

William Friedman's Bletchley Park Diary: A New Source for the History of Anglo-American Intelligence Cooperation

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The great American cryptologist William F. Friedman along with two other colleagues visited Bletchley Park and other British code-breaking facilities in the spring of 1943. A recently discovered diary that Friedman kept while in the UK gives a meticulous account of his activities during the mission. The diary sheds light on the role Friedman and his colleagues played in negotiating the 1943 Travis–Strong agreement between the United States and Great Britain and helps resolve problems with the dating of that agreement. The diary gives Friedman's mid-war assessment of the British codebreaking effort. The diary also gives a portrait of Friedman himself as none of his other writings do.

I

On the afternoon of Friday, 23 April 1943, the great American cryptologist William F. Friedman¹ boarded a government C-54 at National Airport in Washington and flew in secrecy to Great Britain.

Friedman, a civilian employee of the US Army's Signal Security Service,² was one of a three-man clandestine American mission to the UK – the other two were Col. Alfred McCormack and Lt. Col. Telford Taylor,³ both of the Special Branch of Military Intelligence – sent to observe British wartime cryptanalytical operations against the Axis powers.

Evidently unknown to scholars until now, Friedman kept a meticulous, day-to-day, sometimes hour-to-hour diary of his activities on the mission, noting in it virtually everything he saw and did.

Thanks to his *Diary*,⁴ which runs to almost 26,000 words, we now know whom Friedman met among British cryptologists and when he met them, what British facilities he visited and when, and what the British were willing to show him and in what sequence.

We also know in a general way what the Americans in the UK and their British hosts were saying to each other: Friedman almost invariably noted in his *Diary* the subjects under discussion. It must be said, however, that Friedman gives us few of the details of these discussions. He was a highly circumspect intelligence officer who was close-mouthed about his trade and jotted down only what he thought was safe to record in an informal document.

Nevertheless, historians of intelligence should find the *Diary* useful for a number of reasons. For example, read carefully and read in conjunction with other documents, the *Diary* sheds new light on how the agreement between the US Army and GC&CS⁵ (widely but erroneously referred to as BRUSA – see below) was negotiated and on Friedman's role in the negotiations. It also gives us an on-the-spot view of Bletchley Park and its denizens as seen by the premier American cryptologist of the period as well as his assessment of the British wartime decrypting effort.

The *Diary* is remarkable as well because it is a hitherto unknown, lengthy piece of prose written by Friedman and it gives us a picture of the man himself as none of his other writings do.

What follows is an account of Friedman's *Diary* and its contents.

II

Friedman had begun work in cryptology at Riverbank Laboratories near Chicago, where he had been hired as a geneticist in 1915. Riverbank was owned and operated by an eccentric millionaire named George Fabyan,⁶ whose wide-ranging interests included acoustics, archaeology, bibliophily, and cryptology. Fabyan also entertained the theory that Francis Bacon was the real author of the plays and sonnets of William Shakespeare. Fabyan first had Friedman, and then another employee, Elizebeth Smith, hired in 1916 (Friedman and Elizebeth would marry in 1917), begin researching what was then known of cryptology and try to use what they learned of that science to sift through the writings of Shakespeare and Bacon to prove the theory.

Though the couple found no evidence that Bacon wrote Shakespeare,⁷ the Friedmans did become experts at cryptology. William in particular became a master of the science, to which he made brilliant contributions during the next decades. (Elizebeth herself showed considerable talent in the field and had a long career working as cryptanalyst for various US government agencies.)

After the United States entered World War I, William was inducted into the US Army as a first lieutenant and served in France in 1918 working on German codes and ciphers.

In 1920, Friedman finished a groundbreaking theoretical contribution to cryptology, *The Index of Coincidence and Its Applications in Cryptograph*.⁸ Toward the end of that year Friedman happily left Fabyan's enterprise and in

1921 went to work on a temporary contract for the War Department devising cryptosystems. He later became a civilian employee of the Department, where he continued to work on cryptosystems, taught cryptology, and made further theoretical contributions to the field. In 1930 he became chief of the US Army Signal Corps' Signal Intelligence Service, where he and his colleagues attacked the codes of foreign governments, particularly those of Japan.

By late 1940 Friedman's team at SIS had broken the main Japanese diplomatic code known as 'Purple' and had constructed a working model of the Japanese encrypting machine, *Angooki Taiipu A*, an astonishing feat of analysis and of mechanical virtuosity. The emotional strain of the effort, however, seems to have broken Friedman's always precarious mental health⁹ and shortly after Purple was solved he was admitted for treatment to the neuropsychiatric center of Walter Reed General Hospital in Washington.

When released in April 1941 Friedman returned to SIS, where he was put on short hours and confined mostly to performing administrative duties. He was given the title 'Director of Communications Research'.

