

# IJUH

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*Twelve Proverbs* (1558), Pieter Bruegel the Elder

- Two millenia of Chinese herbs in the treatment of the UTI
- The rise and tragic fall of EG Ballenger
- Walt Whitman: American sage, Civil War nurse

# PRAETERITO DOCET

'The past teaches'

## On the Cover



Pieter Bruegel (the Elder) (c. 1525/1530 - 1569) was a master painter of the so-called Dutch Golden Age of Art. Bruegel was one of the first to use as subject matter the lay public, peasant scenes of leisure and play that served as both a historical record and aphorism. One of his most famous paintings, *Peasant Wedding* (1567) (Kunsthistorisches Museum (KHM), Vienna), is a virtual photograph of many aspects of agrarian Europe, from humble dress and diet, to music and libation. *Children's Games* (1560) (also KHM), may have been an attempt by Bruegel to document the sometimes serious nature of the young at play. The work depicts over 80 games that demonstrate how the young mind and body, armed with the simplest

of objects, can develop and learn through highly structured, enjoyable, and often extremely physical activity. As in *Wedding* and *Games*, though, Bruegel often illustrated metaphorical themes that spoke to components of contemporary society, its injustices, and the age-old struggle of good over evil. These are addressed, without opacification, and perhaps a little humor, in *Twelve Proverbs* (1558). Capturing contemporary language and idioms, Bruegel portrays 12 different sayings, most of which have become linguistically antiquated, but which touch on universal aspects of leading the good life. His small pictures, and their accompanying proverbs, encourage the reader to be honest, to mind their own business, to put a check on jealousy, to respond well to bad luck, etc. The final plate is at the lower right (see inset) and displays a male, back turned towards us, evidently urinating on a crescent shaped moon. Printed under the image is "*Vat ick vervolghe en geraecke dar niet aen ick pisse altyt tegen de maen*" or "No matter what I do, I'm always (urinating) on the moon," a then popular reference essentially meaning to not waste one's time on a fool-hardy endeavor. While our *Journal* is devoted towards celebrating the history, art, and culture of urology, we might still take such an expression to heart in today's world.

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*Essai des Urines, Gérard Dou (1613-75)*

**Editorial Office:** Department of Urology, 19 Sunshine Cottage, New York Medical College,  
Valhalla, NY 10595. e-Correspondence: [editor@ijuh.org](mailto:editor@ijuh.org)

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## Foreward

Online publishing is increasingly becoming the norm. Whether by design, or necessity, today's editors view the digital format as critical to a journal's overall success.(1) In addition, the social media component of a printed article, and its online 'traffic' and followers, has become a vital method of distribution.(2-4) Many journals offer an 'open access' alternative towards publication for merit-worthy papers that may not be included in the non-open-access version, and sometimes at a hefty price. (5) The *International Journal of Urologic History (IJUH)* has aimed to keep its submission processing free to its authors. Publishing a journal, even an online only version like *IJUH*, is, however, not free. The costs of domain maintenance, hosting fees, and subscriptions to CrossRef, the search engine that allows readers to find an article on GoogleScholar in the first place, have annual costs. Thankfully, our costs have been met by charitable donations and, more importantly, the volunteerism of our editors. Still, online publishing, especially 'open access' publishing, has its critics, bringing into discussion questions of academic rigor. Online scholarship may also miss some of the benefits and checks of a comprehensive peer review process. *IJUH* has been grateful for its authors ascribing to the highest level of academic quality and for its reviewers in holding them to that standard. *IJUH* has also been grateful for the quality of the images authors have provided. Most have been unpublished, some even original, which is unusual given their historical nature. Images, though, make up a substantial portion of social media content and are ample fodder for deeper searches by the interested public. Future authors may wish to devote substantial efforts in not only the academic rigor of their text but in the visual information conveyed by their artwork. In this issue of the *Journal*, the lush photography by Rubano et al., the detailed illustrations by Witthaus et al., or the striking photo of past AUA President EG Ballenger, courtesy of a local historical society, are 'stand alone' in their own right. (6-8) Future readers and subscribers will hopefully long enjoy *IJUH* as we continue to celebrate the past on the most innovative parts of the electronic highway.

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# Walt Whitman, John Mahay, and Urotrauma in the American Civil War

Michael W. Witthaus<sup>\*1</sup>, Laena Hines<sup>2</sup>, Eric Mathews<sup>2</sup>, Marni Rabinowitz<sup>3</sup>, Steven Hudak<sup>4</sup>, and Ronald Rabinowitz<sup>2</sup>

<sup>1</sup>Department of Surgery, University of Maryland School of Medicine, Largo, MD; <sup>2</sup>Department of Urology, University of Rochester Medical Center, Rochester, NY; <sup>3</sup>English Department, Sutherland High School, Pittsford, NY; <sup>4</sup>Department of Urology, University of Texas Southwestern, Dallas, TX.

\*Correspondence: Michael Witthaus, University of Maryland School of Medicine, Chesapeake Urology Associates, 14999 Health Center Drive, Suite 108, Bowie, MD, 20716 (e-mail: michael.witthaus@umm.edu)

**Introduction:** Walt Whitman (1819-1892) was a visionary American poet who inspired innovation within the literary landscape, choosing to preserve real, complex life with poetic imagery. He also chose to volunteer as a nurse during the American Civil War, daring to confront the violent, painful reality of war's aftermath with precision and unflinching honesty. The United States Sanitary Commission organized volunteer nursing for the Union Army during the Civil War (1861-1865). Our objective is to investigate the urologic management and perspectives of Walt Whitman during his service as a nurse during the American Civil War.

**Sources and Methods:** We conducted a review of the literature pertaining to Walt Whitman, his clinical practice, and his relationship to John Mahay during the Civil War. A review of textbooks, peer-reviewed articles, works of prose, and government archives was performed. Original publications and images were reviewed through the Walt Whitman Archive, Library of Congress, the National Museum of Health and Medicine, and the archives of the International Journal of Urologic History.

**Results:** During the Civil War, Whitman cared for numerous patients, including Private John Mahay, who sustained a penetrating GU injury during the second battle of Bull Run (August 29th, 1862). He passed several bone fragments per urethra, suggesting a PFUI (pelvic fracture urethral injury). Mahay continued his chronic urologic care with Walt Whitman. The entry and exit wounds resulted in fistulas to the urinary tract with documented blood, pus, and urine drainage. Mahay ultimately died on October 24th, 1863, after nearly a year of chronic urologic care. Several urinary stones were removed from Mahay's bladder on autopsy and archived. Whitman's account of John Mahay preserved him as a living person, his travails, and sufferings prior to the advent of modern urologic care.

**Conclusions:** Walt Whitman's Civil War writings chose to confront reality with honesty, precision, and eloquence. His commitment to John Mahay's care during the Civil War underscores the essential human aspects involved in acute and chronic urologic care following traumatic injury.

