Anesthesiology in California: The Early Years

by Selma Harrison Calmes, M.D.
Department of Anesthesiology, Olive View–UCLA Medical Center, Sylmar, CA 91342

Presented in part at the Annual Leffingwell Lecture in San Francisco, May 1998, on the occasion of the Fiftieth Anniversary of the founding of the California Society of Anesthesiologists.

This article briefly reviews the early history of anesthesia in California. Much of the history of anesthesia in California has not been completely documented yet and is complex due to the large size of the state. What follows is the most current historical information, and some essential references for further reading.

How did the news of anesthesia get from Boston to California?[1]

The first successful demonstration of surgical anesthesia occurred in Boston on October 16, 1846. Within a year, the news of anesthesia had spread to the major cities of the world—but not to California. California was not a part of the United States either geographically or politically at the time of the ether demonstration. Travel to California was difficult, taking a minimum of six months from the East Coast. There was no mail service. And, there was little reason for the news to get here. There were only five trained physicians and two Army surgeons in the state; there were no hospitals, no medical schools, no medical societies, no medical journals and no pharmacies.

This isolation changed with the discovery of gold near Coloma in January, 1848. Because of the travel difficulties, the news of gold did not reach the East Coast until September and was not widely known until December, 1848. When it did become known, people from around the world rushed to the state, seeking to "strike it rich." The '49ers included an estimated 1,300-1,500 physicians. These physicians came to get rich quickly and only practiced medicine after failing at that, as did most '49ers. These physicians probably brought the knowledge of anesthesia and anesthetics with them. One likely example was Dr. Edward Willis, an English surgeon, a graduate of Edinburgh and London, who found his way to the tiny Gold Rush town of Placerville. In his canvas tent "office," he displayed his microscope, a stethoscope, splints of various kinds, a huge jar of leeches and surgical instruments. His blue sign with gold letters declared, "Dr. Edward Willis, MRCS. Surgery and Physic in all branches. Sets bones, draws teeth painlessly, bleeds, advice gratis." As an Edinburgh graduate, he would be familiar with anesthetics, and we can presume he brought anesthetic agents with him since he brought his microscope, stethoscope and leeches. His promise to "draw teeth painlessly" strongly suggests he used anesthetics for this painful procedure, and most likely for others as well.

What happened next?

Ten years after the Boston demonstration, anesthesia was well established in California. The state's first medical journal began in 1856. Anesthesia was mentioned on the first page of the first issue, in a report of a discussion at a Sacramento County Medical Society meeting. The case presented discussed the possible additive effects of morphine and chloroform. Thirteen operations were reported in that volume. There was no mention of anesthesia in four of these.

There is also strong evidence that anesthesia was not always used to relieve surgical pain. The 1850 Fee Bill ("Aviso") for Los Angeles physicians, the first in the state, did not include a charge for anesthesia. Later medical journal reports clearly record that no anesthesia was given, even in painful operations. This reflects the selective use of anesthesia everywhere in the U.S. at this time, common practice until the last quarter of the 19th century. Generally, women, children and wealthy people were thought to deserve pain relief. Men needed to experience surgical pain to help them become "manly," and poor people did not deserve anesthesia.

The first charges for anesthesia service were published in the state in 1874. The Alameda County Medical Society "Fee Bill" (comparable to the present day Relative Value Guide) stated, "Administration of anesthesia in any case $5-25." Operations in contrast, were paid $100-$500 for majors, $25-$100 for secondary operations and minor procedures were paid $5-$25. Mortality from anesthesia was estimated in 1883 as deaths were thought to occur once in every 2,800 anesthetics. This article ended with a plea for professional anesthetists: "When the administration of anesthetics becomes an isolated profession, and shall become the business of men who shall do nothing else (an example of which is the celebrated Dr. Clover in London), then it is probable that the mortality will fall much under that above given."

Surprising for the time, there was also research going on. San Francisco physicians F. Dudley Tait and Guido E. Caglieri studied possible therapeutic uses of lumbar puncture in both cadavers and animals and performed the first spinal anesthetic in the U.S. on October 26, 1899. Their report of 11 cases of spinal anesthesia using cocaine was the second report of spinal anesthesia in America. The first instance was the surgeon Rudolph Matas of New Orleans who reported a single case just before Tait and Caglieri.[2]

First Professional Physician Anesthetist[3]

(Note: Physician anesthetist was the term in use at the time, not anesthesiologist, so it is used.)