We know little of his professional life after his return to SIS until we find him being sent to the UK in 1943.

The mission Friedman was sent on is still shrouded in mystery. We do not know who suggested it or how its members were chosen and no mission orders or mission description appear to have been declassified. To this day we do not know the official reasons why Friedman and his colleagues visited Bletchley Park and other British Comint installations.

We do know that sometime toward the end of 1942 the head of Military Intelligence, Gen. George Veazey Strong, had planned on sending McCormack – alone – to GC&CS to see if it would be feasible to station an American team in the UK to receive British Comint intelligence and related evaluations.¹⁰ (McCormack had been instrumental in establishing the 'Special Branch' of Military Intelligence, a kind of central evaluating body that would, among other things, gather and comb through enemy signals intercepts and extract as much intelligence as possible from them.)

Friedman himself had long been pushing for an exchange of expertise with the British that would allow US cryptanalysts to work on Enigma intercepts. Perhaps because talk of a mission to Britain was in the air, on 8 February 1943 Friedman sent a memorandum to his immediate superior, Col. W. Preston Corderman, chief of the Signal Intelligence Service, setting out in detail the reasons why US codebreakers should 'undertake operational exploitation' of 'German Army and Air Force E traffic' in Washington and urging that the case be made to the British.¹¹

McCormack touches on the mission's purpose in his 'War Experience', an unpublished memoir of his activities for the Special Branch during the war

(and the fights he got into with the American military) now deposited at the National Archives. In a short account of the mission (in which, astonishingly, he never mentions Friedman) McCormack, writing of himself in the third person, says:¹²

In April, McCormack was sent to England as the representative of the Assistant Chief of Staff G-2, to work out arrangements that would insure that American field commands would be furnished promptly with all relevant British intelligence, and that the War Department would have access to British intelligence in all its aspects.

These are the only suggestions we have of the mission's origins and purpose. The circumstances surrounding the mission, however, and the testimony of the *Diary* suggest that the Americans went to the UK to do more than simply study how the United States might receive British Comint intelligence.

At precisely the time that the trio of Americans were in the UK, talks were going on in Washington between American intelligence officials and the deputy director of GC&CS, Commander Edward Travis, who at this point in the war was in charge of Bletchley Park.¹³

The *Diary* clearly shows the travel dates of the two missions. In late April Friedman and his colleagues arrived in the UK. By 2 May they were holding discussions with Travis and other British officials. On 8 May, Travis left for the US. By 11 June he was back in the UK meeting with Friedman and McCormack there, having completed a Comint agreement in Washington. One day later Friedman and McCormack left the UK for the US (Taylor stayed behind to work at Bletchley Park).¹⁴

In short, in the spring of 1943 there was a more or less simultaneous exchange of delegations of codebreakers between GC&CS and Arlington Hall. (Travis, it appears, was a delegation of one.)

The talks in Washington led to an accord, the landmark Travis–Strong Agreement (erroneously referred to as the ‘BRUSA Agreement’¹⁵), an accord that formed the basis of all subsequent Anglo-American Sigint cooperation.¹⁶ Travis–Strong had been under negotiation for months (see below) and was completed and signed on 24 May 1943.

The Friedman mission was apparently connected with the negotiations going on in Washington. But what was the nature of that connection?

The *Diary* gives us important clues. In it Friedman and McCormack, especially Friedman, again and again hold what sound like formal discussions with the powers at Bletchley Park and Berkeley Street, the diplomatic codebreaking section of GC&CS,¹⁷ mostly on how the British and Americans

should cooperate in handling enemy Comint, and then sending these mini-agreements back to Washington:

Thursday May 6 ... Then rejoined D[enniston]¹⁸ & got revised draft of proposal for division work on Flora[dora].¹⁹ Then to Embassy to draw up tele to Wash on proposal (22).²⁰

Friday, May 7 ... After lunch we got down again to more serious detailed discuss re JAC²¹ & reached conclusions, some of which were embodied in telegram to AH.²² Conf going very smoothly in a most friendly spirit of cooperation (26–27).

Monday, May 17th ... We got down to work quickly [on JAC], De Grey²³ presiding. Subcom[mittee] apptd on communication matters, to which I was appointed for US, to meet at 2:30. Main session finished at 12:45. Lunch with the whole crowd. Subcom met & finished its work at 3:30. Rest of afternoon on various discussions, approval of draft of minutes of a.m. & p.m. sessions draft of tel by me to AH (49–50).

Saturday, May 22nd ... chat with D[enniston] re official matter—he gave me paper of proposed basis of talk with Taylor, M^cC & self on future relations in neutral & allied fields (64–65).

Sunday, June 6th ... Had a quick conf. with Welchman²⁴ and arrived at tentative agreement re coop. on E[nigma] work for A.H. He asked me to draw up brief on it, which I rushed through in a few minutes before lunch, at which Tel & De Grey present (120).

