



# How Cancer Caused World War I and Its Aftermath

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*Author's Note: A version of this article was originally published six years ago. At the time it attracted considerable comment from physicians who were unfamiliar with the medical issues that influenced European history at the turn of the last century. It was especially favorably received by our non-physician readers, probably because it discussed a medical topic in terms they could easily understand.*

*In the ensuing years, as the Journal's distribution list has expanded, we have not only added large numbers of physicians to our medical staff, but also a considerable number of readers who are not physicians. As a result, we thought it would be worthwhile to publish a modified version of the original article.*

*That the intervening years have also been characterized by America's involvement in almost perpetual war, adds a particular if tangential relevance to this article. World War I had origins so complex that historians still argue about them. To the best of my knowledge, however, only one of those discussions (see reference #2) has directly considered the influence of cancer.*

"The lamps are going out all over Europe;  
We shall not see them lit again in our lifetime."

- Sir Edward Grey,  
British Foreign Secretary, 1905-1916

## HISTORICAL BACKGROUND IN BRIEF

It is understandable that American historians have always given disproportionate attention to the effect of world events on America, but occasionally—particularly in the era before modern technology and instant communication—that emphasis almost completely missed the significance of events that happened elsewhere. Consider the difference between the number of words devoted to the cancer of America's President Grover Cleveland and that of Germany's Kaiser Friedrich III.

Cigar-smoking President Grover Cleveland had a malignant lesion of the maxilla removed in 1893, during a somewhat risky and surreptitious operation aboard his yacht while it cruised off Manhattan. A rubber prosthesis filled the surgical defect in his palate so successfully that the malignancy and the operation were kept secret until long after his death 15 years later. America was in the midst of an economic depression, and contemporary public awareness of a major Presidential illness would doubtless have intensified the financial crisis. But although the concealed illness

had no immediate impact, its eventual revelation was the stimulus for a subsequent river of articles and countless speculations by American historians.

Contrast this flood of ink with the story of Kaiser Frederick III of Germany (1831-1888). A chain smoker, he also had a malignancy of the respiratory tract, and it profoundly impacted world history; but because it affected a European head of state, it is hardly discussed in this country, and few individuals—even in the medical community—realize its significance. This article will demonstrate that if not for the misdiagnosis and mismanagement of the Kaiser's ultimately fatal laryngeal cancer in 1887-88, World War I would likely never have happened, despite the assassination at Sarajevo of Archduke Franz Ferdinand of Austria, which was the immediate precipitating event.

Frederick was the son of Prince William of Prussia, a mild-mannered reactionary who became King of Prussia in 1861. William left the reins of power in the hands of his "Iron Chancellor" Bismarck, who used Prussian military power and subtle diplomacy to unite Prussia with surrounding German states into a German Empire in 1871. In the process, King William was elevated to become Kaiser William I. At first this expansion of Prussian militarism posed no apparent threat to England, and Bismarck's conservative diplomacy maintained a delicate balance of power.

It was no accident that England and Germany were linked by long-standing ties of language, sentiment, and blood, as intermarriage among the European royal houses was part of that era's diplomatic calculus. Though Queen Victoria married for love, and for the rest of her life mourned the 1861 death of her beloved husband at the age of 42, it is notable that he was her German cousin, Prince Albert of Saxe-Coburg-Gotha. Similarly, in 1858 Kaiser William I's son, now Crown Prince Frederick William, married the eldest daughter of Queen Victoria, also named Victoria but known as "Vicky." (In fact, the British Royals were known as the House of Hanover until July 17, 1917, when King George V, reacting to the revulsion against Germany caused by the Great War, adopted Windsor as the official family name. A number of other English/German royals made similarly expedient changes.)

His wife Vicky encouraged Frederick's liberal and reformist tendencies, as well as his desire to create a constitutional monarchy like that of her mother Queen Victoria, which would be more responsive to the will of the people. Bismarck, the political conservative and consummate behind-the-scenes power broker, distrusted Frederick, and kept him out of any position of political power, despite Frederick's upstanding character, personal bravery, and distinguished military career. He commanded victorious armies in the Austro-Prussian War of 1866, and the Franco-Prussian War of 1870. His politics and his personality made him so personally popular with the German public that they affectionately called him "Unser Fritz."

In contrast, his conservative and passive father, Kaiser William I, supported Bismarck's repressive policies over the objections of his liberal son. To the eventual misfortune of Germany and the world, William lived to the age of 91, and Frederick didn't succeed his father as Kaiser until March 1888, when he was 56 years old and terminally ill of laryngeal cancer. When Frederick died soon thereafter, he was succeeded by his aggressive eldest son, William II, about whom much more later.

