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FRITZ HABER: THE PROTEAN MAN

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by

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Enjoy the gaieties of life
And its serious sides as well.
Nothing alive has a single cause,
It is always many-sided.

Freut Euch des wahren Scheins
Euch des ernsten Spieles
Kein lebendiges ist Eins
Immer ist's ein Vieles.[1]

Lutz Haber
Bath, March 1998

This IQP analyzes whether German chemist Fritz Haber ever considered the moral implications of his involvement in the development of German chemical weapons, including Zyklon B. Haber, born a Jew, had family members killed in Nazi gas chambers, making this ethical dilemma even greater. This question was investigated using several biographies, articles, and original letters translated German. We determined there is no evidence that Haber regretted his involvement.

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Introduction: Fritz Haber: The Protean Man

Is it possible for a person to exist who is a very patriotic German, a Jew who became more aware of his faith later in life, a person who helped catapult world food production to record highs, and a man who aided Germany in developing the chemical weapons which killed thousands of people? Surprisingly, the answer is yes; his name was Fritz Haber and by today's standards one might consider him to be a monster. When one considers the circumstances in which he lived, however, he becomes a more sympathetic character with complex motivations who made choices he once believed were the right ones. Did he regret these decisions before he died, or did he go to the grave firm in the belief that everything he did was morally sound and justifiable? We hope to illustrate in this work just what sort of a man Fritz Haber was.

First, we will present a brief history of Fritz Haber's early life; in order to understand the man he grew to become, one must first understand the child he once was. The values which his father instilled in him would become the basis of his morals. Examining his life during World War I, which will be referred to as the Great War for the remainder of this paper, will show that he believed that chemicals were a legitimate form of weaponry. When others spoke out against them, he simply believed that these people were resistant to change, once stating "The disapproval that the knight felt for the man with a gun is repeated by the soldier who shoots steel bullets, when confronted by a man who appears with chemical weapons."[1] This statement clearly illustrated that he was consistently an advocate of technological advancement, in this case chemical warfare.

A study of his marriages–first to Clara Immerwahr, until she committed suicide with his service pistol in 1915, and second to Charlotte Nathan, which ended in divorce–shows a demanding and oppressive side of Haber's personality to which his friends and colleagues were never exposed. Unaware of his near-tyrannical rule at home, they unanimously declared him to be a "great man, but friendly at the same time."[2] Richard Willstätter and Albert Einstein were two examples of this. These two relationships evolved over time from being strictly colleagues to being colleagues and friends, so that the letters exchanged between Haber and the two men eventually contained matters of a more personal nature, in addition to matters pertaining to their work. Because of this, we can gain more insight into Haber's true character.

After the war ended, Haber continued research in this field despite the fact that this research was declared illegal by the Geneva Convention. Here, it will be shown that at this point in his life, he was still comfortable with the idea of chemical warfare and had not yet begun to wrestle with the idea that what he had done had serious consequences. It was not until the final years of Haber's life that he may have begun to show remorse over his actions earlier in life. Around this time he began correspondence with Sir William Pope, a former foe turned friend, in an effort to secure a way out of Germany, which was quickly descending into oppression. The once-enthusiastic and unwavering patriot now felt he was no longer welcome in the Fatherland because of his Jewish heritage.

Had Haber lived longer than he did, would he have changed his beliefs? Would he still consider chemical weaponry to be more humane if he knew the devastating results of dropping the atomic bombs on Hiroshima and Nagasaki, both immediately and over the long term? If Haber had lived to see World War II, when the accomplishment for which he won his Nobel Prize was corrupted and used as an agent of genocide in the Nazi death camps, would he still have believed "for humanity in time of peace, for the Fatherland in time of war"?

In this paper, we will explore these questions through the use of correspondence between Haber and his acquaintances as well as recollections from family and friends. Additionally, we plan to use documented incidents which occurred during Haber's life. By using these, we hope to gain insight into Haber as a man, and to show that he may well have regretted his advances in the field of chemical warfare as he neared death. We will begin with a brief summary of Haber's early life.

Let it be mentioned now, however, that some of these questions were not able to be answered by the end of our research period and while writing this composition. There is simply not enough evidence remaining from the time during which Haber worked and lived. For example, it has been mentioned in a number of sources that Clara Immerwahr wrote a series of suicide letters before her death, but these letters have never been found and are thought to have been burned, perhaps even by Haber himself. Would he truly want people to know the real reason for his wife's depression and subsequent suicide if he had in fact been her motivation? We have done our best, using our resources to their greatest extent, to attempt to discover the answers to the aforementioned questions and to provide insight into Fritz Haber's life and his thoughts on the choices he made.

Notes

1. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, page xiv.

2. Ibid, 174.

3. Ibid, 69.

4. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, Page 127.

The Early Years: An Overview of his Life before his Work with Chemical Weapons

1868-1934

Nobel Prize winner Fritz Haber was born December 9, 1868, in Breslau, Germany (now part of Poland). He was born into one of the oldest families in town, as the son of Siegfried Haber, a merchant. Haber's father was a successful business man, who dealt with dyes and pharmaceuticals. He instilled in Haber Prussian values, such as duty, discipline, hard work, and a sense of order. Haber's mother, unfortunately, died in childbirth. Early in his life, his family and teachers saw potential in him and a high level of intelligence. Haber began his formal education at a *Volksschule*, a common school. After three years, he then continued his schooling at the St. Elizabeth Gymnasium for nine years. The Gymnasium's curriculum was heavily focused on studying the arts rather than the sciences; because of this, Haber also had a lifelong interest in philosophy and literature.

However, there was one subject that had always fascinated Haber in school, as one as well he had consistently excelled at: Chemistry. He went on to study at three universities, Heidelberg, Berlin, and the Charlottenburg Technische Hochschule, where he was awarded his Ph.D. After that, he went to Eidgenössische Technische Hochschule in Zurich, to do post-doctoral work. He briefly joined his father's business, but soon decided to take his career path in a different direction, as a university chemist. Though he was born into a Jewish family, Haber did not embrace his faith fully and always thought of himself first and foremost a German, and secondly, to some extent, a Jew. He did not seem to be very invested in the religion itself, and to facilitate his career advancement, Haber converted to Lutheran faith, as most university careers were only open to Christians at the time. However, Jewish culture was still quite prevalent in his life; he surrounded himself with Jewish friends and married into Jewish families. However, the religion itself still remained something of a non-issue with him and though he never completely abandoned it, he never fully embraced it either.

In 1901 Fritz Haber married his first wife, thirty-one year old Clara Immerwahr. Clara also came from a respected Jewish family in Breslau, and Haber had known her since his adolescence. Their marriage was not the best – Clara's happiness hampered by Haber's inattentiveness, and his domineering presence. Even in photographs there was evidence that he was remote, formal. Haber later said in 1933 that he "was German to a

degree which no one today would believe."[1] To Chaim Weizmann he said, "I was more a great military leader, more a captain of industry. I was the founder of huge enterprises."[2]

Haber's first job was doing research in organic chemistry at the University of Jena. However, he found himself unhappy with the university's orthodox methods. Later on his life he would often recount, joyfully, how chance had brought him to Technische Hochschule of Karlsruhe. When he was twenty-five years old, he entered into his new job, teaching physical chemistry (a subject which he had virtually self-educated himself in) and also doing research. Through his intensive research into thermodynamics and electrochemistry awarded him the position of associate professor of physical chemistry in 1898. His books, *Grundiss der technischen Elektrochemie auf theoretischer Grundlage* ("The Theoretical Basis of Technical Electrochemistry," 1989) and *Themodynamik technischer Gareakitonen* ("Thermodynamics of Technical Gas Reactions, 1908) greatly enhanced his reputation. A colleague of Haber's described him as "impulsive, capricious, lively, and an excellent teacher who could speak knowledgeably about almost any subject."[3]

In turn-of-the-century Germany, most university positions were not high paying. As Haber was not a professor, he did not receive a regular salary, and thus had to look for ways to earn extra money. To do so, he often worked as a consultant for industry and filed patents. However, some of his peers disapproved of Haber doing outside work. At first, Haber was denied a chair in physical chemistry, but he was finally made a professor in 1906. One of his colleagues, Wilhelm Ostwald, said in regards to Haber, "[W]hen one works with above average intensity, one provokes instinctive opposition from colleagues."[4]

In 1910, Kaiser Wilhelm II founded the Kaiser Wilhelm Society for the Advancement of Science. Fritz Haber was proposed to direct for the institute for the branch of physical chemistry. Haber made many strong demands, and all of them were met. He was given a chair at the University of Berlin, membership in the Prussian Academy of Sciences, and an annual salary of 15,000 marks (approximately $75,000 today). Haber was able to convince Albert Einstein to come to Berlin, and he also attracted many young and up-and-coming scientists to the institute

Haber managed to solve a problem that had been frustrating chemists for longer than a century, which was how to synthesize ammonia from hydrogen and nitrogen. He managed to work out that the synthesis required extreme conditions: a pressure of more than 200 atmospheres and at a temperature greater than 600 degrees

Celsius. Haber also realized that a catalyst was required for the synthesis, and finally he and his collaborator, Carl Bosch, along with assistant Robert Le Rossignol, happened upon osmium, a rare and dense metal. It provided remarkable results and on July 2, 1909, they demonstrated their procedure to the director of Badische Anilin und Soda Fabriken (BASF), a large chemical company.

Though Haber had not originally thought of any practical uses for this process, BASF realized its profitable possibilities, including the ease with which ammonia could now be converted to fertilizer. On September 9, 1913, Haber's process was increased a thousand fold, when it was industrialized. Not only did Haber receive large royalties for his process, but he also was awarded the Nobel Prize in 1918. However, Haber soon became caught up in controversy, due to his highly profitable discovery. An Austrian company contested his patents and other companies fought to break them as well.

However important Haber's contributions to the world and chemistry were, it was with the start of the Great War that Haber would play an even greater role.

Notes

1. Lehrer, Steven. *Wannsee House and the Holocaust*. Jefferson, NC: McFarland & Company, Incorporated Publishers, 2000, Page 7.

2. Ibid.

3. Ibid.

4. Ibid, 8.

The Great War: "The Greatest Period of his Life"

1914-1918

On July 28, 1914, Fritz Haber applied for a six-week long holiday, yet he must have felt the growing tension between other nations and his own beloved Germany for he stated that: "If the political situation becomes such that our nation is pulled into a warlike entanglement, then I intend to return from this holiday."[1] It seems he had not expected the political tensions to escalate so dramatically nor so quickly, for only three days after applying for his break, the Great War erupted. The next few years would so dramatically alter Haber's life that the period during the war has been called "the greatest period of his life."[2]

The Great War began on July 31, 1914 and the German people were filled with a sense of patriotism. Many Germans jumped at the chance to serve under their nation's flag, as did Haber. Already a noncommissioned officer, a *Vizefeldwebel*, he tried to volunteer for war duty, yet he was rejected because of his advancing age. Although he must have felt disappointed when he was not accepted, he would soon learn that his role in the war efforts would be far greater than he could have ever imagined.

When General Elrich von Falkenhayn, chief of Germany's General Staff ordered that a Board of Wartime Raw Materials be created inside the Ministry of War, Walter Rathenau, an economist and author of texts on politics and the economy, was appointed to be at its head. Fritz Haber was chosen as head of the chemistry department of this newly approved board, which quickly became known as the "Haber Office"[3] for he helped to forge a grand alliance among the military, scientific, and industrial industries during the war.

Perhaps the biggest crisis that Germany faced early on in the war was the question of how could it produce enough sodium nitrate, the raw material for both explosives and nitrogen fertilizers. The German war machine required about 20, 000 metric tons of sodium nitrate per month.[4] The German military was desperate for a process that would produce enough of this chemical so in late September, Rathenau contacted Carl Bosch, Haber's long-time collaborator, asking him to join the War Ministry. Once in his new position, Bosch called upon Alwin Mittasch. This man had been a witness to Haber's ammonia experiments in July 1909 and when asked by Bosch if he thought "it would be possible to build a factory within a few months that could produce, say, a hundred tons of nitric acid per day", he responded that he did indeed think it possible. Work on the first

nitrate factory, based on the Haber-Bosch process, began at once and by May of 1915 it would be producing 150 tons of nitrate per day. Hence, Haber's scientific achievements enabled the German military to continue on with the war.[5]Only a short time later though, by the end of 1914, Fritz Haber and Rathenau had a disagreement and Haber left his position in Rathenau's Board of Wartime Raw Materials. He would continue aiding in the nitrogen crisis throughout the war, but he now focused his attention on the work that is still debated about today, chemical warfare.[6]

Having been appointed head of the Chemistry Section in the Ministry of War at the outbreak of the war, a position that he still maintained at this point, Haber and his colleagues continued to investigate new types of explosives at the Kaiser Wilhelm Institute. Early in 1915, Haber and two of his colleagues were testing a new method of preparation for a chemical that would be used as a lachrymator (a tear gas) for howitzer shells. During one of these experiments, Haber was called out of the room by someone, and only for this reason did he avoid the tragedy that was to affect his co-workers. A large explosion killed Otto Sackur and caused Gerhardt Just to lose his right hand. Haber could not believe that he had so narrowly avoided this tragedy and was deeply affected.[7] He mourned the loss of Sackur for years and some report that Haber and Richard Willstätter wept uncontrollably at the funeral.[8]

Yet Haber would have very little time to himself to mourn his loss, for the German forces were realizing that the firepower of their enemies was superior and that they must first weaken their adversaries before an attack. Hence, the use of chemical agents became a prevalent topic of discussion among the German scientists. Nernst, a fellow German scientist, was reportedly "summoned to headquarters to see General von Falkenhayn after Lieutenant Colonel Max Bauer had conceived the idea of developing shells that contained solid, gaseous, or liquid chemicals that would damage the enemy or render him unable to fight."[9] Soon after this meeting, experiments were initiated.