**Keywords:** Trauma, Walt Whitman, Civil War, Fistula, History

Walt Whitman (1819-1892) was a visionary American poet who inspired innovation within the literary landscape, choosing to preserve real, complex life with poetic imagery. He also chose to volunteer as a nurse during the American Civil War, daring to confront the painful reality of war's aftermath with precision and unflinching honesty. In "The Wound Dresser", a compilation of letters he wrote from Washington D.C.'s wartime hospitals, he reflected,

"Thus in silence in dreams' projections,  
Returning, resuming, I thread my way through  
the hospitals; The hurt and wounded I pacify with  
soothing hand, I sit by the restless all the dark night  
— some are so young; Some suffer so much — I  
recall the experience sweet and sad." (1)

Whitman defied the pomp and circumstance prized in artist's portraits of the time. In a now lost photo by

Gabriel Harrison (1818-1902) from 1854, Whitman was captured, in his own words, "just as you see me"; his shirt is open at the collar.(2) His hair and beard are flyaway, hat purposefully aslant, and his stance, with his hand on one hip, is casual in a time that sought to preserve an image of staid formality rather than reality (Figure 1). Whitman's choices of portraits, like his poetic word choice for the care for the injured and the dying, demonstrates his ability to cut through facades to arrive at the heart of the matter- our shared, fated humanity. One of the many wounded Whitman personally cared for was the New York soldier John Mahay, who infamously sustained a urogenital injury in 1862. Whitman himself wrote of the account but there has been no formal urologic evaluation of the Mahay case from the perspective of Whitman's eyewitness account and the impact the case had on him. Our objectives were to investigate Walt Whitman's wartime experiences as a nurse during the Civil War and his role in the management and outcomes of the urogenital wounds of Private Mahay.

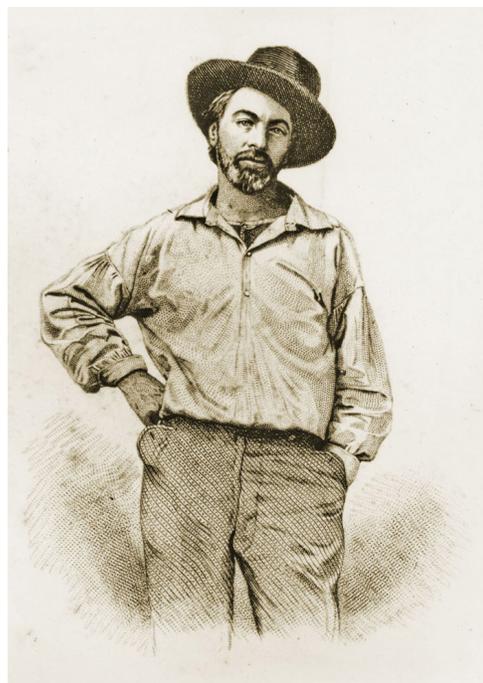
## SOURCES AND METHODS

We conducted a review of the literature pertaining to Walt Whitman, his clinical practice, and his relationship to John Mahay during the Civil War. A review of textbooks, peer-reviewed articles, works of prose, and government archives was performed. Original publications and images were reviewed through the Walt Whitman Archive ([whitmanarchive.org](http://whitmanarchive.org)), Library of Congress ([www.loc.gov](http://www.loc.gov)), the National Museum of Health and Medicine ([medicalmuseum.health.mil](http://medicalmuseum.health.mil)), publicly available literary databases, and photographic archives of the International Journal of Urologic History ([www.ijuh.org](http://www.ijuh.org)).

## RESULTS

### A Call to Action:

At the close of 1862, as Walt Whitman cared for his ailing mother in Brooklyn, New York, he read the list of Union Casualties from the Battle of Fredericksburg (December 11-15, 1862) and suspected his brother, George, enlisted in an involved regiment, was among the wounded. Walt quickly boarded a train for Virginia and eventually found George alive in a Union Army Camp in Falmouth Virginia, recovering from a minor jaw injury. But at the Lacy House, a makeshift hospital

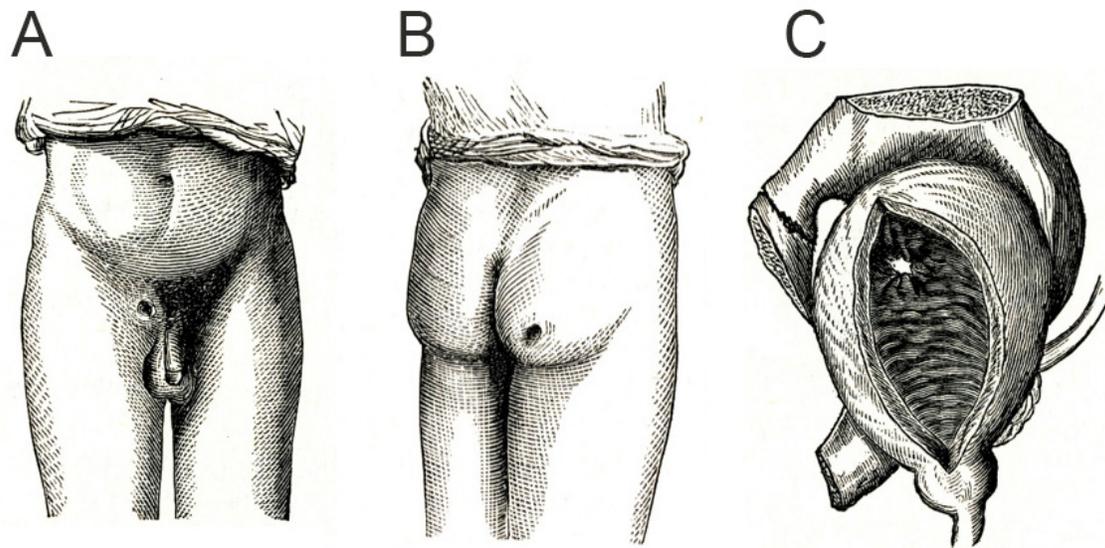


**Figure 1.** Walt Whitman, 1854, in a Samuel Hollyer (1826-1919) engraving of the original daguerrotype by Whitman's friend and fellow New Yorker Gabriel Harrison (1818-1902) (Beeghly Library, Ohio Wesleyan).

of sorts, Walt was profoundly shocked by the heaps of amputated feet, legs, arms, and hands carried in a cart nearby. He became inspired to visit the weak and wounded soldiers of Falmouth, then traveled back to Washington, DC, where he spent his days and nights tending to soldiers as a volunteer nurse at the Armory Square Hospital, long razed, but now the site of the Smithsonian Air and Space Museum.(3) Armory Square was the first of many hospitals established by the United States Sanitary Commission, a civilian run relief organization first approved by President Lincoln in June, 1861, and which coordinated the provision of relief supplies, and medical facilities for the Union Army during the Civil War (1861-1865). Whitman recalled these days at Armory Square Hospital and other sites in "The Wound Dresser" (1865) which revealed the trauma of the war and the ongoing pain and suffering of the injured soldiers.