Clearly, Friedman and his colleagues were more than just observers – in their ‘conferences’ with Denniston, de Grey and others, they were not observing anything, they were negotiating.

But negotiating what? For a likely answer to that question we need simply look at the Travis–Strong Agreement,²⁵ the final shape of which was being worked out concurrently in Washington. Travis–Strong deals with the division of cryptanalytic labor between the British and the Americans and with security concerns. It is short, it is highly general, and it could not possibly in itself serve to define how the British and Americans would actually cooperate. Other more technical agreements would be needed for that.

Though we cannot tell for sure, there is every likelihood that Friedman, McCormack, and Taylor (America’s top cryptologist and two smart lawyers) were in the UK to work out with the British the detailed procedures of

Anglo-American wartime cryptanalytic cooperation: 'division work on Flora', 'JAC', 'communication matters', 'future relations in neutral & allied fields', and 'coop. on E work' – the implementing regulations, as it were, for the Travis–Strong law.

Not that Arlington Hall kept its trio in the UK well informed about what was going on at home. Friedman repeatedly complains that his boss back at Arlington Hall, Corderman, is responding late or not at all to his and McCormack's cables. But even Friedman's complaints suggest strongly that negotiations were going on:

Monday, May 24th ... A short one [cable] for me from Corderman giving barest outlines of results of discussions on E there (later found to be very sketchy & omitted altogether fact we were to do research & op on menus to be sent over – this being in my opinion very important) (70–71).

Friday, May 28 ... To office where prepared telegram Corderman re failure to answer one from here at least 10 days old. They seem to be very slow in getting answers across & quite embarrassing to me (82).

Saturday, May 29th ... He [Taylor] & Al very much disgusted with msge from AH to me which makes it seem that all the msgs we had been sending back made no impression & were so much waste so far as concerns our understanding of what is going on here (96).

Friday, June 4 ... No word about anything from A.H. – No answer to my long telegram & think they are acting pretty badly all round on Jig matters (115).

Monday, June 7th ... No mail for Tel or me & only one snippy tel for me. One for Al the other day was intended as terrific bawling out, which Al answered & may get fired for (136).²⁶

The above quotations, including Friedman's complaints, leave little doubt that Friedman, McCormack, and Taylor were negotiating with their British colleagues and nailing down in detail how Travis–Strong would be implemented and were sending the results back to Washington. (To be sure, no such agreements have found their way into the public domain and may no longer exist.)

The *Diary* also helps clarify when the various parts of Travis–Strong were agreed to. Travis–Strong comprises three sections: a main text and two appendices. Appendix A sets out what the Americans will do with German

machine ciphers, which Friedman was eager to tackle, and how the British would cooperate with the American effort. Appendix B sets out British security regulations for 'Special Intelligence', that is, highly secret information obtained through cryptanalysis of enemy high grade ciphers, and American agreement to follow British procedures.

The three parts of the document released by NSA²⁷ are quite distinct and not only because of their designations: though the pages are numbered consecutively through the document, they were typed on three different typewriters and have differing dates ('May 17, 1943' for the main body, '1st March 1943' for Appendix B) or no date at all (Appendix A). It is also likely, to judge from its spelling and dating style ('centres', '1st March 1943'), that Appendix B was typed in the UK. Appendix B is also the only part of the document released by NSA that bears signatures, those of Strong and Travis. It was signed, presumably in the UK, on 1 March 1943.²⁸

That Appendix B was signed on '1st March 1943' suggests that by that date sufficient progress had been made on Travis-Strong for the British and Americans to know the general structure of the agreement if not its details, namely, that it would consist of a main body followed by at least two appendices. The main body, as noted, carries the date 'May 17, 1943', a good two and a half months after that of Appendix B.

It is the middle part, Appendix A, dealing with German machine ciphers, whose date of agreement has not been known but can now be determined.

For Friedman, writing on 18 May, the negotiations are still 'going on in Wash':

Tiltman²⁹ gave me pretty good news about what is going on in Wash on the controversial discussions. We shall probably do things on E[nigma] both over here under George & back at AH (52).³⁰

Which means that according to John Tiltman, who, though in the UK, was probably better informed as to what was going on in Washington than Friedman, McCormack, or Taylor,³¹ by 18 May at least some part of Travis-Strong had not yet been agreed to; and we now know what part, the one dealing with 'E[nigma]', which is to say, Appendix A.

The date when everything came together was 24 May, as a cable from Arlington Hall dated 25 May shows: 'Cabling you today giving you highlights of agreement which was signed yesterday. Will send you copy by next pouch'.³²

We know now, thanks partly to the *Diary*, that the allies agreed to Travis-Strong progressively, that the 'controversial discussions' were over what kind of work the Americans would be doing on 'E traffic', and that these were the issues that took the longest to resolve.