Fritz Haber was one of the observers of the tests which were carried out in mid-December at a firing range near Berlin.[10] There he witnessed the unveiling of T-shells, 15-centimeter howitzer shells filled with xylyl bromide[11] (a tear gas which stings and burns the eyes of those exposed to it).[10] However, the Falkenhayn was thinking that a more potent chemical should be put to use, and only one day after the tragic inicident in Haber's lab, Emil Fischer [a professor of chemistry at Berlin's university] was called to meet with Falkenhayn. Fischer

later reported that:

> [Falkenhayn] spoke about the new 'stinking materials' and wasn't yet satisfied with them…. He wants something that puts people permanently out of action. I explained to him how hard it is to find materials that are fatal even at very low concentrations. I do know of one very nasty chemical, but I didn't dare recommend it because we don't have the necessary raw materials in Germany to manufacture it. If the enemy should hear about this, it would only hurt us.[12]

Haber, however, did not have the same reservations as Fischer, and quickly jumped at the idea of using much more poisonous gas in the war.

Otto Hahn reported in 1955 on his meeting with Haber in Brussels in January 1915:

> Our troop had been pulled back to Brussels because we had suffered heavy losses and had many sick during the battles in Flanders in the autumn of 1914. I received a request from Prof. Haber to meet him in a hotel to talk with him. The appointment was for about 12:00 noon. I came to the hotel and found Haber lying in bed. From his bed he gave me a lecture about how the war had now become frozen in place and that the fronts were immobile. Because of this situation the war now had to be fought by other means in order to be brought to a favorable conclusion. He then gave me a lecture on chlorine gas clouds, which had to blow over the enemy trenches in order to force the enemy to come out of them. I interjected that the use of poisonous substances was certainly universally condemned, whereupon he replied that the French had already tried something similar with shells in the autumn of 1914. We would thus not be the first to use this kind of weapon. Anyway, in war, methods have to be used that lead to its rapid conclusion.[13]

Haber then revealed his plan to introduce chlorine gas into the war to the High Command, who were in support of the idea and put Haber in charge of testing it. It was soon thereafter approved to be used on the frontline of the war, at Ypres in Belguim.

Using both his brilliant mind for science and his great skill at directing and organizing people, Haber quickly immersed himself in the war effort, devising revolutionary schemes involving the use of chemical weapons. Chlorine gas was finally deployed, after much waiting for a windy enough day, against the enemy on April 22, 1915 at Ypres. The attack was not as successful as Haber would have hoped because the German High

Command had had its doubts about the effectiveness of the chemical weapons and had therefore not sent as many troops as it could have. The result of the first deployment of chlorine gas left Haber feeling bitter, for he believed the attack could have been much more of a success.[14] The attack was successful though at proving to the German military that Haber's ideas about chemicals being a serious form of weaponry in a war were true.

Haber was promoted to the rank of captain by the kaiser, who ignored the usual steps of promotion in order to allow Haber the same status as members of the officer corps while he carried out further duties and developments dealing with the gas warfare.[15] As one of his soldiers would later report, "All at once we and our gas troops became great people…. Haber was ordered to appear before the Emperor and promoted from sergeant of the reserves to captain. He appeared proudly in his new uniform, instead of the administrative uniform that we called his 'pest controller's outfit'."[16] Haber would maintain this rank throughout the war, though he had hoped to rise even higher.

Over the next two weeks, the Germans would use their new weapon, the chlorine gas, against the enemy four more times. At some point, between April 24 and April 29, Fritz Haber returned to his home in Berlin. He stayed only until May 2, but in this short span of time, his life would change dramatically when his wife Clara committed suicide on the night of May 2. Some would call Fritz Haber an extremely cold-hearted person, for he returned to the front lines the night after his wife's demise. Yet one must consider the fact that for the previous few months he had been surrounded by death. As his friend Richard Willstätter later stated: "It was a time in which human life meant little. On the battlefields of Flanders a generation of German students was being mowed down. On the ever-lengthening front lines the number of killed and wounded towered into the hundreds of thousands and even higher."[17] Perhaps Haber simply could not process all the terrible scenes that had only recently played before him. His wife's death may have simply occurred at a time at which he already felt emotionally numb. In a letter written six weeks after the passing of his wife, in June of 1915, Fritz Haber explains the way in which he feels at this point in the war to Carl Enger, his former mentor in Karlsruhe:

> For a month I doubted that I could keep going. But now the war, with its dreadful images and constant demands on all my powers, has made me calmer. I was fortunate to be able to work at

> the ministry for eight days, so I could see my son. Now I'm at the front again. Working through all the complications of war with unfamiliar people, I have no time to look left or right, to reflect or sink into my own feelings. The only thing that lives in me is the fear that I won't be able to carry on, or bear the enormous burdens placed on me…. It really does me good, every few days, to be at the front, where the bullets fly. There, the only thing that counts is the moment, and the sole duty is whatever one can do within the confines of the trenches…. But then it's back to command headquarters, chained to the telephone, and I hear in my heart the words that the poor woman once said, and, in a vision born of weariness, I see her head emerging from between orders and telegrams, and I suffer.[18]

In order to suppress his feelings, Fritz Haber dove straight into his work. The addition of Bayer's Carl Duisberg to the advisory committee at the Kaiser Wilhelm Institute at this time provided Haber with a substantial link between his institute and industry. The Institute, by the beginning of February 1916, worked solely for the military administration.[19] By 1917, Haber was at the head of an empire, controlling over 1,500 people, which included 150 scientists. He presided over eight different departments which were located in various cities. The budget allotted to the institute inflated to over fifty times that of the budget during a time of peace.[20] With all these resources available to him, Fritz Haber's horizons were virtually limitless, as he would later state: "I was one of the mightiest men in Germany. I was more than a great army commander, more than a captain of industry. I was the founder of industries; my work was essential for the economic and military expansion of Germany. All doors were open to me."[21]

While the German army continued to use chlorine gas on the frontlines, Haber and his colleagues were testing various other chemicals. On February 15, 1917, a meeting was held at the War Chemicals Incorporated building[22] regarding ways to de-lice soldiers, as well as ways to destroy the moths that were causing havoc in the flour mills.[23] In attendance were members of the Ministries of War, the Interior, and Finance; other representatives from various institutes and ministries; and Fritz Haber. Haber was very interested in this meeting because he knew that chemical weapons were a solution to the problem and that this could allow for their continued research and development, even when the war ended. He stated that, "The experiences gained in gas warfare must be further pursued and deepened,…essentially through scientific research within the framework of

a scientific institute."[24]

The United States had already been using hydrogen cyanide gas as an insecticide and the way in which it works was presented at the meeting by representatives from Degussa (a company that manufactured cyanides and that wanted to expand the use of their products). Those in attendance at the meeting were impressed enough that a Technical Committee for Pest Control (*Technische Ausschuss für Schädlingsbekämpfung*), known as Tasch, was created. It began as a government body at first and Fritz Haber was named the chairman. Tasch was to "preserve through the application of highly poisonous substances for pest control, the high output that has hitherto been maintained in agriculture and forestry, in viticulture, horticulture, and fruit growing, as well as in industry by the destruction of animal pests; to promote human and animal hygiene; and thereby to ward off diseases."[25]

With the war still going on, the military had control over a great deal. For this reason, a military division was created by Haber which would carry out the pest control. Special "gas personnel" were chosen to deal with the practical aspects of gassing.[26] Techniques were developed for terminating insects that are eerily similar to those which would later be used at Nazi concentration camps. An infested building would be emptied and sealed before poisonous gas was pumped in.[27] Haber's direct work with these pesticides shortly after the war when he handed directorship of Tasch over to Walter Heerdt, although the infamous Zyklon process would be worked on at his institute in 1919-20 by other scientists. During this time however, the further development of chemicals to be used as a weapon against humans on the battlefield was never a neglected issue.

In 1917, Haber hired Hugo Stolzenberg, a chemist who had also been an officer before being too badly wounded to continue service, to help expand the plants which were producing the chemical weapons. Stolzenberg began his work in Breloh, focusing mainly on mustard gas.[28] Mustard gas is a far more potent chemical and weapon than chlorine gas. It causes causing painful blisters, blindness, and certain death if it is inhaled. Many were horrified by the terrible losses caused by the chemical weapons. Fritz Haber did not share this view. He called the use of mustard gas a "fabulous success".[29]

Throughout the war, being a great leader in both the scientific and industrial world, along with being needed so desperately by the German military, seemed to fill Fritz Haber with a sense of pride and fulfillment that he would sorely miss at the conclusion of the war and that he would never gain again.

The way that Haber felt during the time of the Great War seems to have been best described by his one-time British student, J. E. Coates, at a memorial lecture in 1939:

> The war years were for Haber the greatest period of his life…. In them he lived and worked on a scale and for a purpose that satisfied his strong urge towards great dramatic vital things. For three or four generations back his family had served and fought for Germany. To be a soldier, to obey and be obeyed – that, as his closest friends knew, was a deep-seated ideal. During his period of military service [when a young man] he had done exceptionally well, but the Jew did not become an officer. Early in the war, he received the special and very unusual promotion [specifically ordered by the Kaiser] directly to the rank of captain. Higher rank he did not attain though he ardently desired it.[30]

Although it seems as if Haber must have exalted in the war, Coates goes on to explain that "in his heart [Haber] hated its wastage and suffering".[31] Yet Haber had found an environment where he was needed and where he was obeyed and even if he did not enjoy the destruction his research was causing, it appears that he ignored those feelings. As another of his former student remarked upon Haber's drastic transformation induced by the war: "Haber was not only extremely affable, but- I cannot find any other expression- just fascinating. He is now 100 percent a military man. He believes to have found his true vocation in executing military organizational tasks."[32] Haber's youngest son, Ludwig, when researching his father's wartime career, drew a similar conclusion stating that "In Haber, the [German High Command] found a brilliant mind and an extremely energetic organizer, determined, and possibly unscrupulous."[33]

Fritz Haber's views on gas warfare did not waiver during the war, although backlash was pouring in from all sides, he remained steadfast in his beliefs. He viewed gas warfare as an "intellectual challenge, or an intricate game. Conventional warfare was like checkers, he wrote to the industrialist Carl Duisberg. 'Gas weapons and gas defense turn warfare into chess'".[34] He even told a group of German officers that battles were won "not through the physical destruction of the enemy, but rather because of imponderables of the soul that, at

the decisive moment, undermine his ability to resist and cause him to imagine defeat. These imponderables turn soldiers from a sword in the hand of their leader into a heap on helpless people."[35]

Notes

5. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, Page 127.

6. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, Page 153.

7. Stoltzenberg, *Chemist, Nobel Laureate*, 129.

8. Ibid, 130.

9. Charles, *Master Mind*, 147.

10. Stoltzenberg, *Chemist, Nobel Laureate*, 131-132.

11. Ibid, 129.

12. Charles, *Master Mind*, 155.

13. Stoltzenberg, *Chemist, Nobel Laureate*, 134.

14. Charles, *Master Mind*, 154.

15. Stoltzenberg, *Chemist, Nobel Laureate*, 135.

16. Charles, *Master Mind*, 155-156.

17. Stoltzenberg, *Chemist, Nobel Laureate*, 137-138.

18. Ibid, 138.

19. Ibid, 135.

20. Charles, *Master Mind*, 164.

21. Ibid, 168.

22. Ibid, 169.

23. Stoltzenberg, *Chemist, Nobel Laureate*, 139.

24. Charles, *Master Mind*, 169.

25. Ibid, 141.

26. Stoltzenberg, *Chemist, Nobel Laureate*, 232.

27. Charles, *Master Mind*, 170.

28. Stoltzenberg, *Chemist, Nobel Laureate*, 232.

29. Ibid, 232-233.

30. Ibid, 233.

31. Charles, *Master Mind*, 170.

32. Stoltzenberg, *Chemist, Nobel Laureate*, 149.

33. Charles, *Master Mind*, 170.

34. Manchester, Keith L.. "Man of Destiny: The Life and Work of Fritz Haber." Endeavor 26. 2. 01 06 2002. Page 67. 24 Jan 2009. <http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V81-46WM6MT-8&_user=74021&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000005878&_version=1&_urlVersion=0&_userid=74021&md5=7eadd86fa0da7027f583c6e061a1ec49>.

35. Ibid.

32. Charles, *Master Mind*, 154.

33. Ibid.

34. Charles, *Master Mind*, 172-173.

35. Ibid, 173.

Clara Immerwahr: Haber's First Wife

1891-1915

Fritz Haber was married to two women in his life; both marriages failed. As he told a friend, "Women are like lovely butterflies to me. I admire their colors and glitter, but I get no further."[1] Given that his first wife, Clara Immerwahr, killed herself with Haber's service pistol, it is safe to say that this marriage was a failure as well. Why was it such a failure, though? Clara had a doctorate in chemistry. Why did this marriage end so badly?