Dr. Mary Botsford (1865-1939) of San Francisco was the first Californian to dedicate her practice solely to anesthesia, beginning in 1897. She can also be considered the first professional anesthetist in the U.S. Dr. Isabella Herb of Chicago (1869-1943) entered anesthesia earlier, in 1893, but Herb detoured to pathology from 1905-1908. Botsford focused continually on anesthesia and should be considered the first American professional anesthetist.[4] For comparison, Ralph Waters began his interest in anesthesia in 1913 while doing general practice. Arthur Guedel gave anesthetics beginning in 1909. In contrast, English physicians devoted themselves to anesthesia practice as early as 1858.[5]

Dr. Botsford was born in San Francisco, married a physician and entered medicine after his death. She graduated from the University of California Medical School at San Francisco (UCSF) in 1896, began a private practice and worked at the Children's Hospital of San Francisco (CHSF). This hospital was founded by women physicians in 1875 to provide practice opportunities for women doctors. The University of California had a commitment

MARY E. BOTSFORD
Chairman Anesthesiology

Mary Botsford, M.D., first physician to specialize in anesthesiology in California and probably in the U.S.

to equal education for the sexes from its beginning, and the medical school generated comparatively large numbers of women physicians, who then faced few opportunities for practice and hospital training. This was where all the women physicians of San Francisco practiced because they could not use other hospitals and it was where nearly all women medical graduates on the West Coast interned.

Botsford decided to enter anesthesia after seeing how sick patients became after anesthesia and surgery. But, then, it was not possible to make a living doing only anesthesia. Few operations were done at the time, and there was little reimbursement. She had an office practice in the afternoon and earned no income from anesthesia during the first two years. The combination of practicing anesthesia but also having another practice was common for many years throughout the country.

Self-taught by necessity, she soon began teaching CHSF interns, who were required to rotate on anesthesia. Botsford was charismatic and dynamic and soon attracted some of these women interns to enter anesthesia. At least 46 women physicians were trained by Botsford. These young doctors covered many Bay Area hospitals and also practiced in Southern California. At some point, Botsford began work at the UCSF hospital as its first faculty member in anesthesia and chief of the department. In 1931, she was appointed Clinical Professor of Anesthesia at UCSF, the first to hold this title. She was paid a small salary from the hospital but this was not supplemented by the university. To support herself, Botsford had an active private practice among San Francisco's elite at the Dante Sanitarium, a luxury hospital-hotel. The university surgeons objected to her "excessive" fees for these patients, but it was common at the time to charge based on the patient's wealth.[6]

Botsford led the efforts to get a Section on Anesthesia in the California Medical Association (CMA), which became the first state-wide anesthesia organization and the first such section in the United States. Also, she was instrumental in the passing of the first state law requiring that anesthesia be taught in the state's medical schools, another first in the U.S. She was the first president of the CMA Section on Anesthesia, the organization from which the California Society of Anesthesiologists (CSA) evolved. She also was recognized nationally, serving as president of the Associated Anesthetists of the United States and Canada that year. She published many clinical and scientific papers and did research with Arthur Guedel and Chauncey Leake at UCSF. Dedicated completely to anesthesia and a high degree of professionalism, she set advanced standards for the practice of anesthesia in the state and provided essential early leadership.

Subsequent Contributors

The early history of anesthesia in the state is complex and not yet completely documented. A chronological annotated list of many of the important early physician anesthetists follows. One pharmacologist is included because of his important role in the specialty.

Eleanor Seymour was the daughter of a Los Angeles physician. She was a 1903 USC Medical School graduate who interned at CHSF. There she was exposed to Botsford and her technique of anesthesia. When she did return to Los Angeles, she had a faculty appointment at USC in bacteriology and also practiced anesthesia.[7] In 1919, she and Dr. George Piness organized the Southern California Society of Anesthetists, the state's most important professional group, which fought aggressively against nurse anesthesia.[8] While presidents came and went yearly, Seymour was the secretary for many years and was the driving force behind the organization. She was also president of the national organization, the American Association of Anesthetists, in 1923.[9] Around 1934, when the State Superior Court decided that nurses could practice anesthesia, she gave up the practice of anesthesia and spent the rest of her professional career at the Olive View Sanitorium