Travis–Strong is only one of the topics on which the *Diary* sheds light. We catch a glimpse here too of the old US Army–Navy rivalry over Comint and watch as the Navy throws obstacles in Friedman's way even when he is in the UK, much to his irritation. In this entry, dated 7 May, he writes:³³

Started in work but was soon interrupted by call from Travis who wanted tell me [*sic*] that we were to be shown their Nav E machine (modification of what he had told us the day before i.e., we were not to be shown anything on Nav side (at request of our Navy!!). He asked me not say anything back home re Navy having requested this but we could say merely that we were not shown that part. Travis said he frankly did not see why he should bear the obloquy for this sort of action & wanted it straight so far as I was concerned (25–26).

On 19 May he writes: 'Talks with De G outlining my future steps. Am to see Nav Hag[elin]³⁴ also. Lunch as usual with De G et al. (53).' Then on 23 May he writes:

But soon as got into bed got to thinking about how our Navy has been acting re our seeing N[avy] things here & got pretty well riled the more I thought about matter. It had been agreed I was to see B/P Nav E bombe & Hag. De Grey told me former was off as Travis had sent word from Wash. Sorry etc, not anything B/P had wanted dictated by our N at Wash. I can't understand – unless Ad. Redman³⁵ put in his oar after hearing how our G-2 had messed things up & and did not propose get involved. I shall have it out with J. Wenger³⁶ when I get back, as consider it severe reflection my own status & trustworthiness. Had fitful sleep & dreamed a dream involving this subject apparently as substance was being double-crossed by chap who symbolized Navy (73).

In his official report,³⁷ which he wrote after returning from the mission, Friedman does mention British work on the German Naval Enigma,³⁸ but his account is sparse and he does not go into the technical details of decryption or evaluation of intelligence. The US Navy succeeded nicely in keeping Friedman out of what it considered its home waters.

III

Beyond what it can tell us of official history, the *Diary* beautifully evokes the atmosphere at Bletchley Park and the strong feeling of camaraderie, of close, easy rapport that developed between the two groups of codebreakers. Friedman spends a golfing week-end with Denniston at the latter's home

south of London, enjoys happy evenings with the Tiltman family, is wined and dined expensively in London. Later he is taken to Cambridge University for a tour and an overnight stay in a room reserved for honored guests. He meets Nobel prize winners. At Christ's College, he lunches at the Master's table.

Friedman loved England.

Which does not mean he cannot be funny about the English, especially the working conditions and sartorial *mores* at Bletchley Park:

Sunday May 9 . . . Terrible weather – cold & rain all day. I had put on my long underwear & my sweater, so was quite comfortable except for cold feet. Col. Marr Johnson from India is suffering lots from the cold since he usually works 110–120° at home & these rooms at B/P are ghastly cold these days. The Englishmen keep their windows open all the same! They seem to be inured to the cold & damp. Their working quarters, compared to ours at home, are veritable rabbit warrens, and with primitive conditions as to chairs, furniture, etc. (31).

Thursday, May 20 . . . On the whole I'd say we are very much cleaner in home & office – but then there's been a real war here now for 3 years & there isn't any labor or material for cleaning, painting, paperhanging, etc. Things have to do as they are until the end of war (58).

Tuesday, May 25th . . . Birch³⁹ (looking terribly seedy) at other end of table opposite De Grey (The clothes the civilians wear around here are awful – frayed, dirty, unpressed. But I guess it can't be helped.) Wonder what they'd be like in normal times, though I suspect Birch would look seedy at all times (76).

Friedman admired the British codebreakers and their achievements enormously and considered their work superior to that of the Americans:

Friday, May 28 . . . I am impressed with volume work done by these people per capita, under heavy physical handicaps & I wonder if they aren't really much better workers than we are despite our machines, mechanization, fine offices, etc. In a technical sense I think we are way ahead of them but in a *practical* sense, judged by accomplishments these *amateurs* (most of them really that in my opinion) have very largely surpassed us in detail, attention to minutia, digging out every bit of intell possible & *applying* high-class thinking originality & brains to the task. Their key personnel are of much greater capabilities than ours, I think (88–89).

As noted, the *Diary*, if it only hints at critical information – what Friedman is discussing with the British – it tells us far too much about the inconsequential details of Friedman's day: what time he gets up in the morning, what he has for breakfast, where he lunches and dines, when he gets to bed.

Such details, which have a hint of the obsessive to them, may simply have been Friedman's way of putting his thoughts in order and getting himself into his writing. But keeping such meticulous, near-obsessive notes may have served some other, deeper purpose – which brings us to Friedman's mind.