"I onward go, I stop,  
With hinged knees and steady hand to dress wounds,  
I am firm with each, the pangs are sharp yet  
unavoidable,





**Figure 3.** Injuries of private John Mahay, sustained in the Second Battle of Bull Run. A. Entrance and B. Exit wounds of penetrating injuries. C. Post mortem demonstration of shot perforation of bladder and fracture of the right ischium and symphysis pubis. All from *The Medical and Surgical History of the War of the Rebellion*, volume II, p 294 (14).

mortality of bladder injury.(5) The high fatality rate of these injuries was due to either hemorrhage or intra-abdominal sepsis. However, injury to the urethra or external genitalia had a much lower mortality rate (20% and 13%, respectively). While many of these injuries were complicated by fistula and stricture, mortality was improved, partly due to the diversion of urine via perineal urethrostomy or suprapubic cystostomy.(6) Patients with adequate urinary drainage had improved outcomes, presumably due to decreased intra-abdominal sepsis.(5) Civil War battlefield triage did not exist until the pioneering efforts of Army Medical Director, Maj. Jonathan Letterman (1824-1872) in September, 1862. The successful treatment of pelvic injuries during the Civil War era included a commitment to the proper control of bleeding vessels, removal of foreign bodies, debridement of necrotic tissue, incision of infected collections, and adequate diversion of urine when external injury occurred.(5)

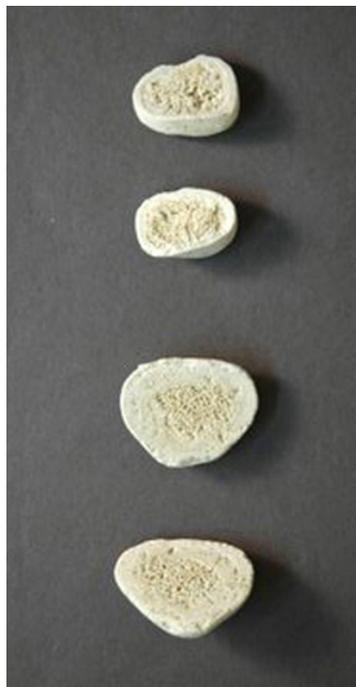
### **Second Battle of Bull Run- August 29th, 1862**

Several months before George Whitman entered the Battle of Fredericksburg, the Army of Northern Virginia, led by Robert E. Lee (1807-1870), made a major assault into the United States at Manassas, Virginia against the Union Army of the Potomac under John Pope (1822-1892). There, in what became the 2nd Battle of Bull Run,

Lee's outnumbered forces outmaneuvered and defeated Pope and allowed Lee to cross the Potomac river into western Maryland, threatening Washington D.C. itself. The two-day battle left 1700 dead and 22,000 casualties including Private John Mahay of the New York 101st. Mahay sustained a penetrating bullet wound through the pelvis (see Editor's note). The projectile shattered his pelvis and perforated the bladder, leaving a wound that drained pus, urine, blood, and bone fragments per urethra (Figure 3).(7) Surviving the initial trauma and under the care of Major John Hill Brinton (1832-1907), Mahay was brought to the Armory Square Hospital in Washington where the private would later suffer chronic fistulas, pain, bladder stones, and infection (Figure 3).

### **A Poet at the Bedside**

It was at Armory Square, therefore, where Whitman first came across Mahay, who would become one of Whitman's first and favorite patients, resulting in numerous writings and correspondences. Whitman was known to visit Mahay for his care and supply him with candy to improve his morale. Whitman could not ignore, however, the devastation of Mahay's injury, writing on one occasion that "the water came out of (his) wound, by slow but steady quantities, for many weeks – so that he lay almost constantly in a sort of puddle".(7) Whitman recalled later the case from Second Bull Run



**Figure 4a (left).** Bladder stone fragments recovered from John Mahay at autopsy by D.W. Bliss, USV on October 25th, 1863. They remain in the National Museum of Health and Medicine (NMHM). Image courtesy of NMHM. **Figure 4b (right).** Gravestone of John Mahay, Congressional Cemetery, Washington DC, section 3, site 148. Image courtesy of Sophie Seypura, IUH.

in his memoir *Specimen Days*:

"One scene at his bedside will suffice for the agonies of nearly two years. The bladder had been perforated by a bullet going entirely through him. Not long since I sat a good portion of the morning by his bedside, Ward E, Armory-Square. The water ran out of his eyes from the intense pain, and the muscles of his face were distorted, but he uttered nothing except a low groan now and then. Hot moist cloths were applied, and relieved him somewhat. Poor Mahay, a mere boy in age, but old in misfortune."(8)

Mahay's wounds would never heal. Mahay died on October 24th, 1863, after 14 months of chronic care. Several urinary stones were removed from Mahay's bladder on autopsy on the 25th, which Major Brinton himself archived at the National Museum of Medical History (Figure 4a). Private Mahay was buried three days later in the Congressional Cemetery in Southeast Washington on the banks of the Anacostia River. Whitman recalled "he had quite a funeral ceremony"(Figure 4b).(8)

Whitman worked in Washington D.C. the remainder of the war in the US Paymaster's office but his true

devotion appeared to be as a caregiver in the city's rudimentary military hospitals. He estimated that he made over 600 visits to tens of thousands of wounded soldiers, most barely adults, "as sustainer of spirit and body in some degree, in time of need". (9)

## DISCUSSION

At the time of the Civil War, Walt Whitman was already a celebrated, if not controversial, writer, celebrating the beauty and "sacred everydayness" of American life, and known to figures as diverse as Ralph Waldo Emerson and Secretary of the Treasury Salmon Chase. Whitman's attachment to the "'divine Average' American life" may have predetermined his year's of service as a spiritual and bedside caregiver to the Union's war injured (10). His additional commitment to John Mahay's care underscores the essential human aspects involved in acute and chronic urologic care following traumatic injury when the modern technologic aspects of management had not yet existed.

Walt Whitman's Civil War writings chose to confront reality with honesty, precision, and eloquence while skirting the inevitability of death in so many

patients, lingering in the open wards of mid-19th century hospitals, devoid of antibiotics, autoclaves, or modern concepts of surgical management beyond amputation and debridement. Instead, Whitman's words highlighted the humanism in caring for traumatic injuries which ultimately claimed their victims. Several years before the war, Whitman considered the far reaching impact of the death experience on the physical and emotional elements that surrounded the deceased.

The dull nights go over, and the dull days also;  
 the soreness of lying so much in bed goes over,  
 The physician after long putting off gives the silent  
 and terrible look for an answer  
 The children come hurried and weeping, and the  
 brothers and sisters are sent for  
 Medicines stand unused on the shelf (the camphor-  
 smell has long pervaded the rooms)  
 The faithful hand of the living does not desert the  
 hand of the dying,  
 The twitching lips press lightly on the forehead of the  
 dying;  
 The breath ceases, and the pulse of the heart ceases  
 The corpse stretches on the bed and the living look  
 upon it  
 It is palpable as the living are palpable  
 The living look upon the corpse with their eyesight,  
 But without eyesight lingers a different living and  
 looks curiously on the corpse.(11)

Mid-19th century American attitudes of death reflected, as the Emily Dickinson scholar Carol de Grasse wrote, the "paradox of the social death scene", a kind of Victorian 'cult of death' encompassing uplifting elegies and 'mortuary verse' about the departed.(12) Some, like Dickinson and Whitman, looked at death in a quasi-Romanticized framework, a mixture, as de Grasse writes, of fascination and horror. Whitman's wartime efforts with John Mahay and so many others, may have been fueled by his recognition that death, while inevitable and loathed, may also be embraced and eased with compassion and humanism.

"The sun bursts through in unlooked-for directions!  
 Strong thoughts fill you and confidence - you smile!  
 You forget you are sick, as I forget you are sick,  
 You do not see the medicines -  
 You do not mind the weeping friends- I am with you,  
 I exclude others from you- there is nothing to be  
 commiserated,  
 I do not commiserate- I congratulate you."(13)

## CONCLUSIONS

Walt Whitman's commitment to John Mahay and thousands of patients' care during the American Civil War underscores the essential human aspects involved in acute and chronic urologic care following traumatic injury, when the absence of modern technology prioritizes the power of compassion and bedside care.

