SPECIAL ARTICLE

Orthodontics in 3 millennia. Chapter 3: The professionalization of orthodontics

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In the 1930s, creative thinkers in orthodontics began to more openly question the status quo. Apprenticeships had given way to formal instruction, and proprietary schools bowed to graduate university programs, including some taught or headed by women. The MD degree was gradually replaced by the MS as the focus of orthodontics zoomed out from teeth to the total patient. Angle's dogmatic stance against extraction was challenged successfully by his last disciple, Tweed, and another of Angle's pupils, Broadbent, developed that century's most important diagnostic aid, the cephalometer, which opened the door to Brodie's landmark growth studies and Downs's cephalometric analysis. Dentistry's first specialty organization, the Society of Orthodontists, was formed in 1900, and the first specialty journals appeared. (Am J Orthod Dentofacial Orthop 2005;127:749-53)

Can you imagine one of today's distinguished orthodontists—a professor at a major dental college—standing before a national dental group and (citing low educational standards and the increasing frequency of extractions) proclaiming, "we are again just where we were 30 or more years ago. These men are today merely 'straightening teeth'"? Such a scenario would never take place today, even if the claim were true. Yet, that is just what Weinberger[1] told the audience at the August 1933 meeting of the American Dental Association in Chicago. He was so concerned about the state of his beloved specialty that he was willing to risk professional suicide. After all, many of "these men" were probably right there in the audience!

"Thirty or more years ago" would take us back to the turn of the century. Angle was just starting to train a handful of specialists, and his influence was just beginning to be felt. The state of the orthodontic art, according to Weinberger,[1] had the following characteristics:

- Treatment was seldom begun before the eruption of all permanent teeth.
- Tooth esthetics was the primary objective of treatment, and the study of occlusion was given meager attention, but the mechanical aspect was given far greater attention.
- Biological problems were of secondary importance.
- Extractions were generally recommended, and prevention was largely ignored.
- Standardized appliances were sold at supply houses with inadequate instructions on how to use them.
- Orthodontics was given a minor place in the curriculum, with no graduate courses offered.
- Fixed appliances vied with removables; proponents were divided into "camps."

"Orthodontia today is at its lowest ebb," is how Brodie[2] described the state of the specialty a year later. "It is held so cheaply by the dental profession and the laity that the commercial laboratory is considered fully competent to treat malocclusion." Watchdogs such as Brodie and Weinberger agreed that the only way to upgrade the faltering craft was with education at the graduate level. Undergraduate courses were failing because many potential instructors refused teaching posts; they did not wish to revive unpleasant memories of their own undergraduate courses. Proprietary schools might have filled the vacuum with men like Angle at the helm.

That is not to say that men held a monopoly on teaching. The first undergraduate orthodontic program at the College of Physicians and Surgeons (now University of the Pacific) when it was established in 1915 was headed by Elizabeth E. Richardson (1863-1938; Dewey School, 1915).[3] Guilhermena G. Mendell (d. 1946; Angle School, 1902) was the first woman graduate and the first woman instructor at the Angle School (1902). She later taught at the Pasadena school and practiced with her husband, Harvey Stallard (1888-1974), a pioneer in gnathology. Josephine M. Abelson (1901-1987; Dewey School, 1923) was the first female

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Fig 1. Josephine M. Abelson helped pave way for women to practice and teach orthodontics.

Fig 2. John V. Mershon tried to infuse biology into hitherto mechanistic specialty.

director of the Dewey School clinic (Fig 1). She married Sidney E. Riesner (1900-79), a pioneer in radiography and temporomandibular joint treatment. Both Mendell and Abelson influenced their husbands to study orthodontics.

Other early 20th-century pioneer women included Gertrude Locke (1869-), a founding member of the American Society of Orthodontists (ASO) (1901); Jane G. Bunker (Angle School, 1904), founding member, European Orthodontic Society (1907) and the Eastern Association of Graduates of the Angle School of Orthodontia (1909); Genette Harbour (1865-1936; Angle School, 1911), first woman orthodontist in Los Angeles (1911) and founding member, Pacific Coast Society of Orthodontists (1913); and Eda B. Schlencker, the first woman to be certified by the American Board of Orthodontics (ABO) (1933).[4]

UNIVERSITIES TAKE THE PLUNGE

Finally, in the early 1920s, a few universities opened graduate departments, following Harvard-Forsyth's short-lived program (1915-19). It was the first to offer a full year of instruction. In 1922, New York University and Columbia University, both in New York City, began teaching graduate orthodontics—at Columbia, under the leadership of Leuman M. Waugh (1877-1972), who was also a founder of the dental school itself. A self-taught orthodontist from Canada, Waugh had an illustrious career in teaching and dental politics. He headed the orthodontic department from 1917 to 1945. He helped found the International Association of Dental Research (1920), of which he was later president. As president of the ASO (1935), he was instrumental in organizing the association into constituent societies.[5]

