The Hospital for the Ruptured and Crippled: William Bradley Coley, Third Surgeon-in-Chief 1925–1933

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Abstract In January 1925, the Board of Managers of the New York Society for the Relief of the Ruptured and Crippled appointed William Bradley Coley, M.D., age 63, Surgeon-in-Chief of the Hospital for the Ruptured and Crippled (R & C) to succeed Virgil P. Gibney who submitted his resignation the month before. It would be the first time a general surgeon held that position at the oldest orthopedic hospital in the nation, now known as Hospital for Special Surgery (HSS). Coley had been on staff for 36 years and was world famous for introducing use of toxins to treat malignant tumors, particularly sarcomas. A graduate of Yale College and Harvard Medical College, Coley interned at New York Hospital and was appointed, soon after, to the staff of the New York Cancer Hospital (now Memorial Sloan Kettering Cancer Center) located at that time at 106th Street on the West Side of New York. With his mentor Dr. William Bull, Coley perfected the surgical treatment of hernias at R & C. He was instrumental in raising funds for his alma maters, Yale, Harvard and Memorial Hospital. His crusade in immunology as a method of treatment for malignant tumors later fell out of acceptance in the medical establishment. After his death in 1936, an attempt to revive interest in use of immunotherapy for inoperable malignancies was carried out by his daughter, Helen Coley Nauts, who pursued this objective until her death at age 93 in 2000. Coley's health deteriorated in his later years, and in 1933, he resigned as chief of Bone

Tumors at Memorial Hospital and Surgeon-in-Chief at R & C, being succeeded at Ruptured and Crippled as Surgeon-in-Chief by Dr. Eugene H. Pool. William Bradley Coley died of intestinal infarction in 1936 and was buried in Sharon, Connecticut.

Key words Virgil P. Gibney · William Bradley Coley · Hospital for the Ruptured and Crippled (R & C) · New York Hospital · Hospital for Special Surgery (HSS) · Lewis Clark Wagner · William T. Bull · Bessie Dashiell · John D. Rockefeller, Jr. · New York Cancer Hospital · Royal Whitman · Bradley L. Coley · Bradley L. Coley, Jr. · Helen Coley Nauts · Joseph D. Flick

Introduction

In January 1925, the Board of Managers of the Hospital for the Ruptured and Crippled (R & C) appointed Dr. William Bradley Coley (1862–1936), a general surgeon, as the third Surgeon-in-Chief of the hospital. At the same time, the Board designated Dr. Virgil Gibney (1847–1927), then 78 years of age, who had been in deteriorating health since having a stroke in 1922, Surgeon-in-Chief Emeritus.

Now in its 62nd year, R & C was the oldest existing orthopedic hospital in the country and had become the leading orthopedic center under the skillful direction of Gibney [1, 2]. It was to remain at its third location on 42nd Street just east of 2nd Avenue in New York until 1955 when it would relocate as the Hospital for Special Surgery (HSS) to 535 East 70th Street. Although founded by a general practitioner, James Knight, a general surgeon now occupied the Office of Surgeon-in-Chief for the first time.

Gibney's final years

In the summer of 1922, a particularly hot summer, there were many polio cases. Dr. Gibney usually spent most of

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his summers at his Bridgeport, Connecticut home. However, this year, he felt increasing responsibility to care for the many potentially crippled patients and made a number of trips to his New York office where he would often spend the night at his townhouse at 16 Park Avenue. After one particular exhausting trip to New York in August, Gibney returned to his Bridgeport home where he saw a post-polio patient in his reception area. As she was leaving, Gibney felt the beginning of a stroke, bid her farewell, and went to his bedroom where he lost consciousness.

His recovery was slow and never returned to normal. His wife realized that he would be unable to cope with their New York home (no elevator) and winterized their Bridgeport home, which was originally built as a summer residence. The New York townhouse was sold the next year [3].

With continued improvement in his health, Gibney decided to return to his private practice and sought the help of a recent R & C graduate orthopedic resident, Dr. Lewis Clark Wagner, who was then on staff at St. Luke's Hospital. Wagner, a Kentuckian and a graduate of Johns Hopkins Medical School, joined Gibney in private practice on July 1, 1923.

Now with his private office under control, Gibney approached the Board of Managers to discuss resigning as Surgeon-in-Chief. The Board at first felt he was able to carry on his hospital role, but finally, in January 1925, accepted his resignation.

Gibney's health was failing, and by 1926, his trips to New York ended. On June 16, 1927, after two bouts of an intestinal crisis, Gibney, just short by 3 months of his 80th birthday, passed away at his home in Bridgeport.

