

Chapter 2: Eben Byers – “He Was Doing Alright Until his Jaw Fell Off”

On a glorious September day in 1931, Robert H. Winn, a lawyer for the Federal Trade Commission, along with some colleagues visited the stately mansion of Eben Byers in Long Island, New York. They were there to collect testimony from him relating to his use of a deadly patent medicine. “A more gruesome experience in a more gorgeous setting would be hard to imagine,” observed Winn. “There we discovered him in a condition which beggars description.” Winn continued:

Young in years and mentally alert, he could hardly speak. His head was swathed in bandages. He had undergone two successive operations in which his whole upper jaw, excepting two front teeth, and most of his lower jaw had been removed. All the remaining bone tissue of his body was slowly disintegrating, and holes were actually forming in his skull.¹

Everybody in the room, including Byers, realized they were talking to a dead man. How did this wealthy industrialist and former U.S. Amateur golf champion, whose money could buy him almost anything, end up like this? Six months later, at the age of 51, his suffering would end when he succumbed to radium poisoning. His death would elicit a nationwide response, not only from the medical profession, but also the federal government, resulting in countless future lives being saved.

Eben MacBurney Byers was born April 12, 1880 in Pittsburgh, the son of Alexander MacBurney Byers, who established the A.M. Byers Company in Pittsburgh in 1864. His company manufactured steel and wrought iron, and when other producers attempted to undersell him with cheaper materials, he vowed that he would produce quality wrought iron pipe “or bust.” His company was responsible for innovations in iron production, and produced much of the pipe still in use in many Pittsburgh homes. It also sold pipe to golf courses for irrigation systems. “Byers pipe of genuine wrought iron has never been known to cause a serious failure after being buried in the ground for upwards of 30 years,” boasted one advertisement of its durability.²

In February 1876, Byers and his brother Ebenezer acquired sole ownership of the company, but 18 years later their partnership ended in scandal. In August 1894, newspapers reported that A.M. Byers's sister-in-law was claiming that her husband had been kidnapped on A.M.'s orders for the purpose of forcing him to give up his interest in the company. The story is straight out of a soap opera.

Annie Hays came from one of the "oldest, wealthiest, most aristocratic and most influential" families in Western Pennsylvania. She was a member of the Daughters of the American Revolution and one of the recognized belles of the area, a true beauty when she married Ebenezer M. Byers 20 years earlier. He was handsome and charming then, and she was infatuated with him.

Her family, however, strongly opposed the marriage, "not only because they considered his family inferior but also on account of his habits." Like many men, he turned out to be a bad husband. He and his brother A.M. came from a family of poor farmers and he felt insecure on account of his wife's social superiority. According to Annie's friends, Ebenezer began to annoy her with "references to her 'blue blood,'" and would fill his house with "his sisters and brothers, who were uneducated people."³

Byers was also an alcoholic with a "jealous disposition" and "violent temper." He was reported to "be a regular Jekyll and Hyde. He could be pleasant and agreeable at times, and was well liked by his friends and acquaintances except when drinking." His drinking sprees would frequently incapacitate him for three to four weeks at a time, and his abuse of his wife was "often so terrible she had to flee to the houses of her neighbors, and from them she could not conceal the black and blue marks from his blows on her face and neck." Annie frequently called the police to the house seeking relief from her husband's outbursts, but when confronted Byers claimed he was innocent of any wrong doing, and instead insisted she and the servants were liars. Annie would kick him out of the house and he'd go to his brother A.M.'s or his sister's boarding house, sometimes remaining away for months. Both her and his health began to suffer.⁴

It was reported in the winter of 1892-93 that men from A.M.'s office would come by and induce her husband to drink. "She says they

tried to persuade him to sign certain papers or go to the office and sign them,” reported the *St. Louis Post Dispatch*. “Ebenezer refused to do either.” One day she returned home and discovered her husband was gone. She claimed A.M.’s agents had forced Ebenezer to sign papers changing the firm’s name and assigning his interest to A.M.

More disturbing, she charged that her husband had been kidnapped and placed in seclusion under the care of a doctor, Lewis W. Tallman (who was indeed later charged with kidnapping.) She hired a detective to locate Ebenezer, which took over a year, when he was finally discovered in Japan, “with his mind in a very bad state.”⁵

When finally returned to the United States, Ebenezer Byers was committed to Kirbride’s Insane Asylum in Philadelphia. “That his mind is unbalanced is unquestioned,” asserted Superintendent John B. Chapin. His brother A.M. didn’t deny that he wanted control of his brother’s affairs, but he also added that Ebenezer had desired “to get away from his wife.” A month later, in October 1894, it was reported that a guardian had been appointed for the “lunatic.”⁶

A.M. Byers now had total control of the company, and his brother died the following year in the asylum. Annie Byers continued to maintain that her husband had been coerced, and had not been of sound mind when he signed away his interest in the company. In a pathetic twist of fate, she was also declared insane in 1899, but was later released and died in 1910. Eben Byers was 14 years old when this drama unfolded, and it must have been emotionally upsetting as well as an embarrassment for him and his family. His classmates at the St. Paul’s School in Concord, New Hampshire would have probably known of the scandal.

Founded in 1856, it was a school for the elite. Graduates have included Robert Mueller, former director of the FBI and Special Counsel overseeing an investigation into allegations of Russian interference in the 2016 U.S. presidential election, Watergate Special Prosecutor Archibald Cox, banker J. P. Morgan, Jr., and John Jacob Astor IV, who died on the *Titanic*. Eben Byers was among rich kids in his privileged social class, as he would be later at Yale.⁷

Alexander Byers accepted his power as a given, as would his sons, and he was determined to hold on to it. This was an era when

workers were at the mercy of their bosses, with 12-hour days, seven days a week being common. From the 1890s onward, union leaders in the steel industry pushed for reforms, but employers chose to keep the long day as the standard.

In reality, there was little concern for workers. As one steel mill worker explained in the late 1880s:

They wipe a man out every little while. Sometimes a chain breaks, and a ladle tips over, and the iron explodes...Of course, if everything is working all smooth and a man watches out, why, all right! But you take it after they've been on duty twelve hours without sleep, and running like hell, everybody tired and loggy, and it's a different story.⁸

Andrew Carnegie was “kinder,” as his workers only toiled six 12-hour days. “It sweats the life out of a man,” said another worker. “I often drink two buckets of water during twelve hours; the sweat drips through my sleeves, and runs down my legs and fills my shoes.”⁹ Men like Alexander Byers and Andrew Carnegie built this country, at times ruthlessly, and for those injured in their mills, there was no workman’s compensation; men were simply out of a job, and perhaps permanently crippled.