Nowhere in the *Diary* does Friedman allude explicitly to his mental condition, his slide into depression in 1940 which brought him to Walter Reed late that year and which prevented him from traveling to Britain in 1941 on an earlier American mission (his place was taken by his subordinate, Abraham Sinkov).⁴⁰

Though he resumed work at SIS after his discharge from Walter Reed, Friedman's mental health was precarious and he was always in danger of falling into serious depression. His bouts with that illness had begun in 1927 and occurred every few years thereafter, increasing in frequency as he aged, so that toward the end of his life he was sinking into dark, suicidal moods virtually every year.⁴¹

Friedman must have found the prospect of a mission to Bletchley Park a God-given boon, a way to demonstrate once again his eminence in a difficult, secret profession and his mastery of its techniques. The mission may also have been a way to show that he mattered, that after an exceedingly difficult period in his life he was back.

McCormack touches on this in a cable he sent to Arlington Hall on 23 May:⁴² 'Friedman is very well liked here and highly respected and this trip is making a new man of him.' There is also a hint at these hopes in a letter his wife Elizebeth wrote him on 13 May:⁴³ 'This has been a very good day, for it brought two messages from you. The best news I've heard yet came from Kully [Solomon Kullback].⁴⁴ I'm so glad things are going better and that you feel you are "doing good" '.

Yet hints of the latent mental instability that plagued Friedman all his adult life are discernible in the *Diary*. Thus, he complains of fits of nervousness that he calls the 'heebeegeebees':

Monday, May 24th ... Another thing, not enough relaxation & change from daily grind has me keyed up, I guess ... I've noticed that on days when I am 'tense' & have 'heebeegeebees' I sleep well in night but when don't have them, sleep not so good. – Haven't had hbgbs for many days now. Wish I could solve this mystery of myself (74).

... and of insomnia, a well-known symptom of depression and a curse that runs through the first half of the *Diary* like a *leitmotiv*:

Tuesday April 27 ... Bed at 10:30 but too tired for good sleeping (5).

Sunday May 2 ... Poor sleeping for some reason or other, maybe tetanus shot still working (8).

Thursday, May 13 ... Went to bed at 12 & slept poorly again. Woke up many times & in the a.m. almost decided to spend the day in bed but got up (grumpily) & went about my business, feeling pretty dragged out, though (39–40).

Sunday May 16 ... I did not sleep well again (48).

Monday, May 17th ... I don't understand this failure to sleep unless it be that I must not drink any tea, coffee, or alcohol whatever. The pleasure of my visit is being impaired by my inability to get good sleep. Perhaps I'm tired out from being so much on the go and shifting base so much, together with minor excitements due to rushing hither & yon. I've used up about ½ of my little ½ gr amyals & must go easy with them to make them last (48–9).

Friday May 21st ... Wakeful until 2:15 when decided to take pink pill. Damn this insomnia! Guess the long days without physical exercise responsible for poor sleeping, as can't figure anything else as cause (61).

Monday, May 24th ... Got up at about 1 a.m. and took two small pills from Washington cache but didn't do much good. Awoke early & not at all refreshed. Guess this work is very exhausting mentally & I hope to get through with it soon (73–74).

Wednesday, May 26th ... This pace is terrific for me, especially so because of this rather poor sleeping. Feel fine otherwise, though tired most of time (80).

The dates are significant. Almost all of Friedman's complaints of insomnia are written before the Travis–Strong negotiations were completed, on 24 May. He suffers particularly in the week or so just before that date, when even sleeping pills don't seem to work. Once Travis–Strong is agreed, however, Friedman begins to relax and his mood lightens. There is no more talk of the 'heebeegeebees' and, starting on 31 May, exactly one week after

Travis–Strong was agreed, he writes glowing notes about how well he is sleeping:

Monday, May 31st . . . Had good sleep till about 7 when trucks going by (we were on main street) woke me & I dozed until 8 (102).

Tuesday, June 1 . . . Worked until 10:30 and then went below to have drink . . . Then to bed and had an excellent sleep in the big bed (104).

Wednesday, June 2 . . . Had good sleep and was up by 8 a.m. Nice kipper for breakfast. To B/P by bus and worked steadily all day (106).

It is difficult not to draw the conclusion that anxiety over Travis–Strong and its negotiations had been troubling Friedman deeply and it was only after the last piece of that agreement, the part dealing with ‘E traffic’, had been signed, that Friedman’s troubles – for the time being – ended.

He unwinds with Denniston, with E.R.P. Vincent,⁴⁵ and with others; he visits Oxford and takes long trips through the English countryside. When he finally visits Cambridge with Vincent, the tone is serene:

The atmosphere of Cambridge, which I drank in in great gulps, gives one a feeling of ‘solidity’ – the solidity that is England. Here stand in quiet dignity and great strength buildings devoted to learning and democratic institutions and the dignity of man – for nine centuries – still going strong (123).