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**Editor's Note:** The full accounting of case 856, that of the pelvic injury of Private John Mahay's and his subsequent clinical course, may be found, on page 294 in volume 2 of the compendium of the *Medical And Surgical History of the War of Rebellion*:

"Case 856 private John (Mahay), company H 101st New York, aged 19 years, was wounded at the second battle of Bull Run August 29, 1862. He was taken to Armory Square hospital. Surgeon J.H. Brinton, U.S.V., made a memorandum of the case in his note book (sic), with diagrams indicating the position of the entrance and exit wounds...The missile, probably a conical musket ball, entered over the horizontal ramus of the right pubis, an inch from the symphysis, and, passing downward, and a little upward, emerged through the right buttock. Surgeon D.W. Bliss, U.S.V., forwarded a report of the case. After giving the military description and seat of injury the report continues:

"Several pieces of bone, at different periods, passed through the urethra, and although he has never been perfectly free from pain, sometimes of the most severe character, his appetite and strength long continued good. The wounds made by the entrance and exit of the ball would close up for a longer or shorter period, and again open and discharge urine, pus, and blood; and when urinating, the contents of the bladder would pass quite as freely through these fistules (sic) as through the urethra. He generally urinated freely, but never without pain, referred to at times as very severe; the urine always albuminous, mucopurulent, or bloody, and in considerable quantities. During the earlier part of the treatment, a catheter was retained in the bladder, and attempts have been made, at different later periods, to re-introduce it, but were attended with unendurable suffering. The catheter never seemed to be of much benefit. The patient has suffered much pain, referred to the kidneys, at different periods which was allayed by cupping, warm fomentations, and opiates. About six weeks ago (September 15, 1863) he was placed under the influence of ether and the anterior wound was dilated and an irregularly shaped piece of bone was extracted, and at the same time a stone was distinctly felt, but it was not deemed prudent to operate for its removal at that time. Since then, he has been gradually failing and he died on the evening of October 24, 1863. At the autopsy on the following day, it was discovered that the course of the ball varied but little from the foregoing description. The bladder was greatly contracted, and the walls or coats were three eighths of an inch in thickness, and the cavity was nearly filled by two stones, one weighing two drachms ten grains\*, the

other three drachms fifty seven grains, or, conjointly, six drachms seven grains. Several pieces of necrosed bone were removed from the point of exit of the ball'.

"The two calculi here referred to were sent to the Museum\*\* .... The bladder and injured portion of the right *os innominatum*\*\*\* were also forwarded, and constitute the highly interesting specimen, represented in the wood cut (See Figure 3c). There is ligamentous union of the fracture of the horizontal ramus of the pubis. The fractured ischium is united by callus, and so much deformed as to be a puzzling study. The thickened bladder adheres to the pubis and ischium, and its walls appear to have been perforated at one point only, the opening remaining widely previous. The missile probably struck the viscera while distended, and produced a single laceration on his right lateral wall. In Dr. J.H. Brinton's note-book there is a memorandum of a visit to the patient January 3, 1863: "Patient is nearly well. He complains of pain at the anterior wound when he draws a long breath, and of constant pain in the glans penis, and frequently pulls at the prepuce. Appetite good. Pieces of bone were discharged some five or six days since through the posterior opening, and some little pieces came through the urethra, the size of a grain of rice and ragged. One piece was expelled, which was larger, about half an inch in length, and nearly a quarter of an inch in width. There was great pain in micturition. The catheter has, at various times, been introduced." (14)

\*One *drachm* was generally regarded as 1/8th of an ounce apothecary or 3.9 grams. 60 grains = 1 drachm. Thus, six drachms and seven grains would be about 25 grams.

\*\*National Museum of Health and Medicine, Silver Spring, Maryland.

\*\*\*(*Arch.*) The point of convergence of the pubis, ilium, and ischium

# A History of Four Chinese Herbs Used to Treat Acute and Chronic Urinary Disorders

Amanda Rubano<sup>\*1</sup>, Ronald Rabinowitz<sup>2</sup>, and Divya Ajay<sup>2</sup>

<sup>1</sup>University of Rochester School of Medicine; <sup>2</sup>Department of Urology, University of Rochester Medical Center, Rochester, NY

\*Correspondence: University of Rochester School of Medicine and Dentistry, 601 Elmwood Ave, Mailbox 299, Rochester, NY 14642 (e-mail: Amanda\_Rubano@URMC.Rochester.edu)

**Introduction:** Traditional Chinese Medicine (TCM) has treated Urinary Tract Infections (UTIs) for over 4 millennia. This review explores history of the classical diagnosis of “urinary syndrome (US)” in TCM and the four herbal ingredients of Huang-lian-Jie-du Decoction (HLJDD), a traditional herbal tonic, used to treat US. With increasing antibiotic resistance, alternative therapies for UTIs have gained importance. We explore the TCM concept of US and *lin* and its relevance to the modern antibiotic era.

**Sources and Methods:** Primary Chinese texts, translations, medical literature, and academic publications were reviewed to investigate the treatment of US with HLJDD in TCM. Botanical gardens were explored to find living versions of historic herbs used in HLJDD.

**Results:** The concept of US, referred to as *lin* in TCM, can be traced back to in the Yellow Emperor’s *Classic of Internal Medicine* in 2600 BCE. In 610 CE, Chao Yuanfang described herbs as a treatment of US. Wang Tao, in 752 CE, classified US into five types, with Heat US corresponding to the Western diagnosis of UTI. Wang Tao also documented HLJDD as an herbal remedy for ‘heat clearing’. In *The Handbook of Prescriptions for Emergencies* (220 CE), HLJDD consists of *Coptis chinensis* (Franch.)<sup>†</sup>, *Radix scutellariae*, *Cortex phellodendri*, and *Fructus gardeniae* in a 3:2:2:3 proportion. Recent clinical trials have examined HLJDD and its ingredients, investigating their efficacy as alternative treatments for UTI. Some trials found that the herbal ingredients not only enhance the effects of antibiotics, but also prevent UTIs when taken prophylactically by postmenopausal women. Most recently, *Coptis chinensis* was found to have inhibitory activity against many uropathogenic bacteria, including *E. coli*.

**Conclusions:** This historical perspective provides a more complete understanding of the evolution of Heat US in TCM and its correlation to the modern diagnosis of UTI, along with the herbal ingredients of HJLDD as treatment. Modern research confirms the application of HLJDD and its ingredients as an alternative treatment for UTI.

**Keywords:** Traditional Chinese Medicine, Chinese Herbal Medicine, Urinary Tract Infection, Urinary Syndrome

Urinary tract infection (UTI) is diagnosed each year in approximately 400 million people worldwide.(1,2) The standard treatment for UTI is antibiotic therapy. According to the Center for Disease Control and Prevention, UTI is among the most common causes for antibiotic use. Increase in bacterial resistance to antibiotics poses a mounting threat to public health. (3) Microbial resistance motivates the exploration of alternative therapies for UTIs, particularly within the field of Traditional Chinese Medicine. Because of this growing interest, a thorough review of Chinese literature was undertaken to understand the development of a traditional herbal therapy in the context of the condition

that called for it. *Lin* is a traditional Chinese medical diagnosis described as painful, dribbling, or difficult urination with associated frequency and urgency according to the *Great Dictionary of Chinese Medicine*. (4) This study examines the historical development of the traditional Chinese medical diagnosis known as *lin* and its evolution to Heat Urinary Syndrome, a close analog to the contemporary diagnosis of urinary tract infection. We also traced the history of an herbal treatment used for the Heat Urinary Syndrome, *Huang-lian-Jie-du* Decoction, and investigated modern research that spoke to the herbs’ efficacy at treating symptoms of urinary tract infections.