1927 News Notes in the Journal of Bone and Joint Surgery noted the following:

Gibney is dead. One of the fathers of Orthopaedic Surgery has been called away. The world is poorer by his loss!....Dr.Gibney is dead, but his memory liveth and will live because he was more than a surgeon. He was a man with greatness in him. [4]

There were many tributes recognizing Gibney. One was naming a private pavilion completed in 1923, *The Gibney Pavilion*, which remained until the hospital moved in 1955. Made possible by Lewis Clark Wagner, an anonymous patient donated a life-size bronze bust of Dr. Gibney which was unveiled on January 30, 1929. It was done by an American sculptress, Agnes Kemp, and was set on a pedestal to replicate the exact height of Gibney. It presently stands in the reception area of the Richard L. Menschel Conference Center of Hospital for Special Surgery. For many years, our residents would rub the nose of the bust before exams for good luck, resulting in a shiny appearing nose. That tradition eventually faded away.

Gibney published more than 175 articles in professional journals and trained more than 140 orthopedic residents (Table 1). As an assistant to James Knight for 13 years, Gibney personally treated and carefully observed his patients, although being overshadowed by Knight's conservative principles.

Dr. Gibney's patients revered him, were enamored by his winning smile, and overwhelmed just by his presence. When Dr. Gibney became Surgeon-in-Chief, he introduced surgery for orthopedic conditions at R & C and designated a Department of Hernia Surgery. Although he was an orthopedic surgeon, he realized his own surgical limitations and appointed to the staff general surgeons who in those times were great leaders in their fields.

At the time of Gibney's death, Dr. Coley remarked: "Dr. Gibney was highly fitted by nature for an orthopaedic surgeon....Generations of house surgeons came and went and every one left with a feeling of great respect for Dr. Gibney's professional skill, and with a stronger feeling of friendship and affection that endured through all the years.... He will be remembered long as a distinguished surgeon and a great teacher, but even longer as a loyal and devoted friend".

Coley's appointment as Surgeon-in-Chief

William Bradley Coley was appointed clinical assistant to the Hernia Clinic in 1889 just 1 year after receiving his medical degree from Harvard Medical School and while a house surgeon at the New York Hospital (Fig. 1). It was Dr. William T. Bull (1849–1909), an eminent surgeon at the New York Hospital and Attending Surgeon of the Hernia Department at R & C, who took a liking to Dr. Coley and arranged his appointment as well as at other prestigious institutions. Bull was a close colleague of Gibney and shared an office with him [5].

Coley had been on staff for 36 years when the Board of Managers of the Hospital for the Ruptured and Crippled appointed him Surgeon-in-Chief at age 63. Why a general surgeon was given this appointment is not clear from hospital records or other sources of hospital history. There were certainly well-known orthopedic surgeons on staff, probably the most famous being Royal Whitman (1857–1946) who, at age 68, had been on staff since 1889, the same year as Coley. Whitman, also a graduate of Harvard Medical School in 1882, authored the most comprehensive orthopedic text in English history, *A Treatise on Orthopaedic Surgery*, first published in 1901. Another well-known leader in orthopedics, Dr. Samuel Kleinberg (1885–1957) considered him to be "the most accomplished orthopaedic surgeon of his day in our country"[6]. Maybe age was a factor, as Whitman retired 4 years later in 1929 at age 71.

It is further strange that at the time of his appointment to R & C, Dr. Coley was recognized internationally as a pioneer in cancer research. Not many cancer patients were treated at the Ruptured and Crippled. Early in his career, Coley had vigorously pursued treating inoperable sarcomas using a vaccine of toxins derived from bacteria.

Coley, Dashiell, and Rockefeller

The Coley toxin story is an intriguing one, originating from his experience in treating one of his first patients, 17-year-