Nine months after Eben Byers’s aunt was declared insane, his brother A.M., Jr. died in December 1899. The following year (coincidentally on the same day it reported news of Harry Vardon winning the U.S. Open in Chicago), the *Pittsburgh Daily Post* announced the passing of A.M. Byers. He had suffered from heart disease, and it was said he never recovered from the shock of his son’s death. Eben would never have to worry about money, as his father left behind an estate estimated between eight to twelve million dollars (around \$230 to \$355 million dollars today.) Byers’s sons, Dallas, Eben, and John succeeded each other as the head of the company.¹⁰

After graduating from Yale in 1901, Eben began working in the A.M. Byers firm, as well as with the Girard Iron Company in Ohio, and served as the latter’s president from 1904 to 1910. He was named president of A.M. Byers in 1909 upon the death of his brother Dallas, and held that post until 1925, when his younger brother J. Frederic took

over (J. Frederic also served as president of the United States Golf Association from 1922 to 1923.) Eben Byers would later serve as the Chairman of the Board of A.M. Byers, as well as the boards of numerous banks.¹¹

By 1912, according to the Bureau of Labor, 82 percent of all employees in blast furnaces worked seven days regularly, down from 97 percent in 1907. With World War I came a boom for steel and other industries, and the percentage of manufacturing employees working 12-hour shifts actually stood higher in 1919 than it had in 1911.

In 1919, before the Senate Committee on Education and Labor, John Fitzpatrick, chairman of the National Committee for Organizing Iron and Steel Workers, stated, “The home life of the entire family is destroyed where a 12-hour day obtains.” The committee reported that the policy of working men 10 and 12 hours per day in the steel mills was “unwise and un-American...An 8-hour day with a living wage that will enable men to support their families and bring up their children according to the standards of American life ought to be a cardinal part of our industrial policy.” The Federal government and public opinion supported a change, but it was slow in coming. Only when the industry saw that profits were not affected did the transition to the 8-hour day begin in the late 1920s.

Thousands of workers had more leisure time, as from 1922 to 1926 the average full-time hours worked in steel mills dropped from 72.3 to 59.8 and across all occupations stood at 54.4, down from 63.2 in 1922. “Reckon that’s how I spend my time now – findin’ out what’s goin’ on in the world,” said one steelworker. Now when he came home from work he could play with his children and not simply eat his dinner and collapse into bed. He said he wouldn’t go back to the long day “for anything in the world.” It might have meant more money, but in his view, “The rest makes up for the money.”¹²

Eben Byers probably wasn’t overly concerned with his workers, as they were faceless creatures from a different social class, a different world. He was an industrialist by birth, but much preferred playing golf and entertaining women. He wasn’t an imposing physical specimen, standing 5’4” – some compared him to a jockey – but was nice enough looking and did have a way with the ladies. At Yale, his suave demeanor

and conquests at nearby girls schools earned him the nickname “Foxy Grandpa.” Money and success can also be powerful aphrodisiacs.

On the golf course, he played a good enough game to team with future collegiate champion Charles Hitchcock, Jr. in an April 8, 1900 match against Harry Vardon at the New Haven (Connecticut) Country Club. Vardon, as mentioned in the previous chapter on Nathaniel Moore, was on his tour of the United States, and won the 18-hole match 1 up.¹³ In July Byers played in the U.S. Amateur for the first time, during his summer break from Yale, only two months before his father’s death.

Two years later, in 1902, he lost in the finals of that event to Louis James 4 and 2 over a water-logged course at the Glen View Club in Illinois. His swing technique brought mixed reviews.

One man, who can be said to speak with authority, pronounced it the best he had ever seen in an amateur in this country, whilst others declared it was not at all attractive. Perhaps the charm of the style lay in its ease. The swing was short, slow, and deliberate, with a halt at the top. It seemed as if the ball would go a very short distance, but to everybody’s astonishment Byers generally got as long a ball as any of his opponents. Such good results are seldom attained with such apparent ease.¹⁴

On his way to the finals Byers beat Walter Travis, one of the great amateurs of the day, who remarked that Byers’s “game was simply unbeatable.” But against James, after being two up in the morning round, his putting failed him. *The New York Times* reported that the match was played under the most “unfavorable conditions,” as rain came down in torrents off and on. Despite the weather, a gallery of 1,600 (a third of them women), “probably the largest that ever witnessed a golf game in this country,” followed the play. Byers disappointed numerous supporters who had bet money on him, but said “James defeated me fairly, and I have no excuses...He is a fast and plucky player. I was off on my putting, and should really have made a better showing.”¹⁵

In 1903 he lost again in the finals, this time to Walter Travis, whose putting from three to ten feet was deadly. Two weeks later they

both played in a special match against a team of Oxford and Cambridge golfers at the Ekwanok Club in Vermont. While Travis was defeated, Byers beat Norman. F. Hunter of Cambridge in the finals, 1 up.¹⁶

After being defeated in the early round in the 1904 and 1905



Eben Byers on the green, c.1906.

U.S. Amateurs, Byers broke through with a victory in 1906 at the now defunct 6,203-yard Englewood Golf Club in New Jersey, a Donald Ross design. Byers defeated George Lyon of Canada in a nip-and-tuck match (Lyon had won the golf competition at the 1904 St. Louis Olympics.) Lyon was a former cricketer and the “results he obtained from his absolutely unorthodox methods lessened the value in many minds of the teaching of the authorities,” noted *Golf* magazine. Lyon dispatched the ball from the tee “with one

clean, smashing hit delivered with sledge-hammer force and the full shots through the green were played in the same manner. But he got results.”

Byers, for his part, was said to have iron play that had no superior, although that week he was suffering from a sprained wrist. “Mr. Byers’s weak spot, perhaps, is his ability to miss short putts, but in this year’s championship the failing was not conspicuous.”¹⁷ Byers gained a measure of revenge on Walter Travis from 1903, beating him in the semi-finals to make it to the championship match. Lyon had beaten defending champion H. Chandler Egan in an earlier round, the same man he beat for the Olympic gold medal.

Byers made a dramatic entrance for the final, arriving by automobile from Manhattan as Lyons was on the putting green getting in some last-minute practice. At 10:30 a.m. they teed off,

and as the pair descended the hill toward the green, a multitude of golfing enthusiasts chased after them, intent on seeing every shot. The committee walked in front holding a rope stretching across the course, a precaution to prevent the too excitable in the gallery from crowding upon the players.