Dr. Eleanor Seymour

Eleanor Seymour, M.D., long-time Secretary of the Southern California Society of Anesthetists and leader in the fight against nurse anesthetists.

which is now Olive View-UCLA Medical Center, treating tuberculosis.[10]

Caroline Palmer was a 1906 graduate of the Cooper Medical School of San Francisco, which is now Stanford Medical School. She interned at CHSF. She became an associate professor of surgery (anesthesia) and chief of anesthesia at Lane Hospital, which later became the Stanford Hospital.[11] She retired when William Neff was appointed the chair of anesthesia at Stanford in 1937.[12]

Dorothy Wood graduated in 1919 from Stanford Medical School and also interned at CHSF. She became an instructor in anesthesia at the University of California and succeeded Dr. Botsford, when she retired due to age, as chief of anesthesia at UCSF.[13]

Arthur Guedel has been noted for his many innovative contributions to anesthesia. In fact, Dr. Guedel can be considered the state's most noted anesthesiologist. He is commemorated by the CSA-sponsored Guedel Memorial Center in San Francisco.

Dr. Guedel began medical practice in 1909 in Indianapolis and gave anesthesia occasionally. During his Army service as an anesthetist in World War I, he made many anesthesia innovations. After the war, he became a close friend of Ralph Waters who was developing the nation's first and most influential academic anesthesia department at the University of Wisconsin. With Dr. Waters, he developed the cuffed endotracheal tube and

Continued on Next Page

California. . . *Continued from Page 9*

CAROLINE B. PALMER
Secretary Anesthesiology

Carolyn Palmer, M.D., a Botsford trainee and first chair of anesthesiology at Stanford University.

improved endotracheal tube quality.

In mid-1929 Arthur Guedel moved to Los Angeles for health reasons. Although well known nationally, he had great difficulty getting established in Los Angeles. He was thought to be a "trick" anesthetist because of his use of endotracheal tubes. In addition, in the middle of the Depression there was severe economic competition. While in Los Angeles, he developed the Guedel airway, which is still in use today; published his classic texts *Introductory Outline to Anesthesia* (1935) and *Inhalation Anesthesia, A Fundamental Guide* (MacMillan, NY, 1937, second edition 1951); and held Wednesday afternoon teaching sessions in his garage where the Guedel airway, among other items, was first machined. These sessions were well attended and well loved by local and visiting anesthesiologists. He also went to San Francisco periodically and conducted research on CO_2 with Drs. Chauncey Leake and Mary Botsford.[14] He was head of the section of anesthesia at the USC Medical School from 1931-1940.[15] Unfortunately, his research work exposed him to new drugs, barbiturates and amphetamines, from which he developed an addiction to both. He cured himself, albeit with great difficulty.

Louis W. Harding was an 1890 graduate of the University of Iowa Medical School. After 22 years in general practice in a small Iowa town, he developed asthma and retired. He was then offered a part-time job at the University of Iowa hospital giving anesthesia two afternoons a week for a surgery clinic teaching session at $50 a month. Students and interns rotating on surgery gave anesthesia under his instruction. He found that his asthma improved when he was in an OR giving ether and later started giving anesthesia for other cases. In a few years, he was again working full time, now for $5,000 a year. He moved to Los Angeles in 1930 to retire but became bored and renewed his license to practice medicine. He entered the private practice of anesthesia in Los Angeles and finally retired in 1941 at age 75.[16] According to Guedel's letters, Harding was a formidable competitor in the private practice arena.

Mary Ross was a 1922 medical graduate of the University of Iowa who took graduate anesthesia training under Dr. Harding. She was the first physician to receive a certificate for completing anesthesia training in the U.S., from the University of Iowa in 1923. She came to Los Angeles with Harding and practiced there for many years.[17] She is included here for her historic importance.

Charles McCuskey was another California anesthesiologist noted primarily for his political roles. His medical degree was from the University of Tennessee in 1918. He completed 18 months of anesthesia training at the Mayo Clinic under Lundy in 1925-26, then stayed on from 1925-33. He came to Los Angeles in 1933, one of the best-trained anesthesiologists in town. He was an associate professor at the College of Medical Evangelists (CME) from 1933-39 and then became the chair of anesthesia at USC in 1939, remaining until 1958. He was elected the first president of the CSA in 1948 and, a few months later, also was elected as the president of the ASA.[18] He received the ASA's Distinguished Service Award in 1953.