#### A TALE OF MEDICAL MISJUDGMENTS

From a medical perspective, Frederick's sad story and its fatal outcome reflect both cognitive and judgmental failures by various physicians. The story began in January 1887 when Crown Prince Frederick complained of hoarseness, attributed at first to another of his frequent colds which resulted from his chain smoking. When the symptoms persisted, Dr. Ernst Gerhardt, a physician from Berlin, cauterized a lesion

on the left vocal cord several times. When it recurred by May, eminent surgeon Dr. Ernst von Bergmann was consulted, and a diagnosis of cancer was considered. As was common in that era, when the doctor-patient relationship incorporated not only a high degree of paternalism but considerable reluctance to talk about cancer or even use the word, Frederick was not told of these considerations. When surgical removal was recommended, Kaiser William I and Bismarck, aware of the diagnosis, refused to subject Frederick to laryngectomy without his consent. Three other consultants advocated a more conservative approach: laryngofissure and a limited resection of one vocal cord. The lesion was early, the Prince was healthy, and the surgical risk was low. Frederick would be permanently hoarse, but he would have a voice.

#### GERMAN SURGERY: 19TH CENTURY STATE-OF-THE-ART

It is not hyperbole to say that German surgery in the late 19th Century led the world. After the introduction of ether in 1846 in America, the availability of safe and effective general anesthesia transformed surgery from an agonizing ordeal of rapid amputations and extirpations, to an art of refined and meticulous operations that soon came to include often delicate reconstruction of the involved tissues. In medical history the 19th century has been called The Century of the Surgeon, and nowhere was surgical progress more rapid and dramatic than in the German-speaking countries of Europe.

Countless surgical operations and—thanks to precision German engineering and manufacturing—instruments still in use today, were introduced by brilliant and intrepid pioneers such as Theodore Billroth, the father of abdominal surgery. Theodore Kocher, a German speaking Swiss who became President of the German Society of Surgeons, was awarded the Nobel Prize in 1909 for his work on the thyroid gland. The gradual acceptance of antisepsis began with Viennese obstetrician Ignaz Semmelweis' controversial insistence on hand-washing, though full acceptance of surgical antisepsis was delayed until Pasteur provided its scientific basis. Even before antisepsis, however, surgery of the larynx posed a negligible risk of infection just as it does today, since the tissues of the head and neck are so well vascularized that a sterile field is unnecessary, and indeed unobtainable.

In sum, the German Royal family had access to the finest surgical care in the world, and Frederick's disease would likely have been controlled if objective

judgment had been combined with the timely application of the best medical knowledge and surgical techniques of that era. Unfortunately, this case proved again that famous people may get inferior care if the judgment of their physicians is clouded by the exalted position of their patients. (As physicians we know that if we are ill we may fall victim to the same danger. When we or someone in our family is ill, the best policy is to seek trustworthy physicians whose primary consideration is the welfare of all their patients, and to ask them for the same care as they would give to any “ordinary” patient. Of course though that principle may apply, we still don’t want to wait as long for an appointment!)

In Frederick’s case, prominence again proved a detriment. Even after three more German consultants agreed with the suspicion of malignancy, another opinion was sought from a noted English laryngologist, Dr. Morrell Mackenzie, who had written an authoritative text on diseases of the throat. Mackenzie’s unnecessary involvement ultimately proved severely damaging. He came to Berlin promptly and attempted a biopsy which yielded a small fragment of tissue. This was examined by another of Germany’s medical giants, Rudolf Virchow, the father of cellular pathology.

Virchow saw no malignancy. Mackenzie, relying on Virchow’s opinion, locked horns with Gerhardt and von Bergmann, who argued correctly and courageously that—Virchow’s eminence notwithstanding—pathology was still an inexact discipline, and extirpative surgery should proceed anyway. The choice was left to Frederick and Vicky, whose decision could only be based on emotion, not fact. They opted for the Englishman’s more favorable recommendation that the presumed “throat infection” might resolve in a milder climate, and they attended Queen Victoria’s Golden Jubilee celebration on June 21, 1887, but it was clear that the situation was not improving. The next day, in London, Mackenzie removed all the tumor he could find, and again Virchow failed to find evidence of a malignancy.

