

## A Biographical Portrait of Edward Hartley Angle, the First Specialist in Orthodontics, Part 1

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### ABSTRACT

Much of what is known about Edward Hartley Angle, MD, DDS (1855–1930), the acknowledged “father” of modern orthodontics, has been derived from secondary sources, accounts written by his contemporaries and others. New historical research using primary sources, largely the recently published four-volume sourcebook of Angle’s correspondence and business transactions from 1899 to 1910, gives a broad view of the personality, interests, and activities of this prime mover in the evolution of orthodontics. This three-part article highlights aspects of Edward H. Angle’s life and persona, based on new findings culled from his letters and other personal documents. Part 3 presents a biographical chronology of Angle’s remarkable life. (*Angle Orthod.* 2009;79: 1021–1027.)

*“To arrive at a just estimate of a renowned man’s character one must judge it by the standards of his time, not ours.”*

Mark Twain,  
*Personal Recollections of Joan of Arc, 1896.*

### PART I

Old letters often tell rich history. At certain junctures in the historical record, details found in the letters of visionary leaders reveal important developments better than a simple recounting of events can. Orthodontics 100 years ago was at just such a critical point. No personality central to the history of orthodontics stimulated as much progress, excitement, and polarity as Edward Hartley Angle, MD, DDS (1855–1930), the acknowledged founder of this clinical specialty. Early in the 20th century, he dominated the emergence of “orthodontia as a science and a specialty.” This inventive doctor gave malocclusion the primacy and order it needed. He also created the first educational program

to train specialists in orthodontics, and he developed the first prefabricated orthodontic appliance system. Thus, the exquisite series of letters, accounts, and patents from the mind and hand of Edward H. Angle, now contained in the Angle Archives and published in 2007 in a four-volume sourcebook, give new life and context to the early history of orthodontics.

Dr Angle’s papers, like the literary remains of other great pioneers, provide clear windows into the writer’s remarkable nature, capacities, and limitations, as well as a rich historical panorama of events and relationships during the seminal days of modern orthodontics. The published archives include Angle’s correspondence and business papers written between May 3, 1899 and December 19, 1910. It was a time of Angle’s most provocative accomplishments and most accelerating prosperity. The bulk of this period includes 9 of Angle’s 13 years (1895 to 1908) spent in St Louis, golden years in Angle’s professional development and in the history of that city.

In the early 1900s, St Louis, Missouri, was undergoing a renewal in celebration of its role as the gateway to western expansion of the United States. The centerpiece for its renaissance was the Louisiana Purchase Exposition, better known as the 1904 World’s Fair of St Louis, a 7-month extravaganza attracting nearly 20 million visitors. It was a dazzling show, built in 1200-acre Forest Park, featuring colossal outdoor neoclassical sculptures, and pavilions designed as Grecian palaces filled with futuristic technologies and other displays of science, art, and optimism. St Louis was thrust into a global spotlight. So were Dr Edward Angle and orthodontics.

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Accepted: February 2009. Submitted: February 2009.  
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This was the time, at the turn of the 20th century, that Angle implemented his new school and sought the recognition of orthodontia as a full and independent branch of dentistry. By 1904, the Angle School of Orthodontia was training two classes a year, with many students coming from distant places to learn from the “world’s greatest” clinical orthodontist. During the 1904 World’s Fair, St Louis was the host city for the Fourth International Dental Congress, attended by many foreign dignitaries. Angle chaired the Congress’s highly successful section on “Orthodontia,” and in the process, he engaged many who became new friends and followers.

To appreciate Angle’s times best, we should apply a bit of retrospective context. In 1904—near the temporal midpoint of the Angle Archives—America and Americans were very different than they are today. It would still be another decade before the dawn of personal income taxes. The average life span in the United States was 49 years in 1904. The leading causes of death were respiratory infections: pneumonia, influenza, and tuberculosis. Only 14% of homes had a bathtub; only 8% had a telephone. A 3-minute call from St Louis to New York City cost \$8, which is equivalent to \$176 in today’s dollars; Angle’s round-trip train ride to New York cost \$25 (\$550 in current money). The average worker’s wage was 22 cents per hour, producing a yearly income between \$300 and \$600. Competent professionals (including dentists) could expect to earn \$2000 to \$4000 per year. Angle boasted that one of his former students practicing orthodontics in New York City was earning \$40,000 annually, an extraordinary income in those days.<sup>3:302</sup>

Further context may be gained with some knowledge of Edward Angle’s 44 years of life before the 1899 start of the remarkable record of his letters and accounts contained in the Angle Archives. Thus, the aim of this three-part article is to provide readers with a biographical portrait of Dr Angle, the man, the writer, the inventor and the professional, incorporating a sketch of his early life and some happenings, insights, and impressions culled from his own words within the precious collection of Angliana, which has been recently published. Part 3 is a chronology of Angle’s life with new findings from recent historical research.