Bruce Anderson was the person who stimulated the CSA's founding in 1948. As a Stanford medical student, he was exposed to anesthesia by Caroline Palmer. Anesthesia training was at the Mayo Clinic. He practiced at the Merritt Hospital in Oakland.[19]

Chauncey Leake, Ph.D., was a UCSF pharmacologist with a great interest in anesthesia due to his previous experiences at the University of Wisconsin, where he worked with Ralph Waters. He was a close friend of Arthur Guedel. He agreed with Waters that anesthesia was clinical physiology and pharmacology. He was recruited to USCF in 1928, and he continually supported the UCSF anesthesia department in research and academic matters and contributed to many anesthesia research projects. His medical student pharmacology course was influential in the development of many future anesthesiologists.[20]

Hugh Hathaway, often called "Hatch," was trained at the University of Wisconsin under Waters, where he was a close friend of Virginia Apgar. Because of difficulty with interpersonal relations, Waters did not think Hathaway was ready when influential San Francisco neurosurgeon Howard Nafziger, then chair of surgery at UCSF, insisted on having a Waters-trained anesthesiologist to be chair of the UCSF department. Hathaway was the only possible candidate at the time. Waters postponed as long as possible, but Nafziger argued and pressured him. "Hatch" finally came to UCSF in 1940. Problems soon appeared related to drug use and patient deaths. He lasted only a few years. His drug rehabilitation treatment was paid for by his previous colleagues at Wisconsin. He was replaced by a non-academic anesthesiologist, Frank Murphy.[21]

Figure 3-1 Arthur E. Guedel M.D. (1883-1956)

Arthur Guedel, M.D., pictured during his time in California.

William Neff was appointed chair of anesthesia at Stanford to replace Dr. Caroline Palmer, a Botsford trainee, in 1937. A 1930 graduate of Hahnemann Medical School in Philadelphia, he trained with Ralph Waters from 1932-34. He made important contributions to thoracic anesthesia and helped found the CSA. He was the founder and the energetic force behind the Guedel Memorial Center in San Francisco.[22]

Forrest Leffingwell was a 1933 graduate of the College of Medical Evangelists in Los Angeles. He completed anesthesia training at the Glendale Sanatarium and Hospital,

Charles McCuskey, M.D., during his presidency of both the California Society of Anesthesiologists and the ASA.

which is now Glendale Adventist Hospital. He became a clinical instructor at White Memorial in 1941 but was called for Army service. He spent most of World War II in the Pacific, serving as chief of anesthesia in several large facilities. On his return, he became chair of anesthesia at White Memorial and also an attending anesthesiologist at Los Angeles County General Hospital. He then was professor and chair of anesthesia at Loma Linda. He was president of the CSA in 1950-51, speaker of the ASA's House of Delegates from 1953-60, and ASA president in 1962. He received the ASA's Distinguished Service Award posthumously in 1969.[23]

Competition!

By 1919 when anesthesia societies were formed in both Northern and Southern California, nurse anesthesia was a clear threat. This threat was even a primary cause for the southern group's formation. Little information is available regarding the formation of the northern group, but clearly the organization's activities were centered on the fight against nurses. However, because of manpower problems, physician anesthetists could not cover all operations, especially emergencies and obstetrics. Physicians even wrote that nurses could do emergencies and obstetrics, casting the die for the preservation of nurse anesthesia.