Clara Immerwahr was born in 1870[2] in Breslau, Germany, to a Jewish family[3]. She managed to obtain the standing of a *Gymnasium* graduate, something which was essential at the time to attending university; this is the first real indicator of her incredibly driven personality. It was, during that time, technically impossible for her to acquire such a degree because she was a woman. However, she found a loophole in Breslau's laws and, having gained the ability to go to the necessary lectures, passed the exams which gave her the previously mentioned *Gymnasium* graduate standing.[4]

From there, she went on to study chemistry in Breslau's university. Richard Abegg, a former classmate of Haber's, taught the subject there, and he became her academic adviser. He provided her with much advice and encouragement throughout her period of research. She often, surrounded by men who did not support the presence of a woman in their laboratory, felt as though she could not continue.[5] As she wrote to Abegg at one point during her research:

> I know that Herr Professor meant well. But in this case as so often, it confirms the old saying: The well-fed can't understand the hungry. And one doesn't make a sad person happier simply by telling him, "Cheer up!" … I've only known the joy of life in fleeting moments, and I may say that each of them has been balanced out by years of heaviness. How am I supposed to have "fresh courage and nerve" when it takes all my meager strength just to cope with daily existence? … I write this to Herr Professor not as an accusation, but because I cannot bear to keep carrying bitter feelings in my heart toward people who are dear to me.[6]

In this letter can be seen a woman who, though she was driven, had a strong tendency toward depression. This would come into play more as the years wore on.

It is also evident, from this letter and from the events following it, that while she had problems, she was also very driven, as she did end up finishing her degree at the university. She defended her dissertation on December 22, 1900; her defense was very highly attended, and the crowd was comprised mostly of women. The two students who were questioning her did not allow her gender to keep them from being as thorough as possible, but despite that, she proved a worthy opponent, and later that day was awarded a doctorate from the dean of the philosophical faculty.[7]

She and Haber were married in 1901, but that was not the first time they'd considered matrimony. Ten years previously, they had become engaged, but both sets of parents objected. According to the customs of the time, marriage could not occur until the man was successful and established, and also when there would be no monetary dependence on the parents. Though they continued to see one another for a short amount of time, the engagement was broken.[8] However, Haber mentioned in a letter written in 1901 that he had spent the last decade trying to forget about Clara, and that he had not succeeded.[9] This second time through, Clara was more cautious, writing in a letter eight years later:

> It was always my approach to life that it's only worth living if one develops one's abilities to their fullest and experiences all that human life has to offer, to the extent that one can. And so I decided to get married – among other reasons – because I felt that otherwise a page of the book of my life, and a chord in my soul, would lie fallow and untouched.[10]

This was possibly not the best reason to agree to Haber's proposal and marry him, but the first years of the marriage were happy all the same. Clara attended seminars at the Institute, showed an interest in Haber's work, and even gave lectures on "Chemistry and Physics in the Household".[11]

Their son Hermann was born in 1902. When Hermann was ten weeks old, however, Haber was offered the chance to tour science facilities in the United States as a representative of the German Electrochemical Society. Whether Haber struggled with the decision to leave will never be known; it's likely, however, given the atmosphere and morals of the time, that it barely took thought. Either way, Haber left for the United States, and Clara went to stay with her father in Breslau.

It is possible that this was a turning point in their marriage. As he told his second wife, Charlotte Nathan, after Haber returned from the trip, he and Clara slept in separate rooms until her death.[12] This was only one problem with their relationship; often Haber would stay in the Institute for hours, missing dinner completely, and this would make his wife very unhappy. He also showed up at home at eleven or twelve at night, friends in tow, and demanded to know why there was no food on the table. He had always been absentminded – during a trip he and Clara took in 1901 he forgot her on a train platform and boarded the train without her[13]. Many of these little things compounded, however, began to turn into one very large thing which could no longer be ignored.

That was not the main issue, though. Clara Immerwahr had been a bright young student, very driven, and completely devoted to perfection in her work. Clara Haber was just as driven, just as perfectionist, but no longer having science, she turned to housework. Everything had to be just so, and any deviation from that would not be borne. On the other hand, Haber was very particular about his household, and of the two personalities, his was stronger. As Clara wrote to her academic adviser in 1909:

> [T]he uplift that [marriage] gave me lasted only a very short time, and even if I must blame some part of the inadequacies on circumstances and on the special disposition of my temperament, still the major part is the oppressive demands Fritz for his part makes in the house and on the marriage, beside which any temperament that does not push even more inconsiderately for its own interests will simply be destroyed. And that is the case with me. (…) Everyone should be allowed to go his own way, but in my opinion even a genius is justified in permitting himself specially cultivated "crotchets" and a sovereign contempt for every rule of normal behavior – even the most everyday ones – only if he is alone on a desert island.[14]

In her own words, Haber was destroying her.

The family moved to Berlin in 1911, but this did not help; on the contrary, it made matters worse. Clara withdrew into herself. People who knew her then said she became a "gray mouse, inconspicuous and nice."

> [She] dressed in rough woolen clothes and always had an apron on …. She had no feeling for what would please a man …. The child Hermann, was cared for and pampered in such a way that we made jokes about it …. When Fritz Haber was asked one evening where she was after a trip on a steamer on which rain had wet them through, he answered, "She is at home worrying about which

relative might have contracted what sickness and how." She was excessively anxious.[15]

By this time, there was little left of the Clara Immerwahr of old. The menial household tasks her husband had set her were all she had, and she was consumed by them.

As World War I started, Haber became more and more involved with the war effort, something which she opposed. "She began to regard poison gas as not only a perversion of science but also a sign of barbarism."[16] Still, he persisted. At one point, when the weapons project had progressed to field tests, Clara went with him. One soldier remembered her as "a nervous lady who was sharply opposed to his accompanying the new gas troops to the front."[17]

Although Clara objected, Haber continued his efforts, and a major offensive was set for April 22, 1915. It was so successful that there was a reception at Haber's home on the 1st of May. Many people attended; Charlotte Nathan may have been one of those people, although this has never been confirmed. One report of the evening, however unreliable, tells of how, that night, Clara came upon Charlotte and her husband in an embarrassing situation, realized that they were having an affair, and went over the edge.[18] This is certainly a possibility. Another is that her genetic predisposition to depression – many of her family members were depressed, and one of her sisters committed suicide – finally got the best of her. A third is that, having exhausted all her other resources, Clara took the only route left to her in one last final protest against her husband's involvement in gas warfare.

The only thing that is sure is that, early the next morning, after composing several letters which have not survived, Clara took her husband's service pistol, went to the garden and fired a test shot. She then shot herself in the heart, but did not die immediately. Their son Hermann, hearing the shots, found his mother dying, and called for his father, who had taken sleeping pills that night as usual and could not be awakened. She died shortly after.

Haber returned to the front that night, as his orders told him to. He was close-mouthed about Clara's death for most of his life, and it certainly did not deter him from continuing to aid the German war effort. However, his attitude toward Hermann as the boy was growing up, as well as certain comments he made to his friend Richard Willstätter, indicate that he did feel a certain amount of guilt over what happened. Was it simply

because he felt he could have treated her better over the course of their marriage, and thus possibly prevented her death? Was it because he knew that his involvement with chemical weapons had pushed her past her limit?

Notes

1. Hager, Thomas. *The Alchemy of Air: A Jewish Genius, a Doomed Tycoon, and the Scientific Discovery That Fed the World but Fueled the Rise of Hitler*. New York, NY: Harmony Books, 2008, page 156.

2. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, page 45.

3. Hager, Thomas. *The Alchemy of Air,* 155.

4. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, Page 46.

5. Ibid, 48.

6. Ibid, 48-49.

7. Ibid, 49-50.

8. Goran, Morris. *The Story of Fritz Haber*. Norman, OK: University of Oklahoma Press, 1967, pages 28-29.

9. Charles, *Master Mind*, 46.

10. Ibid, 51.

11. Stoltzenberg, *Chemist, Nobel Laureate*, 174.

12. Charles, *Master Mind*, 179.

13. Goran, *The Story*, 30.

14. Stoltzenberg, *Chemist, Nobel Laureate*, 174-175.

15. Ibid, 175.

16. Goran, *The Story*, 71.

17. Hager, *The Alchemy of Air*, 160.

18. Charles, *Master Mind*, 167.

The Post-War Years: Haber's Ongoing Research on Chemical Weaponry 1918-1926

At the conclusion of The Great War, Fritz Haber was confronted with many conflicting emotions. He would have to give up the power he had attained as an officer during the war and would have to resume life as a civilian. This proved to be a most difficult task for several reasons.

As Germany rose to greatness and then fell from such great heights, Haber keenly felt the devastated. On his fiftieth birthday on December 9, 1918, he was in no mood to celebrate, for it was only a month after the war had ended and he was harboring too many worries. In February 1919, Haber expressed his feelings in a letter to the chemical magnate Carl Duisberg: "You know the feeling when you're on a snow-covered slope, sliding downward? You don't know until you get to the bottom whether you'll arrive with all your limbs intact or with broken legs and neck. All you can do during the slide is stay calm…. This mountaineering experience is what we're going through- painfully- in economic life at the moment."[1] This was only the beginning of the stressful issues he would have to face during his transition back to civilian life.

Immediately after the war, his friend and colleague Richard Willstätter had nominated him for a Nobel Prize in chemistry. Haber did not think he would have a chance to win and in a letter to Willstätter he expressed his doubts: "I find it unbearable to write about such things. It's all so dreary and irrelevant, and I have no doubt that political considerations make it inconceivable for Stockholm to consider Germans who've been recommended by other Germans."[2] He also did not think that he had made any great scientific achievements for he says that he "always jumped from one thing to another." The Nobel Committee, however, thought that Haber's accomplishments were impressive enough to award him with the prize. He would not find out the verdict until several monthss after the war, and after facing much more distress.

The greatly patriotic Haber, as well as the whole of the German nation, would be forced to see their beloved country humiliated by the treaty which would bring peace after the war. The Treaty of Versailles, presented to the German government on May 7, 1919, "exceeded the gloomiest expectations". The German government was allowed three weeks to review and to accept the terms of the Treaty. Germany would be forced to relinquish vast amounts of territory, including all her colonies, territories in the East, and Alsace-Lorraine,

which would cause her to lose much of her iron ore and coal sources.[3] Aside from the devastating losses of land and resources, restrictions would be placed on the German armed forces. The army would be limited to a maximum of 100,000 men and the navy to only 10,000 men. The army would also no longer be allowed to use heavy artillery, gas, tanks, or aircraft while the navy would be banned from the use of submarines.[4] The Treaty of Versailles basically placed the entirety of the blame for the war on the back of the defeated German nation.

Yet amid this devastation there was a moment of happiness, for Haber learned that he was to receive the Nobel Prize in mid-November of 1919. He felt especially proud for his country, more so than for himself, for three Germans were to be given Nobel Prizes in the sciences.[5] Haber wrote to Willstätter that "I think it was a deed of greatness on the part of the Swedish academy to elect three Germans- and only Germans- as prizewinners. My heartfelt wish is that it may lead to renewed international understanding."[6] Yet this wish was not to come true.

To further brand Germany and her allies with the guilt of the war, the Allies declared that a number of war leaders, beginning with the ex-Kaiser, would be tried for war crimes. On February 3, 1920, a list of nearly 900 names of leaders of the old regime, whom the Allies demanded surrender themselves for alleged war crimes, was published. Fritz Haber was included among the alleged war criminals. In response, Haber hastily sent his wife, Charlotte; his son, Hermann; and his very young daughter, Eva, to neutral Switzerland. To protect himself, he grew a beard and fled to Switzerland, joining his family in St. Moritz.[7] There, he hoped to secure immunity from prosecution by obtaining Swiss citizenship, which, according to his wife, he received.[8] Haber may have taken even further precautions to protect himself from being identified because years later, a forged passport with Haber's photograph on it was discovered by scientists at his institute.[9]

While Haber was in Switzerland, Staudinger (a chemist who had occupied the laboratory one floor above Haber's at the university in Karlsruhe and who remained in Switzerland during the war) wrote to him, sending along with a letter several wartime publications that he had written previously declaring that Germany would inevitably be defeated. Haber sent a short note in response stating that Staudinger's views on chemical weapons was dated; he also suggested that Staudinger review a variety of works from American, English, and German authors supporting the use of chemical warfare.