<sup>†</sup> Common botanical notation for the many species originally catalogued by the French botanist Adrien Franchet (1834-1900).

## SOURCES AND METHODS

A review of primary Chinese texts with accompanied translations, medical literature and academic publications was undertaken to investigate the history of Urinary Syndrome and HLJDD in Traditional Chinese Medicine and the development of HLJDD's current application. We conducted field research at the William and Lynda Steere Herbarium (New York Botanical Gardens (NYBG), New York) and accessed NYBG resources including the Index Herbariorum ([sweetgum.nybg.org/science/ih/](http://sweetgum.nybg.org/science/ih/)) and the records of the LuEsther T Mertz Library (New York).

## RESULTS

### The History of Heat Urinary Syndrome:

Within Traditional Chinese Medicine, the treatments for symptoms associated with the modern diagnosis of a urinary tract infection have a history that dates back four millennia. To help identify traditional alternative treatments that could be advantageous for urinary tract infections, it is imperative to identify traditional diagnoses with a similar clinical picture. The most closely associated disease in traditional texts to our current diagnosis of a UTI is *lin*, translated as urinary syndrome. Predictably, the accounts of *lin* appear before its treatment. The term *lin*, first appears as a term for urinary syndrome in the Yellow Emperor's *Classic of Internal Medicine* in 2600 BCE.(5) Around this same time, urinary syndrome was referenced in

both the medical manuscripts at Mawangdui, before 168 BCE, and Wuwei, in the first century CE.(6) Over time, the diagnosis of *lin* became more refined. Hua Tuo (140–208 CE) distinguished eight types of Urinary Syndrome: Cold, Hot, Qi, Fatigue, 'Sticky', Sand, Deficient and Excess types.(7) The imperial physician of the Sui Dynasty, Chao Yuanfang, explicitly recorded the subtypes of *lin* and its treatments in *Treatise on the Etiology and Symptoms of Diseases*.(8) Chao Yuanfang's treatment were described as a complex intervention that combined herbs, *daoyin* (exercises), and lifestyle changes as important components. In 752 CE, Wang Tao added to this knowledge in *The Medical Secrets of an Official* where he differentiated five types of Urinary Syndrome, i.e. Stone, Qi, 'Sticky', Fatigue and Hot.(8) These five types of Urinary Syndrome were agreed upon and the subtypes studied for the proceeding centuries. Now, it is understood that different types of urinary syndrome correlate generally with the following Western pathologies.(9)

- Heat Urinary Syndrome: acute infection of urinary tract (UTI), acute nephritis, cystitis
- Blood Urinary Syndrome: tuberculosis of kidney, carcinoma of bladder or kidney
- Stone Urinary Syndrome: urinary calculi
- 'Sticky' Urinary Syndrome: urethritis
- Fatigue Urinary Syndrome: chronic prostatitis.

Species	Active Ingredient	Traditional Name	Associated Plant	Medicine Source
<i>Cortex Phillodendri</i>	barberine	Huangbai	Amur Cork Tree	Bark
<i>Fructus Gardeniae</i>	genipin	Zhi Zi	<i>Gardenia jasminoides</i>	Dried Fruit
<i>Coptis chinensis</i>	Coptidis alkaloids	Duǎn è huánglián	<i>Rhizoma Coptidis</i> or Chinese Goldthread	Rhizome
<i>Radix scutellariae</i>	Flavones	Huang Qin	<i>Scutellaria baicalensis</i> or Chinese skullcap	Root

**Table.** Chinese herbs of HLJDD and their potential chemical and botanical properties, in continuous use as part of traditional chinese medicine (TCM) for at least 2000 years.



**Figure 1A (left).** *Coptis Chinensis* (Franch.) or Chinese Goldthread, whose rhizome provided important alkaloids in HLJDD. **Figure 1B (right).** *Scutellaria baicalensis*, or Chinese skullcap, collected by H Swift, August, 1939, regarded as similar to *radix sutelariae*, or Huang Qin, whose roots are used in HLJDD. Both courtesy New York Botanical Gardens, NY.

While Heat Urinary Syndrome is most synonymous with acute (UTI), it is important to note that there is never an exact correspondence between Chinese and Western Medicine. This manuscript is cautious to retrospectively diagnose a UTI in those with Heat Urinary Syndrome due to the lack of physical evidence.(10) It aims to establish a connection between the two diagnoses to provide historical context and elucidate why the herbal treatment of *lin* was considered for a UTI.

In the 12th century, Zhu Dan Xi wrote, "In *lin* disease with dribbling of urine and difficult urination there is always Heat and one must clear Heat to free urination."(11) This idea was reinforced by Zhu Dan Xi in 1418 in *The Essential Methods of Dan Xi*, when he wrote, "There are five types of Urinary Syndrome but all have Heat."(12) The symptom of Heat, what is known as burning on urination, is foundational in diagnosing and treating urinary syndrome. Given its frequency, the treatment of heat became principal to treating all subtypes of urinary syndromes. In 752 CE, Wang Tao, the same author known for differentiating the five types of Urinary Syndrome, documented Huang-lian-Jie-du Decoction (HLJDD) as a prescription for Heat clearing and detoxifying.(8)

#### **History of Huang-lian-Jie-du Decoction and contemporary research:**

Huang-lian-Jie-du Decoction (HLJDD) was first

discovered in the *Handbook of Prescriptions for Emergencies* written between 206 BCE– 220 CE, but it was first explicitly recorded by Wang Tao in *Arcane Essentials from the Imperial Library*.(13,14) The ingredients of HLJDD and their proportions are as follows: Huang Lian (*Coptis chinensis*), Huang Qin (*Radix scutellariae*) Huang Bo (*Cortex phellodendri*), and Zhi Zi (*Gardenia fructus*), in a 3:2:2:3 proportion. Despite the diverse treatments of *lin* used throughout history, HLJDD has been applied and improved upon over time. Today, HLJDD and several of its herbs have been studied and validated through contemporary clinical trials as a treatment for different conditions, including urinary tract infections. Modern research confirms the potential applications of HLJDD and its properties, including anti-inflammatory, antioxidant, antithrombotic, hypoglycemic, hypolipidemic, hypotensive, and antitumoral effects.(15-17) In 1984, the Journal of Chinese Medicine published a clinical trial that treated a portion of patients diagnosed with Heat Urinary Syndrome with either the herbal remedy of Ba Zheng San, Eight Upright Powder, or Huang Lian Jie Du Tang Coptis Resolving Toxin Decoction. Of the 125 subjects, 79.8% were found to be cured.(18)

More recently, a 2019 study was conducted to analyze the phytochemical and pharmacokinetics of HLJDD with the hypothesis that herbs create synergic interactions among one another and improve pharmacological activities better than single drugs. The study concluded



**Figure 2A (left) and B (right, close up).** *Gardenia jasminoides*, equivalent to *Fructus gardeniae*, or Zhi Zi, thought to contribute, among other phytochemicals, genipin, in HLJDD, from its dried fruit. From the Enid Haupt Conservatory House 3, New York Botanical Gardens (IUH Archives, 2023).

