IJUH
The International Journal of Urologic History
www.ijuh.org



# Rediscovering Leo Buerger: The Unwritten Legacy Behind the Brown-Buerger Cystoscope

**Loren J Smith*, Michael E Moran**

*From the (1) Division of Urology MaineHealth Maine Medical Center, Portland, ME and Tufts University School of Medicine, Boston, MA; (2) Prisma Health Midlands Urology, Columbia, SC and University of South Carolina School of Medicine, Columbia, SC.*

**Corresponding Author: Loren Smith, MD, MaineHealth Maine Medical Center, Department of Urology, 46 Sullivan St #1, Portland, ME 04103; e-mail: lorenjsmith@gmail.com.*

**Introduction**: Few instruments are as strongly associated with the urologist than the cystoscope. Its development over 400 years to the modern instrument reflects many innovators but the contribution of Leo Buerger, the early 20th century American urologist, cannot be understated. The Brown-Buerger cystoscope was the first American-made cystoscope, was widely adopted throughout the US by 1910, and established itself as the standard instrument in urologic practice, to the extent that Hugh Hampton Young remarked that there was little need for further refinement. Little is known, however, of Leo Buerger himself, from his rise to prominence, to his untimely death in a Manhattan hotel room. Our objective was to fully describe Leo Buerger and how his contributions revolutionized urology.

**Sources and Methods**: We used historical materials derived from PubMed and Google Scholar; the archives of the William P. Didusch Center for Urologic History, and the archives of the City College of New York, municipal archives, and historical newspapers.

**Results**: Designed by Leo Buerger and manufactured by Wappler Electric Company, the Buerger cystoscope integrated many prior innovations into what would be recognized by today's urologist as a modern equivalent and included a catheterizing channel, mirrored lenses, and an irrigating system. Buerger himself, growing up as a European émigré in late 20th century New York, rose to educational prominence in city schools where he was a classmate and friend of Upton Sinclair Jr, trained at Mt Sinai in New York and in Breslau, Germany, and then practiced in the medical wards of Manhattan which served the indigent poor and wealthy alike. His observations of obliterating vascular disease in smokers became known as Buerger's Disease. His personality was abrasive and a urologic career in California and a real estate enterprise in Manhattan proved unsuccessful. He died in his apartments at the Sherry-Netherland Hotel at the age of 64 in 1943.

**Conclusions:** Leo Buerger's revolutionary innovations in instrumentation produced the Brown-Buerger cystoscope which has been the field's 'work horse' for a century. His personal life was less successful, was sued for divorce, struggled with antisemitism, and grappled with financial failure, and loss. The Brown-Buerger cystoscope, however, remains a coveted prize for the winner of the annual history essay competition of the American Urological Association.

**Key Words:** Leo Buerger, Frederick Tilden Brown, cystoscopy,

Leo Buerger, the New York urologist, wrote of the cystoscope in 1933 that "in no other domain is the progress of the art and science of medicine so intimately linked and dependent upon the use of a diagnostic optical instrument, as in the field of urology. The accurate visualization of the bladder interior and the precise execution of maneuvers therein are fundamental achievements; indeed, they are a *sine qua non* for both diagnosis and therapy."(1)

The cystoscope set urology apart from other surgical specialties and is often regarded as the field's foundational instrument. Its development—shaped by urologists, engineers, and entrepreneurs—illustrates a rich history of innovation, collaboration, and competition. Among its most influential iterations was the Brown-Buerger cystoscope, developed by Frederic Tilden Brown (1853–1910) and Leo Buerger (1879–1943), which became central to diagnosis, treatment, and surgical education for decades. While Brown was celebrated in his time, Buerger's contributions have



https://doi.org/10.53101/IJUH.5.1.003
Vol. V (i), pp 8-18, Fall 2025
Electronically distributed

received far less recognition. Our aim was to identify unpublished and primary source materials that would better trace the evolution of the cystoscope with a particular focus on Buerger's career, his contributions, and legacy.

## SOURCES AND METHODS

We used systematic searches of medical and scientific literature using PubMed, Google Scholar, and the archives of the William P. Didusch Center for Urologic History (Linthicum Heights, MD), the New York Public Library (digitalcollections.nypl.org), Museum of the City of New York (collections.mcny.org), the Lillian and Clarence de la Chapelle Medical Archives at New York University (archives.med.nyu.edu), and the Archives and Special Collections of the City College of New York (library.ccny.cuny.edu). These platforms facilitated access to primary and secondary sources, including peer-reviewed publications, historical manuscripts, and institutional archives. Additional materials were gathered through the U.S. Patent and Trademark Office, digital newspaper archives, relevant monographs, and the Vital Records of the city of New York (www.nyc.gov/site/doh/services/birth-death-records.page), the state of Maine (https://www.maine.gov/dhhs/mecdc/vital-records), and Bayview Cemetary, Jersey City, NJ.