## THE EARLY YEARS

Edward H. Angle’s early years reflect elements of a classic American success story of his era: a fiercely determined young man of no remarkable heritage serendipitously finding his considerable aptitudes and blazing trails in pursuit of his visionary goals. At various times in his letters, he expressed his admiration for a pantheon of archetypes with traits akin to his



**Figure 1.** Edward H. Angle’s boyhood home on his parents’ farm in District 1, “Ballibay,” Herrick Township, Bradford County, Pennsylvania. This farmhouse is still in use, although no longer in the Angle family. The last member of the family to occupy the farmhouse was Neal Angle, Dr Angle’s nephew, who sold the farm in 1946. (Early 1900s photograph, reproduced from the 1938 meeting program of the Angle Society.)

own, such as the indomitable messenger in “A Message to Garcia,” the popular, inspirational short story (1899) by Elbert Hubbard, which became required reading for Angle’s students.<sup>1:84,151</sup> Samuel L. Clemens (Mark Twain),<sup>2:503</sup> poet-storyteller James Whitcomb Riley,<sup>1:564</sup> George Catlin,<sup>1:608</sup> Benjamin Franklin, and Rembrandt van Rijn were among his favorite heroes. All were creative achievers and resolute individualists of humble birth and with great connection to everyday people.

Dr Angle never forgot his farm-boy life in northeastern Pennsylvania that helped shape many of his qualities and quirks in adulthood. From the southern boundary of District no. 1 of Herrick Township in Bradford County, you could almost see the deep, winding chasm of the Susquehanna River valley. This area was nicknamed “Ballibay” in the 1820s by the new settlers from the town of Ballybay, County Monaghan, Ireland. Edward Hartley Angle was born here June 1, 1855 in a modest, white wood-framed house near the crest of a hill on his father’s 200-acre dairy farm (Figure 1). He is recorded in the 1860 Bradford County census book as “Hartly,” the fifth of six children, and third son, to Philip Casebeer Angle and Isabel Erskine Angle. His father’s roots were primarily Dutch and his mother was born in Ireland. From childhood, he was called “Hart” by his family and close friends. The Angles had a seventh child, William, a bright lad, who died of illness at age 11. Teen-aged Hart was hurt terribly by the loss of his younger brother Willie, his favorite sibling.<sup>1:107–108</sup>

Hart showed no enthusiasm in school or on the farm, to the utter dismay of his unsympathetic father. He was always behind in his learning, especially math, and he avoided farm work as much as he could. He was a natural tinkerer, a whittler, a maker of things. In reminiscences, his wife Anna told about his heavily scarred knees, lifetime reminders of boyhood knife

slips. When his father needed a more efficient hay rake, 11-year-old Hart invented one. However, he did not get much appreciation for the new machine, and soon someone else applied for and was awarded the patent for Hart's instinctively clever work. It was an early lesson in life's unfairness that the sensitive boy probably long remembered.

In Angle's letters, we find a man who cherished his boyhood friendships throughout life. He never lost contact with some of his Herrick chums, like Cyrus Camp, Guy Fuller, and Jerry Sanger. His correspondence with them is often in the playful tones of a kid still horsing around the farmyard.<sup>1:187;2:398,502</sup> Angle peppered his letters to his hometown friends with monikers concocted from the names of town fathers with whom the boys occasionally skirted trouble. "Cy" Camp was sometimes referred to as "J. Rufus Avery" or "Gideon Squares" in Hart's jocular letters to him.<sup>1:187,240-242</sup> Angle also showed his self-deprecating humor to old, dear friends in the variety of comical aliases he used in signing his letters: Alexander J. Horatio,<sup>1:523-525</sup> Alonzo Revellen,<sup>1:201-202</sup> Big Foot,<sup>3:261-262</sup> Colossus Doc the Great,<sup>2:622-623</sup> Flat-nosed Hart,<sup>3:279-280</sup> Little Harty Angle,<sup>1:819-820</sup> Old Man Friar,<sup>1:53-54</sup> Uncle Reuben,<sup>2:622-623</sup> and sometimes simply the geometric notation " $\angle$ ."<sup>2:381-382</sup>