In the end, the mission was a triumph for Friedman. The Americans had gotten all Friedman had wanted them to get from the British regarding German E traffic. He had been fêted by people he admired. He had made new and congenial friends and had renewed his friendship with John Tiltman, whom he had known in Washington and with whom he would become particularly close after the war. And back home, with his *Report on the E Operations*, he had scored a solid achievement in analyzing and describing for the Signal Security Agency the intricate marvels of the British codebreaking effort.

IV

We do not know much about what happened to the *Diary* after Friedman left the UK. We do know that on 9 or 10 June he tore the first 145 pages out of the notebook, which go down to the 9th, and sent them off somewhere.⁴⁶ We do not know where or to whom, though most likely to someone at Arlington Hall. Then, starting on 11 June, Friedman wrote another 26 pages, without inserting

page numbers, describing his last two days in the UK and his flight home. At some point – we do not know when – the torn-out part of his *Diary* was reunited with the bound part and the *Diary* is now one document. The *Diary* remained at NSA until it was released to the National Cryptologic Museum.

Friedman and McCormack returned together by air to Washington on 12 June 1943,⁴⁷ stopping in Reykjavik, Iceland, Presque Isle, Maine, and New York. McCormack remained at Special Branch for the duration of the war, then returned to legal practice. Friedman, though he was never again involved in the more strenuous aspects of codebreaking, remained at SSA, where he worked in administration and helped transform that body into the National Security Agency. In 1955, after a series of heart attacks, he retired. Taylor stayed on in the UK to serve out the war as liaison between British codebreakers and their American partners. After the war, he served as US Chief of Counsel for war crimes in the Office of Military Government, Germany, then returned to legal practice and teaching in the United States.

NOTES

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- 1 Friedman was born in Kishinev, Russia 4 September 1891 and died in Washington, DC, 2 November 1969; his wife Elizebeth was born in Huntington, Indiana 26 August 1892 and died 31 October 1980 in Plainfield, New Jersey. For Friedman's life with much material on Elizebeth, see Ronald Clark, *The Man Who Broke Purple: The Life of William F. Friedman, Who Deciphered the Japanese Code in World War II* (NY: Little, Brown 1977). For a short but more up-to-date account see James R. Chiles 'Breaking Codes was this Couple's Lifetime Career', *Smithsonian* (June 1987) pp.128–43.
- 2 What began as the Signal Intelligence Service in 1930 had by early 1943 become the Signal Security Service (SSS). Later that same year it was renamed the Signal Security Agency (SSA). See Robert Louis Benson, *A History of U.S. Communications Intelligence during World War II: Policy and Administration* (Ft. Meade, MD: Center for Cryptologic History: National Security Agency, written between 1975 and 1976, but classified until publication in 1997) p.40. At just what point in 1943 the SSS morphed into the SSA is not clear, but by 12 August of that year, when Friedman submitted his *Report on E Operations* (see below, n.37), he addressed it to 'Commanding Officer, Signal Security Agency'.
- 3 At the time of the attack on Pearl Harbor McCormack was a partner in the upscale New York law firm Cravath, de Gersdorf, Swaine and Wood. Shortly after the attack, he was appointed special assistant to Secretary of War Henry L. Stimson, then inducted into Army Intelligence as a full colonel. McCormack was made deputy chief of the Special Branch under Col. Carter Weldon Clarke, a career army officer, and was serving in that capacity when he traveled to the UK in the spring of 1943. Taylor, like McCormack, had been a lawyer when war broke out (he was special counsel to the Federal Communications Commission). He joined army intelligence in 1942 with the rank of major and was assigned to Special Branch.
- 4 Available on request at the library of the National Cryptologic Museum, Ft. Meade, Maryland. Friedman kept his *Diary* in a pocket-sized (6 3/8 inches by 3 3/4 inches) notebook