## RESULTS

### Early Cystoscopic Timeline

The Hippocratic Oath forbade lithotomy—derived from *lithos* (*Gk*: "stone") and *tomos* (*Gk*: "to cut")—a restriction often seen as an acknowledgment of medicine's limitations.(2) By the 1st century C.E., Aulus Cornelius Celsus described lithotomy as frequently fatal, citing complications like high fever, urinary fistulas, and severe inflammation. At the time, surgery was left to "practicing men," a separate class not bound by the Oath. Over time, these specialists evolved into the first urologists. Seeking safer access to genitourinary structures, early urologists turned to endoscopy to avoid complications like fistula, hemorrhage, and death. The cystoscope revolutionized the field by enabling internal examination and treatment through natural orifices. At the first meeting of the Urology Section of the San Francisco County Medical Society, Martin Krotoszyner (1861-1918) declared, "The history of urology is best divided into two parts: the pre-cystoscopic and the cystoscopic era."(3) The cystoscope lineage reflects decades of scientific debate, technological innovation, and professional rivalry.

The development of cystoscopy is well known and has been traced back to Philipp Bozzini (1773-1809) of Frankfurt's *lichtleiter* (*Ger:* "light conductor") in 1806, representing the first use of reflected light as an illumination source.(4) Comprised of a sharkskin-covered metal chimney housing a candle and mirror for reflection, its initial intended use was to find bullets lodged in his patients.(5) Antoine Desormeaux (1815-1882) of Paris was the first to perform a true endoscopic procedure in 1853, using a long metal channel with a mirror reflecting a petroleum-fueled lamp.(4) He was first to recognize the benefit of lenses to condense light allowing for more sophisticated visualization. (6) However, both instruments were afflicted with the same drawback—they became intolerably hot during use. Maximilian Carl-Friedrich Nitze (1848-1906) of Berlin pioneered the first modern endoscope in 1878 allowing for the systematic treatment of bladder tumors and calculi.(5) Nitze collaborated with an optician, an instrument maker, and a dentist to create a 7 mm prismed telescopic lens with two large horns near the eyepiece to facilitate inflow and outflow of water to cool the tungsten wire.(7) The electrician Charles Preston and urologist Henry Koch (1851-1915) of Rochester, NY developed a low-amperage, but short-lived 'mignon' light bulb small enough to fit into the tip of the cystoscope between 1896-1899, allowing for true illumination of the bladder. The instrument maker Reinhold H. Wappler (1870-1933) emigrated from Germany to New York and in 1890 set about creating the Wappler Electric Company to manufacture an 'American' cystoscope, later becoming the American Cystoscope Makers Incorporated (ACMI). He once lamented about the state of current cystoscopic technology. "In a most deplorable state were the Genito-urinary specialists; they depended for diagnosis on instruments brought over from Germany and Austria. Those instruments were very delicate and of many mechanical defects—they were mostly on the way for repairs."(8) Seeking his own advancements to the frenzied developmental cycle of creation and improvement, New York urologist Frederic Tilden Brown (1853-1910) partnered with Wappler to create the "Composite Sheath" cystoscope (1901). It built upon Boisseau du Rocher's 27 French "Megaloscope" of 1895, the first double-catheterizing cystoscope.(9) Brown's elegant set of instruments boasted several telescopes for visualization including a direct and right-angle view. Obturators were used for instrument placement and later exchanged for a lens system during use.(10) It also earned the ire of du Rocher himself, who claimed infringement. The next major contribution to the Brown cystoscope, and from

which emerged the instrument that revolutionized the field, was from New Yorker Leo Buerger.

**Leo Buerger: service and innovation**

Leo Buerger (1879–1943) received little positive recognition during his lifetime and remains absent from major medical biographies.(11) Born to a Jewish family in Vienna, he immigrated to New York as an infant and grew up on the lower East Side. He attended the City College of New York (CCNY) at 23rd Street and Lexington Avenue. He was an outstanding mandolin player, becoming the leader of the school orchestra. He was in the Chess Club, the "Sound Money League", and with his classmate, future writer Upton B. Sinclair Jr (1878-1968), participated in the debate and writing club, the Clionian Society Literary (Figure 1). They both graduated in 1897. Buerger then attended medical school at Columbia University, interned at Lenox Hill Hospital (1901–1904), and became an assistant pathologist at Mount Sinai Hospital in 1904 (Figure 2, left). Aspiring to a surgical career, he volunteered at the Breslau Surgical Clinic in Germany (1905–1906) and then then returned to Mount Sinai as an associate in general pathology. (12) He did not receive a surgical appointment until 1914. Mount Sinai—originally founded as the "Jews' Hospital", included the (Har) Mount Moriah facility in the lower East Side where Buerger held a post—played a pivotal role in caring for immigrant communities yet was often regarded as second-tier by the broader medical establishment.(13,14)

