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The Wondrous Story of Anesthesia
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A History of Women in American Anesthesiology

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Summary

Women came slowly to medicine and anesthesia. The first modern woman physician, Elizabeth Blackwell, received her degree in 1849. The University of Zurich Medical School enrolled women in 1867. To increase their opportunities, American women founded 17 medical schools and 7 hospitals in the 19th century, but the move to scientific medicine prompted by the Flexner Report caused closure of all but one after 1910. Men avoided anesthesia because it offered minimal pay and status in the 19th century, but that presented an opening for women such as Herb in Chicago and Botsford in San Francisco at the turn of the century. In 1916, women constituted 19% of the American Association of Anesthetists (AAA) membership, but only 3.6% of physicians were women.

American women physicians were rejected for service as regular officers in both World Wars. In 1920, 3 women chaired anesthesiology departments, and the first anesthesiology resident, Mary Ross, completed training at the University of Iowa in 1923. Between World Wars, men were favored over women for internships and residencies. Only 4% to 5% of physicians were women. Waters established his residency program in anesthesia at the University of Wisconsin in 1927. Of his first 6 trainees, 3 were women, and one, Apgar, published her eponymous Score, in 1953. Marx entered anesthesia in the late 1930s, becoming the “Mother of Obstetric Anesthesia.”

The Armed Forces in World War II drafted male physicians into anesthesia, many finding that they liked it, leading to competition with females after the war. Industry provided free health insurance during World War II, making anesthesia financially attractive, and further increasing competition from males. And then the tide slowly changed, equalizing the competition. Title IX of the 1972 Higher Education Act banned discrimination in admissions. Female medical students increased from 824 in 1964–65, to 1,295 in 1970–71 and 3,392 in 1974–75. In 2000, 27% of residents in anesthesia were females, but in 2010, 38%.

In 2004, 5 of the 7 major medical specialty organizations (not anesthesia) had female presidents. The ASA’s only woman president, Stephenson, served in 1991, but the President elect for 2013 is Jane Fitch. In the 1980s, 6.5% of female anesthesiology faculty, but 17.7% of male faculty, were full professors, a difference not materially changed in the 2000s. Comparing the 2000s to the 1980s, the number of female American Board of Anesthesiology examiners increased. By 2010 the number of female Directors of the Board had increased to 3/12. Women became editors of modern anesthesia journals in 1980 (Anesthesiology and Analgesia) and 1987 (Anesthesiology). By 2011, 4 were editors at Anesthesiology and Analgesia and 2 at Anesthesiology. In 2010, women chaired anesthesia departments at more than a dozen prestigious medical schools. One became dean at the University of Iowa in 2012. This US-focused history had its counterpart in other developed countries, particularly the UK and Australia where women sometimes played greater and earlier roles in governance of anesthesia than did women in the US.

Introduction

No women were physicians when surgical anesthesia was demonstrated in 1846, and few existed as anesthesiology initially developed. By the 20th century however, lack of manpower combined with acceptance of female anesthetists provided an opening that women physicians filled. They became leaders; three women served as presidents of national anesthesia organizations from 1922–1930, when women could not belong to many specialty societies. In 2013, more women than men graduated as physicians, and although an increased number now selected anesthesia, proportionately fewer women became leaders. This story illustrates how history and society affected the place of women in the practice of medicine and anesthesia. The chapter focuses on the US, because in the modern era, women first became physicians in the US, and because more information documents women’s activities in anesthesia.
A Brief History of Women in Medicine

In 2700 BCE, Egyptian Merit Ptah is said to be the earliest recorded woman physician. For the most part, universities excluded women, although some mediaeval Italian universities trained female physicians. The first modern woman to be awarded a medical degree, US citizen Elizabeth Blackwell (1821–1910), received her degree, in 1849 after a long and difficult struggle [1]. This set the pattern for future women in medicine [2]. Women battled against perceptions of lesser physical and mental competence (smaller brain size), difficulties during menstruation, and conflicts with their traditional roles as wives and mothers. In the 19th century, women felt that they might improve a profession that applied foolish remedies such as bleeding and purging. “Why not prevent disease?”