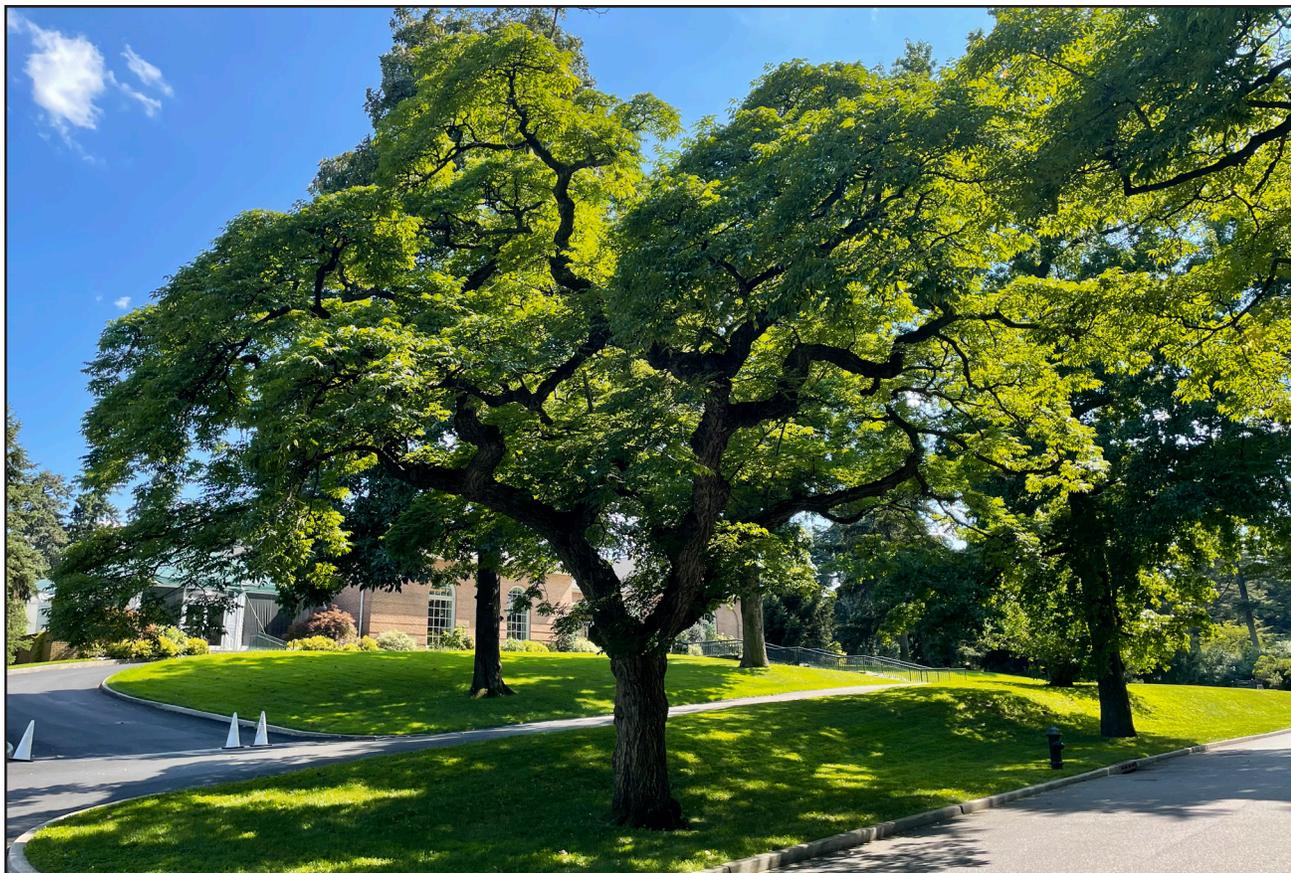
that HLJDD possessed certain pharmacokinetic properties that potentiated better pharmacological effects than a single drug or couplet medicine.(2)

Three of the four herbs in HLJDD, *Coptis chinensis*, *Radix scutellariae*, and *Cortex phellodendri* have been included in various clinical trials testing their efficacy in treating UTIs over the past twenty years. *Coptis chinensis* was found to have anti-inflammatory properties and inhibitory activity against several uropathogenic bacteria, including *E. coli*.(19) An in vitro study evaluated the antimicrobial properties of three different berberine alkaloids (the major active component of *Coptis chinensis*) and found that the growth rate constant of *E. coli* was reduced with all berberine alkaloids studied (berberine, coptisine and palmatine).(20) A 2007 randomized control trial conducted by Shen et al. gave postmenopausal female subjects with symptoms of a UTI and positive bacterial urine culture a treatment known as Er Xian Tang (EXT). The decoction included two of the four herbs included in HLJDD: *Cortex phellodendri* and *Coptis chinensis*.(21) Compared to the control group of four weeks of antibiotic capsules alone, EXT treatment was as effective at four weeks and at 3 month recurrence rates. The findings suggested that the herbs may provide more effective treatment than antibiotics alone for acute UTI episodes and potential prophylactic use for long-term management of recurrent infections. A 2011 trial

conducted by Ma et al. tested a decoction that included *Radix scutellariae* and produced similar findings for postmenopausal women in the acute and prophylactic setting.(22)

Chen et al. and Luo et al. performed randomized clinical trials (RCTs) comparing a *Cortex phellodendri*-based approach plus antibiotics with antibiotics alone in the treatment of UTI symptoms.(23,24) Chen et al. used a modified erxian decoction plus antibiotics in middle-aged and postmenopausal women, finding that the Chinese Herbal Medicine (CHM) approach was as effective as antibiotics in the acute management of UTI as well as in longer-term prophylaxis.(23) Similarly, Luo et al. used a bushen tonglin decoction on females with chronic UTI and concluded it may have potentiated the standard role of antibiotics.(24)

A 2018 systematic review confirmed that the decoctions tested in Chen 2008 and Luo 2011, which utilized *Cortex phellodendri*, may provide effective treatment during the acute phase of UTI and prevent recurrence in the six months following treatment when given prophylactically (25). Another study concluded, however, that the two RCTs were of sub-optimal quality limiting their generalizability either as a sole intervention or as an adjunct to antibiotics in treating symptoms of recurrent UTIs in postmenopausal women.(8)



**Figure 3.** The Amur corktree or *Phellodendron amurense* closely related to its cousin *P. chinense*, the barks of which are collectively referred to as Huang Bai in TCM and are thought to contribute the phytochemical barberine in HLJDD. From the grounds of the NYBG, July 2023 (IJUH Archives).

## CONCLUSIONS

The use of herbal therapies to treat *lin* and urinary difficulties in China has been documented for more than two thousand years. In our modern era of increasing antibiotic resistance, the efficacy of traditional Chinese herbal approaches has taken on renewed interest. Components of the original Huang-lian-Jie-du Decoction including *Coptis chinensis*, *Radix scutellariae*, and *Cortex phellodendri*, have been included in some contemporary clinical trials but will require more rigorous RCTs to establish their role as an adjunct or replacement of antibiotic therapy. The precise roles of *Coptis chinensis*, *Radix scutellariae*, and *Cortex phellodendri* have yet to be discovered; they may have been in more continuous use by health care practitioners in treating urinary difficulties than any other compounds in history. They may yet hold an even more promising role in the treatment of urinary tract infection in the future.