**F. Tilden Brown: A "Bold and Enterprising Nature"**

In contrast to Buerger's recent immigrant background, fellow New York urologist Frederic Tilden Brown (1853–1910), descended from a Mayflower settlers, and was a member of the Sons of the Revolution and Society of Colonial War. He was a graduate of the 1880 College of Physicians and Surgeons a few years before Buerger, was a member of the American Medical Association and the Greater New York Medical Association, and he enjoyed

**Figure 1.** The Clionian Literary Socieyt of the City College of New York (CCNY), 1897, where both Buerger, front row, left, and future 'Muckraker', the author Upton Sinclair Jr., (second row, second from left) were friends and members. (Courtesy CCNY Special Collections and Archives)

**Figure 2.** (Left) Leo Buerger at the time of his medical school studies at New York Univeristy (courtesy Lillian and Clarence de la Chapelle Medical Archives at New York University). (Right) F Tilden Brown (front row, right( with the surgical staff of Presbyterian Hospital, c 1903, a few years prior to the development of the Buerger-Brown cysoscope.(Courtesy of the New York Academy of Medicine Library) Brown, a staple of the NY Academy of Medicine and Manhattan's medical elite, portrayed a different projectory than Buerger's as a 1st generation Austrian immigrant practicing in the lower East Side. Neither had propitious ends. In 1910, Brown suddenly left New York for Bethel Maine, where he died of suicide.(15) Buerger died in a hotel room in 1943 and is buried in an unmarked grave in New Jersey.(12)

the privileges of the Rockaway Hunt, Riding, and Garden City Golf Clubs.(15) Like his father, he was inducted into the NY Academy of Medicine and was described as having "a bold and enterprising nature."(16) Counted among the inner circle of the urologic elite like FC Valentine, EL Keyes, and FN Otis, Brown was a regular at the Academy on 5th Avenue, where his frequent addresses earned acclaim. His prominent surgical appointments at Presbyterian, Nassau, and Bellevue Hospitals, where he also taught genitourinary diseases, reinforced his stature (Figure 2 right). Kelly's Dictionary of American Medical Biography called him "one of the conspicuous landmarks in his specialty".(17) Among the nouveau riche of Manhattan's Gilded Age, the New York Times' made sure to print the details of his grandson's wedding.(18)

**The Brown-Buerger Correspondences**

Buerger began developing his version of the cystoscope in 1906 and, on October 8, 1908, he wrote to Brown seeking feedback on his forthcoming paper, "A New Indirect Irrigating Observation and Double Catheterization Cystoscope."(19) At times terse if not dismissive, Brown's reply would have seemed an unlikely basis for a partnership.

"Please do not think that I mean to retract my enthusiastic congratulations over your unmistakable achievement in so assembling and proportioning the features and details of the Composite Cystoscope and the Otis-Brown Cystoscope, in the slightest degree; but only to urge a perfectly just maintenance and balance of the history of Cystoscopy by calling your attention to the fact any one reading, or learning your paper, as at present expressed, would be apt to get the erroneous impression that your intended presentation possessed a certain number of intrinsic and original features while in reality it consists of an assemblage of already existing parts and details in the instruments above alluded to. I do not, for a moment, knowing you as I do, mean to infer that you could intend or wish to either keep in the background the existence of features utilized in your adaptation, or to make unduly prominent the valuable new proportioning and assemblage of these features. But I can perfectly appreciate your enthusiasm, and sympathize with your gratification in having so re-adjusted certain parts as to make it decidedly easier for the examiner and less uncomfortable for