President Ransom H. Thomas of the USGA refereed the match. A.W. Tillinghast, future icon of golf course architecture, who spent his summers at Toronto, wanted to caddie for Lyon, but Lyon thought it “might change his luck to desert his regular boy.” About 2,000 people came out to watch, and their numbers hindered play at times. Around 10,000 came out for the entire week’s play, setting an attendance record. Top players even stayed to watch the final match. Jerome Travers, who would win the next two U.S. Amateurs and the 1915 U.S. Open, followed the afternoon round, as did Georgianna Bishop, 1904 U.S. Women’s Amateur champion. Walter Travis followed the morning round before having to leave.¹⁸



Eben Byers (middle with bucket hat), and George Lyon (with the club), at the 1906 U.S. Amateur. USGA President R.H. Thomas on the far right.

“Every good stroke or clever bit of play was applauded with an impartiality which was keenly appreciated by the players,” wrote the *Chicago Inter Ocean*. The crowd, however, was glad that the

championship cup was not won by the Canadian. When Byers made his best putt of the day to par the 160-yard finishing hole and secure a 2 up victory, he was carried off the green by two competitors who went out in the early rounds. Archie Reid (son of John Reid, who helped bring golf to the United States in the 1880s) and Hugo Johnstone put him on their shoulders and “bore him up a steep bank at the home green to the clubhouse.”¹⁹

One advantage Byers had was that of a good caddie, Jock Hutchison, who would go on to win the 1920 PGA Championship and the 1921 British Open. A newspaper asserted that the “combination of Byers’ spirit, fine brassie and spoon shots, accurate putting, and Hutchinson’s [sic] sound advice turned the trick at Englewood.” William C. “Billy” Carnegie, a nephew of the famous Andrew Carnegie, had hired Jock’s older brother Tom to give his family golf lessons at his winter estate on Cumberland Island, Georgia. But tragedy struck on December 11, 1900, when Tom was thrown from a horse and killed. After the death of his 21-year-old brother, Jock was asked by Carnegie to come over from St Andrews, Scotland and become his tutor and caddie. Jock later served at the Pittsburgh Golf Club and Allegheny Country Club in Pennsylvania, and while at the latter he “became ‘Eb’ Byers’s personal coach and caddie.”²⁰

The Brooklyn Daily Eagle reported that the “only regrettable feature of the day was the employment of a professional caddie.” Hutchison had also carried for Byers at the Metropolitan Amateur earlier that May, where Jerome Travers beat him in the finals 3 and 1. “On the face of things there was nothing objectionable about Hutchinson’s [sic] work, but a most pernicious principle is involved. It offends no law, but as Travis said more than once, it is unsportsmanlike.”²¹

That U.S. Amateur was the zenith of Byers’s career. He would compete in nine more U.S. Amateurs, his best finish being in 1907, when he reached the semi-finals before losing to winner Jerome Travers. He also played in two British Amateurs (in 1904 and 1907) and missed the cut in his only U.S. Open in 1908.

In 1913 Byers played in two exhibition matches against Harry Vardon and Ted Ray on their tour of the U.S. that year. On August 26th, he partnered with Joe K. Bole at the Mayfield Club in Cleveland, as the

two lost a 36-hole match 5 and 4. John D. Rockefeller was an interested spectator there. On September 25th, with 1910 U.S. Amateur champion William C. Fownes, Jr., another 36-hole match was played. The result was the same, as they were defeated 5 and 3 at Oakmont, outside of Pittsburgh.²²

The last match he ever played in the U.S. Amateur was against Bobby Jones, who in 1916 was playing in his first national championship at Merion Cricket Club. Charles “Chick” Evans, the winner that year, would recall years later “scanning the course and seeing Bobby and Eben Byers engaged in a club-throwing exhibition.”

Jones won that match 3 and 1, and used to joke later in life that he only won because Byers ran out of clubs first.²³ Eben tried to qualify for the U.S. Amateur three more times, the last in 1926, with no success. The Byers family helped found the Allegheny Country Club and the Rolling Rock Club in Pennsylvania, the former being Eben’s home course.

Fred Brand, Jr., who served on the USGA’s Executive Committee and whose father was brought from Carnoustie, Scotland by Byers in 1903 to be the head professional at Allegheny, used to caddie for Byers. From 1922 to 1926, Brand was paid \$15 a week [about \$220 today – pretty good pay for a 16-year-old kid] during the summertime, when he was out of school.



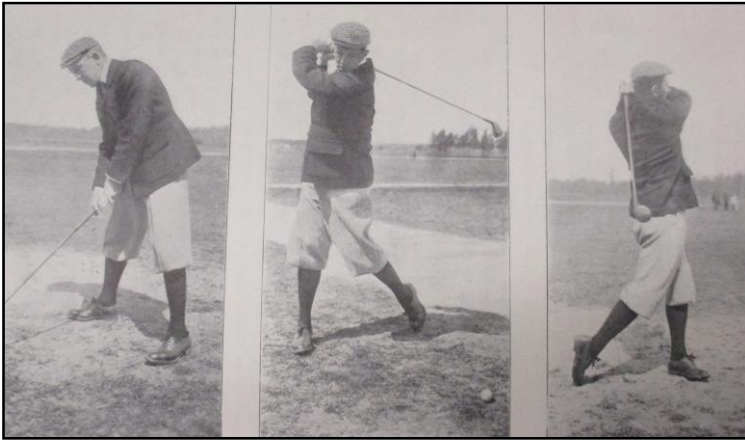
Eben Byers as a member of the Yale University golf team, 1899.

He would be at the club every day by 10 a.m., and if Byers didn’t show up by three o’clock he was free to carry another member’s bag. He said he had a wonderful relationship with Byers, and that he was a “perfectionist in every respect, and his caddie had to be on his toes at all times.”

Brand also maintained that Byers contributed to the practice of matching clubs. Each year Burt Kilroy (who later headed MacGregor’s clubmaking division and was the clubmaker for Brand’s father) would make up eight complete sets. Byers

would then go through all of them and pick out the clubs that worked best for him to make up his set. When he died, more than 1,200 clubs were found in his home. Byers had also “given away another 50 or so sets over the years.”²⁴

When Alexander Byers died, his sons kept the same tight reins on the company that he had, and retained a corps of managers familiar with the company’s operations and inherent philosophy. As late as 1923, the Byers family held almost absolute control of the firm, and survived the Great Depression. Eben Byers continued to lead a life of privilege after the stock market crash, maintaining homes in Pittsburgh, New York, Rhode Island and South Carolina.



Eben Byers’s swing, 1903. Note the high left heel and bent left arm on the backswing, the form of the day.

He had horse-racing stables in New York and England, and his entries appeared in many important races. He followed baseball with enthusiasm and had box seats at Forbes Field in Pittsburgh for many years. Byers also won numerous trophies for trap-shooting, a sport he took up in 1916, which supplemented his womanizing and frequent visits to Palm Beach, Florida.²⁵

Life was good. Then, while returning from the annual Yale-Harvard football game in 1927, he fell hard from the upper berth of his Pullman car, and things began to change. Supposedly, the injury to his arm resulted from “some post-game revelry.” For the next several weeks,

Byers complained of muscular aches and a run-down feeling that undermined both his athletic, and, it was rumored, sexual performance.