In 1874, at age 18, he was introduced to dentistry with coaxing from his understanding mother Isabel. Recognizing his nascent mechanical skills, she secured a position for Hart with a dentist in nearby Herrick, as an office apprentice. He got on well in dentistry—it appealed instantly to his keen manual and visual senses, his love of tools and his need for orderliness. Two years later, he applied to dental colleges. His scratchy, brief letter of inquiry dated September 6, 1876, to the Baltimore Dental College is the earliest document extant from his hand. In it, he touted his proficiencies in the indispensable texts of the day: Harris's *The Principles and Practice of Dental Surgery* (1863) and Piggot's *Chemistry and Metallurgy, as Applied to the Study and Practice of Dental Surgery* (1854). Although his English constructions and spelling were rather crude for a schooled 21-year-old, young Angle exuded the restless confidence that would mark his entire adult life and would win him success in many adventures to come. He was invited to enroll at Pennsylvania College of Dental Surgery in Philadelphia for their DDS program, then arranged in two 6-month terms spaced over a nominal 2 years and located in a building at the northwest corner of Twelfth and Filbert Streets. Angle alluded to his college experiences years later in friendly letters with classmates E. L. Townsend<sup>2:622</sup> and Charles J. Tibbets.<sup>2:623</sup>

## THE YOUNG DENTIST

After dental school graduation in 1878, Edward Angle went to the Bradford County seat, Towanda, and set up a general practice of mechanical dentistry in the center of town. He became a boarder in the home of Towanda's leading physician, Dr David Shepard Pratt, a good strategic decision for the bright new dentist in town. Young Dr Angle advertised in local newspapers, such as *The Sullivan Review*, and appeared to be rapidly successful. Here in his leisure as an unmarried young professional, Angle developed his first interests in mechanisms for tooth alignment or "regulation," considered the main purpose for moving teeth at that time.

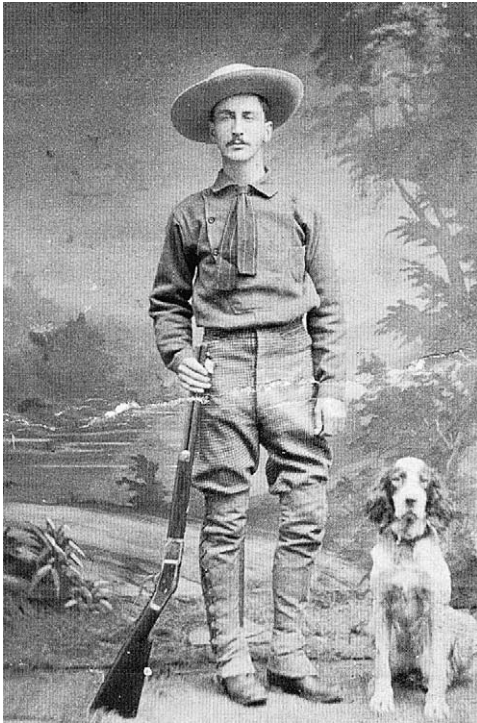
In Towanda, Angle experienced declining health that was to plague him on and off for the rest of his life. He was diagnosed with pleural pneumonia. Today, we may understand this chronic respiratory condition as a consequence of tuberculosis. One popular treatment of the day was for the sufferer to move to fresher, cleaner air—to a pristine resort set up for this purpose or to the mountains or the desert. Angle formed special bonds throughout his career with those who shared the same affliction, former student Albert "Leaf" Ketcham being the most prominent among them.<sup>2:107-108</sup>

After 3 years of dental practice in Towanda, in the spring of 1881, 26-year-old Dr Angle abandoned dentistry and took a train to Minneapolis, Minnesota, on a physician's advice, in search of better health. Within a few months, his condition improved and, with his recovery, came renewed confidence and resolve to make something of himself. For his health's sake, Angle was considering permanent retirement from dentistry in favor of work that was less confining and more outdoors. In Minneapolis, he heard that sheep farming in Montana was where the "big money" could be made. In the fall, he returned briefly to Pennsylvania to entice some of his old farm buddies from Herrick to join him in setting up a lucrative sheep-raising business. They signed on excitedly, and the lot of his Ballibay cronies—including his older brother Mahlon and close friend Cy Camp—traveled with the freewheeling Hart to the fresh air of the Montana wilderness in search of their "pot of gold" (Figure 2).