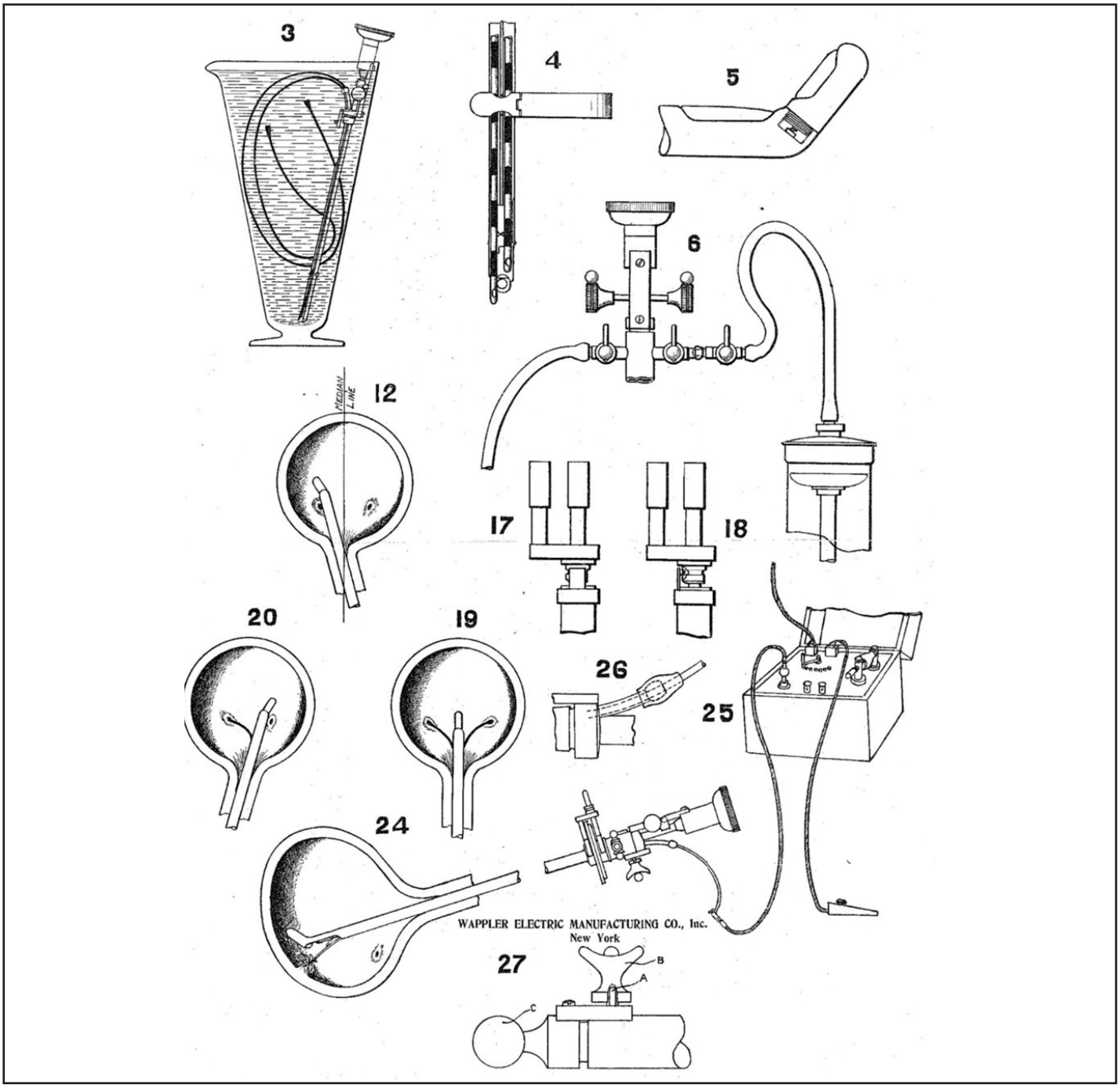


**Figure 3.** The Brown-Buerger Cystoscope instruction manual by the Wappler Electric Instrument Company accompanied each cystoscope kit in a 6 cm x 33 cm x 14 cm wooden box containing an indirect examining and catheterizing cystoscope. Many components in the 1909 design were novel and innovative and easily recognized by urologists a century later, including petite mignon bulbs (#5), ureteral catheterization ports (#19,20), an Albarran bridge (#24), and a power source (#25).

the examined, to carry out synchronous Ureter Catheterization, and while I wish to take this opportunity to congratulate you again over the accomplishment, I would ask you to try and take a calmly impartial view of the proper balance of proprietorship in the sum total results."(20)

Brown's tone may have extended to the broader medical community, where Buerger's improved cystoscope was initially met with skepticism or silence. Schoenberg noted that "much controversy surrounded use of the new device," further complicated by Buerger's own difficult personality that was marked by egotism.(21) Buerger recalled the "cynical attitude" of colleagues at Mount Sinai and the "disdainful

and contemptuous silence" that met his early efforts.(22) Similarly, his identification of thrombo-angiitis obliterans (TAO), a vascular condition he observed predominantly in Jewish patients, was met with skepticism during his lifetime, with many casting doubt on the validity of the disease.(23,24) Ultimately, both the cystoscope and TAO gained acceptance through subsequent studies validating Buerger's original observations.(25)

**The Brown-Buerger Cystoscope: The urologists workhorse**

In 1909, the Brown-Buerger Combination Cystoscope became the first widely adopted American-made cystoscope, eliminating the need for overseas repairs. Ultimately manufactured by the Wappler Electric Company, the Brown-Buerger integrated prior innovations—Brenner's catheter channel, Albarrán's deflector, Tilden Brown's sheath, Otis's telescope, and Goldschmidt's irrigating system (Figure 3). Notable for its ease of use, it allowed double ureteral catheterization, provided both direct and indirect visualization, and accommodated various instruments through a single sheath. Features included a short lamp with external power, an irrigating obturator, and a deflecting telescope that could guide two 7F catheters while enabling continuous irrigation.(19,26,27)