Staudinger refused to let Haber's dismissive and derogatory attitude halt his desire to encourage Haber

to reflect upon not only whether the use of chemical weapons was legal but also whether it was moral. He writes to Haber: "I hope that you might agree with this view: That we, as chemists, have a special responsibility in the future to point out the dangers of modern technology, and in doing so to promote peaceful relations in Europe, since the devastation of another war would be almost unthinkable."[10]

Haber's response to this letter was quite lengthy and also rather scathing. He thought that Staudinger's ideas were "divorced from the real world" because, as he explains, the banning of certain chemical processes would not end war:

> Eternal peace can't be assured though technical means. A husband and wife can get along because of their spirit and self-discipline, not because you lock up every rod and poker. Still, this difference of opinion wouldn't estrange me from you. What bothers me is something that I think you don't even see- the real effect, even if unintentional, that your writings had at the time you wrote them. You stabbed Germany in the back in the hour of its greatest need.[11]

Haber thought Staudinger had been a traitor to Germany, betraying both "truth and homeland", during the war. Staudinger's writings built upon foreign claims of atrocities committed by Germans during the war when a peace settlement was being drawn up. These allegations aimed at presenting Germany with an even more penalizing peace settlement. Haber believed that his friend had turned against Germany in her time of need "because [he] thought they would help support the realization of [his] pacifistic ideals." Staudinger's declarations had deeply hurt Germany and Haber's final words to him were very scornful: "The damage remains, even if unintentional. It can't be repaired, and that's what separates me from you."[12]

If Haber had known all that Staudinger had done, he may not have even replied to the letter he received. In January of 1918, Staudinger had learned that Germany was planning to use mustard gas that spring. He was so appalled by the news that he told an American colleague, warning them that a new and far more devastating gas weapon was on its way. The information was then presented by the American scientist to the International Red Cross, which then cautioned French officials. The French appeared not to heed the warning though, yet the confidence by Staudinger assuaged his conscience. Haber would have considered this action treasonous.[13]

After only a few months in Switzerland Haber was able to return to Germany, for the Allies had withdrawn their request for the extradition of war criminals. He returned to his institute and threw himself into

his work there, trying to ease the transition he had to make back to his old life. He did not, however, abandon his work on chemical weaponry. In a lecture called "Chemistry in War", presented by Haber on November 11, 1920, he clearly demonstrates his stand on the issue of gas warfare. He firmly believed that "gas weapons [were] definitely no more inhumane than flying bits of metal" and he advised the officers "to be as well informed as possible about the military technological characteristics of gas weapons and about the perquisites for their production." Clearly he believed that his work should be continued, yet he and his colleagues would have to be very secretive if they did not want to be discovered.[14]

Haber was forced to feign complete innocence when the newly appointed controller of the British Chemical Warfare Department, Sir Harold Hartley, was ordered to investigate Germany's research on prohibited chemical weapons. In June of 1921, he visited Berlin, Breloh, Munich, and Stuttgart. Haber had to have lengthy discussions with Hartley, as did Haber's former associates in the field of gas warfare. Hartley reported that Haber greeted him with enthusiasm exclaiming, "Why haven't you come before? I was looking forward to going over our records with you and only last month we had a most unfortunate fire. They were all burnt. Look at the roof!"[15] The two spent the following couple weeks in each other's company, speaking cordially, as Hartley described it: "We were soon discussing the pros and cons of gas tactics and defense much as we should have discussed any other scientific problems…. I like to think that we parted at the end of a fortnight as friends. It was a great experience to have enjoyed his confidence."[16] Clearly Hartley had not been able to discern Haber's actual thoughts, or he would have had a great deal to report back to Britain.

Although, he had successfully hidden his secrets from Hartley and Britain, Haber remained in the public eye. He participated in a series of heated debates over the position of chemical warfare in international law. There was much argument over which country had broken the agreement signed by most European nations at the Hague conference in 1907 stating that "it is especially forbidden: (a) to employ poisons and poisonous weapons; (b) to employ weapons, projectiles, or material calculated to cause unnecessary suffering."[17]

When it was decided that the Germans were at fault, the Reichstag commissioned a committee that would inspect Germany's actions with respect to international law during the war. The committee sat in October 1923 and Haber was cross-examined as a witness under oath. He tried to shift the blame from the Germans to the French over the issue of who first used poisonous gases. He also continued to take the position that chemical

weapons were more humane than other forms of weaponry because a less significant percentage of those wounded died. He described gas warfare in the following way, stating that: "its physiological actions on humans and the sensations they cause vary a thousandfold. Every change of sensation in the nose and mouth distresses the mind, making it imagine an unknown effect, and makes a new demand on the moral resistance of the soldier."[18] The committee accepted much of what Haber said, and the final portion of their judgment reads:

> Neither the German nor the French governments, nor as far as is known, any other power participating in the war or a neutral one raised any prospects against the modes of action in the gas war. From this it can be concluded that both sides viewed the Hague Conventions of 19 July 1899 and 18 October 1907 as obsolete and by silent agreement regarded it as annulled. Even accepting this assumption, it remains a fact that the first obvious transgression of an international agreement was on the French side, whereas Germany only followed and thereby merely took a countermeasure as accepted in international law.[19]

Hence, in Germany, Haber's actions during the war were considered proper and accepted by the new democratic state. Having made it through these instances, Haber perhaps felt he had overcome the most difficult obstacles and he continue the secretive work of preserving the knowledge and, if possible, the processes and the materials of chemical weapons that he had been conduction for several years at this point. He would also work on advancing chemical weaponry, whether it was legal or not.

In March 1920, several companies approached the National Trust Company, demanding that their rail tanker cars, which stood in Breloh packed with gas cylinders and materials, be returned. A way to clean out the cars and to safely dispose of the chemical waste had to be found. This is when the National Trust Company requested the help of Haber, who then employed the help of his colleague Hugo Stoltzenberg. Stoltzenberg did not readily accept the task, and was only persuaded finally by Haber. Work began in Bereloh that same year, which Haber followed keenly, and it was reported by Johannes Jaenicke later that "Stoltzenberg had free access to Haber."[20] This created a stronger bond between Haber, Stoltzenberg, and the Ministry of Defense.[21]

As the work in Breloh continued, Haber quite often received inquiries from other nations about the construction of chemical plants as well as the distribution of chemical weapons. Any information that Haber received he passed on to Hugo Stoltzenberg. Then, in the spring on 1921, "dealings were being quietly initiated

concerning the building of a chemical weapons factory for the Spanish state."[22] By the time that Hartley had come to visit Haber, Stoltzenberg had already begun selling chemical weapons to Spain. A plant was finally built in Melilla, in Spanish Morocco, that would convert thiodiglycol to mustard gas. The thiodiglycol was delivered to Melilla as well as to the German army from a plant in Hamburg, which Stoltzenberg had set-up. Stoltzenberg remained in close contact with the Spaniards until the 1930s, and his actions were reported back to the German army through Haber. Through these close foreign ties, Haber and Stoltzenberg were able to gain a great deal of important knowledge in the area of the deployment of chemical weaponry. A major focus was delivering the weapons by air, spraying them rather than dropping them in a bomb.[23]

The evidence supports that the boldest undertaking Stoltzenberg embarked upon, a deal with the Soviet Union concerning chemical weapons, was the end of Haber's work in the advancement of illegal chemical weapons. In 1923, Haber suggested that Stoltzenberg should be the man to construct a secret chemical weapons factory on the Volga River in the Soviet Union. The factory was never built, for over two years it leached away all of its funding, and by this time Berlin no longer would support these actions, nor would Moscow provide further financing. Stoltzenberg was then in a great predicament and in 1926, Haber presided over secret negotiations between the German government and his friend over outstanding debts.[24]

After this point, there is no further evidence to tie Haber in with the continuing research on chemical weapons; he was no longer an active participant, and so ended Haber's support of and research on chemical weaponry. Would he grow to regret his deep involvement with the development of even more potent chemical weapons, or would he remain steadfast in his view that chemical weapons were no more inhumane than any other form of weaponry?

Notes

1. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, Page 188.

2. Charles, *Master Mind*, 195.

3. Ryder, A. J.. *Twenieth-Century Germany: From Bismarck to Brandt*. New York, NY: Columbia University Press, 1973, Page 203.

4. Duffy, Michael. "Primary Documents: Treaty of Versailles, 28 June 1919." *The War to End All Wars*. 28 10 2001. 16 Sep 2008 <http://www.firstworldwar.com/source/versailles.htm>.

5. Charles, *Master Mind*, 196.

6. Ibid.

7. Ibid, 189.

8. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, Page 150.

9. Charles, *Master Mind*, 189.

10. Ibid, 190.

11. Ibid.

12. Ibid, 191.

13. Ibid.

14. Stoltzenberg, *Chemist, Nobel Laureate*, 161.

15. Charles, *Master Mind*, 192.

16. Ibid, 193.

17. Stoltzenberg, *Chemist, Nobel Laureate*, 151.

18. Ibid, 152.

19. Ibid.

20. Ibid, 163.

21. Ibid.

22. Ibid, 164.

23. Ibid, 164-165.

24. Charles, *Master Mind*, 194.

Albert Einstein: "Friends in Opposition"[1]

1911-1934

Fritz Haber and Albert Einstein first met at a major scientific congress in Karlsruhe in 1911, at which Haber was presenting the principal lecture. That same year, Haber was invited to become the first director of the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry. Three years later, Germany's "academic luster got even brighter" when Albert Einstein arrived in Berlin, to direct the Kaiser Wilhelm Institute for Physics.[2] Haber played a large part in obtaining this position for Einstein, even writing to a colleague in the Prussian Ministry of Education that it "would be an immense advantage for theoretical chemistry in Berlin to have Einstein there."[3] Haber had also previously stated that "it is a very rare coincidence that not only is such a man available, but his age (34) and personal circumstances favor transplantation, and that his character and his other traits make me very confident of a beneficial relationship."[4] This prediction held true not only in their professional lives, but in their personal lives as well, as they quickly developed a friendship.

In the spring of 1914, Einstein's wife, Mileva, and their two sons came to Berlin where they lived, for a short time, with Fritz and Clara Haber. Mileva had previously stayed with the couple. Meanwhile, Einstein stayed at Haber's Institute as a guest, living in a room close to that of Haber himself. At this point, Einstein and Mileva's marriage was quite close to an end. Einstein even claimed that the "sole" reason he would ever think of remaining with her was because of his love for his children. He went on to say that "a friendly relation" with her would not occur; their connection must be exclusively "a business relation." This dysfunctional marriage most likely strengthened the bond between Haber and Einstein because Haber quite often attempted to act as an intermediary between the two. The couple, however, quickly reached their breaking point and on July 29, Mileva took the boys and left Berlin. Einstein wept "at the loss of his boys" and stated that "without [Haber] I wouldn't have been able to do it."[5] Haber spent that evening at the side of his friend. Only three days later, the Great War erupted.

That the two men were friends did not by any means indicate that their views of World War I were at all similar; they immediately moved in opposing directions. Haber was in agreement with the majority of his colleagues and thus "acted according to the slogan 'For the fatherland in time of war.'"[6] Einstein, on the other

hand, "became a convinced pacifist and internationalist and, in diluted form, a socialist."[7]

In support of the war and opposing Allied accusations of German atrocities in Belgium, Haber, his friend Richard Willstätter, and 91 others signed the "Manifesto of the 93". The document denied that Germany had committed atrocities and also asserted that Germany was blameless for starting the war; Germany's culture and military tradition were emphasized as being "one and the same."[8] Responding to this proclamation, Einstein co-wrote the "Manifesto of the Europeans" with Georg Nicolai; this opposed the first manifesto. It was distributed among the scientists in Berlin, but only two others, Wilhelm Forster and Otto Bück, signed.[9]

Throughout much of the war, Haber continued to believe in "Germany's ultimate victory" while Einstein believed that the war was "a kind of suicidal drama in Europe's history, an eruption of insanity."[10] Additionally, Einstein joined a peace group named the Federation of the Germans, founded in November 1914, which wanted the war to end quickly and peacefully as well as to prevent future wars from occurring. While abroad, he often made remarks expressing his disapproving and opposing thoughts on the war and since he was still a state official in Prussia, these remarks "bordered on high treason."[11]

Surprisingly, despite Haber's fervent patriotism and Einstein's great pacifism, which Haber could have considered a deal-breaker, so to speak, they remained friends; Haber did not permit the political actions of his friend to alter his high estimation of Einstein both as person and also as a scientist. Einstein even tutored the then thirteen-year-old Hermann Haber in mathematics during the beginning of 1915 because the child was "quite sick and couldn't go to school."[12] Haber also continued to rally for Einstein's cause at the Institute by helping to found the Kaiser Wilhelm Society's Institute for Physics in the fall of 1917; he sat on its board of directors together with Einstein.[13]

By 1917, Haber had lost his faith that Germany would win the war. Einstein described his thoughts on the horrific war by stating that, "Our entire much-praised technological progress, and civilization generally could be compared to an ax in the hand of a pathological criminal."[14] Thus, with the armistice of November 11, in 1918, Einstein was overjoyed that the war was to end. Haber, however, had poured his soul into the German war effort and now had to deal with the great loss and well as any repercussions his actions may have caused amongst his friends.

In January 1918, Einstein was trying to help one of his fellow physicists travel to neutral Holland, and

Haber took the liberty of taking a request for this action to the very top of the military ranks. Einstein apparently rebuked Haber's attempt to help and Haber tried to explain his actions to his friend in a letter[15]:

> Nothing was further removed from my mind… than [to feel] pleasure at your unfamiliarity with military custom… It is not only in the field of mathematical physics that life depends on the knowledge of and acceptance of certain formal connections and not only in the field in which you work miracles is it usually impossible to achieve success without the formal laws. For myself I merely ask that you believe that I am pleased and happy to be useful to you, that I have too much respect for your person and achievement to ever make fun about something you do and that I personally am extremely fond of you [*ich Sie persönlich lieb habe*].[16]

Haber clearly did not intend to embarrass his friend, but it does seem that he was very proud that he was able to take the request to the highest military authorities. He reveled in his ranking and the power it allotted him, yet with the end of the war he was forced to integrate himself back into civilian life. This was only made harder when he was listed among the war criminals to be tried for their actions during the war. He was forced to flee to Switzerland but was eventually able to return to Germany when the charges were dropped.

During these difficult times for Haber, Einstein was celebrating the changes occurring in Germany, for he had detested the old regime. His theory of relativity was also gaining more acclaim, being called "one of the greatest- perhaps *the* greatest of achievements in the history of human thought."[17] Einstein was joining Haber among the elite of German scientists, as well as German society. Yet his actions promoting Zionism sometimes caused his friend to question whether or not Einstein was patriotic and supportive of Germany at all.