Angle invested all his savings into their sheep-farming venture, all to be undone by the great blizzard of 1882, a record-breaking deep freeze that killed off the entire herd. The empty-handed boys from Ballibay sullenly returned to Pennsylvania, except for Hart. A defeated Angle, feeling physically better but mentally depleted, hobbled in to Minneapolis by mid-1882 looking for work—again in dentistry.

He got back into general dental practice and soon





**Figure 2.** Studio photograph taken in Minneapolis, Minnesota, of young “Hart” Angle in hunting uniform with an English Springer Spaniel at his side, around the time of his Montana sheep-farming adventures, c. 1881–1883 (26–28 years old).

resumed the creative thinking and tinkering with tooth-regulating appliances that he began in Towanda. Within a couple of years, Angle inquired at the Dental Department of the Minnesota Hospital College in Minneapolis regarding faculty employment. Impressed with what he had to offer, the college administrators tailored a position to suit his skills and their needs. In 1886, 31-year-old Edward Angle was appointed a professor of histology and lecturer on comparative anatomy and orthodontia. A few years later, after the Hospital College merged into the University of Minnesota, he was elevated to professor of orthodontia, a rare position in those days when orthodontia was a neglected part of the prosthetics department at dental colleges. At the same time, he quickly ascended through the ranks to become president of the Minneapolis City Dental Society in 1888. He also was able to maintain his small private dental office, where he experimented more and more with novel approaches in orthodontic mechanisms. In sum, through his resilience, industriousness, and good fortune, Angle seemed to have landed on his feet psychologically and financially from the Montana get-rich-quick debacle a few years earlier.

His big break came in 1887 when Angle was permitted on the speaking program of the Ninth International Medical Congress convened in Washington, DC.

On the fourth day of this important Congress, Thursday, September 8, 1887, the section on “Dental and Oral Surgery” was called to order at 11 AM in the Universalist Church at the corner of 13th and L Streets. Thirty-two-year-old Dr Angle was the youngest of the session’s speakers and was scheduled last on the day’s program. Two prominent authorities on orthodontics directly preceded Angle: Clark Goddard, professor at University of California, San Francisco, and Eugene Talbot, textbook writer and professor from Chicago.

A confident Edward Angle presented his talk, entitled “Notes on Orthodontia with a New System of Regulation and Retention,” using lantern slides—a relatively new visual aid for lecturing. He demonstrated his classification of tooth movements and his novel orthodontic devices, such as piano wire in a soldered “pipe” (tube) and the jackscrew and traction screw. The open discussion that followed was sometimes acrimonious. Many well-known dentists in the audience, including John N. Farrar and Victor H. Jackson, accused Angle of falsely claiming originality. They cited others (including themselves) who earlier introduced similar appliances. Angle carefully explained how his devices were different and better, indeed “new,” but apparently, he did not prevail. The edited paper and subsequent inflammatory discussions were published in the *Transactions of the Ninth International Medical Congress* under an imposed, truncated, noncontroversial title, “Notes on Orthodontia.” This 1887 article commonly has been called the “First Edition” of his classic textbook on the treatment of malocclusion. Actually, Angle considered that his first edition was his 14-page chapter appended to Loomis P. Haskell’s new book on dental laboratory procedures published in 1887; he titled this version of his Congress paper “Extracts of Notes on Orthodontia, with a New System by [sic] Regulation and Retention” and it did not contain the discrediting commentaries.

Years later, colleagues observed that the bitterness Angle developed from the contemptuous treatment he received at this 1887 Congress helped harden him for the professional “fights” he was to invite and encounter throughout his adventurous career. To those who would challenge him, his style often seemed abrasive, sometimes brutal; to others, those loyal to him and backing his causes, he was as charming and gentle as a puppy.