Table 1 Orthopaedic residents serving under Dr. Virgil Gibney 1887–1925

Residents
Francis G. Aud (1910)
Georges Audet (1924)
John Allen Balsley (1902)
Edward LeRoy Barnett (1899–1900)
David Beal (1920)
George E. Bennett (1909)
William T. Berry (1901)
James Bishop (1895)
Harry Blair (1924)
James Bost (1920)
William A. Boyd (1908)
Frederick C. Bradner (1899)
Nathaniel Perkins Breed (1904)
John A. Brooke (1914–1915)
Joseph Buchman (1923–1924)
Charles P. Bull (1905)
James B. Bullitt (1889)
Thomas DeLorche Burckhalter (1900)
Robert E. Burns (1921–1922)
Sherman Burns (1921)
F. F. Carr-Harris (1906)
Arthur H. Cilley (1897)
C. C. Collins (1916)
Paul C. Colonna (1921–1922)
Ogden F. Conkey (1909–1910)
Thomas E. Cook (1924)
John R. Coryell (1910)
Frank T. Dare (1901)
Antonio E. DeMoya (1918–1919)
Matthew DePass (1889–1890)
Howard DuPuy (1917–1918)
E. R. Easton (1914–1915)
Charles F. Eikenbary (1903)
Edward S. Farley (1918–1919)
Robert Felter (1924)
P. H. Fitzhugh (1891)
C. A. Forgey (1892)
C. F. Fowler (1917)
Clarence B. Francisco (1907)
William E. Gallie (1905)
Bernard Gaston (1921)
Edwin O. Geckeler (1923–1924)
Moses Gellman (1923–1924)
W. Travis Gibb (1887)
A. Lorne C. Gilday (1901)
Frederick W. Gilday (1897)
Charles A. Goodrich (1896)
Guy B. Grigsby (1907)
Elwin W. Hannock (1910)
S. T. Harris (1894)
Joseph D. Hartnett (1919)
Eugene Carson Hay (1890)
Philip Heit (1923–1924)
Horace C. Holbrook (1918)
William F. Holcomb (1923–1924)
William Horan (1921–1922)
Robert L. Hull (1909)
Charles H. Jaeger (1896)
A. L. Johnson (1924)
G. Hewitt Johnson (1913)
J. M. Johnston (1888)
S. Fosdick Jones (1904)
Eli E. Josselyn (1887)
Ralph C. Kahle (1922–1923)
Edward Y. Kau (1919–1920)
Joseph R. Losee (1908–1909)

Table 1 (continued)

Residents
Daniel F. Luby (1911)
Andrew R. McAusland (1912)
John J. McDermott (1922–1924)
Francis A. McGreen (1913)
Henry J. McKenna (1911)
W. Ross Martin (1893)
Percival K. Menzies (1912)
William J. Mersereau (1898)
Orville R. Miller (1914–1915)
Samuel E. Milliken (1888)
Barclay W. Moffat (1919–1920)
Edmund J. Morrissey (1923–1924)
Thomas Moylan (1924)
Howard G. Myers (1888)
William A. Newman (1922–1923)
Toufick Nicola (1920)
Bernard S. O'Brien (1917–1918)
John B. O'Brien (1918)
John F. O'Brien (1917)
Joseph F. O'Brien (1914–1915)
J. C. O'Neill (1915–1916)
Charles Ogilvy (1898)
W. Barnett Owen (1905)
Edward J. Parrish (1900–1901)
Robert Patterson (1921–1922)
Seck Wah Phoon (1924)
Robert T. Pirtle (1902)
Charles E. Preston (1907)
Frank A. Purcell (1922–1923)
Victor W. Purdy (1919–1920)
Joseph E. Raia (1916–1917)
Abraham H. Rechtman (1923–1924)
Charles A. Reed (1904)
W. G. Reynolds (1895)
John B. Richardson, Jr. (1903)
W. B. Ryan (1916)
Judson J. Sales (1923–1924)
Preston Satterwhite (1898)
D. D. Saunders, Jr. (1893)
Ben L. Schoolfield (1920)
Herman B. Schwatt (1906)
Irving Schwartz (1921)
Charles E. Sevier (1924)
A. R. Shands (1892–1893)
William T. Shields, Jr. (1912–1913)
Leon Slater (1921–1922)
Russell Smith (1921–1922)
Samuel Smith (1890)
W. Lent Sneed (1911)
Shirley Erving Sprague (1899)
C. L. Starr (1891)
Frank H. Starr (1903)
Richmond Stephens (1911–1912)
J. Wilbert Stone (1900)
E.J. Strickler (1908)
F. P. Strickler (1915–1916)
J. A. Taylor (1921–1922)
Atha Thomas (1923–1924)
W. B. Thompson (1894)
C. A. Thomson (1892)
Harlin Tucker (1913)
Arthur H. VanDyke (1895)
B. V. Van Meter (1897)
Lewis Clark Wagner (1921–1922)
R. B. Walker (1922–1923)
Rawley VV. Ward (1917)
George William Warren (1902)
J. Hilton Waterman (1896)

Table 1 (continued)

Residents

John W. Wheat (1894)
 Henry G. Williamson (1898–1899)
 Theodore A. Willis (1919–1920)
 C. H. Wilson (1891)
 Dale Wilson (1906)
 William E. Wirt (1889)
 W. E. Wolcott (1915)
 James Wyant (1920–1921)
 I. Zadek (1916–1917)

old Bessie Dashiell, a close friend of John D. Rockefeller, Jr. (1874–1960) [5]. The two had known each other for about 2 years, having met through Bessie's brother, Lefferts Dashiell who was a classmate of Rockefeller at a private school on the Upper East Side of New York. While Lefferts was gregarious and outgoing, both Bessie and JDR Jr. were quiet with similar interests. He often spoke of her as his "adopted sister", especially as he did have a sister named Bessie.