The growth progressed nonetheless, and by autumn Frederick had completely lost his voice. When Mackenzie examined him again in November, the diagnosis and prognosis were undeniable, and Frederick was told that his life expectancy was limited. In keeping with his resolute and dignified character, he thanked Mackenzie for his care, and accepted his fate, reportedly saying: “Lerne leiden, ohne zu klagen!” (“Learn to suffer without complaining.”) The next February

a tracheotomy was necessary to prevent suffocation, and by March when his father the Kaiser died, he was already too weak to attend the funeral. Frederick died on June 15, 1888 after only 99 days as Kaiser, during which the German public and press trashed his English wife and his English doctor for what had befallen their deservedly beloved “Fritz.”

Soon thereafter, both Mackenzie and the German doctors published conflicting accounts of the story, each designed to exonerate themselves from criticism. Mackenzie, who had been knighted in the interval by Queen Victoria for his presumably excellent care of her son-in-law, suggested that the lesion had become malignant as a result of the treatment rendered by the German physicians after Mackenzie’s first visit. Because his account was so flagrantly self-serving in its criticism of other physicians, he was castigated in England and censured by the Royal College of Surgeons. A few years later in 1892, he died quite suddenly at the age of 54.

In defense of Virchow and his apparent misreading of the pathology, it is possible that when he first examined the tissue it was a verrucous carcinoma like that of Grover Cleveland. In the absence of invasion it would have been considered benign because in that era the diagnosis of malignancy was heavily dependent on a tumor’s invasiveness and biological behavior. Indeed, verrucous carcinoma was unknown until the 20th century, as was the concept of carcinoma-in-situ. If indeed the lesion was at first superficial and noninvasive, and it only became overtly invasive later, Mackenzie’s seemingly self-serving claim that “it had become malignant,” was not far-fetched according to the knowledge of the day.

#### THE BLOODY CONSEQUENCES

The brief reign of Kaiser Frederick III was succeeded by that of his 29 year-old eldest son William II, whose personality was profoundly influenced by an injury to his left brachial plexus at birth, which left him with a shortened, almost useless left arm. In official photographs the arm’s condition is concealed by artfully tailored uniforms and clever positioning, but it made him sensitive to criticism and prone to compensate with bluster and braggadocio. At first a polite and agreeable child, he entered the First Regiment of Foot Guards as a young man and gradually began to strut and speak in a militaristic, authoritarian manner. Despite his parents’ efforts to raise him to be a modern constitutional monarch, he became increasingly volatile and politically conservative. He was

overtly disrespectful to his parents, and he was virtually estranged from his liberal English mother, whom he ostracized after his father's death.

Like the British monarch, the Kaiser's position as head of state was inherited, but his powers were far greater. He had sole authority for appointing the Chancellor, the Foreign Secretary, and all Cabinet level ministers. He was Commander-in-Chief of the military, though the elected Reichstag controlled the military budget and approved all appropriations. On paper Germany's system of government in the first Empire had many resemblances to our Presidential system, but with fewer checks and balances, and without the need for Parliamentary "advice and consent" on many appointments. Like most political systems, even more liberal ones like America's, it was susceptible to abuses of power in the time-honored tradition of manipulating public opinion by stoking fear of external threats.

In that regard it was ultimately dangerous that as Kaiser, William II proved a truculent throwback who bridled under the restraints of a constitutional monarchy. He eventually was so frustrated by Bismarck's careful, calculating diplomacy that he sent the Chancellor into retirement. William II's reign from 1888 until WW I was characterized by relentless military expansion, and a naval buildup that threatened England's naval supremacy. England's safety and prosperity as an island nation with worldwide colonies depended on its ability not only to control the English Channel and prevent invasion from the continent, but simultaneously to maintain unimpeded sea lanes and transit through the Mediterranean Sea and the Suez Canal to India, Singapore, Hong Kong, and the South Pacific. England viewed its sea power as an asset to every trading nation, as England assured safe and open access to ports around the world for ships of all flags.

Throughout the 19th Century, British naval supremacy, its colonial empire, and its continental alliances, had all been designed to contain and suppress its historical enemy France with whom it had been at war earlier in the century. As late as 1895, with Victoria's reign drawing near its close, mere rumors that France might be planning an expedition to the headwaters of the Nile could stoke the old hostility. In contrast, Germany and England had bonds of language, culture and kinship; had no contested borders; lacked any significant colonial rivalry; and shared a history of wars against France. But Germany's relentless naval expansion and unwavering pressure on

England slowly dissipated British complacency and forced it to realize that Germany was determined to contest England's dominance in ways that were anything but honorable.