He went to see a Pittsburgh physiotherapist named Dr. Charles Clinton Moyer, who recommended he try Radithor, a patent medicine blend of radium and water. Its manufacturer, the Bailey Radium Laboratory in New Jersey, claimed it was a cure for dyspepsia, arthritis, high blood pressure, impotence and more than 150 other endocrinologic maladies. Byers began taking it in December 1927.²⁶ He didn't realize it at the time, but the day he emptied that first half-ounce bottle of the stuff down his throat, he was sentencing himself to death.

When Marie and Pierre Curie discovered radium in 1898, it caused great excitement within the scientific community, with claims of its power to cure a variety of ailments. Like DNA and stem cell research today, it was hoped that radium might have the potential to be a medical miracle. Marie Curie wrote that the luminous effect of radium, "seemed suspended in the darkness [and] stirred us with ever-new emotion and enchantment." The U.S. Surgeon General said it "reminds one of a mythological super-being."

The Curies initially thought it could selectively destroy cancerous cells and enhance the growth of healthy ones. It was thought that small doses taken internally – known as "mild radium therapy" – could revitalize damaged cells and tissue. Dr. Roger M. Macklis, an oncologist, studied the Byers case while at Harvard and helped frame the case in the context of his times. "Radium can indirectly cause increased production of red blood cells," he says, "and hence an invigorated feeling."²⁷

"For the first few months after taking radium into the body," wrote Robley D. Evans in his early study on radium poisoning in 1933, "there is a sensation of well-being and general physical improvement. Soon, however, the deadly alpha ray bombardment of the blood producing centers begins to be felt, and death follows in a year or more, depending on the total quantity of radium fixed in the system. Protection of the public from these nostrums is mainly a matter of public health education and legislation."²⁸

However, in the early 1900s, mild radium therapy quickly gained legitimate standing in the medical community. The *American Journal of*

Clinical Medicine claimed that “Radioactivity prevents insanity, rouses noble emotions, retards old age, and creates a splendid youthful joyous life.” Other scientists proclaimed that radioactivity carried “electrical energy into the depths of the body and there subject[ed] the juices, protoplasm, and nuclei of the cells to an immediate bombardment by explosions of electrical atoms...causing the system to throw off waste products.”²⁹

Radithor was a “status drink.” At \$1 a bottle [about \$15 today], only the well-to-do could easily afford it. It was marketed as a health drink by William J.A. Bailey. “Radioactivity is one of the most remarkable agents in medical science,” he claimed. “The discoveries relating to its action in the body have been so far-reaching that it is impossible to prophesy future developments. It is perpetual sunshine.”³⁰

Dr. Macklis began studying the Byers case in 1989, when he came across several empty bottles of Radithor in a medical antiques shop and bought one on a whim. Because of his medical training, he knew it was possible to make water temporarily radioactive by incubating it with radium.

The radium gives off radon, a radioactive gas whose half-life is short. I assumed that the maker of the patent medicine had resorted to this very inexpensive process and that the Radithor’s residual activity had decayed to insignificance long ago. I was wrong. Tests performed by my colleagues [in their gamma-ray spectroscopy unit] revealed that almost 70 years after it had been produced, the nearly empty bottle was still dangerously radioactive.³¹

Dr. Macklis asserts that Bailey “was a born con man” who peddled various miracle cures, especially for impotence, for years. Radithor was his big success, the result of years of laboratory research Bailey claimed, but actually it was just distilled water laced with one microcurie each of two isotopes of radium. He sold more than 400,000 bottles for \$1 each – a 400% profit, says Dr. Macklis, adding: “He was the chief impresario in the radioactive patent medicine field.”³²

Whereas Eben Byers was born to wealth, William John Aloysius Bailey, four years older, grew up in a rough-and-tumble section of Boston. In spite of poor entrance exams, he was admitted to Harvard in 1903, although two years later financial difficulties forced him to drop out. He bounced around through various schemes for the next few years, and was arrested on mail order fraud charges in 1915, being found guilty with two others and sentenced to 30 days in jail. In 1918 he was fraudulently promoting a patent medicine for male impotence, in which the active ingredient was strychnine.

Radiation research was a natural draw for Bailey, says Macklis, “because it had become a glamour field in medicine.” Claiming to be a Harvard graduate with a doctorate from the University of Vienna, he sought legitimacy for his views. In 1925 Bailey moved to East Orange, New Jersey and opened the Bailey Radium Laboratories, where he created his best money-maker, Radithor.³³

Bailey was not alone in pushing radium products, as across the country advertisements in magazines were claiming that radium could restore vitality to the elderly, making “old men young.” Radithor became the energy drink of the day. One aficionado wrote: “Sometimes I am halfway persuaded that I can feel the sparkles inside my anatomy.” Radium shone “like a good deed in a naughty world.” One could shop for radium jockstraps and lingerie, and radium-laced butter, milk, toothpaste, face creams, soap, and rouge.³⁴

When Eben Byers went to see Dr. Moyer in 1927, he was looking for something to give him a pick-me-up. Radithor was it, and it was also used as an aphrodisiac. “Improved blood supply sent to the pelvic organs and tonic effect upon the nervous system generally result in a great improvement in the sex organs,” touted a pamphlet entitled *Radithor, the New Weapon of Medical Science*, which was mailed to doctors in the mid-1920s.

Dr. Moyer, like many others, found willing subjects ready to open their wallets. It did not require a prescription, and Bailey sold it to physicians for \$25 a case (30 half-ounce bottles with about \$3.60 worth of radium in them); the public had to pay \$30 a case (over \$400 today.) Bailey made money, doctors like Charles Moyer made money, and people like Byers were destroyed.³⁵

For the next two years, Byers gulped two or three bottles of Radithor a day. Initially, he found it a wonderful elixir. A cousin of his, Buckley Byers, Jr., remembered that Eben was once “so intoxicated by Radithor” that he played a multi-day golf marathon/competition with some friends, also under its influence.

They went through the woods, down paved roads, and along the Ohio River from the Byers mansion in Pittsburgh to another family residence in Sewickley, 30 miles away. There was a big family quibble back then because Eben was hoarding the Radithor in the basement, the wine cellar, everywhere. He was filling both houses with train-car loads of the stuff.