Twenty-eight-year-old William Coley had just finished his New York Hospital surgical training and was in his first year of private practice when Elizabeth Dashiell was referred to him for an injury of her right hand. She had sustained a minor compression between two benches in a Pullman car during the summer of 1890 when she was travelling to Alaska. Coley, consulting with Dr. Bull, thought it was periostitis. An incision and drainage produced no purulence, but a small gray mass on the bone. Because of persistent pain, Dr. Coley then biopsied the small mass which turned out to be a round cell sarcoma.

After further consultation with Bull and their colleagues, Dr. Coley performed a below-elbow amputation

on November 1st, but Bessie took a rapid downhill course with widespread metastasis in the next month. She died on January 23, 1891 [5].

At home in Cleveland, Rockefeller, now 17, was devastated by this event and attended Bessie's funeral in New Jersey. During this period, Dr. Coley also met John D. Rockefeller, the father, and a relationship grew between Coley and John D. Rockefeller, Jr., which would last many years, having common interests in research and treatment of cancer.

In April 1891, Coley read a paper before the New York Academy of Medicine, *Contribution to the Knowledge of Sarcoma*, in which he made it clear that he was going to devote his career to the study of cancer ¹.

With his professional future redefined, Coley immediately started investigating case histories of sarcoma at New York Hospital and in the private files of Dr. Bull and Dr. Robert F. Weir (1838–1927), chief surgeon at New York Hospital. He stumbled onto the case of a German immigrant who developed a lesion on his face in front of his ear. This developed into an egg-size mass, which was excised by Dr. Bull. Because of reoccurrences, Bull reoperated in 1884, but because of its large size, he could not attain a primary closure. Pathological analysis was a round cell sarcoma. An erysipelas infection resulted with isolation of *Streptococcus pyogenes*. Over weeks, the sarcomatous mass was reduced in size until it was gone when Stein was discharged in February 1885.

This is what Coley was looking for, and with much enthusiasm, energy, and perseverance, he began his hunt in the tenements of the Lower East Side looking for Stein. One day, he found his man with the telltale scar below his ear. He brought him back to New York Hospital for Dr. Bull to examine. The patient was 7 years postoperative of an "inoperable" sarcoma, free of disease, and in good health. This was the beginning of William Coley's pursuit, which, 1 day, would label him the *father of cancer immunotherapy*.

Coley, his toxins, and the New York Cancer Hospital

In 1891, Dr. William Bull referred an Italian immigrant drug addict, Zola, in his mid-30s, on whom he operated twice for

Fig. 1. William B. Coley age 30, at a Christmas party in 1892 at R & C seen with a House Surgeon, C.A. Forgey, M.D. on his left and an unidentified resident on his right. (From Cancer Research Institute)

¹ Bradley L. Coley, Jr. "Peter", grandson of William Bradley Coley, was kind enough to give me a copy of his aunt Helen Coley Nauts' 365-page manuscript (unpublished and without a title) of the life of her father Dr. William B. Coley. It is a detailed story of Dr. Coley's life and pursuit into the research and development of a vaccine for sarcoma. Although not medically trained, Nauts, at the age of 31 in 1938, began a mission to carry on her father's crusade when she found 15,000 patient records of her father stored in the family barn in Sharon, Connecticut. She eventually investigated nearly 1,000 case histories. In 1952, she founded the New York Cancer Research Institute (currently Cancer Research Institute) and worked relentlessly on her project until she died December 2, 2000. Among her awards was the *Commandeur de l'Order National de Merite* by French President Valéry Giscard d'Estaing in 1981 for her "outstanding contributions to scientific research" and the 1997 *National Institute of Social Sciences' Gold Medal for Distinguished Service to Humanity*, an award given to no other woman in science and medicine since Dr. Marie Curie [7].

recurrent sarcoma, to Dr. Coley. The man had only a few weeks to live. Coley proposed a plan of injections of *erysipelas* into the tumor, and with Dr. Bull's consent (as well as the patient who was told of its experimental nature), Coley began his experiment of injections, and after 1 month, the tumor had regressed. After multiple injections staged over months, the patient regained his health with the tumor reduced in size. Zola lived for another 8 years in remission.²

Soon after, in 1892, Coley was appointed to the staff of the newly opened (1887) New York Cancer Hospital at 106th Street and Central Park West by Bull (one of the three attending surgeons). The hospital was only the second in the world to be dedicated to the treatment of cancer. It was a dreaded disease shunned by other hospitals. The Board had many wealthy families, prominent of whom was William Astor, who, in 1898, influenced the name change to the General Memorial Hospital³.

Coley now had a hospital to support his research in developing a vaccine for sarcoma. He befriended many of the wealthy families associated with the hospital, engineered significant financial support, and unfortunately had encountered challenging relations with some staff members, especially James Ewing who would become the country's most eminent pathologist and eventually Medical Director of Memorial Hospital.