Einstein planned to travel to the United States in the spring of 1921 with Chaim Weizmann, a leading Zionist and a distinguished chemist at Manchester University. The pair planned to raise funds for a Hebrew University in Jerusalem. This trip reflected Einstein's deep connection with his Jewish heritage and brought to the light the great divide between himself and Haber over this issue. Einstein had, in fact, even refused an important invitation, in May 1918, from the Imperial Academy of Sciences to travel to St. Petersburg stating that "I find it repugnant to travel without necessity to a country in which my tribesmen are so brutally persecuted."[18] Having much earlier converted from Judaism, Haber commented little on his friend's outspoken ethnic views, yet he did not wish for his friend to travel to the United States in 1921. He did not believe that Einstein should

sail on an Allied ship nor should he spend time with former enemies of the German nation saying that previously everything his friend had done had "sprung from the nobility of [his] human nature and the goodness of [his] heart" yet now his actions "had the significance that 'the acts of princes' had in earlier times."[19] Haber believed that the people of Germany would consider Einstein's doings treasonous:

> So many Jews went into the war, perished, became impoverished, without complaining, because they thought it their duty. Their lives and deaths have not eliminated anti-Semitism from the world but, in the eyes of those who make up the dignity and greatness of our country, have demeaned it to something odious and undignified. Do you want by virtue of your conduct to wipe out all that we have gained from so much blood and suffering? ... You sacrifice definitely the narrow ground on which the existence of academic teachers and students of Jewish faith in our institutions of higher education rest.[20]

Haber seems to have viewed Einstein as the greatest representative of "German Jewry". His actions would "proclaim to the whole world that [he wants] to be nothing but a Swiss citizen who happens to live in Germany" and Haber believed that "this is a time in which belonging to Germany brings with it a bit of martyrdom". Did Einstein truly want "to demonstrate [his] inner alienation right now?" His apparent disloyalty to Germany would be viewed by German citizens "as a sign of Jewish disloyalty" and that would damage the reputation of the Jewish people.[21] Clearly Haber did, to a certain degree, care how the culture he was born into was represented. Or maybe he simply feared that his friend's actions would hasten the rise of the growing tide of dislike and mistrust towards the Jews and he feared that even his ancestry would not be able to be overlooked, however patriotic he was.

Einstein's reply to Haber was almost instantaneous. He made it clear that he had to go, particularly "after I have seen lately in countless examples how perfidiously and unlovingly one treats superb young Jews here and seeks to cut off their chances for education." [22] Einstein did indeed make the journey and on his return he remained close to progressive groups in political beliefs and culture.

Albeit Einstein's radical declarations and actions during this time caused him to be detested by "right-wing colleagues and frightened German bourgeois", yet both he and Haber were included in the Weimar's highest circles of political and social "*Prominenz*". Nevertheless, no matter how integrated the two were in

German society, they could not completely escape the rising tide of anti-Semitism. In 1921, Einstein received the terrible news that Walther Rathenau, a man whom he had known for years and whom he had warned against "accepting the portfolio at the Foreign Ministry because of prevailing resentments against Jew."[23] Einstein described his thoughts on this anti-Semitic tragedy in the *Neue Rundshau*: "That hatred, delusion, and ingratitude could go so far- I still would not have thought it. But to those responsible for the ethical education of the German people for the last fifty years, I would want to call out: By their fruits you shall know them."[24] Although Haber did not yet experience such a personal tragedy with regards to anti-Semitism, he was certainly becoming more aware of its growing influence over the high society in Germany, for when his friend Willstatter attempted to hire a extremely well-qualified individual for a particular vacancy in 1924, he was denied and knew this result was based solely on the fact that the candidate was of Jewish descent.

During the increasingly radicalized political climate, Haber and Einstein remained close, their private predicaments strengthening their friendship. Haber's second marriage, to Charlotte Nathan, fell-apart in the mid-1920's while his health became progressively more fragile. He constantly suffered from insomnia, which to some extent must have been affected by his financial worries, which stemmed from his divorced wife's constant demands for money, his failing investments, and the onset of the Great Depression.[25] Perhaps, even, the growing anti-Semitic feelings and actions of the people worsened his insomnia. His colleagues were already being affected. Did Haber worry that he too would soon have to face the consequences for being of Jewish descent in the country that he had so loved and honored his whole life? He would soon find out.

On January 30, 1933, Hitler was brought to power. Haber thought that Hitler would not be in power long and that he was "simply a puppet of his conservative allies." For Einstein, however, Hitler's appointment was affirmation of his greatest doubts concerning Germany. Einstein was quick to make his opinion clear when he rallied for a "worldwide 'moral intervention' against 'the excesses of Hitlerism.'"[26] The new leaders of the country were still nervous that any unfavorable publicity abroad, would threaten their newfound power; hence, they were outraged at Einstein's scathing criticisms. Einstein's condemnations would be particularly damaging because he was one of the few German scientists who was still held in high esteem and honored outside of Germany. For this reason, Nazi authorities demanded Einstein be expelled from the Prussian Academy of Sciences, and in an official announcement Einstein's resignation was declared by the Academy "without

regret."[27] Haber thought this decision sound, and perhaps to preserve their friendship, he sent Einstein the following letter on April 6, 1933:

> If ever a time occurred when I felt all the tortures of conflicting duties and envied you your simple aim in life, which you pursue in accordance with your own individual nature, then that time is now. The Prussian Academy has exchanged letters and newspaper statements with you and is not happy with the result for the topic of your departure does not die down …. Unfortunately these living idolaters have derived from the Christian religion the ineptitude of linking divinity and fallibility. And the predominant opinion of the one side for divinity and the prevailing view of the others that you acted wrongly are the reasons that the matter of your departure does not come to rest. Perhaps it would still go right if only it were clear wherein your offenses lay. According to all information on this matter, it is clear that you have become an enemy of the National Socialist movement and a criminal with respect to Hitler's government, and that honorable mention of you endangers the originator or the disseminator of the remarks. But that you committed an offense by turning against this government while abroad and declaring yourself a voluntary exile has not persuaded a fair number of people. You come to be attacked because you did not defend this government while abroad. But indeed, the others note that for a defense a factual knowledge of the situation is required, knowledge to which you would have had no access or insufficient access while abroad. Yes, and so on. The outcome of this business for you is "many enemies, much honor," but we have to carry the worst part. For our honor has been stained.[28]

It seems that Fritz Haber envied his friend Albert Einstein in some aspects. He describes how he is feeling "all the tortures of conflicting duties" and that he is jealous of Einstein's "simple aim in life". Clearly the *Law for the Restoration of the Professional Civil Service*, officially passed on April 7, 1933, deeply affected the way Haber thought about the country that he had previously been a loyal and devoted patriot of. He now would be forced to dismiss some of his colleagues from their positions at the Institute, brilliant minds as they were, simply because they were of Jewish descent. Deep down, perhaps he wished that he could stand up for his beliefs and rally for his colleagues' positions. Einstein did not conceal his thoughts or feelings for fear of being

punished; as described by Haber, he pursued his actions "in accordance with [his] own individual nature". For expressing his derogatory views on Nazism while abroad, Einstein was expelled from the Prussian Academy. The fact that Haber agreed with this action, rather than defending his dear friend, made him feel as though his "honor [had] been stained". At this point, Haber must have felt deeply conflicted. Should he turn against his once beloved country and leave the Institute with what was left of his honor intact, or should he continue to ignore his Jewish heritage in the pursuit of scientific advancements?

Before making the decision that would forever alter his life and his scientific work, Haber wanted to be sure that his former colleagues had found vocational positions abroad. He turned to Einstein writing: "I must write to you once again. For the people who would like to receive your help are many, and I am forced… to bother you in individual cases."[29] However, Haber had just agreed with the decision to have Einstein expelled from his position at the Academy, so why would Einstein be so willing to help him at this time? It seems that Einstein knew precisely how Haber felt, understanding the enormous pressure and moral strife that his friend was enduring, for he wrote to him:

> I am amazed at the unintelligent behavior of the Academy, less so at the lack of moral stature (this latter I already knew about). I can imagine your inner conflicts. It is similar to having to give up a theory that one has worked on all one's life. It is not so with me, because I never for a moment believed in them. I hope that soon I can write to you at some other place.[30]

Haber was facing the decision of what he would do once he left the Institute, for it seems that his mind was already made up that he would indeed resign from his post as director. When travelling through Paris, he wrote to Einstein describing his thoughts on this matter:

> I am here traveling through Paris to Santander in Spain, where there is a meeting organized by the Universidad International de Verano. What shall I do afterward is uncertain. My life plan was set so that I would occupy my position as director of the Kaiser Wilhelm Institute until 30 September and then would choose a lifestyle and work befitting my years and my no longer perfect health, if this were offered to me. I cannot say that I have been showered with attractive offers… Three times now I have received an invitation to go to Palestine and there enter into closer relations with the University in Jerusalem. […]

> Perhaps I should try and describe the situation in Germany to you. But I assume that you have daily contact with informed people. The provision for German scientists who have had to yield to the law on *Berufsbeamtentum* [racial laws regarding employment in the public service] is being interpreted to Aryan colleagues abroad who are trying to help- for example, [Max] von Laue and [Fritz] Schlenk- as a crime. The support for a limited number of prominent scholars that comes from abroad makes the overall situation only more terrible. I was never in my life as Jewish as now.[31]

The fact that Haber now referred to himself as being Jewish and was even considering moving to Palestine and working there seems to astound Einstein. In a reply letter, he expresses that he is glad that his friend's "love for the blond beast" had diminished and he is especially pleased that Haber now is approaching him "as the advocate of the Jewish." Einstein concludes his letter saying that he hopes to "meet [Haber] under a milder sky."[32]

Unfortunately for the two men who shared such a unique and exceedingly strong friendship over the course of two world wars and through many personal tragedies, they would never meet under a milder sky. Haber's long struggle with failing health would end in January 1934. Einstein wrote to Haber's son, Hermann in great sadness for the loss of his old friend:

> Now almost all of my true friends are dead. One begins to feel like a fossil, not a living creature.
>
> At the end, he was forced to experience all the bitterness of being abandoned by the people of his circle, a circle that mattered very much to him, even though he recognized its dubious acts of violence.
>
> I remember a conversation with him; it must have been about three years ago after a meeting of the Academy of Sciences. He was quite incensed about the way he'd been shabbily treated during a vote, and to recover he went with me to the Schlosscafé on Unter den Linden. I said to him, a bit drolly, "Console yourself with me- your moral standing is truly enviable, and here I am happy and cheerful!" And this is what he said: "Yes, all of society never mattered to *you*." It was the tragedy of the German Jew; the tragedy of unrequited love.[33]

This great friendship had been forged in kind of golden age for science, which was ended by the rise of

Hitler. As Fritz Stern described it:

> The openness of Berlin's scientific community- in the academy, in the Kaiser-Wilhelm-Society, in the university, and in the impromptu settings- had brought Haber and Einstein into close companionship, and it was Haber's genius to convert collegiality into friendship. For Haber, his institute had been home; for both men the scientific cluster of activity in Berlin guaranteed the deepest kind of nurturing. They found and kept alive a place of human decency, an oasis even in its own time, and oasis before Hitler destroyed all that was valuable and destroyed the faith that had been the precondition of these deep bonds.[34]

This scientific community provided the basis for many of his deepest friendships. His relationship with Einstein is especially revealing about the way that Haber felt about many of the great events of his life. Through reading the correspondences between the two, one is able to discover the many choices and obstacles that Haber was faced with and the manner in which he dealt with these. The way that Haber viewed himself, as a chemist, a German, a Jew, or some combination of the three, can also be extracted from these correspondences.

Notes

1. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, page 193.

2. Friedrich, Bretislav. "Fritz Haber (1868-1934)." FHI-Berlin. 5 Oct 2008 <http://www.fhi-berlin.mpg.de/~brich/Friedrich_HaberArticle.pdf>.

3. Stern, Fritz. *Einstein's German World*. Princeton, NJ: Princeton University Press, 1999, page 62.

4. Ibid.

5. Ibid, 65.

6. Stoltzenberg, *Chemist, Nobel Laureate*, 195.

7. Ibid.

8. Stern, *Einstein's German World*, 113.

9. Stoltzenberg, *Chemist, Nobel Laureate*, 195.

10. Stern, *Einstein's German World*, 114.

11. Stoltzenberg, *Chemist, Nobel Laureate*, 195-196.

12. Stern, *Einstein's German World*, 114.

13. Stoltzenberg, *Chemist, Nobel Laureate*, 196.

14. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, page 151.

15. Stern, *Einstein's German World*, 124.

16. Ibid.

17. Ibid, 128.

18. Ibid, 136.

19. Ibid, 137.

20. Ibid.

21. Charles, *Master Mind*, 209.

22. Stern, *Einstein's German World*, 138.

23. Ibid, 139-140.

24. Ibid, 140.

25. Ibid, 141.
26. Ibid, 153.
27. Ibid.
28. Stoltzenberg, *Chemist, Nobel Laureate*, 200.
29. Ibid.
30. Ibid, 201.
31. Ibid.
32. Ibid, 202.
33. Charles, *Master Mind*, 241.
34. Stern, *Einstein's German World*, 163.

Charlotte Nathan: His Second Wife

1915 – 1927

Charlotte Nathan, born in 1889 in Berlin, had many secretarial positions in her life, the last at The German Society of 1914, located in Berlin. Her position here was closer to managerial than secretarial; she ran the business end of the club as well as organizing the meetings and receptions which occurred. It was here that she met Fritz Haber for the first time.