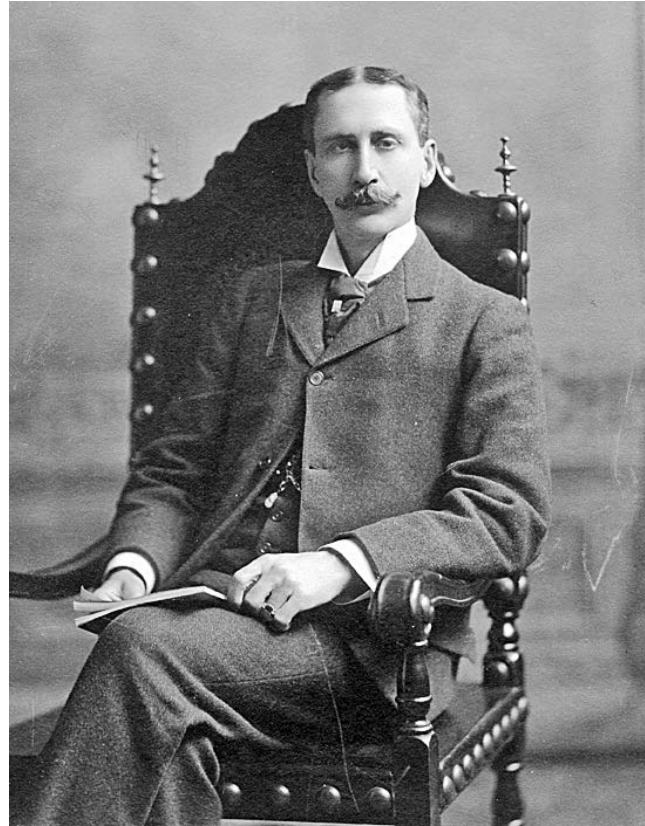
## THE FIRST SPECIALIST IN ORTHODONTICS

The year 1892 was a watershed in Angle’s professional development: he announced that he would be practicing orthodontia to the exclusion of all other dental therapies. With this decision, he became the first

acknowledged exclusive specialist in orthodontics in the world. Until this moment, none of the authorities on orthodontics worldwide and in history ever mustered the vision and confidence to limit their dental or medical practice to only this emerging type of treatment. Angle was no longer on the faculty at the University of Minnesota. He resigned to concentrate his energies on experimentation in orthodontia and the development of marketable, prefabricated (“ready-made” in his vernacular), new treatment appliances. He also needed time to work on his textbook’s third edition, his first real book, a 51-page work, 20 pages longer than his 1890 edition, which had been published as an appendix in the second edition of Haskell’s prosthetics laboratory book. He hired Anna Hopkins, a bright young Minneapolis secretarial school graduate, to help him with his book and practice. It was the beginning of a life-shaping relationship for both of them.

Also by 1892, Edward Angle was beginning to feel stress from his troubled marriage. Florence A. Canning was the sister of John E. Canning, a Minneapolis machinist whom Angle came to know and rely on, the way any inventor needs a toolmaker. It seems that Angle met Florence socially through this business relation. In March 1887, 22-year-old Florence and the 31-year-old dentist married. Less than 9 months later their daughter Florence Isabel Angle was born in Minneapolis, only 3 months after her father’s disastrous appearance at the Ninth International Medical Congress in Washington.

Angle’s correspondence a dozen years later described a disintegration of this marriage from the start. The couple was grossly mismatched, he the ambitious idea man and she the daydreaming reader of romances.<sup>2:187–188</sup> Angle gradually lost respect for Florence “Senior,” as he referred to his wife in some letters, and he became by default an absentee father to their sickly daughter “Florencie.” By July 1900, his personal confidence in his new directions was strong enough to prompt him to move out of their boarding-house apartment in St Louis.<sup>1:805;2:186</sup> He had his thriving practice, his income-producing books, patents and appliances, his growing international fame, his prospering proprietary school, and perhaps most significantly, Anna Hopkins, his secretary, amanuensis, confidante, and sympathetic soul mate (Figure 3). We can follow his travails as a distant father in his stream of letters trying to influence the upbringing of his daughter to whom he wrote as “your ol’ Padre”\* (Figure 4). It took Angle another 9 years to deliver an acceptable divorce settlement for Florence Senior in May 1908.<sup>3:305</sup> Angle’s mother had died a few months earlier, and the delay



**Figure 3.** Edward Hartley Angle, age 43 years, 1898, St Louis, Missouri, at the beginning of his legendary ascent in international fame and fortune.

and particular timing of his divorce may well reflect the determination of a devoted son to shield his devoted mother from the shame of his broken marriage. On June 28, 1908, Hart and Anna were married in St Louis (at ages 53 and 36, respectively) and within 2 months the newlyweds had moved to New York to begin a new chapter in their lives, as retired gentry.<sup>3:305</sup>