Three more schools opened in 1923. Each was associated with an important person in orthodontic history. A. LeRoy Johnson (1881-1967; Angle School, 1909) wrote "Basic principles of orthodontics," which was considered one of the best expositions of orthodontic biology of its time.[6] It influenced schools to limit undergraduate education to the fundamentals of occlusion, diagnosis, etiology, and classification. Many schools closed their orthodontic clinics. Also as a result of this article, Johnson was asked to open one of the first master's programs in orthodontics, at the University of Michigan, where he was appointed professor of orthodontics. As such, he became the first full-time orthodontic teacher.[7]

John V. Mershon (1867-1953; Angle School, 1908) was head of orthodontics at the University of Pennsylvania from 1916 to 1925 (Fig 2). When he took over the newly formed graduate department, he tried to present orthodontics from the biologic rather than the mechanical viewpoint. His extensive teaching, including the Dewey School, was done gratuitously. His study of the relapse phenomenon led to his memorable quote, "You can move teeth to where you think they belong; nature will place them where they will best adapt themselves to the rest of the organism."[8] The third school, Northwestern University, opened its graduate department under Charles R. Baker (1880-1970), an orthodontist in Evanston, Ill, who also gained recognition as a writer, historian, editor, and librarian. His library became the nucleus of the American Association of Orthodontists (AAO) library that now bears his name.[9]

The end of the Roaring Twenties marked a turning point in orthodontic education with the opening of 2 new programs. The first was in response to a shortage of health services in the sprawling suburban and farm communities of California.

To relieve this shortage, Guy S. Millberry, dean of the School of Dentistry at the University of California (1914-26; 1927-39), instituted a new concept in orthodontic education: during their final 3 years in dental school, qualified students would undertake special training in orthodontics and pedodontics, yet receive enough instruction in general dentistry to comply with American Dental Association educational requirements and pass the state board.

The Curriculum II program, as it was called, was directed in its formative years by Ernest M. Setzer (1895-1943) and George W. Hahn (1894-1977), both trained by Angle in the early 1920s. One of Angle's leading instructors, Hahn completed the training of Angle's last students, including Charles Tweed, in his office in Berkeley, Calif, after the Angle College closed. Just before World War II, he was made chair of the division. He also chaired the AAO Preceptorship Program throughout its life (1960-70; see below).

Many educators were skeptical of its efficacy and called Curriculum II the "great orthodontic experiment." But, between 1929 and 1969, it turned out some 310 orthodontists, many of whom went on to distinguished careers. It produced more American Board of Orthodontics diplomates than any other course of its time.[10]

The impetus to establish a graduate department in the College of Dentistry at the University of Illinois campus in Chicago (Fig 3) came from Frederick B. Noyes (1872-1961; Angle School, 1908) (Fig 4). Initially trained as a histologist, Noyes enjoyed the distinction of being the son of a dentist (Edmund Noyes) and the father of a dentist (Harold Noyes); all 3 became dental deans. Noyes organized the first course in dental histology in the United States at Northwestern University (1895-1914) and, in 1912, wrote the first text on that subject, *Text-book of Dental Histology and Embryology*, which remained a standard for more than 45 years and went to 9 editions.[11]

In 1929, as dean of the dental college, Noyes sought to establish a department that would carry on wit Angle's ideals. The Angle College had closed 2 years earlier, and the profession's leaders—concerned about orthodontics' future—were asking, How can we keep the study of our specialty out of the hands of the mechanistic "diploma mills"?[12]

The answer, as far as Noyes was concerned, was to place the department under the leadership of Allan G.

Fig 3. Old College of Physicians and Surgeons was first home for University of Illinois orthodontic department.

Fig 4. Histologist and dean, Frederick B. Noyes had vision for future of orthodontic education.

Brodie (1897-1976; Angle College, 1927), one of Angle's last graduates and one of his favorites (Angle and close friends called him "Steve") (Fig 5). Brodie had been out of school only 2 years, but his writing and speaking abilities and his grasp of the edgewise appliance had catapulted him to the position of spokesman or the "new mechanism" and placed him at the forefront of orthodontic education.

Brodie's reluctance to give up his growing practice in New Jersey for a half-time annual salary of $4500 was overcome when Noyes invited Brodie into his practice and guaranteed a total salary, from practice and teaching, of at least $10,000. Brodie was also guaranteed complete control over all aspects of the graduate department.

Brodie continued in this capacity for 36 years. During this time, the University of Illinois produced some of the most noteworthy orthodontists of the time: Downs, Kloehn, John Thompson, Wylie, Alton Moore,

Fig 5. Allan G. Brodie, more than anyone else, carried on where Angle left off.