So pleased was he with the results that he had cases of it sent to his friends, colleagues and female acquaintances. He even fed some of it to his racehorses. Like other ardent Radithor enthusiasts, Byers consumed vast quantities of it, drinking approximately 1,500 bottles, and probably accumulated a radiation dosage equivalent to thousands of X-rays.³⁶

While the science of the day gave some measure of support to Byers’s faith in radium water, regulatory agencies at the time were more focused on truth in advertising issues than in the harmful effects these products were having on people. The Federal Trade Commission (FTC), for instance, took action against makers of potions that lacked advertised levels of radioactivity, and initially paid little attention to other people whose health was suffering due to their exposure to radium – watch dial-painters.³⁷

When the United States entered World War I, soldiers had trouble seeing their watches at night, which could have catastrophic consequences when needing to know what time to move in the field. Watch dial factories in Newark, New Jersey (the United States Radium Corporation) and Ottawa, Illinois (the Radium Dial Company) hired workers, mostly young women, to paint the dials with a greenish-white luminous paint, which went by the name “Undark.” It contained miniscule bits of radium, the most valuable substance on earth, with a single gram selling for \$120,000 in 1917 (\$2.3 million today.)

Each woman added radium powder to water and a gum arabic adhesive to create the paint, and when mixed with zinc sulfide, the reaction created a brilliant glow. When a thin layer of this paint was applied to the watch dials, they glowed, making them easier to read at night on the Western Front. The dust, however, would waft in the factory air and settle down into the women's hair, covering their shoulders, faces, arms, and necks, making the girls gleam. "When I would go home at night," recalled Edna Bolz, "my clothing would shine in the dark." The young women would paint their lips, eyebrows, and even their teeth before going out at night. Then, upon returning home, and turning off the lights, they'd surprise their boyfriends and husbands by glowing in the dark.³⁸

Their pay was roughly three times that of the average working girl, and the work was light. Without exception, the "radium girls" were told the paint was safe to handle, and virtually no precautions were taken to protect them. During the course of their work, to ensure that the paint did not get on parts other than the dial, the tips of their already fine brushes had to be constantly wetted with a cloth to keep them at a fine point. But quickly the cloth was discarded and the women moistened the tip with their lips. It was lip, dip, paint all day long.

Within a few years, it became evident that they had been lied to, as many began to suffer from radium poisoning – it affected their teeth, legs, hips and joints. One was Amelia "Mollie" Maggia, who had some teeth pulled in 1922, and developed ulcers in her mouth and gums. The doctors thought she had syphilis, but after investigating further, learned she had been poisoned by radium. She was in agonizing pain, and went back to her dentist. As he gently examined the bone in her mouth, he was horrified to have her jawbone break off in his fingers. He removed it by "merely putting his fingers in her mouth and lifting it out." Mollie would die a few months later, a "painful and terrible death," according to her sister.³⁹

Radium deposits itself in the bones like calcium, and once there is in a position to produce peculiarly effective damage, since it bombards the bones like bullets from a machine gun. Eben Byers didn't know about Mollie – why would he? We are all oblivious to most things in the world, unless they are close to us and affect us directly. If he had known

of her condition he probably would never have taken Radithor, but it was too late.

There were others. Grace Fryer's spine had been shattered by radium – it “eats bone as steadily and surely as fire burns wood,” writes Kate Moore in *The Radium Girls* – and Grace had to wear a back brace in order to walk. Even with all this, there were those who spoke out publicly against attempts to link radium to the dial-painters' deaths. “It is a pity,” said huckster William Bailey, “that the public [is being] turned against this splendid curative agency by unfounded statements.”⁴⁰

Katherine Schaub began having trouble with her teeth in 1924, and was also diagnosed with radium poisoning. She described the pain she experienced as comparable to “a dentist drilling on a live nerve hour after hour, day after day, month after month.”⁴¹ She would later be one of several who testified in a lawsuit against the United States Radium Corporation, whose five defendants each won a judgment of \$10,000 in cash, a pension of \$600 a year for life, and past and future medical expenses. Katherine died five years later, in 1933, a year after Eben Byers.

Shortly after the death of Schaub, Catherine Donahue, one of the dial-painters in Illinois, found herself too ill to go to church on Easter Sunday. A Catholic priest gave her communion at her home. A horrified friend recalled that as he was doing so, part of “her jawbone broke through the flesh and [came] out into her mouth.” Donahue had to keep picking out pieces of jawbone from her mouth, which excreted a considerable discharge of pus and gave off a foul odor. “I just remember her moaning, moaning,” said her niece. “You know that she was in pain, but she didn't have the energy to scream.” When she died at the age of 35, Catherine weighed less than 60 pounds.⁴²

Many dial-painters experienced pain in their teeth and had abscesses in their mouths and lesions on their faces. Their limbs were also affected. Necrosis – the death of body tissue, occurring when too little blood flows to it – was present in many of them, brought about by the radiation poisoning. This would also affect Eben Byers.

By 1930, Byers began feeling the ill effects of Radithor. He was losing weight and complained of severe headaches, and pain in his jaw. He told his private physician that he had lost that “toned-up” feeling,

only to be told that he just had a bad case of sinusitis. However, when his teeth began falling out, he became alarmed. A radiologist from New York, Dr. Joseph Steiner, was consulted and reviewed Byers's X-rays. He saw similarities with the bony lesions in Byers's jaw to those described in dial-painters who had recently died. Dr. Frederick B. Flynn, a radium expert from the Department of Industrial Medicine at Columbia University, was called for a consultation. He confirmed Steiner's suspicions. "Byers's body was slowly decomposing," wrote Dr. Roger Macklis, "the result of massive radium intoxication from the Radithor."⁴³

Flynn didn't share his conclusions with the public, however, in part because others, including Byers's personal physician, refused to believe them. William Bailey's company had sent pamphlets via mass mailings to nearly every physician in the nation touting the use of Radithor, complete with convincing testimonials from doctors and patients alike.