The Brown-Buerger cystoscope revolutionized American urology by improving visual diagnostic accuracy and simplifying ureteral catheterization, becoming the standard instrument for nearly six decades. (5,9) Hugh Hampton Young, considered the "Father of American Urology," praised it, writing, "The double catheterizing, irrigation and evacuation cystoscope, as made by American Cystoscope Makers, Inc., and generally known as the Brown-Buerger model, is so efficient that it might seem almost perfect and unnecessary to attempt to improve it."(28) Paul M. Pilcher, a contemporary cystoscopist, also acknowledged Buerger's advances as foundational to broader clinical adoption, predicting they would encourage more surgeons to embrace cystoscopy for diagnosing kidney and bladder disease. (29) The instrument's success lay in the complementary innovations of both inventors: Brown introduced a dual-lens system with interchangeable optics, while Buerger refined the design for greater maneuverability and clinical versatility. Their combined contributions made the cystoscope both technically superior and practically indispensable. Reflecting its historical significance, the American Urological Association annually presents a refurbished Brown-Buerger cystoscope as part of the


**Figure 4.** Brown-Buerger cystoscope, circa 1945, by American Cystoscope Makers incorporated (ACMI). These universally used instruments are now highly valued collector's items and a reburbished 'Brown-Buerger' is the main prize given to the winning history of urology essay at the annual meeting of the American Urological Assocation (AUA). (Courtesy, Didusch Museum, Linthicim)

Earl Nation Retrospectroscope Award—an emblematic gesture recognizing the enduring impact of this collaborative innovation (Figure 4).(27) Rainer Engel (1933-2018), former AUA Didusch Museum curator wrote "looking back at urology's past is just as important as looking ahead to its future. Clearly, the number of Brown-Buerger cystoscopes donated to our collection is a testament to the instrument's staying power—and its place in urology's history."(30)

## DISCUSSION

Leo Buerger advanced in a medical backdrop shaped by exclusionary norms, relying on the support of influential figures like Hugh Hampton Young, who appointed Buerger to the journal's executive editorial committee, helping to elevate his professional standing.(31) In 1917, a high point in his career, Buerger joined the editorial board and accepted a professorship at the Urology Outpatient Clinic of the New York Polyclinic Medical School, a groundbreaking postgraduate training institution.(13,32) That same year, he famously performed a cystoscopy and pyelolithotomy on actress Sarah Bernhardt, who was so impressed with the outcome that she asked Buerger to name his daughter Yvonne Sarah Bernhardt (1917-1942) after her.(33)

Over the course of his career, Buerger wrote extensively about cystoscopy and urethroscopy, describing findings we take for granted today. For example, he published works correlating cystoscopic findings with stained pathologic specimens showing a clear correlation to anatomy and histology. He published over 125 articles and authored chapters in Hugh Cabot's 1918 Modern Urology.(34)

A distinctly curious mind, he also contributed to fields outside of urology. He made bacteriologic contributions in the differentiation of streptococci and pneumococci, completed studies of the role of the celiac and mesenteric plexuses in shock, described osteogenic sarcoma, and elucidated the successful treatment of a case of tetanus with tetanus antitoxin.(22) Remarkably, Buerger's identification of the vascular disorder thromboangiitis obliterans (TAO), a condition eponymously known as Buerger's disease, underscores the rare distinction of a urologist lending his name to a non-urologic medical entity. He published his seminal 1908 paper on TAO in the American Journal of the Medical Sciences, describing vascular lesions leading to spontaneous gangrene.(24) He observed TAO disproportionately among Polish and Russian Jews—a pattern made visible through ethnic segregation of

**Figure 5.** (Left) Leo Buerger, early 1920s, was lauded at a well publicized dinner in February of that year for "his services to humanity". He had married the French concert pianist, Germain Schnitzer (1888-1982) (right) in 1913. It was said she gave up her performing career to raise their two children but eventually sued for divorce in 1927 citing infidelity. Partially paralyzed after being struck by a taxi in 1934, she still outlived Buerger by 45 years and is buried along her daiughter Yvonne Jones (1920-1942) in Ridgefield, Connecticut.