Just as would occur again decades later in the prodrome to WW II, the same giant of British statecraft—Churchill—was critically positioned to prepare for impending doom, having succeeded Battenberg as First Lord of the Admiralty. While England considered its own navy a necessity, Churchill called Germany's navy a "luxury." England's position as unrivaled naval superpower rested on a longstanding policy of building more ships than the sum of any two rivals. Churchill attempted to conciliate the Kaiser's insistence on a larger German navy by indicating readiness to reduce England's historic 2:1 margin of superiority in capital ships to 1.6:1. When Germany's building program continued unabated, he proposed a one year moratorium on laying keels for "dreadnoughts," the most powerful class of battleships. The Kaiser reacted with typical volatility and paranoia, rejecting all attempts to moderate the arms race, and insisting that "no one can tell Germany what we may or may not do." The German public's resentment was also inflamed by the military, and Germany's intransigence overrode all attempts at diplomacy by a peace-loving British Labor government that would have preferred to divert funds from armaments to social programs in health care, education, etc. (It is remarkable as one reads these accounts to realize how similar they sound to the ranting of Hitler before WW II; the main difference being Hitler's emphasis on planes and submarines, not just ships).

Responding to the Kaiser's enthusiastic prompting, the Reichstag approved a long-term program of naval expansion that would make Germany a credible rival in the North Sea. To lessen its need to match Germany's ship building, England transferred its Mediterranean Fleet to the North Sea, leaving the French Navy to protect the Mediterranean, but Germany began construction to widen and deepen the Kiel Canal across the base of Denmark. Enlargement of this waterway to accommodate large warships was a new threat that would alter the balance of sea power by bringing German ships from the Baltic directly into the North Sea without the arduous trip around Denmark through the long strait of the Skagerrak. Many diplomats correctly predicted that completion of the new canal in 1914 would coincide with the outbreak of war with Germany.

Sure enough, on June 28, 1914, the assassination of Archduke Franz Ferdinand, heir to the Austro-Hungarian throne, by a Bosnian member of a Serb extremist group, provided Germany with the pretext it sought. Notwithstanding this event, war was certainly avoidable for many reasons: all the Great Powers made efforts to defuse the crisis; the Serbian government was innocent in the plot and acquiesced abjectly to all of Austria-Hungary's objectionable demands; the British public was unwilling to get involved in a Continental melee; the British Foreign Secretary Sir Edward Grey worked ceaselessly to reconcile the aggrieved parties; and the first country invaded, Belgium, was a neutral country.

But although none of the events of July 1914 threatened Germany's sovereignty or territorial integrity in the slightest, Germany under Kaiser William II's influence absurdly and irrationally insisted that "this war is a question for Germany...of her whole national existence... also the preservation and maintenance of German civilization and principles!" On August 4, 1914, German troops crossed into neutral Belgium, and after a British ultimatum to withdraw went unanswered, Great Britain reluctantly went to war with Germany.

By Armistice Day more than four years later on November 11, 1918, more than 9 million soldiers and an equal number of civilians had been killed, and an estimated 21 million people had been injured.

#### IMPLICATIONS AND CONCLUSIONS

Though some historians argue that William II did not intend to unleash a World War, their apologetics

seem wildly misguided. His militant, aggressive, and paranoid nationalist objectives required it, and he surely provoked it with his enthusiasm for naval expansion and his encouragement of the German military. If he did not mean to provoke a World War, why invade a neutral country, Belgium?

In contrast, it is inconceivable that Germany would have gone down this warpath if the enlightened, reform-minded Kaiser Frederick William had lived a normal life span. In 1914 he would have been 82. His father had lived to 91, and William II, the cause of it all, died in 1941 at the age of 82 (apparently of a pulmonary embolus). Even if Frederick William had not enjoyed quite the same longevity that characterized his family, he would not have initiated or tolerated the military build-up that made it possible for Germany to rival Great Britain and its allies. Because his beloved wife was a British royal, in effect he would have had to attack his own family.

Though historians engage in convoluted analyses about the multiple factors that contributed to the Great War, it is fair to say that there was one essential component. From this surgeon's perspective, cancer (abetted by poor understanding of its biology and resultant physician error) caused World War I by killing Kaiser Frederick William prematurely. It is widely accepted that the aftermath of that war, including the onerous conditions of the Treaty of Versailles, laid the groundwork for hyperinflation in Germany and the rise of Hitler. It is not unreasonable to suggest that cancer also caused WWII and the Holocaust.