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**Figure 4.** Leaves of *Phellodendron amurense* or the Amur corktree displaying the classical pinnately compound, pointed, ovals with wavy margins. While the crushed leaves had a fragrance of turpentine, it is the dried bark of the corktree which is used in HLJDD. From the grounds of the NYBG, July 2023 (IJUH Archives).

# Assuring Excellence: The Inventions, Life, and Leadership of Edgar Garrison Ballenger

Alice T. Chu<sup>1</sup>, Samuel R. Donnenfeld<sup>\*,1</sup>, Vikram M. Narayan<sup>1</sup>

<sup>1</sup>Department of Urology, Emory University, Atlanta, GA

\*Correspondence: Samuel Donnenfeld, Emory University Department of Urology, Emory University School of Medicine, Building B Suite 1403, 1365-B Clifton Road NE, Atlanta GA 30322

**Introduction:** Edgar G Ballenger (1877-1945) was a leader in early 20th century American urology, now honored as the namesake for the AUA Southeastern Section's Ballenger Memorial Lecture. Our objective was to learn more about Ballenger's career, his leadership, and how he came to effect such positive change in the development of modern urology in the southeastern United States

**Sources and Methods:** We conducted a review of the literature authored by or on Edgar Ballenger, MD. We accessed archives of Emory University School of Medicine, the Atlanta History and Kenan Research Centers, and newspaper archives of the Atlanta Constitution and Salisbury Times.

**Results:** Ballenger was born and raised a North Carolinian but graduated from medical school and trained in Maryland before returning to the deep South. He volunteered for medical service during the First World War, serving with many others from the Emory University community, and was eventually promoted to the rank of Major. He finally returned to Atlanta in 1919 and began a 20-year illustrious career as a urologist, innovating the surgical management of prostatectomy, providing insights into the control of infection and new thinking on urinary voiding dysfunction. Author, editor, and educator, he served as President of the AUA itself in 1939. He died at 67 after an apparent cardiac arrest and a 7-story fall in the historic Georgian Terrace Hotel. The keynote address of the annual meeting of the AUA's Southeastern Section is the Ballenger Lecture, named in his honor.

**Conclusions:** Edgar Ballenger was an early 20th century innovator in urology, a thought leader and decorated war hero, whose indelible mark on his colleagues and trainees has been forever honored by the tradition of the annual Ballenger Lecture.

**Keywords:** Edgar G Ballenger, Southeastern Section, AUA History

Edgar Garrison Ballenger, MD, was one of the foremost leaders in urology in the United States in the early twentieth century demonstrating unparalleled leadership and ingenuity. Within the contemporary urology community, the Ballenger name is most commonly associated with the Ballenger Memorial Lecture, the major invited scientific lecture at the annual meeting of the Southeastern Section of the American Urological Association. Less is known about his life and contributions to the field of urology. This biographical article aims to provide a comprehensive overview of Ballenger's training, contributions, and leadership from his birth in 1877 until his death in 1945.

## SOURCES AND METHODS

A comprehensive literature search was performed using PubMed and the Emory University Library database to

identify scholarly articles authored by Edgar G. Ballenger, and historical documents and newspaper articles mentioning his name. The Kenan Research Center at the Atlanta History Center provided additional historical information and a photo of Ballenger. We also accessed the archives of the Atlanta Constitution and Salisbury Times for contemporary news stories of Ballenger and his community. Additional resources included the National Library of Medicine at [www.nlm.nih.gov](http://www.nlm.nih.gov).

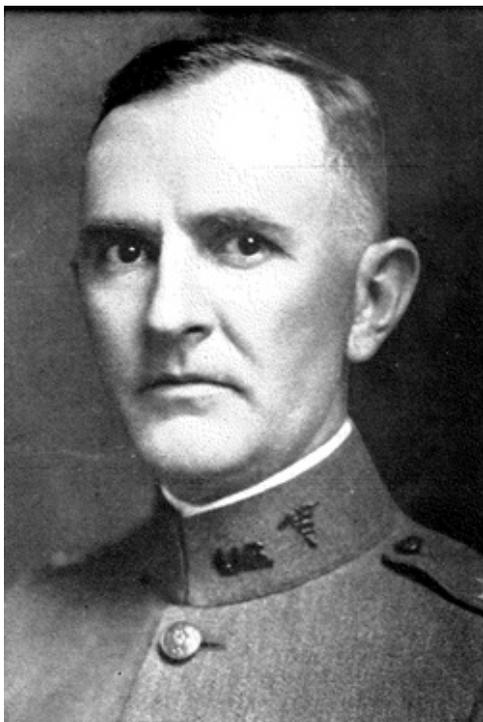
## RESULTS

### An early life

Edgar Garrison Ballenger, MD was born on November 20, 1877 in Tryon, North Carolina, to Anna Garrison and Thomas Theodore Ballenger. Young Edgar attended Furman University and the University of North Carolina,

graduating in 1897. He graduated with his Medical Degree from the University of Maryland in 1901 at the age of 24. After completing Internship at the University of Maryland Hospital, he served as Company Surgeon to the Maryland Granite Company in Guilford, Maryland for 18 months. Following this, Ballenger moved to Atlanta, Georgia, where he specialized in urology.(1)

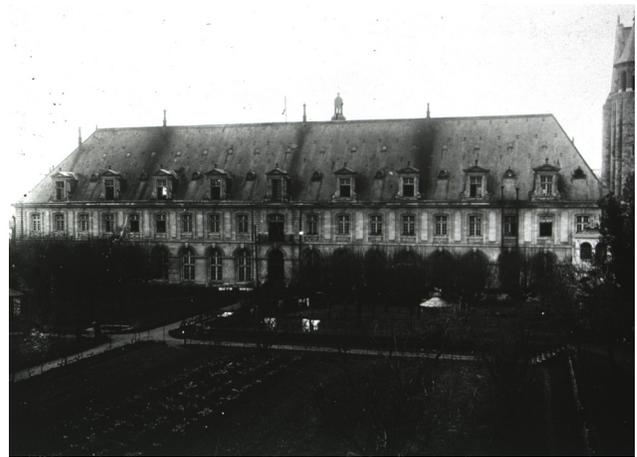
In 1917, at the outbreak of America's involvement in World War I, Ballenger joined Base Hospital 43, a civilian medical regiment formed in response to a recruitment effort to obtain high quality medical personnel.(2) Base Hospital 43 was more commonly known as the 'Emory Unit', due to its volunteer physicians, nurses, and other enlisted personnel being predominantly from Emory University.(3) He served in Blois, France as Captain, and then promoted to Major (Figure 1). He served as Chief of the Genito-Urinary Department and Commanding Officer of Annex Mixte—an Annex where patients with infections, venereal diseases, contagious diseases, and overflow patients were treated (Figure 2).(4) Base Hospital 43 was officially relieved on January 21, 1919. Ballenger then transferred to Division 26, then the Seventh Corps of the United States Army, where he served a year in France and Germany.(5)



**Figure 1.** Edgar G. Ballenger (1877-1945), US Army, c 1918, preparing for assignment to the western front with a large contingent of volunteers from Emory University Medical Center known as the 'Emory Unit'. Courtesy Kenan Research Center, Atlanta,