Jewish hospitals, where Buerger worked and shared cultural ties with his patients.(35) Initially met with skepticism, his discovery was ultimately accepted into the medical canon as society attitudes changed.(23)

Buerger's promising career, with offices at 1000 Park Avenue, was followed by a sharp decline. He had married the famed French pianist Germaine Alice Schnizter in 1913, and they had two children, Gerald (1915-2002) and Yvonne Sarah Bernhardt (1917-1942) (Figure 5). Germaine stopped performing to focus on her children but the marriage proved unhappy and in 1927 she sued Buerger for divorce, claiming infidelity with a "stocky, good looking" blond.(36) Buerger spearheaded a business venture known as Hudson Towers, an ambitious 1929 plan to combine hospital, home, and hotel amenities at 263 West End Avenue in New York but the project failed due to massive cost overruns.(37) The pre-War structured was abandoned for decades. Buerger relocated to California in 1929 in hopes of a fresh start, where he was appointed professor of urology at the College of Medical Evangelists. (21) The effort proved unsuccessful. Upon returning to New York, he was not accepted back at Mount Sinai or the Polyclinic. Instead, he worked in smaller private clinics, including Beth David Hospital, Bronx Hospital, and Wyckoff Heights Hospital. He died in relative obscurity at age 64 at October 6, 1943, from a myocardial infarct, at the Hotel Sherry-Netherland, and was interred in an unmarked grave at the Bayview Cemetery in Jersey City, New Jersey overlooking the Statue of Liberty (Figure 6).(12)

Buerger's later professional isolation is often attributed to his reportedly abrasive personality—commonly described as arrogant, condescending, or dismissive—which was said to overshadow his medical achievements. His brash demeanor was on full display at a dinner meeting of local urologists held at the Alexandria Hotel in Los Angeles, where he declared that he had come "to teach the local urologists how to do urology"—a remark that was met with considerable disapproval.(22) Kaplan characterized him as "a center of controversy," admired for his innovations but burdened by his personal critiques.(22) Buerger himself believed such assessments reflected professional jealousy rather than genuine flaws. It is plausible that his defensiveness and alleged bombastic nature were, at least in part, shaped by the broader climate of exclusion and marginalization characteristic of the early 20th century. Descriptors such as "difficult" or "flamboyant" may have operated as coded language, reflecting implicit bias in an era when overt antisemitism was widespread, even if explicit documentation is limited.(13,38)

Understanding the context of Buerger's career requires acknowledging the pervasive antisemitism in early 20th-century American society. As large waves of Jewish immigrants arrived—many from Eastern Europe—they were met with hostility from the native-born elite, who viewed them as culturally alien and economically threatening. These sentiments were codified in the Johnson-Reed Act of 1924, which, under the guise of preserving "U.S. homogeneity," imposed strict quotas on immigrants from southern and Eastern Europe—effectively targeting the Jewish diaspora and barring many from fleeing persecution abroad.(39, 40) Stereotypes depicting Jews as greedy, dishonest, and conspiratorial took root, often framing them paradoxically as both capitalist manipulators and communist agitators.(41) Influential figures like Henry Ford amplified these myths. Ford's newspaper, The Dearborn Independent, published the notorious "The International Jew", blaming Jews for everything from labor strikes to economic downturns. (42,43) With a circulation of nearly a million and translations into 16 languages, the publication reflected and reinforced widespread cultural prejudice that likely shaped the professional landscape Buerger navigated.

While definitive conclusions about Buerger's character and career remain out of reach, it is reasonable to consider that both personal disposition and the broader cultural and institutional climate shaped his professional reception. The era's prevailing attitudes—including the undercurrents of antisemitism—may have influenced how Buerger was perceived and how his contributions were received. At the same time, accounts of his assertive and, at times, polarizing demeanor suggest that interpersonal dynamics also played a meaningful role. His legacy, like many, was likely the product of multiple intersecting forces rather than any single determinant.

F. Tilden Brown did not escape personal challenges either and was consumed by tragic circumstances. Shortly after the development and promulgation of the Brown-Buerger instrument in 1909, he appears to have developed a serious "nervous disorder" and suddenly left his family and residence at 14 East 58th Street, Manhattan for the rural village of Bethel, Maine. There, on the banks of the Alder River, he took his own life via revolver on May 7th, 1910.(15)

**An Unwritten Legacy**

Despite his prolific output—including numerous publications, patents, and innovations—Leo Buerger is largely absent from historical accounts. No full biographies exist, and only two short primary publications focus on his work: George Kaplan's "Leo Buerger (1879–1943)" and Schoenberg's "Eponym: Leo Buerger: Instrument, Disease, and Ego," together totaling just three pages.(21,22) Friedrich C. Luft , in "Leo Buerger (1879–1943) Revisited," noted that his editorial relied heavily on these limited sources due to a lack of broader documentation.(11) Our paper is the first to identify the unmarked location of Buerger's interment and to provide the tragic details of the death of his co-inventor Tilden Brown. Still, Buerger left a generally positive impression upon those who knew him. Upton B Sinclair, Jr. the great American muckraker and writer of the Jungle, was friends and college classmates with Buerger, a relationship of which Sinclair was proud. He recalled fondly in his autobiography 60 years later that