Although the cases of the watch dial workers provided evidence that even small quantities of radioactive material could be devastating to health, the public was slow to take notice. The Food and Drug Administration (FDA) had issued warnings, but had no recourse to legal action. Therefore the Federal Trade Commission took over the investigation into Bailey's claims in 1928. On February 5, 1930, the agency filed an official complaint charging Bailey with false advertising regarding the efficacy and safety of his products.⁴⁴

On September 10, 1931, with the commission's investigation well under way, Robert H. Winn went to Byers's residence to take his testimony, since he was now too ill to travel. His upper and lower jaw had been removed. Although his bone marrow and kidneys were failing, and a brain abscess had left him nearly mute, he was able to answer the questions posed to him. Byers was asked about his consumption of Radithor. "Well, I think I have not had it for about a year or two years," he responded, "and I took it for about two years before that – about four years ago, I would say." When did his physical problems begin? "Well, that was a year ago last January [1930] that it really got bad."⁴⁵

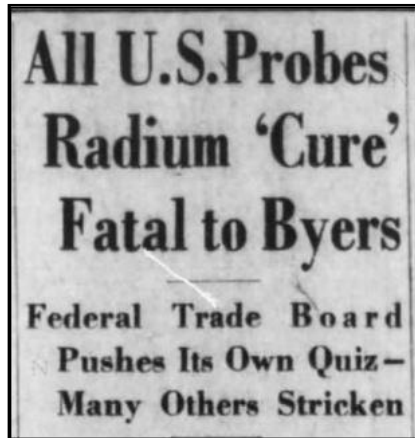
Byers said that two years earlier, in December 1929, he "had a tooth pulled and it would not heal and kept getting pus out of it. That was the start of everything. I had an operation in Palm Beach in January of

the next year.” Many doctors attended to him, and he said Dr. Frederick Flynn examined him with “an instrument, whatever they call it to detect the presence of radium in my system.”⁴⁶

On December 19, 1931, the FTC issued a cease-and-desist order enjoining the Bailey Radium Laboratories from continuing to market Radithor. The American Medical Association, which had allowed the internal use of radium to remain on its list of “New and Nonofficial Remedies” even after the discovery of the dial-painters’ deaths, finally removed it as an accepted treatment. It was too late to do Byers any good. All he could do was wait. *My God, what did I do to myself?* His thoughts must have been similar to Katherine Schaub’s, one of the “radium girls” who said, “I have to remain here [at home] and watch painful death approach. I am so lonely.”⁴⁷

There was no future for Byers, only the past. Painful ones of a family scandal, of the deaths of his brothers, of the first time he drank Radithor. Perhaps he let himself imagine those days on the golf course, of the orange and brown leaves swirling slowly down from a sentinel of trees surrounding the green on a crisp fall day, of the friends who joined in the reverie after his triumph at Englewood in 1906. It was only yesterday, and yet a thousand years ago. A profound sadness must have drained his spirit at the realization that there would be no tomorrows.

Eben Byers died from radium poisoning in the early morning of March 31, 1932 at Doctors’ Hospital in New York City. *The New York Times* reported that he “had been a patient there from time to time during the last two years, and that he had been there continuously for the last month.” Byers’s death was forecast almost a month earlier by Chairman W.E. Humphrey of the Federal Trade



Brooklyn Daily Eagle front page headline announcing the death of Byers, April 1, 1932.

Commission. On March 10th he had said, “Medical science can hold out no hope for him; his is a slow, torturous, certain death.”⁴⁸

Byers’s body had shriveled to 92 pounds, says Dr. Roger Macklis, and his once youthful face, set off by deep-set eyes and dark hair sculpted by pomade, had been disfigured by operations that removed his disintegrating jaw and part of his skull in an attempt to halt the destruction of bone. His brother in law J. Dennison Lyons said Byers “was in great pain during the last six months,” adding a lie that he was “unaware that his life was in danger until about two weeks ago.”⁴⁹

News of Byers’s death and the mysterious circumstances surrounding it made its way to his former colleagues on Wall Street almost immediately. A.M. Byers Company stock, already battered by the Great Depression, lost a third of its value in the week after his death. Friends and relatives, worried that he might have died from something contagious, reached out to Byers’s doctors to ask what he died from. The day after his death, a criminal investigation was opened as his body was being prepared for autopsy.⁵⁰

The autopsy was performed by Chief Medical Examiner Charles Norris and Assistant Medical Examiner Thomas A. Gonzales “after the Bureau of Vital Statistics had rejected the original death certificate ascribing death due to radium necrosis – a gangrenous condition – of the right jaw and neck.” The death certificate signed by Dr. Norris listed radium poisoning, abscess of the brain, necrosis of the jaw, terminal bronchial pneumonia and secondary anemia as the causes of death. Dr. Norris stated that the death was accidental and added the annotation that Byers “drank radium water for the past two years.”

Dr. Charles Moyer, the physician who prescribed the Radithor to Byers, was defiant, arguing that the death was not due to radium poisoning, but rather the combination of two ailments which had induced gout. “I believe that radium water has a definite place in the treatment of certain diseases,” claimed Moyer, “and I prescribe it when I deem it necessary,” adding that he had taken as much or more radium water as Byers and was still active and healthy.⁵¹

The autopsy confirmed that Byers’s bones and organs were dangerously radioactive. The fact that his extracted teeth and remaining jawbone, placed on an X-ray film-plate overnight, produced a dramatic

exposure pattern, was proof of this conclusion. “Distributed through his bones,” noted *Time* magazine’s report of the autopsy, “were 36 micrograms of radium. Ten micrograms is a fatal quantity.” Dr. Macklis said in 1990, “He took enough radium to kill four people if he took it all at once. The mystery is how did Byers survive so long, feeling so good, and have such a super-lethal burden in his body?”⁵²

The *Literary Digest* noted there was a “chill of apprehension over the country” after his death, and the FDA issued a warning against “radioactive” drugs because of serious injuries to users. *The Pittsburgh Press* reported April 1st that more than 100 patients who used Radithor had been afflicted with radium poisoning. “The deadly radium racket,” declared the New York *Daily News*, “which in the last five years has poured thousands into the pockets of quack doctors and vendors of patent medicines and appliances,” was under fire from Federal and city investigators on the heels of Dr. Norris’s autopsy results. “In the Middle West and on the Pacific Coast, 200,000 persons are supposed to be using radioactive waters and apparatus for the infusion of radium energy.”⁵³

Dr. Harrison S. Maitland, medical examiner of Essex County, New Jersey, who had determined the source of the radium poisoning that affected dial-painters in Newark and Orange (New Jersey), was then called into the case by Dr. Norris. Health officials began investigating radium belts, radium coated chocolate bars, face salves, and other radium laced products. The news of Byers’s death alarmed some members of the upper class, although New York City Mayor Jimmy Walker, an admitted radium water user, was hesitant to give it up, insisting that it “made him feel so good.” There were also whispers in the Pittsburgh press about a lady friend of Byers’s who had also died of a mysterious ailment. Some doctors stepped forward with evidence of other cases, and one went on a New York radio program and held the radioactive bones of one victim in front of a Geiger counter to demonstrate “the deadly sound of radium.”⁵⁴

With Byers’s death, the FTC reopened its investigation, and the FDA began campaigning for more sweeping powers. Medical societies denounced patent medicine sales, and many voices called for radium control laws throughout this country and Europe. But it wasn’t the end of flim-flam. In 1937, William Bailey was fined for selling “Kelpodine

Tablets,” a concoction made of seaweed and kelp that “were fraudulently offered for the treatment of 82 specific diseases and ‘other conditions.’”⁵⁵

Bailey was never prosecuted for Byers’s death, and he maintained his potion was safe. “I have drunk more radium water than any man alive, and I have never suffered any ill effects,” he claimed. The Federal Trade Commission shut down his Radithor operation in late 1932, but Bailey continued with other radioactive scams. Hounded by the press and Newark public health officials, Bailey dropped from the limelight.