Contemporaneous observers and commentators agreed that Edward H. Angle—whether they liked the man or not—was a pillar of integrity and a model of character, presumably built up from the high values drilled in at home during his childhood. But, he was not without personal faults, some related to his uncontrollable need to defend his honor when he perceived an attack. One of Angle’s more blatant weaknesses was his relapse occasionally into verbal abuse, an outspokenness commonplace among the educated and privileged of his time. It was a more benign prejudice than the hardcore racial and religious bigotry that was virulently expressed in society later in the 20th century. At various times in his letters, he disparaged the Irish, Scots, Jews, Christian Scientists, blacks, Easterners, university professors, drunks, women, and “quack” colleagues, to name a few easily labeled groups. He

\* References 1:474, 574–575, 795–796; 2:106–107.





**Figure 4.** Only known photograph of Dr Angle's daughter, Florence Isabel Angle (on left), seen with him and an unidentified woman at his 65th birthday party, June 1, 1920, held in the garden at the Angles' home in Pasadena, California. Aged 32 years at the time, she was a schoolteacher in Los Angeles. Never married, Florence died in Morganton, NC 50 years later. (From the Milo Hellman collection in the Angle Society Archives.)

would trot out any stereotypical device he could recall to belittle someone who had caused him embarrassment or financial jeopardy. Angle was particularly callous about people whom he perceived as patent infringers, practice deadbeats, clashing colleagues, or "muttonheads," as he sometimes called these disagreeable folks. Frederick B. Noyes, his friend since 1892 and a former student, put it this way: "When he presented a paper before a society and someone assailed his ideas with elaborate quotations from the literature and citing of authorities, he could not argue. All he could do was to cuss at them, and call them God damn fools, who they probably were, and they didn't like it."

In his correspondence with friends, he referred to many people by nicknames, epithets, or code-names he created in jest or loathing. James "Jason" N. MacDowell was a classic example of a target for Angle's barbs. Dr MacDowell, the first professor in orthodontia at the University of Illinois, wrote in 1901 a book "*Orthodontia: a Text Book for the Use of Students in Dental Colleges and a Hand Book for Dental Practitioners*" for dental students that was described best in journal reviews as derivative and uninspired. Angle considered MacDowell a shameless plagiarist and had harsher names for him, such as "Jase the Degenerate," "Mr. J. Sawdust Brains," "The Oracle," "The Thing," "Idiot," and simply "It." He even expressed a few of these pejoratives directly to MacDowell in critical letters.<sup>2:384</sup>

Angle was unforgiving to those who betrayed him. His brother Mahlon's perceived ineptness in their Montana sheep fiasco of 1881–1882 left Hart with a bitter

taste. Mahlon was the only Angle child to stay on the family farm and work with father Philip, who died in 1907 at 87 years. Mother Isabel's death the following year at age 84 touched off venomous relations between Mahlon and his siblings. Mahlon was committed to continue his parents' dairy farm in Ballibay, and he was successful in buying out the other children's shared inheritance of the property for a pittance through his "bellyaching" and deceit.<sup>3:244–248</sup> Hart, livid over Mahlon's selfish and cheating behavior to the family, soon broke off relations with him for good, referring to Mahlon as "that brute" and "the villain."

On the other hand, Edward Angle's good-natured admiration comes through clearly in his letters to long-time friends and loyal supporters. High on his praise list was Dr Guilhermena P. Mendell from Minneapolis, who in 1902 was the first woman to take the Angle School course. He usually addressed her straightforwardly by her nicknames "Quane" or "Mena," but often he teased her with the titles "Colossus of Minneapolis," "Old Doc Mendell," or "President."<sup>3:324–325,348–349</sup> He loaned her lantern slides and took the pains to write her detailed instructions on how to give a lecture in the best form possible.<sup>3:266–271</sup>

In Edward H. Angle, we see a self-made man whom his rivals and competitors respected regardless of his points of view. Two of the most influential orthodontists in New York, Edward Augustus Bogue and Victor Hugo Jackson, both of whom Angle considered enemies, thought highly enough of Angle's work to offer him the orthodontia editorship for the *International Dental Journal* in 1902. Angle eventually declined.<sup>2:730–731</sup>