> "I number many doctors among my friends, and the better they know me, the more freely they admit the unsatisfactory state of their work. Leo Buerger, a college mate who became a leading specialist in New York, summed the situation up when I mentioned the osteopaths, and remarked that they sometimes made cures. Said my eminent friend: 'They cure without diagnosing, and we diagnose without curing' ".(44)


**Figure 6.** Leo Buerger grave site, plot 60-A-1, Bayside Cemetary, Jersey City, NJ. Buerger died of a myocardial infarction on October 6, 1943 and was interred at Bayside thereafter.(12) No marker exists for the plot although it is in direct view of the Upper New York Bay and the Statue of LIberty, which he had passed as a 7 year emigre from Vienna in 1886, dreaming of a career in music.(45) (IJUH archives)

## CONCLUSION

The unwritten legacy of Leo Buerger (1879–1943) lies not only in his technical innovations but in the complex, often overlooked narrative of a brilliant physician navigating—and challenging—the cultural and institutional barriers of his time. Buerger's unwritten legacy is also one of resilience. He continued to push the boundaries of urologic and vascular diagnostics, even in the face of professional marginalization, skepticism, and what appears to be coded prejudice masked as personality critique. His conflict with figures like Tilden Brown, the dismissal of his work by elite institutions, and his eventual retreat to smaller hospitals after career and personal setbacks reflect the broader challenges of immigrant life in the American states even among the revered halls of medicine. Ultimately, Buerger's story is a case study in how innovation can be forgotten when it challenges hierarchy, disrupts authorship, or comes from the margins. His legacy lives on not just in instruments or diseases that bear his name, but in the historical questions his career forces us to ask about recognition, exclusion, and the politics of memory in medicine.

## REFERENCES


1. Buerger L. A New Cystoscope. Journal of Urology. 1933;30(6):695-710. doi: doi:10.1016/S0022-5347(17)72518-9.
2. Sachs M. [The prohibition of lithotomy within the Hippocratic Oath: historical and ethical considerations on the history of surgery]. Zentralbl Chir. 2003;128(4):341-7. doi: 10.1055/s-2003-38802.
3. Krotoszyner M. Urology: Past, present, and Future. Amer J Urol. 1911; 7(1): 292-296.
4. Reuter MA, Reuter HJ. The development of the cystoscope. J Urology. 1998;159(3):638-40. doi: doi:10.1016/S0022-5347(01)63691-7.
5. Engel RE. Development of the modern cystoscope: An illustrated history. Medscape. 2007. www.medscape.com/viewarticle/561774. Accessed 9/26/2025.
6. D'esormeaux AJ. The endoscope, and its application to the diagnosis and treatment of affections of the genito-urinary passages. Chicago Medizinhist J. 1867;24:177-94.
7. Moran ME, Moll FH. History of Cystoscopy. In: Patel SR et al. (Eds.), The history of technologic advancements in urology (pp 3-20). Springer International Publishing, 2018.
8. Herman JR. Reinhold H. Wappler (1870-1933). Invest Urol. 1973;10(4):331-2. PubMed PMID: 4566867.
9. Nation EF. Epochs in endourology: Ureteral catheterization controversies. J Endourology. 2003;17(7): 497-499.
10. Engel RE. Cystoscopes: The instruments that made urology. William P. Didusch Center for Urologic History, Linthicum, MD, 2004.
11. Luft FC. Leo Buerger (1879-1943) revisited. Am J Med Sci. 2009;337(4):287. doi: 10.1097/MAJ.0b013e318198d030.
12. "Dr. Leo Buerger, Surgeon Here, 64; Urologist, Deviser of Medical Instruments, Dies." New York Times, October 7, 1943, p 23.
13. Schwartz SI. Contributions of Jewish surgeons in the United States. Rambam Maim Med J. 2011;2(1):e0020. doi: 10.5041/rmmj.10020.
14. Baron JH. The Mount Sinai Hospital--a brief history. Mt Sinai J Med. 2000;67(1):3-5.
15. "Dr. F. Tilden Brown a Suicide: Prominent surgeon kills himself while seeking health in Bethel, ME." NY Times, May 8, 1910, p 1.
16. "Frederic Tilden Brown." In: Dictionary of American biography. New York: Charles Scribner's Sons, 1936.
17. Kelly HA, Burrage WL. American medical biographies. Baltimore: N Remington Co, 1928, pp 151-2.
18. "Mrs. K.C. Harding to Wed: Widow of Navy Officer Fiancee of Frederic Tilden Brown." NY Times, June 21, 1947, p 15.
19. Buerger L. A new indirect irrigating observation and double catheterizing cystoscope. Ann Surg. 1909;49(2):225-37. doi: 10.1097/00000658-190902000-00006.
20. F. T. Brown to L. Buerger, Didusch Urologic Museum Archives, Linthicum, MD
21. Schoenberg DG, Schoenberg BS. Eponym: Leo Buerger: instrument, disease, and ego. South Med J. 1979;72(6):737-8.
22. Kaplan GW. Leo Buerger (1879-1973). Invest Urol. 1974;11(4):342-3.
23. Lockwood SJ, Bresler SC, Granter SR. Politics, culture, and the legitimacy of disease: the case of Buerger's disease. Clin Rheumatol. 2016;35(9):2145-9. doi: 10.1007/s10067-016-3310-1.
24. Buerger L. Thrombo-angiitis obliterans: a study of the vascular lesions leading to presenile spontaneous gangrene by Am J Med Sci. 1973;266(4):278-91. doi: 10.1097/00000441-197310000-00006.
25. Buerger L. The normal and pathological posterior urethra and neck of the bladder. Amer J Urol. 1911;7(1): 1-10.
26. Leong CH. Brown-Buerger cystoscope. Hong Kong Med J. 2023;29(6):568-9. doi: 10.12809/