From Saugatuck to New York

Born in the small village of Saugatuck, outside Westport, on the Connecticut shoreline of the Long Island Sound on January 12, 1862, William B. Coley was the first surviving son of Horace Bradley Coley and Clarina Wakeman Coley. The family came from a long lineage of farmers, schoolmasters, and religious leaders from West of England dating back into the early part of the seventeenth century. It was the beginning of the second year of the Civil War and the year before the founding of the Hospital for the Ruptured and Crippled in 1863.

As a boy, he always wanted to go to Yale, so that when he was accepted in 1880, he was overjoyed and enrolled with a cousin on the campus that fall. In those years, New Haven was a city of 78,000 with more than 600 manufacturing companies.

Coley studied all the classics in a curriculum modeled after Oxford and Cambridge Universities. In his time away from the university, he worked as a farm hand for neighboring farmers for \$3.50 per day or for his father and grandfather for no pay.

Graduating Yale College in 1884, he taught Latin and Greek in Oregon for 2 years and then entered Harvard Medical School in 1886, graduating after 3 years in 1888. During a previous summer, young Coley had visited some old Yale friends who were interning at New York Hospital. One of the residents became sick, and Coley substituted for him for 5 weeks. He then applied for an internship, was accepted, and appointed to the surgical services of Dr. Bull and Dr. Weir. New York Hospital, which had opened its doors in 1791 and was a major metropolitan hospital, had moved into a new building on West 15th and 16th Street in 1877 (Table 2).⁴

Coley's surgical practice

In the early years of his professional practice, Coley divided his time between the New York Cancer Hospital on West 106th Street and the Hospital for the Ruptured and Crippled on 42nd Street and Lexington Avenue, probably a most formidable trip in those days. Coley was to relate in his later years, "I was favored by Fortune in taking up the study of Medicine and Surgery at the most opportune time in a thousand years—that time when the old surgery, with high mortality from infection, was just the beginning to be replaced by the new surgery based on Lister's great discovery: antiseptis."⁵

Dr. Bull was a towering surgeon in New York Hospital, and his appointment to R & C in 1888 was very important to Dr. Gibney who needed guidance at R & C into the new era of *aseptic* surgical principles. Bull was the perfect choice and was appointed Attending Surgeon to a separate Hernia Department, reporting only to Gibney as Surgeon-in-Chief.

The nineteenth century had seen many adults and children incapacitated by abdominal hernias which were only be treated by braces and trusses. But Bull introduced modern surgery for the ruptured, and Coley eventually made the hospital the foremost hernia center in the country.

In 1889, Gibney reported to the Board of Managers: "The Hernia Department is no longer a dispensary simply. Dr. Bull has availed himself of the wards and our operating room to treat cases that need hospital care; so that your Hospital is now one for the ruptured and as well as the crippled".

The earliest mention of surgery for hernias in children was reported by Bull and Coley in the *Annals of Surgery* in 1898 where they wrote that in 1889 and 1890, 19 cases of hernia in children were operated on by the older method of

² Because of how seriously contagious the injections could be, all of the treatments were done out of the New York Hospital in Zola's home on the Lower East Side.

³ In 1916, its name was changed to Memorial Hospital. John D. Rockefeller, Jr. donated land on York Avenue and \$1million for relocation of the hospital beginning in 1936. Sloan-Kettering Institute was established by Alfred P. Sloan and Charles F. Kettering, both of General Motors, and dedicated in 1948. Finally the two institutions merged to become Memorial Sloan-Kettering Cancer Center (MSKCC) in 1960.

⁴ Although HSS signed an affiliate agreement with New York Hospital, Cornell Medical Center in November 1951, and an exchange of staff began, it was not until 1955 when HSS moved to its current location that a true affiliation became functional [8].

⁵ Joseph Lister's first published work on *antiseptic surgery* in 1867 did not gain favor in the surgical world until around 1880. His *antiseptic* principles employed the use of carbolic acid to kill microorganisms, while later, *aseptic* techniques included sterile methods to prevent infections [9].

Table 2 Selected timeline events of New York Hospital and Cornell University Medical College

Year	Event
1771	King George III of England grants royal charter to The Society of the New York Hospital (current name)
1791	New York Hospital opens
1877	New York Hospital relocates to West 15th and 16th Streets
1898	Cornell University Medical College established
1913	New York Hospital and Cornell University Medical College affiliate
1927	New York Hospital–Cornell Medical Center agreement formed
1932	New York Hospital–Cornell Medical Center opens on East 68th Street
1951	The Hospital for Special Surgery affiliates with New York Hospital–Cornell Medical Center
1979	Cornell University–New York Hospital School of Nursing closes
1997	New York Hospital merges with Presbyterian Hospital to form New York–Presbyterian Hospital
1998	Cornell University Medical College changes its name to Joan and Sanford I Weill Medical College of Cornell University

Socin, Czerny, and Risel with the result that 50% relapsed during the first year [10]. So disappointing were the results that further hernia surgery was abandoned until the following year when Dr. Coley operated on a 15-year-old boy using the Bassini procedure (from Padua, Italy). They then reported that the Bassini technique using Kangaroo tendon produced excellent results in 400 procedures from 1895 to 1898. Of course, all operations were in children, as the hospital had no inpatient facilities for adults at that time⁶. The report cited 34,271 cases of hernia treated at the Hospital for the Ruptured and Crippled from 1890 to 1897.