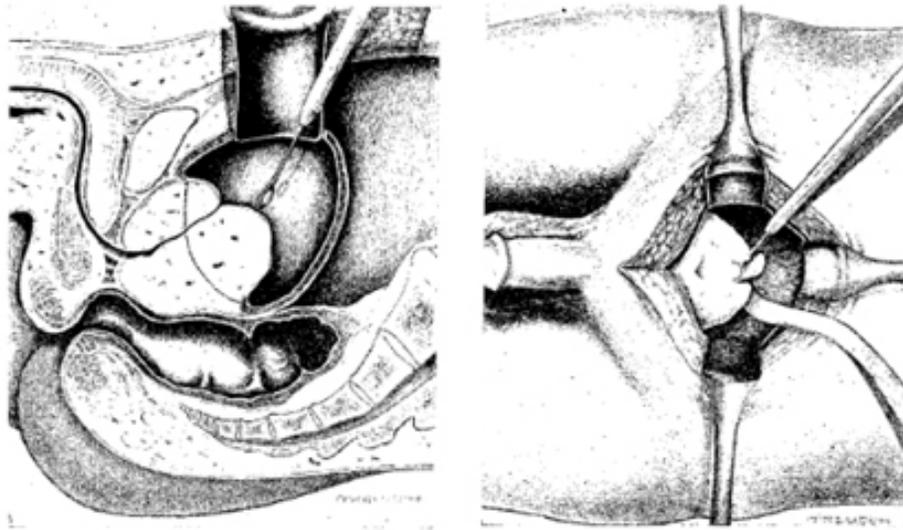
### A Rising Giant

Following his service with the U.S. military, Ballenger returned to practice in Atlanta, Georgia, which was located in the historic Healey Building on Forsyth Street, focusing on genito-urinary surgery. Over his career, he practiced as a genito-urinary surgeon at Grady Memorial Hospital, Wesley Memorial Hospital (now incorporated into Emory University Hospital campus), Davis-Fischer Sanitarium (later Crawford W. Long Memorial Hospital and now Emory University Hospital Midtown), Presbyterian Hospital (now defunct), as well as a Lecturer at the Atlanta School of Medicine and Clinical Professor of Genito-Urinary Disease at Emory University from 1918-1927.



**Figure 2.** Base Hospital 43, Blois, France, the 'Annex Mixte' or the 'Emory Unit' where Ballenger was stationed and chief of the genito-urinary ward, 1918-1919. At its peak, the unit accommodated more than 2000 casualties. National Library of Medicine, Bethesda.

Throughout his years in practice, Ballenger published numerous articles in the *Journal of Urology*, *Journal of the Medical Association of Georgia*, *Journal of the American Medical Association*, and the *Southern Medical Journal* detailing novel discoveries in medicine, urology, and various applications of instruments he invented. He published on a wide variety of topics from venereal diseases to urethral strictures, and the pathophysiology of impotence.(6,7,8) He was among the first to comment on male voiding distance as a proxy measure for urinary flow rate, which is a key and important precursor to the invention of uroflowmetry in 1948.(9,10) Ballenger was among the first to recognize the antimicrobial properties of silver nitrate and its potential for topical applications and irrigation in the genitourinary tract. (11) He was the first to describe transvesical resection of the prostate through a suprapubic cystotomy approach, prior to the advent of resectoscopes, and later



**Figure 3.** "Drawing on the left shows sagittal section of very large prostate protruding into the bladder, exposed by suprapubic cystotomy. Intravesical tissue is removed by loop electrode above dotted line. ON right is suprapubic view showing cutting electrode removing tissue" from Ballenger EG et al. (12)

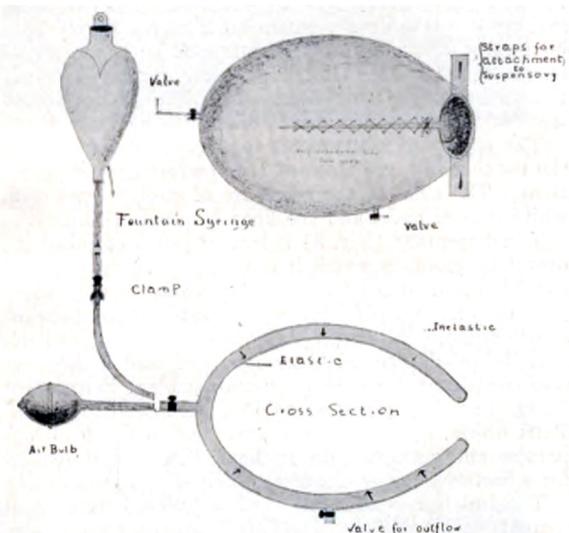
two-way resection via the transvesical and transurethral approach offering a more minimally invasive and less bloody operation than prostatectomy. (12) Ballenger's inventions include a novel urine collection system for suprapubic cystotomies, pneumatic scrotal compressor, and the aptly named Ballenger urethroscope. (13,14) The Ballenger urethroscope was a 24 French scope with a short, curved beak designed for operations on the posterior urethra (could be purchased for \$13.25 or \$2,328.00 today. (15)

#### **An Atlantan Institution; an AUA President**

Dr. Ballenger's other notable texts include *Genito-Urinary Diseases and Syphilis*, published in 1908, a textbook targeted at medical students whom he felt did not have an adequate text for this matter. He was also an editor of *History of Urology*. Volumes I and II, published in 1933. He also served as editor of the *Atlanta Medical Journal* from 1905-1915, and on the editorial board of the *Southern Surgeon*, the official publication of the Southeastern Surgical Congress.

Ballenger's leadership in medicine and urology is represented by his legacy within the numerous regional and national associations he participated in. He was the President of the Fulton County Medical Society (now known as the Medical Association of Atlanta) in 1911, then served as President of the Southeastern Surgical Congress in 1930-1931.(16) He was President of the Southeastern Section of the AUA in 1934-1935, and later

the President of the AUA in 1939. He also served as the president of the Southern Medical Association (SMA) in 1944-1945 until his untimely and sudden death.



**Figure 4.** Ballenger's 1907 description of a "scrotal compressor" for the treatment of chronic epididymitis, allowing for either pneumatic or hydraulic pressure.(11)

Dr. Ballenger died on June 1, 1945, at the age of 67, after an unfortunate seven-floor fall over the banister of a Georgian Terrace hotel stairwell where he was residing. (17) He had been complaining of dizziness during breakfast and had dispatched his attendant for help.

Moments later, his body was found on the mezzanine floor and he was pronounced dead at the scene. His son, Colonel Edgar G. Ballenger, Jr. had ironically been driving through the night from Mississippi to visit his father and arrived just 20 minutes after the fatal fall. As a prominent physician leader, the senior Dr. Ballenger's funeral was well-attended by the medical community of Atlanta and included members of the Southern Medical Association and the Fulton County Medical Society. He is laid to rest at Westview Cemetery in Atlanta, GA. Posthumously, the annual Ballenger Memorial Lectureship was established by the Southeastern Section of the AUA as its major scientific presentation to commemorate his service and prominent work in the field of urology. (18)



**Figure 5.** The vertiginous residential stairwell of the old Georgian Terrace Hotel, Atlanta. Kay Gaensler Photography, Creative Commons .

## CONCLUSIONS:

Edgar Ballenger was a pivotal leader in the development of urology in the early 20th century, establishing the academic and clinical rigor of the southeastern (SE) section of the AUA. His service as President of the SE section, the AUA itself, and later the Southern Medical Association point to one of the most highly influential and revered surgeon thinkers of his time, and rightful honoree of the Ballenger Memorial Lecture at the annual meeting of the SE AUA section.

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