hkmj-hkmms202312.
27. Osinski Thomas. Refurbishing a rusty cystoscope into the retrospectroscope award. Int J Urologic History. 2024;3(2):50-6. doi:10.53101/IJUH.3.1.092409.
28. Young HH. A critique of modern cystoscopes. J Urology. 1927;17(1):17-24. doi: doi:10.1016/S0022-5347(17)73323-X.
29. Pilcher PM. A new cystoscope for catheterizing the ureters by the indirect method. Ann Surg. 1909;49(2):218-24. doi: 10.1097/00000658-190902000-00005.
30. Engel RM. AUA Earl Nation retrospectroscope award. http://urologichistory.museum. Accessed June 5, 2024.
31. Sanford HL. The Journal of Urology becomes the official organ of the American Urological Association. J Urology. 1921;5(1):AUA1-AUA2. doi.org/10.1016/S0022-5347(17)77050-4.
32. Schatzki SC. New York Polyclinic Medical School and Hospital. Am J Roentg. 2017;208(1):228-9. doi: 10.2214/ajr.16.16980.
33. Moran M. Obstructive pyhydronephrosis and life saving intervention of the greatest starlet of all time-Sarah Bernhardt. J Urology 2017;197(4S):e1064-e. doi: doi:10.1016/j.juro.2017.02.2476.
34. Modern Urology In Original Contributions by American Authors. Ed H. Cabot. Lea and Febiger, Philadelphia, 1918
35. Birch CA. Buerger's disease. Leo Buerger (1879-1943). Practitioner. 1973;211(266):823-4.
36 . "Blond Proves Unlucky. Surgeon's wife names her in divorce trial." Daily News, New York, p 62. April 14, 1928
37. Miller T. The Non-Hudson Towers. https://www.landmarkwest.org/72crosstown/263-west-end-avenue/. Accessed August 3, 2025.
38. Brendler H, Ferber, WLF. Early days of urology at Mount Sinai. Urol. 1974; 3(2): 245-250.
39. Historian USDoSOot. The Immigration Act of 1924 (The Johnson-Reed Act). In: Historian USDoSOot, editor.
40. "From Haven to Home: 350 Years of Jewish Life in America." Library of Congress. https://www.loc.gov/exhibits/haventohome/, Accessed 9-26-2025.
41. Diner H. In the almost promised land: American Jews and Blacks, 1915-1935. Johns Hopkins Univ Press, Baltimore; 1995.
42. Kellogg M. The Russian roots of Nazism: White emigres and the making of national socialism, 1917-1945. England: Cambridge University Press; 2005.
43. "Ford's Anti-Semitism". Public Broadcasting Service, https://www.pbs.org/wgbh/americanexperience/features/henryford-antisemitism/, Accessed September 20, 2025.
44. Sinclair U, Jr. The Autobiography of Upton Sinclair. New York: Harcourt, Brace & World; 1962, p 158.
45. "Dr. Leo Buerger signally honored". American Hebrew, February 8, 1924, 401.

## DISCLOSURES

The authors received no funding for the preparation or submission of this manuscript.

## DECLARATION OF COMPETING INTEREST

The authors declare that there are no competing interests. All contributions were made in good faith and without external influence beyond those acknowledged in the manuscript.

## STATEMENT ON USE OF GENERATIVE ARTIFICIAL INTELLIGENCE

The authors affirm that no generative artificial intelligence (AI) tools (e.g., large-language models) were used in the writing, analysis, or figure preparation for this manuscript.