The Hernia Department of R & C continued to be a major treatment center in the country until 1934 when it was renamed the Surgical Department by the 5th Surgeon-in-Chief, Dr. Philip D. Wilson.

Raising a family

At age 22 in 1884, Coley met 18-year-old Alice Lancaster at Miss Nott's Boarding School in New Haven, and after an interrupted 7-year relationship, the two were married and took a walk-up apartment on East 33rd Street in New York. In December 1892, Alice Coley gave birth to a boy, Bradley Lancaster Coley⁷, and the couple moved to their first brownstone on East 35th Street.

Coley was rapidly becoming a well-known surgeon in New York with a flourishing private practice and employing new advances in cancer therapy. His background education was only in the best schools and hospitals in the country. Not only a graduate of Yale (few physicians were even college graduates in those days; not until 1901 did Harvard require a college degree to apply to its medical school) [12], but he was exposed to various life experiences in his worldly travels as a teacher in Oregon, as a ship's surgeon to the Azores, and as a lecturer in Europe. Besides a home in the city, for many years, he had a farm in Sharon,

Connecticut where he indulged in the chores of farming and attempted to make a profitable business of farming. His medical writing included 19 papers published in international journals by 1896. He was elected a fellow of the American Surgical Association (at age 36, the youngest ever elected) in 1897.

In 1908, Coley was appointed the first surgeon of the New York Central Railroad (Coley BL Jr, personal communication, 2007).

Financially, he was very successful, with annual earnings of \$33,000 in 1902⁸.

He was medical advisor, benefactor, and friend to the Huntington family as well as John D. Rockefeller and his son John D. Rockefeller, Jr. dating back to the Bessie Dashiell event. In 1901, he arranged for Arabella Huntington to make a gift of \$100,000⁹ to Memorial Hospital to establish the Collis P. Huntington Fund for Cancer Research. His social contacts were numerous, belonging to some 25 clubs in New York (Coley BL Jr, personal communication, 2007).

Helen Coley Nauts

On September 2, 1907, Alice Coley gave birth to Helen Lancaster Coley in Sharon, Connecticut. Although she would have no medical training, Helen Coley would become a major figure in her father's legacy of Coley's toxins (Fig. 2). Married to a banker, William Nauts, and raising two children, Helen Coley Nauts, at age 29, organized and researched, after his death, all of his medical records and case histories stacked away in their Sharon barn.

In 1941, she contacted Dr. Cornelius P. Rhoads, Medical Director of Memorial Hospital, for his advice in reviving interest in Coley's toxins. He suggested she review 100 of his cases. Subsequently, she reviewed more than 800 microscopically proven cases, but this was not enough to convince Rhoads. However, her energy, perseverance and knowledge, and a grant of \$2,000 from Nelson Rockefeller in 1953, led her to found, with her friend Oliver R. Grace (1909–1992), the Cancer Research Institute in New York.

⁶ The first female inpatient ward was not opened until 1912 when the hospital relocated to East 42nd Street between First and Second Avenues. It was not until World War I when an inpatient adult male ward would open for sailors [11].

⁷ Bradley L. Coley went on to graduate Yale in 1915 and obtain his M.D. degree from Columbia Physicians and Surgeons Medical College in 1919. He was on staff at R & C and 1st Chief of the Bone Tumor Service at Memorial Hospital. He died in 1961.

⁸ About \$750,000 in 2007,

⁹ Over \$2.7 million in 2007

Fig. 2. Dr. Coley always made time for his family and is seen here reading a book to his daughter, Helen, circa 1910. (From Cancer Research Institute)

At the 21st Annual Awards Dinner of the Cancer Research Institute (2007), a record \$1.5million was raised. The annual William B. Coley Award for Distinguished Research in Basic and Tumor Immunology (established in 1975) honoring Coley was presented. The Institute, with its national headquarters in New York, is a global leader in the advancement of immunology and cancer immunology.

In March 2007, The New York Times reported that an advisory panel of the Food and Drug Administration approved for the first time the use of a vaccine to treat cancer, specifically advanced prostate cancer [13].