Fig 6. West Coast orthodontics thrived in early 20th century under leadership of James D. McCoy.

and Ricketts, to name a few. Fifteen of its graduates became department heads in other universities. Brodie himself became dean of the dental college. His inspired teaching and Noyes's foresight finally gave orthodontic education a solid foundation.[13]

The first graduate orthodontic program on the West Coast began in 1934 at the University of Southern California School of Dentistry, the only dental school in southern California at the time. Since 1910, an undergraduate department had existed there under the direction of professor of orthodontics and radiology James D. McCoy (1884-1965; Angle School, 1905) (Fig 6). He and his brother, John, pioneered orthodontic office design in their showcase office on Wilshire

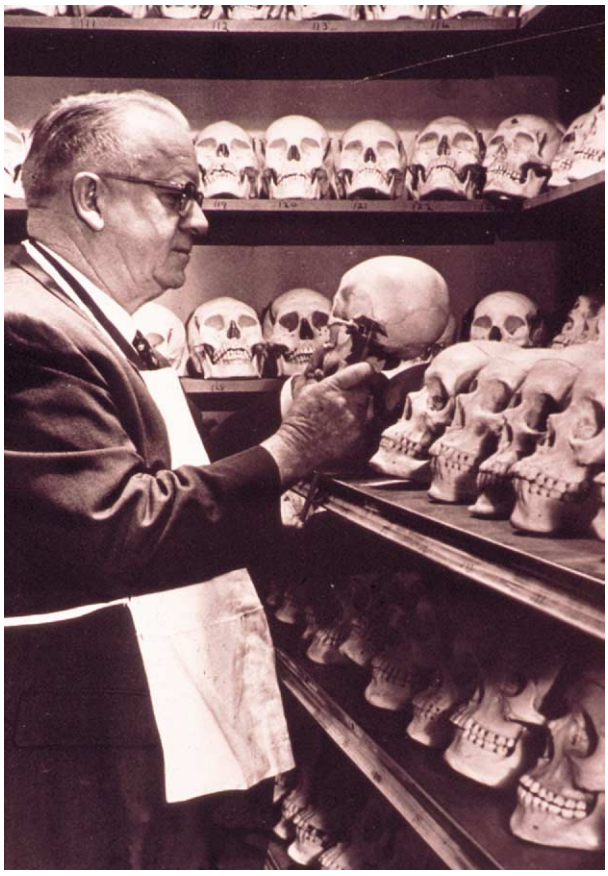

Fig 7. Spencer R. Atkinson examines specimen in his collection of 1400 skulls.

Boulevard in Los Angeles, installing one of the first X-ray units (1908). McCoy wrote 2 textbooks and more than 100 articles. A dynamic, sought-after speaker and raconteur, he was second only to Angle in influencing the development of orthodontics on the West Coast.[14]

However, it was Spencer R. Atkinson (1886-1970; Angle School, 1920) who was chosen to head the new department. Orthodontist, teacher, inventor, innovator, anatomist, and skilled photographer, Atkinson was originally a children's dentist. After studying anatomy and anthropology, he was invited to teach anatomy at the Angle School in Pasadena, where he became a student and then superintendent. Atkinson's interest in the growth and development of the head led to a collection of some 1400 skulls that are now housed at the University of the Pacific School of Dentistry (Fig 7). He originated the term *key ridge*.[15]

ORTHODONTISTS GET TOGETHER: ASSOCIATIONS

Whereas the first American dental association (the Society of Dental Surgeons of the City and State of

New York) was organized in 1834, it was another 66 years before orthodontic specialists reached a comparable level of development. What could be a better time than June 1900, at a banquet celebrating the end of the first session of the Angle School of Orthodontia? Perhaps this was the thought that entered Richard Summa's (1868-1933; Angle School, 1900) mind when he moved to form a temporary organization, called the Society of Orthodontists (soon changed to the ASO and then to the AAO in 1935). Angle was elected president, and the first annual meeting was to be in Saint Louis the next June. During its first year, the fledgling society claimed only 13 members.[16] At last count, the AAO had more than 14,600 members in the United States, Canada, and abroad.[17]

In 1906, after conceiving dentistry's first specialty organization and nurturing it for 6 years, Angle resigned over a petty disagreement. Many of his disciples left with him to form another organization, the Eastern Association of Graduates of the Angle School of Orthodontia. However, the leadership vacuum was quickly filled when the first non-Angle-trained member, Rodrigues Ottolengui (1861-1937) (Fig 8), was elected president. Ottolengui came to dentistry with both clinical and journalistic talents. His grandfather had been a pioneer dentist in South Carolina, and he had been a preceptor with no less a practitioner than Norman Kingsley. His father was a newspaperman and playwright, and his mother was an author. He was thus a natural to become editor of *Items of Interest* (later *Dental Items of Interest*), a post he held for more than 40 years.

In his first issue, Ottolengui inaugurated a department of orthodontics, a first in dental journalism, thereby giving orthodontics a voice. In 1901, he started orthodontic societies on the road to having their own periodicals by publishing the papers read at ASO meetings. His vigorous campaigning helped eliminate charlatans, quacks, and other illegal practitioners from New York City. He introduced the term *prosthodontia* and inadvertently founded the science of forensic dentistry through one of his 6 novels. *The Saturday Review of Literature* called Ottolengui the "dental counterpart of England's physician-crime solver, Sir Arthur Conan Doyle," and Ellery Queen described him as "one of the most neglected authors in the entire history of the detective story."[18]

Five more regional societies came into being in 1921. Others followed until there are now 8, stretching from Alaska and Hawaii to the Virgin Islands. A movement to consolidate all societies under the umbrella of the AAO, begun in the 1930s, had by 1952 come to fruition.

Fig 8. As 40-year editor of Dental Items of Interest, Rodrigues Ottolengui provided first forum for organized orthodontics.

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