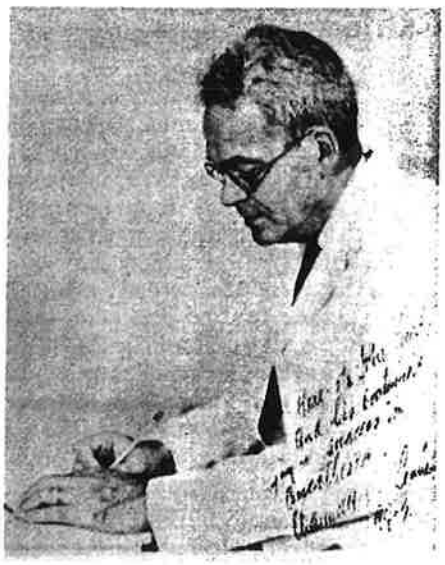
A final blow was the 1934 court decision, *Chalmers-Francis v. Nelson, Los Angeles Superior Court, 1934.* The case was initiated by the Anesthesia Section of the Los Angeles County Medical Association, which sued a local nurse anesthetist and the hospital, St. Vincent's, which employed her. A bitter battle pitted old-time surgeons, many from the Mayo Clinic, where nurse anesthesia practice was active in spite of the presence of John Lundy, against younger physician anesthetists. The practice of nurses *versus* physicians was compared and found to be similar, due to the few agents and techniques then available.[24] The decision was in favor of nurses as the court ruled that surgeons were supervising nurse anesthetists, so the nurses were not practicing medicine without a license. This ruling had enormous influence locally and nationally and continues to be cited today.[25]

In the south, the Los Angeles County General Hospital, now "Big County" or LAC/USC Medical Center, had professional physician anesthetists along with the usual interns from 1919 until World War II. Interns assigned to the service did most of the work. When World War II began, severe manpower shortages forced the hospital to hire nurse anesthetists in 1943.[26] By the end of World War II, nurse anesthetists had established themselves permanently in many areas of the state.

Organizing the State

Local Organizations: By 1919, both San Francisco and Los Angeles had active local organizations, the Northern California Society of Anesthetists and the Southern California Society of Anesthetists. There is no information on what was happening in San Diego. The exact dates when the San Francisco organization began and ended are unknown. Evidence for it exists only in the Minutes Book of the Southern California group, which records frequent communication back and forth between the two groups, and one announcement of a meeting.[27] It was organized in 1940 by William Neff, the chair at Stanford; Hugh Hathaway, the new chair at UCSF; and Bruce Anderson.[28]

The Los Angeles organization began in 1919 and was led by its secretary, Eleanor Seymour. It very aggressively worked to eliminate nurse anesthetists by lobbying surgeons and hospitals; by getting various medical organizations to pass resolutions against nurse anesthesia; and by attempting to get legislation against nurse anesthetists.[29] In 1934, the group, now the Anesthesia Section of the Los Angeles County Medical Society, sued a local nurse anesthetist and the hospital which employed her. The physician group lost, including an appeal to the State Supreme Court.[30] This loss led to much less physician activity in the south.



Chauncey Leake, Ph.D., a close friend of Ralph Waters, head of Pharmacology at UCSF and a strong supporter of research in anesthesia.

In comparison, nurse anesthetists in the state organized officially in February, 1930.[31] Surgeons organized earlier, no doubt due their larger numbers. The Los Angeles County Surgerical Society first met in 1916.[32] The Pacific Coast Association of Surgereons, still an active group, was formed in 1925.[33]

The Pacific Coast Association of Anesthetists (PCAA): This group began in 1921 through the united efforts of the Southern and Northern California societies, stimulated by Dr. Frank McMechan's efforts to organize anesthesia throughout the entire United States. Membership was open to "all licensed and qualified members of the medical and dental profession, as well as research workers interested in advancing the specialty of anesthesia." The entire Pacific Coast and Rocky Mountain states were included.[34] The first meeting was held jointly with the CMA Section on Anesthesia in 1922. George Waller of Los Angeles was elected the first president; Mary Botsford was elected vice president; and Eleanor Seymour was elected secretary.[35]

The CMA Section on Anesthesia: In response to the many threats against physician anesthesia around 1920, there was great need for a state organization. As was common at the time, this was linked to organized medicine. Drs. Botsford and Seymour were both well placed in organized medicine and led the effort to organize the Anesthesia Section of the CMA, which began in 1921. This was the first anesthesia section in any state medical society in the United States. It meets annually for a scientific session, during CMA

Continued on Next Page

California. . . *Continued from Page 11*

meetings. Botsford was the first president and Seymour was secretary.

The California Society of Anesthesiologists: This organization evolved from the CMA Section on Anesthesiology. The impetus was based on the need for a political as well as educational organization and a remark by the new ASA (a group just evolving from the New York Society and the American Society of Anesthetists) executive director to some Bay area anesthesiologists at a University of Utah meeting. Due to the size by then of the state's anesthesia community, California was an immediate political power. Charles McCuskey of Los Angeles was the first CSA president; he was also elected ASA president the same year, 1948. The ASA assumed its present configuration with a House of Delegates from districts that year.