Edward H. Angle in daily life demonstrated most of the characteristics that today are identified as elements of a hypomanic personality, one associated with highly charged, productive, successful people. He was often demanding, intense, enthusiastic, restless, angry, colorful, consumed with confident curiosity, and obsessed with attention to detail. Habitual overwork is a common problem in these overachievers. In 1902, a month past his 47th birthday, Angle was physically depleted from excessive work.<sup>2:520</sup> He had lost much weight and was suffering from chronic fatigue and a flare-up of his lifelong respiratory illness. He wisely decided to take a vacation, a 2-month rail trip alone to the Pacific coast, seeking to regain his strengths. It worked, and he made new friends and found new supporters in the process of this recuperation.<sup>2:589</sup>

Edward C. Kirk, the distinguished Pennsylvania dean and editor of *Dental Cosmos*, once said to one of his students who came back from the Angle course wide-eyed and excited, "What is there about this man Angle that enables him to take you ordinary guys, who were just mediocre students, and just average dentists

and make you over into men full of enthusiasm and energy and eager to work.” Along with his mechanical genius, Angle’s hypomanic nature—his unwavering devotion to orthodontics and his inspirational manner—was probably instrumental in making all the difference to these young impressionable minds. Besides Dr Angle’s aura for pointing students to lofty goals, he had the sensibility to recognize intrinsic quality in his candidates and to maintain high standards in his selection of students. In other words, the native talent, ambition, and leadership potential of his carefully screened students invariably would guide them to great future careers after their first-rate initiation at the Angle School.

It should not be forgotten that Edward Hartley Angle’s personal vision was wide and deep, not simply confined to his profession. He was keen observer of nature in all its forms. The preamble of the citation accompanying the honorary Doctor of Science degree awarded to Dr Angle in 1915 by the University of Pennsylvania acknowledged his broad intellectual base: “Lover of art and nature, intimate friend of trees and flowers, but preeminently founder of the science of orthodontia. . . .” Angle exercised his intellectualism with an active sociability. He was a worldly man who enjoyed people and places; he was an outgoing celebrant and conversationalist. In addition, he was a talented artist, not only with intricate line drawings and creations for clinical orthodontics, but also in crafting gold jewelry, such as stickpins set with semiprecious stones, which he often gave as gifts to friends.

Furthermore, Angle was an avid collector of things of the world. He gladly received and studied valuable arts and crafts from friends and his grateful foreign correspondents in South Africa, Japan, and elsewhere.<sup>2:567;3:301–302</sup> Angle asked his well-known orthodontist-friends and mentors for photographs of themselves and other dental celebrities, both earlier and contemporary, to add to his lantern slide collection, which he projected as a historical prelude to his lectures at various meetings.<sup>1:217;2:567,603</sup> He loved American Indian artifacts, arrowheads and tomahawk heads which he challenged his patients and friends to find and trade to him.<sup>1:394,796;2:723–724</sup> He collected animal and human skulls and osteological materials in plentiful supply from archeologists excavating the burial



**Figure 5.** Edward H. and Anna H. Angle in their Pasadena home, surrounded by a display of American Indian textiles and beadwork in this photograph from the 1920s, which was inscribed and sent as a Christmas card. Collecting Native American arts and crafts was an active pastime for the Angles, who amassed over 300 important ethnographic objects.

mounds around St Louis.<sup>1:508</sup> He and Anna nourished for over three decades an extensive collection of American Indian weavings, beadwork, textiles, clothing, and baskets, mostly from the tribes of the Plains and Great Basin areas of the United States (Figure 5). Most of their archeological and ethnographic collections were donated to institutions and museums in their lifetimes. Almost 300 valuable objects of American Indian ethnography were given by Anna Hopkins Angle from 1930, the year of Edward Angle’s death, to 1959, two years after her death, to the museum of Claremont College, now the Pomona College Museum of Art in Los Angeles. It represents a living testament to the broad tastes and intellectual vigor of the Angles.

## REFERENCE

Numbers in superscript in this article refer to related Angle letters (volume:page) as published in the comprehensive archival publication cited: Peck S, ed. *The World of Edward Hartley Angle, MD, DDS: His Letters, Accounts and Patents*. 4 Volumes. Boston, Mass: E. H. Angle Education and Research Foundation; 2007. ISBN 978-0-9779524-0-3; available on a non-profit basis at [angle@allenpress.com](mailto:angle@allenpress.com).