Though they were engaged by the Easter weekend in 1917, a few months went by without any sort of plans being made or any real motion forward toward marriage. While Charlotte became impatient, Haber grew doubtful:

> "I don't have the inner certainty of what we can become to each other when we commit ourselves to each other forever and live together for a few years, because at that point the love that we feel now will be finished. In its place must emerge an inner harmony in our relationships with other people and the world around us, and we don't know yet whether we possess that harmony." [1]

Despite his misgivings, the two were married on October 25, 1917, in the Kaiser Wilhelm Memorial Church in Berlin. Soon after, Charlotte became pregnant, and their first child, Eva-Charlotte Haber, was born on July 21, 1918.

However, this initial positive attitude toward his second marriage did not last long. During its first year, which was also the last year of World War I, Haber was always doing something, and even when he was home, he only saw Charlotte briefly. This began to dissatisfy Charlotte, who wrote to Haber that year about it:

> "In my opinion you can't expect a twenty-eight-year-old woman, who hasn't lived a family life for years and still does not – for you can't call it family life to have breakfast in a hustle and bustle at 8.30 A.M. and supper around 9 to 10 P.M. in the company of a man who's usually flat-out tired – to keep calm and quiet and to live out in contemplation her new married life, the past nine months of which have brought no great joys."[2]

She wanted to travel, to go somewhere and recuperate, but Haber did not at all agree with this, telling her that he wished her to move to Dahlem with Eva-Charlotte and "establish [herself] there as befits a mother and wife"[3].

Charlotte was unhappy about this, but did so anyway because it would be best for their daughter.

Their second child, Ludwig-Fritz, was born on July 12, 1920. These first few years were generally happy, but this would not last. True, they both enjoyed traveling, and went on many journeys together, including one six-month trip around the world in 1924. However, this was the only hobby they shared; Haber's devotion to science, as shown in his first marriage, came before all else in his life, and in addition to that there was the generational gap to consider. Since they were two decades younger than Haber, the people with whom Charlotte associated, as well as Charlotte herself, had different ideas of what was considered normal and acceptable, things which Haber was most definitely against.

The marriage only got worse. Haber was always late to dinner, and when Charlotte called the institute to ask where he was, he would not answer and eventually would instruct an assistant to tell her he was not there. Also, when annoyed by something Charlotte had said or a particular mannerism of hers, he would rebuke her in public. One of them would then have a tantrum, at which point they would officially be fighting. Haber's way of ending these fights was usually to write her some poetry; this would bring about reconciliation, but it was only ever effective for a while.[4]

As previously stated, Charlotte loved to travel. The couple did often travel together, but still Charlotte had a hard time dealing with a husband who was always tired from his work at the institute. She therefore traveled quite a bit on her own, and in fact began to prefer being abroad to being at home, as she wrote to Haber in 1922 after returning home from a trip:

> "Returning to our home in Dahlem was particularly hard after this trip. It's distressing to realize that every trip leaves me more alienated from this place…. There are dark shadows in this house. There's no room for harmless jokes and fun. Lightheartedness can't just come from itself; it has to be thought-out and logical. The constant education, correcting both thoughts and action – it feels like pressure. As soon as this pressure is relieved, one's true nature explodes; the mask falls. That's the way it is, and this time I felt the difference between home and the outside world with special bitterness."[5]

It's clear that home was no longer a place Charlotte considered to hold happiness.

There were also other problems in their relationship. Hermann Haber, who was born on June 1, 1902,

was a teenager when the marriage occurred, and he was always a strain on the relationship. As she wrote,

> "My husband and I had our first disagreement about him after only two months of marriage. And our last disagreement was also about Hermann. Between them lay countless frictions. This wore down the bond of our marriage to the point that it finally tore…. All my efforts to reach a mutual understanding with Hermann were unsuccessful. Certainly it was partly due to me. I could not give him enough goodness and love. Jealousy over the father and the husband gnawed at both of us."[6]

One interpretation of this passage is that Haber often took his son's side over his wife's side, even at times when it would have been advantageous for both parents to be united against the child. Charlotte even referred to the relationship between Hermann and his father as "mental adultery"[7]. Considering this, the fact that Charlotte and Hermann were constantly fighting over Haber, it's no surprise that the relationship that could be severed eventually was.

What could the source of this somewhat unnatural relationship have been? It's true that Haber and his son had many disagreements in their lives. For instance, Hermann wished to study law, but Haber convinced him to study chemistry instead. Disagreements are an inevitable part of any parent-child relationship, yes, but that specific one is particularly telling when considered in the greater context of Hermann and Haber's relationship. Haber's possible refusal to side with his wife, which at first might seem contradictory to the father-son relationship, follows the same path of logic.

As has been previously stated, Haber's first wife and Hermann's mother, Clara Immerwahr, killed herself with Haber's service pistol on the night of May 1, 1915. Hermann found her covered in blood, and stayed with her until she died. Haber left the next day, as he had to return to the front. The case has also previously been made that Clara's suicide was partly the result of Haber's actions during the war and her opposition to them. The party which took place the night of her death was in celebration of his promotion to the rank of captain; this would have seemed to her like the nail in the proverbial coffin, the place from which there could be no turning back. This would have been very clear to Haber.

Given these facts, one might suspect that Haber's possible preferential treatment of his son over his second wife was a direct result of Clara's death. Haber might have decided that because it was his actions which drove Clara to suicide, it was his fault that Hermann found Clara as she was dying, and his fault that Hermann no

longer had his mother. After deciding this, it would have been a very short logical leap to the idea that he would never do anything to wrong his son for the rest of his life if he could help it. The insistence upon chemistry as a field of study can be attributed to the fact that Haber believed chemistry would be a better path in life than law for his son. The reason that Haber sided with Hermann is equally as obvious: it would be easy to wrongly assume that never doing anything wrong by his son meant that the two would never disagree.

Haber and Charlotte never spoke of what he did during the war, or the consequences which followed. However, as we have discussed, his relationship with her and its eventual downfall was nonetheless indicative of his feelings regarding his actions. Had he not regretted what he did, he would not have fostered a relationship with his son which was perhaps unusual and unhealthy. If Haber and Charlotte had not been torn apart by Hermann, it's possible that the marriage would have lasted, but is rather unlikely.

It is worth noting that examining the relationships Haber had with his wives shows a lesser-known side of the man. It has been shown that Haber's friends and colleagues thought the world of him, as it were; they clearly saw a good side of Haber. In private, however, Haber was a domineering, overbearing man, particular about every aspect of life, and completely single-minded. Would he come to regret this, at the end of his life?

Notes

1. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, p.179.

2. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, p.185-186.

3. Ibid, p.186.

4. Goran, Morris. *The Story of Fritz Haber*. Norman, OK: University of Oklahoma Press, 1967, pp.122-123.

5. Charles, *Master Mind*, 210-211.

6. Stoltzenberg, *Chemist, Nobel Laureate*, 178.

7. Ibid, 179.

The Final Years: "The Tragedy of the German Jew"[1]

1926-1934

By 1926, Fritz Haber's health was rapidly deteriorating. Having given up his work dealing with chemical weaponry research and manufacturing, he turned his attention to "more general scientific themes".[2] Although he could no longer spend all his energy at the institute, for he had accepted a variety of public responsibilities, he was a large part in the bringing about of a sort of golden age at the institute.

Complaining that he felt as if he was "living underneath a boulder," constantly plagued by his poor health, Haber somehow found the strength to appear and act normally in front of his colleagues. One example of this act that Haber performed is recounted by Rudolf Stern, who explains how he once had accompanied Haber to a formal dinner. Haber was clearly very weak and depressed, feelings not eased by the fact that Finance Minister Rudolf Hilferding and Hjalmar Schacht (president of the central bank) were not only attending the dinner as well, but were seated at his table together. This arrangement created much tension because Schacht would soon lead Hitler's economic ministry and had just recently harassed Hilferding in the press. Yet, somehow, despite his physical pain, Haber "rose to the occasion like an old war horse which hears the drums of battle. For two hours, he treated [his dining companions] to a choice sampling of his famous anecdotes with such an irresistible charm that even Hilferding and Schacht could not help laughing and forgetting the dire facts and politics."[3]

Many who knew Haber during this period of time do not recollect on the fact that he was so sick, they most often exclaim how wonderfully quick-witted and clever he was. His coworker in Dahlem, James Frank, once said that:

> [Haber] simply could react incredibly quickly. With him, there were none of those things you call 'stairway jokes'; Haber always knew what to say right away in the room, not later on the stairs. I've known even greater intellects – Albert Einstein and Niels Bohr. But I knew no one like Haber. This combination of – I'm tempted to say provocative – quickness in assessing a situation, along with good-heartedness and understanding, was quite remarkable.[4]

Quite possibly, it was this kindly way in which he presented himself that may have enticed many scholars and researchers to attend his institute, hence enabling the institute to enter into this period of productiveness. Haber has often also been described as a generous and encouraging instructor, while still maintaining "full intellectual control over the whole enterprise (the institute)."[5]

His scientific work and his acclaim as a scientist reached far out of Germany. He worked tirelessly towards the end of his life to strengthen the relationship not only between the state and the scientific community, but also between Germany and her fellow nations. A few years earlier, in 1923, Haber had described the bond between society, the state, and science when stating:

> This social state [the Weimar Republic], which the revolution set up in the place of the previous one, this state, whose whole existence affirms the claims of the broad working class for a higher quality of life and that sees as just compensation for the unheard-of achievements of the people during the war that it should give equal opportunities for improvement to those with equal abilities and provide its support to all those in need, such a state is an extraordinarily costly one. Tormented from the outside for reparations and pressured by internal demands that it must fulfill if it is not to quit, it must make constant advances in its modes of operation and activities, and it can achieve that only through advances in the sciences.[6]

Creating strong international bonds seems to become more of a priority to Haber beginning at the end of 1924, when and his wife, Charlotte Nathan, travelled to Japan. There they were received by Hajime Hoshi and Wilhelm Solf (Hoshi was a Japanese industrialist and businessman, who from 1920-21 donated about 160,000 gold marks to Solf for the promotion of the sciences in Germany. Solf then gave the donation to the Foreign Office in Berlin. Around this time, Hoshi also visited Berlin and while there invited Haber to visit Japan.) It was on this trip that Haber first began to realize the potential that lay in the countries of the Far East. Once he returned to Berlin, he expressed his new thoughts when saying, "Just as it is sure that at present the world's center of gravity lies in the United States, so I am certain that the future of world development lies on the shores of the Pacific."[7] For this reason, Haber thought it prudent for Germany to create a bond, both technical and economic with Japan.

Haber decided that a German-Japanese cultural institute would be the best way to help people

understand Japanese culture, and therefore be more open to technical collaborations. Over the next several years he worked with Solf to make this idea a reality. Then from March to May 1925 he met with representatives from the Kaiser Wilhelm Society and the ministries to present his idea. Haber was successful in this venture and on December 4, 1926, the Japanese Institute officially opened in Berlin. The next year, a parallel institute was opened in Tokyo. This work with the Japanese would prove to be quite beneficial to Haber in only a few years, when Hitler gained power. (Haber would decided that he must leave Germany and would then be invited back to Japan. At this point though, he was too ill to make such a journey.)[8]

Hitler's rise to power seems to correlate with Haber's own demise. In a letter to his son, Haber stated, bitterly, that Hitler's National Social Party had gained "a few millions" in campaign funding. So when, in the 1932 election, the Nazis became the single largest party in Germany, Haber must have felt some sense of an impending crisis. The Nazi party had already been affecting Haber's life for some time. For the last few months, he would have been a witness to the increased hostility amongst those around him. In fact, employees who were National Socialists had begun throwing accusations at their co-workers, accusing them of communist activities. Yet even with all this going on, it is doubtful that Haber fully understood how far and how fast the Nazi's would turn against those of Jewish heritage.

In early 1933, Haber expressed the growing depression that the situation around him, the increasing anti-Semitic feelings, was causing. "I have to learn not to read the newspaper. It depresses me, because I see a view of life and the world taking over that is completely at odds with the thinking to which I'm accustomed."[9] His worst fears were soon to be confirmed, when on April 7, 1933, when the Law for the Restoration for the Civil Service became effective. Haber's own institute was a specific target of this, for in the *Zeitschrift für die Gesamte Naturwissenschaft* (the science newspaper for the national student body), students published one of the new Nazi slogans, which said: "The founding of the Kaiser Wilhelm Institutes In Dahlem was the prelude to an influx of Jews into the physical sciences. The directorship of the Kaiser Institute for Physics and Electrochemistry was given to the Jew F. Haber, the nephew of the big-time Jewish profiteer Koppel. The work was reserved almost exclusively for Jews."[10] Having once worked tirelessly as an advocate of the German nation, continuously trying to strengthen her both her internal and international standings, to now be singled-out and regarded as nothing more than a Jew must have broken Haber's heart.

Although he had been labeled as Jewish, Haber did have to option of remaining in his office, because he was a veteran of war. This option was at first considered a great deal by Haber, because if he remained in his position, from there he could aid those younger Jewish scientists who now found themselves in a bad predicament.[11] Haber's desire to remain at this position would quickly dissipate though; as several incidents occurred that he would consider to be the final straw.

First, on April 15th, Haber's friend and colleague, James Franck resigned from his position at the University of Göttingen. Franck had been in the same exact predicament as Haber, yet decided he did not want to continue at his post. In a letter he quickly wrote to Haber, Franck tried to explain to Haber his reasons for leaving, "I can't just get up in front of my students and act as though all this doesn't matter to me. And I also can't gnaw on the bone that the government tosses to Jewish war veterans. I honor and understand the position of those who want to hold out in their positions, but there also have to be people like me. So don't scold your James Franck, who loves you."[12] Having his friends around him resigning would have made him realize even more deeply how the world around him was changing.