Helen Coley Nauts, who died in 2000 at age 93, continued her crusade up to her very last years, trying to convince the medical establishment of the significance of her father's lifelong research in promoting immunotherapy as a treatment for cancer.

1925—the roaring twenties

When William Coley became Surgeon-in Chief in 1925, the country was in its fifth year of prohibition (1920–1933), organized crime was rampant, and social changes after World War I had exploded in the worlds of fashion, music, and literature. Jimmy Walker (1881–1946), known as *Beau James*, was elected to his first term as Mayor of New York. The flamboyant politician, friend of the stars and of the sports world, boasted a style that was synonymous with the Jazz Age. This popular music, having roots in early Afro-American spirituals, gradually migrated from Chicago to New York, concentrating in Harlem. Variations of this improvisational skill included introduction of the *stride piano*, popularized by the famous “Fats” Waller.

Eventually, investigation of Mayor Walker asserting bribes and corruption lead him to resign during his second term in 1933. He was credited with establishing the first Department of Hospitals in the city and saving the five-cent subway fare.

Prosperity was at every door or if it was not, at least it was “next door”. After Woodrow Wilson’s administration (1913–21), dealing with World War I, the country was ready to return to normalcy. The next three presidents Harding, Coolidge, and Herbert Hoover (1929–1933), all Republicans, joined in a pursuit of financial wealth. They cut taxes for the wealthy, increased tariffs, and reduced interest rates. Harding, having died in office of a heart attack in 1923, was succeeded by his Vice President, Coolidge.

In March 1925, the country for the first time listened to their new president, Calvin Coolidge (1923–1929), take the oath of office on the radio. Broadcasting was at the pinnacle of its “golden age”. It was first installed in the White House in 1922 by President Warren G. Harding (1921–1923). The movie industry was among the top five industries in the country. Americans idolized their stars, Rudolph Valentino and Charlie Chaplin, and became even more overjoyed when talking movies began in 1927 with *The Jazz Singer*.

Table 3 Significant events at R & C circa 1925

Year	Event
1923	First Medical Board established
1923	A private patients pavilion opened, later in 1931 named in honor of Virgil Gibney
1924	The first Arthritis Clinic opened with R. Garfield Snyder, M.D. appointed its Chief
1924	First Department of Physiotherapy headed by Kristian G. Hansson, M.D., a 1923 graduate of Cornell Medical College
1925	First graduate nurses at R & C appointed to administer anesthesia
1925	Occupational Therapy Department founded
1925	William Church Osborn resigns from the presidency of the Board of Managers only to return to that position in 1928
1926	Alker Memorial Library founded by Mr. Henry A. Alker, in memory of his parents and combined with the Arents Library for Children (founded 1905), were both dedicated to patients. The Library Committee was chaired by Helen Coley, Dr. Coley’s daughter
1927	Fenwick Beekman, M.D. appointed as associate surgeon to the Hernia Department
1928	Glass-roofed solarium built on the roof
1928	First therapeutic pool opened in a New York hospital
1929	Hospital laboratory established with John McWhorter, M.D. appointed Director and Pathologist
1929	An ambulance service inaugurated in conjunction with the Department of Hospitals
1929	Royal Whitman, M.D. resigns, later retiring to England

Fig. 3. William B. Coley in his later years showed typical facial features characteristic of acromegaly. (From Hospital for Special Surgery Archives)

The new Surgeon-in-Chief

Luckily for Coley, in his first years as Surgeon-in-Chief, the era of the *roaring twenties* did not spill over into hospital routine. The hospital administrator, Joseph Flick, now in his eighth year, relieved a great deal of burden from the Surgeon-in-Chief's administrative duties, a welcome change from the time Gibney had assumed that office. Flick was a very able organizer, very congenial with the professional staff, and well liked by everyone.

In January 1926, in his first annual report as Surgeon-in-Chief to the Board of Managers, Dr. Coley cited a total

of 3,143 operations performed during the year with a breakdown of 1,328 in the Orthopaedic Department, 817 in the Hernia Department, and 998 in the Private Pavilion. A new Monthly Staff Conference was instituted at which the work done in the previous months was critically reviewed [14].

Coley was very much aware of the need of physical and occupational therapy, an unusual appreciation for a surgeon. He worked closely with the Nursing Department under Ethel B. Ridley, RN, Directress of Nursing (1924–1942) and appointed the first graduate nurses to administer anesthesia in his first year.

Although there had been X-ray machines at the hospital for 27 years, the X-ray Department was at first considered a technical specialty. In 1926, Dr. Raymond Lewis was appointed Roentgenologist to the Hospital, and the specialty was assigned departmental status [15].

In 1928, Coley instituted the first hospital therapeutic pool in the city and persuaded the Board to install a glass roof solarium on the roof (Table 3).