Training: The first training courses were for interns, as anesthesia residencies did not exist until the late 1930s. Apparently, hospital administrators objected to these on economic grounds. The Minutes Book of the Southern California Society recorded on November 31, 1919,

> The Management of the University Hospital has objected to the giving of the usual 3 months course of practical work to interns as such interns would occupy a room which in a year's time would bring in so many dollars return to the Hospital, should it be given over the use of Patients! However, interns at the Children's are still having this course—although it is elective and irregular at the University Hospital and some interns are going there without practical training in anesthesia.

Due to the efforts of the local anesthesia organizations, 10 hours of training in anesthesia was required by the state for interns; this increased to 25 hours in 1920, and the groups were asking for 32 hours in 1921.

The state's first post-graduate course on anesthesia began in January, 1919, and seems most modern. It accepted four students. Lectures and demonstrations would be in the afternoons. There would be clinical practice in the morning and the student would give anesthesia under the supervision of one of the teachers. Instructors were Dr. Botsford and her trainers, Drs. Mary Kavanaugh, Henrietta Duggan and Mary Turnbull Murphy. The announcement noted, "It is also a striking sign of the times that this course should be entirely under the control of a group of noted women physician anesthetists of San Francisco."[36] This was short lived, however. The Minutes Book of the Southern California Society of Anesthetists noted on September 2, 1919,

> Dr. Seymour reported anesthesia conditions in and around San Francisco to be in deplorable condition. The course in Anesthetics having been dropped from the University of California Medical Department and lay persons generally substituted in the University and other hospitals.

The Minutes Book also reported attempts at a commercial course of anesthesia in Los Angeles at the Angeles Clinic.[37]

Summary

All these events and many people led to modest anesthesia accomplishments in the state with some national firsts, until World War II. However, California was still behind the East in training programs and organizations. The first generation of physician anesthetists here had ended. Only the CMA Section on Anesthesia was in place organizationally. Stanford had the sole residency. A disastrous experience with academic anesthesia was beginning at UCSF. USC would not have a residency until 1946. UCLA did not even exist at this time and didn't have a residency until 1951. Health insurance with guaranteed reimbursement and the exposure of hundreds of physicians in World War II to anesthesia who would then choose anesthesia as a specialty, as well as the establishment of the current state organization, were still to come.

Dr. Forrest Leffingwell and his wife. Longtime speaker of the House of the ASA, and with Dr. McCuskey, a recipient of the ASA's Distinguished Service Award.