Then, like all other civil servants, Haber was forced to fill-out a questionnaire about his ancestry. The paper asked for his race, which he answered as "non-Aryan," and also for a list of all his parents and grandparents. In this section, he simply wrote "My parents and grandparents and both women to whom I've been married as well as their ancestors were all non-Aryan as defined by the law."[13] Haber was incensed that he, who had been baptized at a young age and who had also always been a loyal and devoted patriot to his country, should be targeted by the Nazis because of his ancestry. So then, on April 30, 1933, Fritz Haber issued his resignation. He would remain at the institute for five more months, so that a replacement could be found, but then he would leave. Not only did he want to leave his position at this point, but he also wanted to leave Germany.

Fritz Haber now was looking for a position outside of Germany. 1933, while corresponding with an English chemist, discussing a fellowship at a university there, Haber described the intense remorse that he felt, being betrayed by his country the way he had been:

> I have never in my life courted any honors, and I am deeply ashamed to write this. But perhaps you will have some understanding for the feelings of an old man who was tied to his country for

> his whole life, but who now has the feeling that he has lost his homeland – a homeland that his ancestors and he served to the best of their ability.[14]

In 1933, Haber travelled to England, France, and Holland, looking for a position. He did not find any at this time, but he did strike-up a friendship with the Zionist leader Chaim Weizmann. The two had met several years earlier in Paris, and Weizmann had thought that Haber "was lacking in a Jewish self-respect. He had converted to Christianity and had pulled all his family with him along the road to apostasy."[15] At their second meeting, however, Weizmann described Haber as "broken, muddled, moving about in a mental and moral vacuum." He even stated that he "made a feeble attempt to comfort him, but the truth is that I could scarcely look him in the eyes. I was ashamed for myself, ashamed for this cruel world, which allowed such things to happen, and ashamed for the error in which he had lived and worked throughout his life."[16]

Haber remained in Berlin until August 3, when he headed to Paris to visit his son, Hermann. He would never again set foot in his once beloved fatherland. It was while he was in Paris that Haber began corresponding with Sir William Pope, who would eventually facilitate Haber being offered a position at a university in England. About his decision to accept this position, he told his 13-year-old son Ludwig-Fritz:

> I will in all probability move to England and live at the University of Cambridge. I would like you to go to an English boarding school. It would then be possible for you to become an English citizen, which is the best opportunity that you could be granted in life.... As for Eva, I don't know if the most important thing for her is to live with her mother, or whether you feel it is most important for the two of you to be together…. In any case, it will be necessary in the coming years for both of you to learn to speak English and French as well as you now speak German. For your future lives, this is absolutely necessary in these times.[17]

Haber did not want his children to meet the same fate that he had met. They were, or course, of Jewish decent and he did not them to be limited by all the new laws and delegations in Germany. Outside of his once beloved homeland, only then would they find the freedom to do as they wish. This helped him to finally decide that he must accept the position offered to him in Cambridge.

Before relocating to Cambridge, however, Haber travelled to several locations in Europe. It was in Brig, Switzerland where he had a serious collapse cause by what he assumed was a stroke. Shortly after regaining

enough strength to travel, Haber drove to the Swiss sanatorium in Mammern. Here, his physical condition was under constant medical supervision. A quite remarkable thing also occurred during his stay at the sanatorium.

Haber composed a letter on October 3, 1933, in English which he sent to the Paris representative of the Rockefeller Foundation – a former supporter of his institute – "that a new Nazi-appointed director of the institute was likely 'to study chemical warfare with the Institute…. You will remember that in was time I have been the leader of the chemical warfare in Germany and that I have been proud to work for the military authorities with the institute as an experimental basis. But after the Armistice, I have cancelled every such work and fully declined to renew it in whatever form.'"[18]

Clearly Haber would have known that the work on chemical weapons had not completely ceased when he left his position at the institute (they were in fact still further developing the Zyklon cycle). Was he simply trying to acquit himself of any possible future accusations about his involvement with chemical weapons? He was after all beginning a new life in a way, away from his home and his institute. Perhaps he simply wished for a clean slate. Or did he have other intentions, realizing that the research which he had been working on should not be continued, and trying to find a way to stop its continuation in his absence? His exact reasons will never be known, though, for no letters in response to this letter have ever been discovered.

After a few months, by the end of October, Haber once again visited his son in Paris and then he began the journey to his new home in England. Once secured at his new position, and despite his continuously weakening condition, Haber created another great circle of scholars ad scientists, as he had done years before in Dahlem. One colleague of his later described an experience he had had while visiting Haber in Cambridge:

> On 15 December I traveled to London in order to settle various matters, and naturally I visited Haber in Cambridge. There I experienced some unforgettable hours. In the afternoon we gathered for a scientific colloquium in his hotel room in Cambridge; all his laboratory assistants from Dahlem were there, and I was there as a guest, along with a friend I had brought from London. Then began a scientific discussion more wonderful than you could possible imagine. All cares, all difficulties, all pressures were forgotten in that moment. And so the Dahlem circle arose anew under Haber's influence in Cambridge, unfortunately only for a short time.[19]

These times, working with scientists again and feeling useful, must have been a great comfort for Haber.

Yet nothing could stop his body from quickly decaying into a state of even more serious illness. He began to suffer "exactly the same sort of attack [as in Brig] but slightly weaker."[20] By the winter he knew he had to travel south to help ease his sick pains. When leaving Cambridge after only two months, he wanted to be sure to express his immense gratitude, and wrote to the vice chancellor of the university stating that:

> In these weeks I have learned that in this country, where the memories of ages past do not fade, the chivalry from King Authur's time still lives among its scientists…. I have the strong hope that I will be able to return in a few weeks. I feel the uncertainty of the future like a physical weight on my old shoulders, and I am sure that the odss are imponderable whether my physicals strength will suffice to bear the coming earthquakes.[21]

On January 26, Haber travelled to London, and from there he would travel in Paris. In London, he stopped to visit Chaim Weizmann, who commented later that Haber was "still overflowing with spirit and turned the conversation into a real experience." This visit took place only forty-eight hours before Haber passed-away, for right after speaking with Weizmann; Haber continued to travel to Switzerland. When he arrived, he was greeted by his son Hermann and by Rudolph Stern. Both men were appalled at the condition in which Haber appeared before them. Stern reported that:

> He was not capable of speaking for even a few minutes without having a severe heart attack. He agreed to go to bed and asked me to examine him thoroughly. As I have always done, I reassured him with calming words and promised him that the weeks in Orselina [where Haber wanted to go] would do him good. He always reacted to this psychological treatment with amazing gaiety. Nothing could keep him in bed any longer. He got up and came downstairs and – almost without pausing – discussed future plans for his son and himself. Each of us had a chance to talk to him alone, and he showed great interest in everything we told him. I insisted that we all retire early, and we said good night with plans for the next morning.
>
> But hardly had we separated than he called me to his room. He had a sudden heart flutter related to pulmonary edema. I asked Professor [Rudolp] Staehelin, the leading heart specialist in Basel, to come for a consultation, and he immediately appeared at the hotel. Together, we tried everything until his heart no longer responded to our medical efforts. He never returned to

consciousness and died within a few hours.[22]

On February 1, a small ceremony was held which close relatives attended at the crematorium of the Hörnli Cemetery at Basel. The funeral oration was delivered by Richard Willstätter. Haber had written his last will in the winter of 1933 and in this so-called "Cambridge will", he had ordered the following:

> My body is to be cremated, and the ashes are to be buried in the cemetery in Dahlem, just like those of my first wife, whose ashes lie in the same place. If the anti-Jewish movement in Germany makes it impossible or disagreeable for my son or his survivors to carry out this request, or should he or his survivors later want to alter it having carried it out, then he should take my first wife's ashes and mine to the place where he would like to see them buried. The grave should be marked with the inscription of my name, Fritz Haber, my date of birth, 9 December 1868, and the day of my death. Perhaps there can be added, "He served his country in war and peace as long as was granted him."[23]

Hermann Haber would choose to lay his father's ashes to rest in Basel, the place in which his long and sad journey in exile ended. In accordance with his final wishes, Clara Haber's ashes were moved to Basel in 1937 to share a grave with her once husband. And so ended the life of Fritz Haber, but his memory and the scientific advancements that he left behind would never be forgotten.

Notes

1. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, page ix.

2. Ibid, 249.

3. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, page 204-205.

4. Ibid, 206.

5. Stoltzenberg, *Chemist, Nobel Laureate*, 250.

6. Ibid, 259.

7. Ibid, 266.

8. Ibid, 265-268.

9. Charles, *Master Mind*, 220.

10. Stoltzenberg, *Chemist, Nobel Laureate*, 278.

11. Charles, *Master Mind*, 221.

12. Ibid, 222.

13. Ibid.

14. Charles, *Master Mind*, 225.

15. Ibid, 226.

16. Ibid.

17. Ibid, 230-231.

18. Stern, Fritz. *Einstein's German World*. Princeton, NJ: Princeton University Press, 1999, page 135.

19. Stoltzenberg, *Chemist, Nobel Laureate*, 289.

20. Ibid, 290.

21. Ibid, 291.

22. Ibid, 299-300.

23. Ibid, 300.

Richard Willstätter: The Relationship between Fritz Haber and his Oldest Friend and Colleague

1911 – 1934

Richard Willstätter was, like Haber, a Jewish chemist. Born in 1872, only four years after Haber, he knew he wanted to go into chemistry from a young age. His studies took him to the Institute of Chemistry in Munich in 1890, where he did his doctoral research on cocaine derivatives; he was appointed associate professor in 1902. The next year he married Sophie Leser; their son was born the next year. In 1905, Willstätter was appointed professor at the Swiss Federal Institute of Technology, where he studied chlorophyll. He continued this work at the Kaiser Wilhelm Institute in Berlin.[1]

Willstätter met Fritz Haber in 1911, while Haber was on vacation in Zurich. They had many common interests, including science and many recreational activities, and their friendship continued in Berlin, where they went for walks each evening before going to bed.[2] However, for the most part the two were separated by geography for most of their lives, meeting up only rarely, as they did in 1930 when they took a cruise off Madeira with some relatives.[3] Instead, they wrote letters back and forth until Haber died in 1934.

At first, the letters involved mostly business, discussing chemical advances Haber made recently. As time passed, and the two became better friends, becoming close enough that they began to address each other with the German familiar second-person pronoun "du", Haber began to write Willstätter about more personal matters, including his declining health. In 1927, he wrote:

> Dear Richard!
>
> It's nighttime, and I'm afraid to sleep. The heart spasms, my latest achievement, only wake me when they've progressed to the point where I can't cut them off immediately with the alcoholic nitroglycerin solution. I don't know if it takes one minute or four before I've managed successfully to fiddle with the medicine dropper, put the drops on my tongue, and felt relief. But they're very bad minutes.

As Charles points out, "[n]owhere else does Haber reveal similar depths of despair."[4]

If Haber felt this comfortable about revealing his true self to Willstätter, it was only because there was a

mutual shared respect and friendliness between the two men, and in fact Willstätter thought quite highly of Haber. For Haber's sixtieth birthday, Willstätter contributed to the commemorative edition of *Die Naturwissenschaften*.

> His greatness lies in his scientific ideas and the depth of his searching. The thought, the plan, and the process are more important to him than the completion. The creative process gives him more pleasure than the yield, the finished piece. (…) We should misjudge this scientist seriously if we were to judge him only by his harvest. The stimulation of research and the advancement of younger scholars become ever more important to him than his own achievements.[5]

On the other side of this friendship, Haber felt equally as strong toward Willstätter, putting this into words in one letter written in 1929.

> Humans are so many-sided, and in old age they are crusty, like bread browned in the fire, distrustful and temperamental. But you, with the gentle sincerity of your indulgent gratitude, have broken through all the hard crust and made me happy. Now my life is so bound up with yours that I can spend weeks and months in great inner turmoil without exchanging ideas with you and without expressing my feeling of connectedness. But as soon as there is a turning point, or something causes me to stop, the need arises to reach you and to ask when we will see each other again, talk together again, argue again, and as much as I can, make a life out of the course of days by meeting again.[6]

The relationship between these two men was definitely solid. Haber trusted Willstätter so much, in fact, that when things in Germany began to go downhill, it was to Willstätter that Haber communicated his feelings of unhappiness. It's arguable whether or not Haber took earlier threats to Jewish men and women seriously, but once Hitler was granted complete power, he began to realize just what a Nazi government might mean for him. The first sign of this new awareness shows up in a letter Haber wrote to Willstätter in early April, 1933, shortly after all Jewish judges were forced to take leaves of absence from their jobs. What had happened to the judges, he thought, might happen to Jewish scientists as well.