He died in 1949 from bladder cancer, and left an estate of only \$4,175. Although he died of cancer, he never believed that small doses of radioactivity were harmful, and asserted that his health and spirits were excellent almost to the end. Nearly 20 years after Bailey’s death, medical researchers exhumed his remains, finding them ravaged by radiation, and still “hot.”⁵⁶

Eben Byers is interred in a lead-lined coffin in the Byer Mausoleum, Section 13, Lot 67, of the Allegheny Cemetery in Pittsburgh. Robley D. Evans, who did the study on radium poisoning in 1933 as a young man, wrote in 1981 that the “precipitating event which put me on the path of exploring the biological effects of radiation was the heavily publicized death” of Byers in 1932. As part of a radium program at the Massachusetts Institute of Technology, he and a team exhumed Byers in 1965 to measure his total radium intake.⁵⁷ As with the remains in William Bailey, his were also “hot,” and in another 1,600 years will have lost only half of their radioactivity.

It wasn’t until 1938, when the Food, Drug, and Cosmetic Act was signed into law by President Franklin Roosevelt, that drugs such as radium water were outlawed as being dangerous to health even when used according to directions on the label. The deaths of Eben Byers and the “radium girls” were tragic, but they did set in motion measures that would protect future workers exposed to radioactive material in the nuclear age. After World War II, an official from the Atomic Energy Commission said, “If it hadn’t been for those dial-painters, the [Manhattan] project’s management could have reasonably rejected the extreme precautions that were urged on it and thousands of workers might well have been, and might still be, in great danger.” The lessons

learned from the experiences of these women had been, officials said, “invaluable.”⁵⁸

Eben Byers died a horrible, painful, lingering death brought about by his own vanity and desire to drink from a fountain of youth that didn’t exist. He joined countless other victims who were not rich or famous, but who suffered just as much. All were victims of the scoundrels who sold them poisonous products, as well as a medical community that gave them a false sense of security, and failed to protect them until it was too late.

Chapter 2: Eben Byers – “He Was Doing Alright Until his Jaw Fell Off”

¹ Dan Cooper and Brian Grinder, “The Playboy and the Radium Girls (Part 1),” *Financial History*, Spring 2008, 12.

² Byers’s baptismal register shows him being baptized December 13, 1879, Presbyterian Historical Society (Philadelphia, PA), U.S., Presbyterian Church Records, 1701-1907, accession number: vault BX 9211 .P45232 T42 v.1, *Ancestry.com*, accessed November 28, 2019; Historic Pittsburgh.org, “Guide to the A.M. Byers Company Ledger Book 1864-1869,” Senator John Heinz History Center, https://historicpittsburgh.org/islandora/object/pitt:US-QQS-mss639/from_search/0001488594c1e88f3ef3b3972eceacd4-2, accessed August 20, 2019; John G. Anderson, ed., *American Annual Golf Guide* (New York: Golf Guide Publishing Company, 1922), 1.

³ “Mrs. Byers’ Side,” *St. Louis Post Dispatch*, August 19, 1894, 10.

⁴ *Ibid.*

⁵ *Ibid.*

⁶ “Byers is Here in an Asylum,” *The Times* (Philadelphia, PA), September 4, 1894, 1; “A Guardian for the Iron Master Byers,” *The St. Joseph Herald* (St. Joseph, MO), October 16, 1894, 1.

⁷ “Died at Kirkbride,” *Pittsburgh Daily Post*, July 2, 1895, 1; Wikipedia.com, “St. Paul’s School,” [https://en.wikipedia.org/wiki/St._Paul%27s_School_\(Concord,_New_Hampshire\)](https://en.wikipedia.org/wiki/St._Paul%27s_School_(Concord,_New_Hampshire)), accessed July 24, 2019.

⁸ William T. Moye, “The End of the 12-Hour Day in the Steel Industry,” *Monthly Labor Review* 100 (September 1977): 21; Julie Husband and Jim O’Loughlin, *Daily Life in the Industrial United States, 1870-1900* (Westport, CT: Greenwood Press, 2004), 88.

⁹ Husband and O’Loughlin, *Daily Life in the Industrial United States, 1870-1900*, 88.

¹⁰ “Death of A.M. Byers,” *Pittsburgh Post-Gazette*, September 20, 1900, 3; “Millions of A.M. Byers’ Estate Go To Relatives,” *Pittsburgh Daily Post*, October 6, 1900, 7. The will provided: “As the sons become of age he directs that such of them as desire may be employed in some suitable capacity in the business of A.M. Byers & Co., or the Girard Iron Company, their salaries to be fixed at \$5,000 yearly [about \$150,000 today]. From the time that the sons

receive this salary they are not to depend upon their mother for support...Those sons who may not desire to enter the employment of one of these two concerns, when they reach legal age, are to receive the sum of \$2,000 yearly [about \$60,000 today.]”

¹¹ “Eben M. Byers Dies of Radium Poisoning,” *The New York Times*, April 1, 1932, 11.

¹² Moye, “The End of the 12-Hour Day in the Steel Industry,” 22-23, 25.

¹³ Bob Labbanca with Brian Sipio, *The Vardon Invasion: Harry’s Triumphant 1900 American Tour* (Ann Arbor, MI: Sports Media Group, 2008), 184.

¹⁴ “Oldcastle” [pseudonym] “The Amateur Championship,” *Golf*, August 1902, 91.

¹⁵ Recorder Weir, “Golfers in Action,” *Golf*, October 1903, 236; “James Champion Golfer,” *The New York Times*, July 20, 1902, 2; “James is Golf Champion,” *The Brooklyn Citizen*, July 20, 1902, 5; “Louis N. James Takes National Golf Championship at Glen View,” *The Inter Ocean* (Chicago, IL), July 20, 1902, 1.

¹⁶ *Golf*, October 1903, 282.

¹⁷ “Oldcastle,” “The Amateur Championship,” 79.

¹⁸ “Pittsburgher Won the Title,” *The Pittsburgh Press*, July 15, 1906, 18; “Eben M. Byers Won Amateur Championship,” *The Brooklyn Daily Eagle*, July 15, 1906, 27.

¹⁹ “Byers is Winner of Championship,” *The Inter Ocean* (Chicago, IL), July 15, 1906, 29; “Eben M. Byers Won Amateur Championship,” 27.