He appreciated the need of a good records department, and the hospital records over the years were unusual, as all notes were typed. (It is well known that physicians' handwriting is invariably difficult to decipher. In the late 1970s, there was an attempt to abolish typing of our hospital records to reduce costs, but luckily, this was overruled).

In 1929, he established the first true Pathology Department and appointed Dr. John McWhorter as Director and Pathologist. McWhorter was an experienced pathologist who trained in the Surgical-Pathological Laboratory of the College of Physicians and Surgeons and held important staff appointments at The French Hospital and Bellevue Hospital. In addition, he appointed his professional adversary, Dr. James Ewing, as Consulting Pathologist in 1927.

Although Coley was the first surgeon who was not an orthopedic surgeon to head the hospital, he was very interested

Fig. 4. Bradley L. Coley, Jr. "Pete", currently seen in the HSS Kim Barrett Medical Library, reviewing his father's, Bradley L. Coley, *Neoplasms of Bone*, next to a framed photograph of his grandfather, William Bradley Coley. (From Hospital for Special Surgery Archives)

in advancing education, research, and treatment of orthopedic conditions. The records showed an increased number of patients with bone malignancies treated at R & C not only by him but many others on staff during the late 1920s.

There were now three Orthopaedic Divisions working independently of each other with each Attending Surgeon in charge of his own division. Dr. Royal Whitman headed the First Orthopedic Division. Dr. Percy W. Roberts was the Attending Surgeon of Division Two. Dr. Charlton Wallace, who had been Professor of Orthopedic Surgery at Cornell Medical College, was the Attending Surgeon of Division Three. The First Hernia Division was directed by Coley and the Second Division by Dr. Joseph P. Hoguet, who later, in a severe automobile accident, lost his arm.

Over the years, many other well-known orthopedic surgeons on staff had published new techniques for treatments in their subspecialties—to name a few:

- Dr. Samuel Kleinberg—scoliosis
- Dr. Arthur Krida—congenital dislocation of the hip
- Dr. Paul Colonna—hip reconstruction
- Dr. Toufick Nicola—recurrent dislocation of the shoulder
- Dr. Lewis Clark Wagner—paralytic drop foot.

Coley's health

In 1923, Dr. Coley suffered two attacks of duodenal bleeding from ulcers. Ten years before, he had suddenly been made aware by an anonymous source that he probably was suffering from acromegaly (Fig. 3). Realizing the consequences of such a progressive condition originating from a pituitary tumor, he became very concerned that his life as a surgeon might be quite compromised in later years. He reappraised his financial status and began to reduce expenses in his real estate holdings and life style. In 1927 at age 65, his energy level was high, only compromised by repeated attacks of duodenal bleeding. Yet, his acromegaly did not affect him other than resulting in enlarging anatomy such as his glove size increasing two sizes, an increasing head circumference, and diminished hearing.

By 1931, pyloric stenosis, resulting from his duodenal disease, caused him to undergo bypass surgery at New York Hospital under local anesthesia. He recovered without complications at his home in Sharon. His political problems at Memorial Hospital added more stresses to his life, as did financial pressures. His son Dr. Bradley L. Coley was appointed to the First Hernia Division in 1927 and was able to assist his father in surgery in later years.

On January 1, 1933, William Coley tendered his resignation at Memorial Hospital as Chief of the Bone Tumor Service, and on February 1st, resigned as Surgeon-in-Chief of Ruptured and Crippled. He continued to have admitting privileges at both hospitals where he operated. His son Bradley L. Coley was appointed successor to his father as Chief of the Bone Tumor Service at Memorial Hospital (Fig. 4).

Memorial's Medical Board paid tribute to Coley by having a testimonial dinner at the Waldorf Astoria for 350

people on January 12, 1933, Coley's 75th birthday. Speakers included Coley's friend Charles Mayo and James Ewing (Coley BL Jr, personal communication, 2007).

Probably his most prestigious honor had come in October 1935 when he reported a large number of 5-year survivals of inoperable malignant tumors, treated with his toxins, at the Royal College of Surgeons of England where he was inducted as an honorary fellow (the fifth American so honored) in that distinguished society [16].

In 1933, the Board of Managers appointed Dr. Eugene Hillhouse Pool, Coley's successor, as the fourth Surgeon-in-Chief at R & C. Pool, director of one of the two surgical services at New York Hospital, President of the New York Academy of Medicine and President-elect of the American College of Surgeons had been an associate of Dr. William Bull.

On April 15, 1936, William Coley suffered a recurrent attack of diverticulitis, was operated on by Dr. Pool at the Hospital for the Ruptured and Crippled under local anesthesia, and died the next day. Seven months later, Alice Coley, fighting cancer for many years, died in Sharon Connecticut where she was buried next to her beloved husband.

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