> I just read in the newspaper the directive of the Prussian minister of justice, which states, that it

> should be suggested to all officiating Jewish judges that they should submit immediate leave of absence petitions, and that these should be granted immediately, and in the cases where Jewish judges refuse to submit a leave of absence petition, they shall be prohibited from entering the courthouse. While such a decree will not be directly affecting our area, it suggests that what happens today in one area of the Prussian government will soon happen in the other areas in the same manner, and the question arises, how we ought to react. At the same time, in my newspaper, the *Berliner Börsen-Courier* no. 155 of April 1, 1933, the interpretation given to the minister's decree by the head judge of the state court Berlin-Moabit, namely, "Reporters of the Communist or Marxist persuasion or of Jewish ethnicity…" demonstrates that it is not the religion, but rather, the ethnicity that is considered decisive and is equated with being disloyal to the state.[7]

This was also the point at which Haber noted that the Nazis were defining a person's Jewishness by blood, instead of by practice; the fact that he had converted so many years ago was now irrelevant.[8]

Shortly after this development, a new law came into effect which, within six months, would remove all Jews from civil service except for those who had been soldiers in the war. At first, Haber accepted that he was one of the exceptions, believing that he could do more good by staying at the institute and helping younger Jewish scientists find new jobs for themselves. However, when he received a questionnaire about his heritage, he marked himself down as non-Aryan, going so far as to say that all his family, including both his wives, were non-Aryan.

While this may have helped him, it angered the government, which proceeded to single out the institute, ordering the Kaiser Wilhelm Society to dismiss some Jewish scientists. Haber resisted at first; in the end, he let go of two of the most renowned scientists at the institute, both of whom already had offers from abroad. A few days later, on April 30, he wrote a letter of resignation and sent it.[9] As he wrote, shortly after this, to Willstätter:

> In the meantime I have spent time in agonies that come partly from the soul and partly from the body. Perhaps contributing to them is that I can no longer imagine how I can ever again get to work and to be effective. I am bitter as never before, and the feelings of irritability inside me increase daily. I have been German to an extent that I only now perceive fully, and I feel an

> unprecedented disgust in that I can no longer work well enough to dare take up a new position in another country. I admire the composed tranquility with which you bear up against the pressures of these times.[10]

Given all of this, it was clear that Haber could not stay in Germany, and during the summer of 1933 he began to travel.

He went to Holland, to France, and to England before returning to Germany. He left once more on the 3rd of August, after which he planned to visit his son in Paris, go to Spain for a conference, and then return home. However, in Paris he received an offer from three Englishmen at Cambridge; this offer was an honorary position, and required very little in the way of research, and nothing in the way of teaching. Eventually, Haber accepted the position, and after a period during which his health began to fail, moved to Cambridge.[11]

Here, Haber settled in as best he could, and wrote to Willstätter sometime before Christmas, 1933:

> Personally, I have two wishes: one concerns morphine and the other NaCy [sodium cyanide]. Presumably you will not want to make easier my struggle to get hold of these reserve supplies for old age. I feel exceptionally well here. I enjoy the kindliness, namely that of [William Jackson] Pope, but I would have to begin my life anew were I to regain the sense of an existence that is complete. The life's work I have lost is for me irreplaceable.[12]

The morphine may have been in response to his still-failing health; cyanide, however, is mostly used in suicides. Given that information, it's clear that, although Haber appreciated what his hosts were doing for him, he was still unhappy, and while he may not have been willing to actually go so far as to kill himself, the thoughts had crossed his mind more than once. The option was taken from him, however, on January 29, 1934, when he died in his sleep; the cause of death was coronary sclerosis.[13]

Toward the end of his life, what lay in the depths of Haber's mind was at times unfathomable. However, through his correspondence with Richard Willstätter, one of his oldest friends, it is possible to see more clearly his true feelings. Here it is easy to see Haber as a man torn between what he once thought himself to be, a German who happened to have Jewish heritage, and what his government now considered him, a Jew who happened to be born in Germany. He revealed, in these letters, the great misery this caused him, and the

struggles he went through. It is clear that, when he died, Haber had never been able to resolve this great inner conflict.

Notes

1. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, pages 203-204.

2. Goran, Morris. *The Story of Fritz Haber*. Norman, OK: University of Oklahoma Press, 1967, pages 118-119.

3. Ibid, 119.

4. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, page 203.

5. Stoltzenberg, *Chemist, Nobel Laureate*, 207.

6. Ibid.

7. Haber, Fritz. *Fritz Haber Briefe an Richard Willstätter*, translation by David Dollenmayer and Elizabeth Ray. Berlin, Germany: Verlag für Wissenschafts- und Regionalgeschichte, 1995, pages 127-128.Charles, *Master Mind*, 221.

8. Charles, *Master Mind*, 221.

9. Ibid, 222-223.

10. Haber, *Briefe*, 131-132.

11. Charles, *Master Mind*, 226-232.

12. Stoltzenberg, *Chemist, Nobel Laureate*, 209.

13. Goran, *The Story*, 171.

William Pope: Enemy Turned Advocate

1933-1934

"So disillusioned and embittered was Haber by the painful experience of removal of his posted as founding director of the Institute für physikalische Chemie und Elektrochemie … that the erstwhile German patriot resolved to renounce his German citizenship at the earliest opportunity and to seek a refuge elsewhere in Europe."[1] Haber considered many different countries as a future home; eventually he settled on England.

Surprisingly, the greatest advocates in favor of his moving to England were the very men he had fought during World War I: Harold Hartley, Frederic Donnan, and Sir William Pope. The rest of the world had not yet ceased to be angry at Haber and the others who had been involved in chemical warfare during the Great War. However, these men, who had done things similar to those Haber had done, "showed a great deal of understanding for the position in which Haber and his coworkers found themselves."[2] Theirs was the first offer Haber found interesting: they had gotten the University of Cambridge to offer Haber an honorary position, which therefore did not require teaching or research of any significance.[3]

Haber began his journey when he left for Paris, France, from Berlin, on August 5, 1933. He traveled there to visit his son Hermann and his son's family. From Paris, he began a series of ten letters to Pope, in which he expressed what he wishes for upon his arrival in England. The replies from Pope to Haber are inaccessible, since they are currently stored in Berlin, but it is obvious in the ten which still exist that there existed an easy friendship between the two of them which allowed Haber to be open about his bitterness toward his situation and his desire to get out of it as quickly as possible without any loss of dignity or honor. In his first letter to Pope, in fact, he said that his "most important goals in life are that I *not die as a German citizen* and that I not bequeath to my children and grandchildren the civil rights of second-class citizenship."[4]

One of Haber's concerns was to ensure that the staff of his Institute who were in danger had somewhere to go.[5] For example, in the second letter of the series, written to Pope on August 23, 1933, from Paris, Haber requested that Pope secure invitations not only for himself but also for his widowed sister Dr. Else Freyhan, his personal secretary Rita Cracauer, and one of his employees, Dr. Joseph Weiss. He did not wish to start his new life before he was certain that all his former colleagues from the Institute were able to find positions in their

fields elsewhere. He requested that Weiss be granted a fellowship at Cambridge University, where Haber would continue his work.[6] By the end of July, at which point a laboratory for Haber had been secured[7], Weiss's position was not yet concrete. It is not known exactly what position he was offered, but it is known that eventually Weiss joined Haber in his work at Cambridge.

Haber also harbored a more practical concern regarding his move to England. He wanted to negotiate the move without losing his pension and without having to pay a tax, the Reichsfluchtsteuer, by which almost all of his money would be taken by the Nazis.[8] Given the fact that most of Haber's assets were in Switzerland, he could have decided to just ignore the tax, but he "could not tolerate the prospect of being branded in his homeland a tax evader".[9] When the Reich agreed to waive this payment, Haber officially accepted the offer from Cambridge. [10]

In addition to this, Haber even went so far as to fantasize that he could leave his homeland honorably. In the second letter he wrote to Pope, he asked if it would be possible to get formal invitations issued by the British ambassador and given to the foreign office in Germany.[11] If that were to happen, Haber said, "the Foreign Office might feel obligated, as an act of international courtesy, to support it."[12]

Haber and Pope had been enemies in what one might call their previous lives, and their friendship was therefore relatively short by comparison to others Haber had in his life. However, despite this, it is clear that their friendship was strong, since, as previously stated, Haber felt comfortable confiding in Pope about his circumstances and what he felt. There is a distinct feeling of remorse in his correspondence. This coupled with his great efforts to find somewhere other than Germany to settle down for the rest of his life indicate that he regretted his past exploits as well as how his beloved homeland had changed. He seemed to very much wish that none of what he was doing was necessary in any way, and to be acutely aware of the problems with what he did in his earlier life.

Notes

1. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, Page 287.

2. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, Page 228.

3. Ibid.

4. Wallace, Ian. *German Monitor: Fractured Biographies*. New York, NY: Rodopi, 2003, Page 4.

5. Ibid, 7.

6. Stoltzenberg, *Chemist, Nobel Laureate*, 288.

7. Wallace, *Fractured Biographies*, 4.

8. Charles, *Master Mind*, 228.

9. Ibid.

10. Wallace, *Fractured Biographies*, 5.

11. Ibid 7.

12. Charles, *Master Mind*, 229.

Conclusion: Like Fire in the Hands of Small Children

There can be no doubt that Fritz Haber was an extremely complex man. He was a brilliant chemist, a skilled teacher, a committed friend, and yet an appalling husband. He was one of Germany's greatest patriots throughout most of his life, even fighting for his nation in the Great War, but with Hitler's rise to power he discovered that the only thing that mattered was his Jewish heritage. Did he regret any of the things he did during his life, or did he remain firm in the belief that everything he did was morally sound?

As we have stated, Haber converted from Judaism at a young age in order to further his career. However, it is clear that he never really gave up the culture; although he was not a practicing Jew, many of the people with whom he associated and both the women he married were Jews. Additionally, based on the correspondences between Haber and Einstein, the issue of his faith was ever-present in the back of his mind. As an example of this, the two men often disagreed on the perception of Jews abroad; Haber cautioned Einstein that his behavior would reflect badly on Jews in the Fatherland. As Fritz Stern said of their relationship, "Einstein was proud to be a Jew, just as Haber was proud of being a German. It is an honor to both men, and especially to Einstein, that the distress that the other's position must have caused each of them to feel did not seriously hinder their friendship."[1] Because of this, he clearly still cared about the way Jewish people were represented and, toward the end of his life, how they were treated.

Haber's changing attitudes may have extended to more than just how Jews were treated. The domineering way with which he treated both his wives, partially driving one of them to suicide and driving the other one away, may have begun to weigh on his conscience, and he may have come to regret it. He and his second wife, Charlotte Nathan, nearly reconciled in 1930; in the end, they remained divorced, but the fact that she was even willing to consider this possibility shows that she saw in him a change. After all, if she did not believe that he had changed, she would not have even considered reentering the near-abuse which constituted their marriage. Also, another incentive for her to think about the possibility was that he would now have time for a loving relationship with a person: his amazing mind was now caged in a rapidly decaying body.

Haber's once-brilliant mind and magnetic personality may be the reason some may single him out as one

of the least moral scientists of his time. However, those very qualities which helped him stand out so sharply also overshadowed his colleagues, some of whom committed acts which may be considered even worse than Haber's. For example, his one-time friend and colleague James Franck, who worked with Haber to train the gas troops in the Great War and then later at the institute, resigned his position at the institute shortly before Haber. Unlike Haber, however, Franck relocated to the United States and began work on the atomic bomb, which is considered worse than the gas warfare that Haber helped develop.[2]

It is not as though Haber was completely blind to the fact that technology could advance past the bounds of morality. Toward the end of his life, he "confess[ed] to a friend that the great technical accomplishments of the previous half-century appeared increasingly 'like fire in the hands of small children'."[3] Clearly, Haber knew that technology could both create and destroy. He also knew that its development had to be closely monitored to ensure it would not be used rashly, as it was by the Nazis, who were the "children" of this quotation. By calling them "small children", Haber is saying that they cannot be trusted with advanced technology because they lack foresight and do not think about the consequences of their actions.

If Haber had known that his own scientific achievements would later be used to develop a weapon for use on civilians, he may have regretted the enthusiasm with which he approached his work. He and those working with him could be said to have been more interested in seeing if they could advance previous discoveries than perhaps considering whether or not they should. As Daniel Charles, author of *Master Mind*, said, "The spirit of innovation cannot be stamped out – nor should it – but it can be directed and controlled by equally powerful human impulses of responsibility and love."[4] Still, it is true that other than the few ambiguous pieces of information used in this paper, there is no proof that Haber regretted what part he personally played in developing chemical warfare, or even that he ever seriously questioned it. As such, many of the questions we raised rhetorically in our introduction cannot be factually answered; instead, we invite readers to draw their own conclusions.

To this day, scholars are still debating the morality of Haber's life, both personal and professional. His life at the end was perhaps less than ideal, given that the country he once loved so passionately, which had once cared more about what its people could do than who their parents were, had now turned its back on him. The betrayal he was sure to have felt must have been incredibly difficult to bear. Still, through his work at the

institute and through those who sympathized with him, he touched so many other lives that the effects are still being felt. Eloquently put by Wilhelm Schlenk in a startlingly personal obituary for Haber, "'The times pass and we pass with them.' This was one of the most beautiful expressions that Fritz Haber used shortly before our last farewell. Certainly he has gone from this world. But he has not completely left us; for 'A master who his best did give, / lives and acts beyond the grave!'"[5]

Notes

1. Stoltzenberg, Dietrich. *Fritz Haber: Chemist, Nobel Laureate, German, Jew*. Philadelphia, PA: Chemical Heritage Press, 2004, page 202.

2. Charles, Daniel. *Master Mind: The Rise and Fall of Fritz Haber, the Nobel Laureate Who Launched the Age of Chemical Warfare*. New York, NY: HarperCollins Publishers, 2005, page 261.

3. Ibid, 264.

4. Ibid.

5. Stoltzenberg, *Chemist, Nobel Laureate,* 306.

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