References

1. This section, unless otherwise referenced, is taken from Calmes SH. Anesthesia in early California, *The History of Anaesthesia*, Atkinson RS and TB Boulton, eds., London: The Royal Society of Medicine Services, 1989, p. 129-133. This contains specific references.
2. Larson ML. Tait and Caglieri: The first spinal anesthetic in America. *Anesthesiology* 1996, 85:913-919.
3. This section, unless otherwise referenced is taken, from Calmes SH. The women physician anesthetists of San Francisco, 1897-1940: The legacy of Dr. Mary Botsford (1865-1939). *The History of Anaesthesia*, Atkinson RS and TB Boulton, eds., London: The Royal Society of Medicine Services, 1989, p. 547-550.
4. Calmes SH. Unsung heroines of anesthesiology: Doctors Isabella Herb, Julia Arrowood and Margo Deming. Classical File. *Survey of Anesthesiology* 1995, 39:402-406.
5. Calverley RK. J.T. Clover: A giant of Victorian anesthesia. *Anaesthesia: Essays on its History*, Rupreht J, van Lieburg MJ, Lee JA and W Erdmann, NY: Springer-Verlag, 1985, p. 18-23.
6. William Neff to William Hamilton, Oct. 6, 1986. William Neff to SH Calmes, Nov. 27, 1984.
7. Kress GH. *A History of the Medical Profession of Southern California*. Los Angeles: Times-Mirror Printing and Binding, 1910, p. 183.
8. *Minutes Book* of the Southern California Society of Anesthetists, 1919, UCLA's Biomedical Library History Division.
9. No author. More honors richly deserved. *Am J Surg Q Anes Supp* 1924, XXXVIII:89-90.
10. Olive View-UCLA Medical Center Archives, Sylmar, CA.
11. Patrick Sim to SH Calmes, March 9, 1984.
12. Calmes SH. Obituary of William B. Neff, MD, FFARCS. *CSA Bulletin* 1997(Nov.-Dec.), 46:5-9.
13. W Neff to SH Calmes, Nov. 27, 1984.
14. Calverley RK. Arthur E. Guedel (1883-1956). *Anaesthesia: Essays on its History*, Rupreht J, van Lieburg MJ, Lee JA and W Erdmann, NY: Springer-Verlag, 1985, p. 49-53.
15. Martin HE. *The History of the Los Angeles County Hospital 1878-1968 and the Los Angeles County-USC Medical Center 1968-1978*. Los Angeles: USC Press, 1979, p. 432.
16. Davis DA. Moyers J. Harding of Iowa. *Historical Vignettes of Modern Anesthesia*, DS Davis, ed., Oxford: Blackwell Scientific Publications, 1968, p. 68-76.
17. *Ibid*., p., 74-75. *Directory*, Board of Medical Examiners State of California, 1943. Patrick Sim to SH Calmes, Dec. 12, 1980.
18. Martin H. Travel Club, and Calmes SH. Founding of the California Society of Anesthesiologists, 1948. *CSA Bulletin* 1998 (June), 48:31 and 32.
19. W Neff to SH Calmes, Feb. 15, 1984 and *ibid*.
20. Leake C. Recollections of Arthur E. Guedel—1883-1956. Reprinted in *Anes Hist Assoc NL* 1994, 12:6-9.; W Neff to W Hamilton, Oct. 6, 1986.
21. Neff W. The Wisconsin-California connection. *Anes Hist Assoc NL* 1986, 4:1,4-7.
22. Calmes SH. Obituary of William B. Neff, MD, FFARCS, 1905-1997. *CSA Bulletin* 1997(Nov.-Dec.), 46:5-9.
23. No author. DSA awarded posthumously to Forrest E. Leffingwell, MD. *ASA Newsletter* Dec. 1969, 4-5.; Biographical sketch of members of the ASA, no date.
24. Calmes SH. Anesthesia practice in Los Angeles, 1934: A contributor to the legal ruling nurses

Continued on Page 20

California. . . *Continued from Page 12*

can give anesthesia? *Anesthesiology* 1995, 83:A1023.

25. Calmes SH. The fight against the lay anesthetist in Southern California, 1919-1934. *Anesthesiology* 1995, 83:A1024.

26. Martin HE. p. 432.

27. No author. Anesthetists meeting. *Ca St J of Med* 1920, XVIII:392.

28. Neff W. The Wisconsin-California connection. *Anes Hist Assoc NL* 1986, 4:1,4-7.

29. *Minutes Book* of the Southern California Society of Anesthetists, UCLA's Biomedical Library History Division, p. 14.

30. Brown ID and AG Guedel. Anesthesia Section. *Bull LA County Medical Assoc* Jan. 31, 1946, 165; Calmes SH. The fight against the lay anesthetist in Southern California, 1919-1934. *Anesthesiology* 1995, 83:A1024.

31. No author. *Nurse Anesthesia*. Type-written manuscript. No date, after 1958. California Association of Nurse Anesthetists files.

32. Baumgartner CJ. The Los Angeles Surgical Society. *Bull LA County Med Assoc*, Jan. 31, 1946, 165.

33. Brewer LA. *The Early History and Era of Development of the Pacific Coast Surgical Association*, no publisher, no city, 1982.

34. Seymour E. Pacific Coast Association of Anesthetists. *So Cal Pract* 1922, 37:47.

35. No author. Pacific Coast Association of Anesthetists. *Ca St J of Med* 1921, 9.

36. McMechan FM. *University of California Establishes Postgraduate Instruction in the Specialty of Anesthesia* 1919, XXXIII:29.

37. *Minutes Book*, March 1, 1921.

Bulletin of Anesthesia History
Doris K. Cope, M.D., Editor
UPMC Shadyside
5200 Centre Avenue, Suite 415
Pittsburgh, PA 15232 U.S.A.