²⁰ Claire Burcky, “How Golf Came to Western Pennsylvania,” *The Pittsburgh Press*, February 13, 1934, 24; Labbanca with Sipio, *The Vardon Invasion*, 141.

²¹ “Eben M. Byers Won Amateur Championship,” 27.

²² “Vardon and Ray Break Records,” *The Times-Democrat* (New Orleans, LA), August 27, 1913, 10; “Vardon and Ray Defeat Local Golfers,” *Pittsburgh Daily Post*, September 26, 1913, 14.

²³ Joseph Mark Passov, “A Man and His Game,” *Golf Illustrated* (U.S.), September 1992, 33; Herbert Warren Wind, “The Sporting Scene – Mainly About Jones,” *The New Yorker*, April 29, 1972, 118.

²⁴ Fred Brand, Jr. “A Byers Connection,” *Golf Journal*, January/February 1993, 3.

²⁵ Michael W. Santos, “Laboring on the Periphery: Managers and Workers at the A. M. Byers Company, 1900-1956,” *The Business History Review* 61, no. 1 (Spring 1987), 118; Roger M. Macklis, “The Great Radium Scandal,” *Scientific American* 269, no. 2 (August 1993): 94; “Eben M. Byers Dies of Radium Poisoning,” 11.

²⁶ Macklis, “The Great Radium Scandal,” 95.

²⁷ Kate Moore, *The Radium Girls: The Dark Story of America’s Shining Women* (Naperville, Illinois: Sourcebooks, 2017), xvi; Rick Lipsey, “A Great Amateur: Eben Byers,” *Golf Journal*, October 1992, 45.

²⁸ Robley D. Evans, Ph.D, “Radium Poisoning A Review of Present Knowledge,” *American Journal of Public Health and The Nation’s Health* 23, no. 10 (October 1933): 1019.

²⁹ Cooper and Grinder, “The Playboy and the Radium Girls (Part 1),” 12; C. Prentiss Orr, “Eben M. Byers: The Effect of Gamma Rays on Amateur Golf, Modern Medicine and the FDA,” *Allegheny Cemetery Heritage* 13, no. 1 (Fall 2004): 7.

³⁰ Roger M. Macklis, “Radiomedical Fraud and Popular Perceptions of Radiation,” 292, at American Roentgen Ray Society.com, https://www.arrs.org/publications/HRS/oncology/RCI_O_c11.pdf, accessed July 12, 2019.

³¹ Macklis, “The Great Radium Scandal,” 95. It was estimated that the original bottle must have contained approximately one microcurie each of radium 226 and radium 228.

³² Ron Winslow, “The Radium Water Worked Fine Until his Jaw Came Off,” *The Wall Street Journal*, August 1, 1990, A1.

³³ Macklis, “The Great Radium Scandal,” 96-97.

³⁴ Moore, *The Radium Girls*, 5-6.

³⁵ Winslow, “The Radium Water Worked Fine Until his Jaw Came Off,” A1; Cooper and Grinder, “The Playboy and the Radium Girls (Part 1),” 12.

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- ³⁶ Lipsey, "A Great Amateur: Eben Byers," 45; Macklis, "The Great Radium Scandal," 95; Winslow, "The Radium Water Worked Fine Until his Jaw Came Off," A1, A6.
- ³⁷ Winslow, "The Radium Water Worked Fine Until his Jaw Came Off," A6.
- ³⁸ Moore, *The Radium Girls*, 4-5, 20.
- ³⁹ *Ibid.*, 35-36, 38-39.
- ⁴⁰ *Ibid.*, 109, 172, 122.
- ⁴¹ *Ibid.*, 92.
- ⁴² *Ibid.*, 314, 329, 354, 370.
- ⁴³ "Radium Poisoning Kills Yale Man," *New Hampshire Register*, April 1, 1932; Macklis, "Radiomedical Fraud and Popular Perceptions of Radiation," 289; Macklis, "The Great Radium Scandal," 98.
- ⁴⁴ Macklis, "The Great Radium Scandal," 98.
- ⁴⁵ Macklis, "Radiomedical Fraud and Popular Perceptions of Radiation," 286; "Radium Water' Held Cause of Golf Star's Poisoning," *The Pittsburgh Press*, April 1, 1932, 1, 4.
- ⁴⁶ "Radium Water' Held Cause of Golf Star's Poisoning," 4.
- ⁴⁷ Moore, *The Radium Girls*, 272, 157.
- ⁴⁸ "Eben M. Byers Dies of Radium Poisoning," 1; "Many in Danger of Death from Radium Poison," *The Columbus Telegram* (Columbus, NE), April 1, 1932, 1.
- ⁴⁹ Macklis, *The Great Radium Scandal*, 94; "Death Stirs Action on Radium 'Cures,'" *The New York Times*, April 2, 1932, 12.
- ⁵⁰ Cooper and Grinder, "The Playboy and the Radium Girls (Part 1)," 13; Macklis, "The Great Radium Scandal," 94.
- ⁵¹ "Death Stirs Action on Radium 'Cures,'" 12.
- ⁵² Cooper and Grinder, "The Playboy and the Radium Girls (Part 1)," 13; Lipsey, "A Great Amateur: Eben Byers," 45; Winslow, "The Radium Water Worked Fine Until his Jaw Came Off," A6.
- ⁵³ Cooper and Grinder, "The Playboy and the Radium Girls (Part 1)," 13; "Radium Water' Held Cause of Golf Star's Poisoning," *The Pittsburgh Press*, April 1, 1932, 1; "Death of Byers Spurs Drive on Panacea Quacks," *Daily News* (New York, NY), April 2, 1932, 246.
- ⁵⁴ "Death of Byers Spurs Drive on Panacea Quacks," 249; Martha Martin, "Radium 'Cures' Menace Many Wealthy Victims," *Daily News* (New York, NY), April 10, 1932, 3; Winslow, "The Radium Water Worked Fine Until his Jaw Came Off," A6.
- ⁵⁵ Macklis, "The Great Radium Scandal," 98; "Seaweed Tablets No Good in 30 Different Ways," *The Southern Democrat* (Oneonta, AL), January 21, 1937, 6.
- ⁵⁶ Macklis, "The Great Radium Scandal," 99; Winslow, "The Radium Water Worked Fine Until his Jaw Came Off," A6.
- ⁵⁷ Orr, "Eben M. Byers," 7; Robley D. Evans, "Inception of Standards for Internal Emitters, Radon and Radium," *Health Physics* 41, no. 3 (September) 1981: 437.
- ⁵⁸ James Harvey Young, "Federal Drug and Narcotic Legislation," *Pharmacy in History* 37, no. 2 (1995): 62; Moore, *The Radium Girls*, 378.