- of white, blue-lined pages with a red cover, on which he penned an elaborate capital 'F', two inches or so high. Except for a kind of title page which he printed, Friedman wrote the *Diary* in his distinctive cursive script, which is almost always legible.
- 5 Government Code and Cypher School, the British Comint service.
 - 6 For more on Riverbank and Fabyan, see Fred W. Kranz, 'Early History of Riverbank Acoustical Laboratories', *Journal of the Acoustical Society of America* 49/2, Part I (1971) pp.381-4 (reprinted in *Cryptologia* 9/3 (1985) pp.240-46).
 - 7 Much later in their lives the Friedmans collaborated on a book exploding a number of such theories and in which they dealt harshly with Fabyan. See William F. and Elizebeth Friedman, *The Shakespearean Ciphers Examined* (NY: Cambridge University Press 1957).
 - 8 Fabyan had the work published in France in 1922 as number 22 in the *Riverbank Publications* series. It has been reprinted as William F. Friedman, *The Index of Coincidence and Its Applications in Cryptography* (Walnut Hill, Calif.: Aegean Park Press, no date). The historian David Kahn calls Friedman's *Index* 'the most important single publication in cryptology'. See D. Kahn, *The Codebreakers. The Comprehensive History of Secret Communication from Ancient Times to the Internet* (NY: Scribner 1996) p.376.
 - 9 Friedman's life-long mental problems, particularly his depression, insomnia, and alcoholism, are summarized in a letter to his biographer, Ronald Clark, written by Friedman's last psychiatrist (he had consulted at least three for varying periods over the years), Zigmond M. Lebensohn, dated 10 May 1976. (Papers of Elizebeth S. Friedman, Box 13, File 30, George C. Marshall Library, Lexington, Virginia). Lebensohn's letter notes that Friedman had been hospitalized with mental illness five separate times beginning in 1940. His last hospitalization was in late 1963.
 - 10 See Benson (note 2) p.100. Benson suggests the British may have invited the mission (ibid. p.116 n.43).
 - 11 National Archives, College Park, Maryland, Record Group 457, NSA Historic Cryptographic Collection, NR 2820, 'GCHQ/US Cooperation'. By 'E traffic' Friedman means material encrypted with the German Enigma machine. Friedman's main points in the memorandum were 1) that the soon-to-be-in-place American 'E solving machinery', intended for the decryption of German Army and Air Force traffic, was likely to be faster and more flexible than the British 'bombe'; 2) the Americans were perfectly capable of maintaining high security on the E material; and 3) the British needed all the help they could get. Friedman added on p.4: 'We are now exchanging Japanese Army intercept material with the British and this fact should constitute some basis for establishing similar exchanges as regards German Army and Air Force intercepts'.
 - 12 National Archives, College Park, Maryland, Record Group 457, NSA Historic Cryptographic Collection, NR 3444, 'Col. Alfred McCormack Papers': 'War Experience of Alfred McCormack', p.12.
 - 13 Though still under Alastair Graham Denniston, head of GC&CS.
 - 14 See, *Diary* (note 4) pp.3, 26, and entries under 11 and 12 June. Page numbers here and in following citations from the *Diary* are those Friedman penned into the document; he numbered each page consecutively until p.145, thereafter giving only the dates.
 - 15 There was no BRUSA Agreement of 1943. The term 'BRUSA' occurs nowhere in the declassified text of the 1943 Travis-Strong Agreement nor does it occur in any other publicly known official document relating to that agreement. (For the text of the Travis-Strong Agreement see John Carey Sims, 'The BRUSA Agreement of May 17, 1943', *Cryptologia* XXI/1 (1997) pp.30-38.) The actual BRUSA Agreement was an understanding between GC&CS and the US Navy signed on 14 January 1944 (Benson (note 2) p.120). 'BRUSA', a term evidently invented by the British, referred to a 'comprehensive U.S.-British circuit, to be called the "BRUSA" circuit, to be established as early as practicable between Washington, Pearl Harbor, Melbourne, Columbo, and GC&CS, incorporating U.S. naval and British circuits at present used for the dissemination of RI material' (Benson (note 2)), hence the name of the agreement, 'BRUSA'. If Travis-Strong (1943) had actually been called BRUSA, the Navy-CG&CS agreement of 1944 would hardly have been given the same designation. The first use of the term BRUSA in reference to Travis-Strong seems to be in James Bamford, *The Puzzle Palace. A Report on NSA, America's Most Secret Agency*

