Pershing's reaction to and use of this information and other intercept at different times is unknown, it is unlikely he could have capitalized on it. As much as he wanted Villa, it would have been unwise for him to commit American forces to areas of combat in which large numbers of federal Mexican troops were already located.

Other Intelligence

The radio intelligence collection effort produced interesting information about other aspects of the conflict.

The Mexican government had security problems besides Villa's challenge. Funston, in March 1916, wired the War Department a report obtained from two intercepted telegrams that Mexican troops were moving in response to a rebellion by Yaqui Indians.³⁵

An intercepted message of November 1916 from the secretary of the treasury in Mexico City reported that the treasury had sent 3,000,000 silver pesos to subtreasuries in several states. He also said he knew President Wilson had given assurances that his policy toward Mexico would not change.³⁶

Some intercept was of news reports, possibly from journalists, possibly from the Mexican government forwarding press items to its officials around the country. For example, an intercepted plaintext message from Juárez, Mexico, on June 13, 1916, communicators unknown, said: "The situation continues to be delicate. I believe that war is imminent... The press reports that the Punitive Expedition is in danger of being attacked by Carranzistas...."³⁷

After the Expedition

Concerns about the Mexican threat were so strong that the US military continued its high state of alert along the border, despite the need to deploy large numbers of troops for war in Europe.

On March 11, 1918, the army chief of staff authorized establishment of fourteen "radio listening-in stations" along the southern border. The program was authorized fourteen first lieutenants and eighty-four enlisted men. Captain Carl Kinsley of the Signal Corps Reserve was detailed to the Military Intelligence Branch to organize this service.

Although called "stations," intercept was performed in specially equipped trucks, designated radio tractor units (RTUs), that originally had been intended to facilitate the army's own communications in the field. The vehicles were also nicknamed "the White Tractors" because they had been manufactured by the White Motor Company. For the work, shacks were sometimes built or tents erected adjacent to the tractors.

Van Deman and other senior officers, as they worked to establish intercept sites, repeatedly emphasized that the nature, purpose, and methods of the Radio Intelligence Service were confidential and not to be discussed outside the small circle that had knowledge of it. In the Southern Department, those knowledgeable about the program included the commanding general, department intelligence and signal officers, and district intelligence and signal officers.

If there was a legitimate inquiry from outside this small group, the reply was to be: "The radio operations are for the purpose of perfecting radio methods and training radio operators for regular military duties, but the operators are forbidden to discuss or to disclose any detail in regard to their duties or the radio apparatus."

For security reasons, Van Deman asked that officers in the Southern Department who were aware of the program call the radio tractors "radio training units" instead of listening-in stations. The department had no objections to this. The abbreviation RTU thus could stand for either "radio tractor unit" or "radio training unit."

Remarks

The Southern Department of the US Army, headquartered in San Antonio, expressed its appreciation for the information derived from intercepted plain language messages and decrypts. This material, it said, assisted senior officers in understanding the organization and movement of the Mexican Army.

Since it was uncertain whether fighting between the two nations would again occur, the continual flow of information helped them prepare for that possibility.

Although General Funston's staff passed the secret intelligence to the MI Division in Washington, we do not know to what extent it was used in reports to policymakers. Mexico no doubt remained a threat in their estimation, but, with the US entry into the war, Germany became the principal focus of national-level attention as an enemy.

However, the collection of the Mexican information did give America's nascent intelligence service experience in collecting and handling classified information. This was, after all, likely the first sustained effort in US history to regularly acquire secret information about a potential adversary from communications intelligence.

Until rather late in the effort, there was no system for obtaining cryptanalytic support, just an informal network of talented amateurs. Those who performed cryptanalysis on behalf of the army did not yet have a separate institutional identity. That would come in the period between the world wars.

Each Mexican commander in the region had his own code for use with both higher authorities and his own subordinates. In his final report on the expedition, Pershing noted that his command "took up the study of code messages and soon was able to decipher any code used in Northern Mexico." This was hyperbole, but the rate of success seems to have been quite high.

Pershing clearly knew about the intercept of Mexican communications. Virtually every one of his personal reports to his superior, the commander of the Southern District, referred to them. In most cases, however, it cannot be determined at this time exactly what use he made of the intercept in his tactical decisions.

In its wrap-up report after the expedition, the intelligence section noted the difficulties of getting

good information on Villa. Originally, it had been expected that the "de facto" forces would cooperate and provide what was needed, but instead they were hostile. Most other sources, including local residents, refugees, and secret agents proved unreliable. The US forces were able to obtain confidential information about the government from the government's telegraph and radio communications, including some in cipher.³⁸

In a final report on intelligence aspects of the Punitive Expedition, its information officer noted that little had been obtained from traditional sources. Only intercepted telegrams had provided good confidential information. This was a theme to be repeated in future American wars.

Given the failure in its specific mission, General Pershing sought to put the best possible interpretation on the expedition, calling it what a later generation would term a learning experience. In the long run, he was probably right. Most of what the United States knew about intelligence at the outset of the operation had been untried, and the Punitive Expedition gave the military valuable experience in intelligence and taught it the value of communications intelligence at the same time.

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