- (NY: Houghton Mifflin Company 1982) pp.314–19. It seems, however, that in calling Travis-Strong ‘BRUSA’ Bamford simply erred. And every historian treating the subject since Bamford, even after relevant documents such as Benson’s *History* (note 2) were declassified, has erred with him.
- 16 Bamford seems to have been the first historian to remark on the importance of Travis-Strong (‘BRUSA’). See Bamford (note 15) p.314.
 - 17 Located at 7–9 Berkeley Street, a seven-story apartment building adjacent to the Berkeley Hotel in the Mayfair area of London (the ground floor was occupied by one Madame Riché, Couturière des Dames).
 - 18 Alistair Graham Denniston, head of GC&CS.
 - 19 The British name for a German diplomatic code.
 - 20 The numbers here and in all following indented quotations from the *Diary* (note 4) are the page numbers that Friedman penned in.
 - 21 JAC was a Japanese Army diplomatic system (communication from *Intelligence and National Security* reviewer).
 - 22 Arlington Hall, headquarters of Signal Security Service in Arlington, Virginia.
 - 23 Nigel de Grey, assistant director of GC&CS. During World War I de Gray, along with William Montgomery, both of the British Naval Intelligence Unit, had partially decrypted the infamous Zimmermann Telegram. See Kahn (note 8) p.282 ff.
 - 24 Gordon Welchman was in charge of cryptanalytic operations in Hut Six at Bletchley. See Gordon Welchman, *The Hut Six Story: Breaking the Enigma Codes* (NY: McGraw-Hill 1982).
 - 25 Text in Sims (note 15).
 - 26 In a cable dated 20 May Clarke soothes Friedman’s feelings: ‘Your messages most interesting and informative and have been of great help in our discussions with Travis’. Quoted in Lee A. Gladwin, ‘Cautious Collaborators: The Struggle for Anglo-American Cryptanalytic Co-operation 1940–43’, *Intelligence and National Security* 12/1 (1999) p.136.
 - 27 National Archives, College Park, Maryland, Record Group 457, NSA Historic Cryptographic Collection, NR 2751, ‘Agreement between British Government Code and Cipher [*sic*] School and U.S. War Department Regarding Special Intelligence’. This is probably a copy of the same document that NSA released, in highly redacted form, to Bamford and which he used in writing *Puzzle Palace* (note 15). The document now at the National Archives shows no signs of redaction.
 - 28 At the foot of Appendix B the following is typed: ‘Approved for the U.S. War Department. By order of the Secretary of War. JOSEPH T. McNARNEY, Lieut. General, U.S. Army. Deputy Chief of Staff’. McNarney has put his signature over his name. Over his signature is a date stamp of ‘15 JUN 1943’.
 - 29 Brig. John Hessel Tiltman, head of GC&CS Military Section. For more on Tiltman, see Ralph Erskine and Peter Freeman, ‘Brigadier John Tiltman: One of Britain’s Finest Cryptologists’, *Cryptologia* XXVII/4 (2003) pp.289–318.
 - 30 Gladwin quotes another cable, this one from Col. Carter Weldon Clarke and dated 20 May, which reads, ‘Believe an agreement with Travis will be reached this week’. Gladwin (note 26) p.136. As can be seen, the separate parts of Travis–Strong were agreed to separately, Appendix A being the last.
 - 31 If Arlington Hall was as uncommunicative as Friedman complains.
 - 32 National Archives, College Park, Maryland, Record Group 457, NSA Historic Cryptographic Collection, NR 4517, ‘Friedman Correspondence While in England, 1943’, cable 2680, on which is found the note, ‘Copy our reply to Mr. Friedman’s 4813 prepared by Col. Doud’.
 - 33 For more on Army–Navy rivalry over Comint intelligence and how that rivalry affected negotiations with the British, see Stephen Budiansky, ‘The Difficult Beginnings of US–British Codebreaking Cooperation’, *Intelligence and National Security* 15/2 (2000) pp.49–73.
 - 34 The Hagelin enciphering machine, developed in the 1920s by the Swede B.C.W. Hagelin (see Kahn (note 8) p.422 ff.).
 - 35 Rear Adm. Joseph Redman, Director Naval Communications.
 - 36 Cmdr. Joseph Wenger, executive officer of the US Navy’s OP-20-G.

- 37 Back in the US, Friedman and McCormack each wrote a lengthy report on what he had seen, Friedman's *Report on the E Operations of the GC & CS at Bletchley Park* (National Archives, College Park, Maryland, Record Group 457, NSA Historic Cryptographic Collection, NR 3620), and McCormack's *Trip to London* (National Archives, College Park, Maryland, Record Group 457, NSA Historic Cryptographic Collection, NR 3600). These, taken together, probably give us the most detailed description we have of British wartime Comint operations.
- 38 Friedman, *Report* (note 37) pp.89–91.
- 39 Frank Birch, head of the Naval Section at Bletchley Park. Birch, a movie and television actor and playwright, had worked in naval intelligence during World War I.
- 40 For more on the Sinkov mission, see Gladwin (note 26) p.123 ff.
- 41 Lebensohn, 'Letter to Clark' (note 9).
- 42 NSA Historic Cryptographic Collection, National Archives, College Park, Maryland, Record Group 457, NR 3284, American Embassy, London, Messages to Military Intelligence (MID), cable 4853.
- 43 Papers of Elizebeth S. Friedman, Box 2, File 7, George C. Marshall Library, Lexington, Virginia.
- 44 Kullback was one of Friedman's original hires at Signal Intelligence Service in 1930. He was chief of B-2, German cryptanalysis at Arlington Hall.
- 45 Professor of Italian at Cambridge. At Bletchley Park he worked on Italian naval codes. See William F. Clarke, 'Bletchley Park–1941–1945', *Cryptologia* XII/2 (1988) pp.90–97. Clarke writes (ibid. p.91), 'Vincent was Professor of Italian at Cambridge, a fine scholar but like many of his class good at his own classics but very poor at the language used by Naval officers; when he was working under me my first task on arrival at the office when he had been on night duty was to see how many mistakes in translation he had made and send in the necessary corrections'.
- 46 *Diary* (note 4) p.146.
- 47 Ibid. entry under 12 June.