Women also entered medicine for economic reasons; medicine offered an alternative to a career as a poorly paid teacher, their other major option. Early women physicians were usually unmarried, and they paid for their medical education by teaching. Women could pursue medicine as a career because the youthful US lacked the rigid traditions of European medicine [3]. Medical schools, particularly the many marginal ones, in mid-19th century America had lax admissions policies. It was also easy to establish a medical school. American women founded 17 medical schools and 7 hospitals in the 19th century, providing opportunities for women in medical education that included internships, which became important after the turn of the century [2]. Because these schools and hospitals facilitated the entry of women into medicine, they also facilitated women physicians’ entry into anesthesia. There was geographic skewing of the distribution of women physician anesthetists, California having the most through the 1930s, in no small part because of Mary Botsford (1865–1939), who pioneered the development of anesthesia in the San Francisco Bay Area from 1910 to 1930 [4].

The opportunities for women in America’s medical institutions became known worldwide, and hundreds came to the US for medical training. Such competition may have motivated changes in Europe. In 1867, the University of Zurich became the first modern European school to enroll female medical students. L’École de Médecine in Paris followed in 1868. Such openings prompted some American women to train in the scientifically superior European schools [3].

Regardless of the school’s location, women studying medicine were isolated. Separate lectures for women and men were common in “coeducational” schools, as was social segregation [3]. Women were usually unable to join medical societies. Their professional lives had to center on the women’s medical institutions where they had studied.

The Flexner Report of 1910 affected all medical schools and was a crucial factor leading to subsequent closure of all but one of the women’s medical schools (the Woman’s Medical College of Philadelphia, now Drexel University College of Medicine, survived) [2]. This report documented the deficiencies of existing medical schools, prompting the transformation of American medical training into the present science-based institutions. Most women’s medical schools could not provide the laboratories, equipment (such as microscopes), or faculty necessary to teach scientific medicine. Few of the remaining medical schools accepted women, and the proportion of women physicians decreased from 6.0% of the physician population in 1910, to 4.4% in 1930 and only returned to 6.1% in 1950 (Fig. 16.1) [2]. During this time, anesthesiology became a specialty. One of the editors of this book (LJS) remembers 9 women in a University of Michigan class of 209 in 1961.

1846 to the End of World War I

The Suitability of Women for Anesthesia

Medical specialization languished until the end of the 19th century, and anesthesia offered minimal attraction. Few operations were done, and anesthetic agents hadn’t changed in a half century. In the US almost anyone (untrained physicians, nurses, medical students, and orderlies) could—and did—give anesthesia. Because anesthesia seemed like a nurse’s job, it had low status and reimbursement was poor. It was difficult therefore, to interest physicians in anesthesia. These issues were summed up in the discussion after a 1918 talk on professional anesthesia by Ralph Waters (1883–1979),
who would lead the move to modern anesthesia. An audience member stated:

"If you get a nurse to give an anesthetic, there is really no inducement for a doctor to make a specialty of it...The reason we have not better men or a larger number of good men giving general anesthetics is that we do not see that they are properly paid." He added: "I think the main reason that we are having nurses give anesthetics...is the question of money...I am going to pay out anywhere from one hundred to one hundred and fifty dollars a month for anesthesia (by physicians), and if I can hire a girl who will keep my instruments clean, and who will do my office book-keeping, work, etc (as well as give anesthesia), I can get her for about sixty-odd dollars a month." [5]

Some surgeons thought that women physicians combined the desirable characteristics of nurses—submissiveness and acceptance of lower pay—with the medical knowledge needed to improve surgical outcomes. Albert Ochsner (1861–1943) wrote in his 1920 surgical text that: "The best anesthesias are conducted by women at the present time, because it is possible to select women with the highest degree of intelligence and judgment for this work, while medical men possessing these qualities can almost never be induced to elect anesthesia as a specialty [6]."

It gets worse. Hugh Cabot, Professor of Surgery at the University of Michigan, and Surgeon-in-Chief at University Hospital, Ann Arbor, Michigan, closed the 1927 American Surgical Association meeting with

"I would lay particular stress upon the importance of the selection of (anesthetists). They should always be good-looking...Half of the anesthetic effect, when no anesthesia is used, depends upon the appearance of the anesthetist...." [7]

The First Women Physician Anesthetists

Two women physicians, Isabella Herb (1863–1943) (Fig. 16.2) and Mary Botsford (1865–1939) (Fig. 16.3), committed themselves to anesthesia in the 1890s. Botsford graduated in 1897 from the coeducational Medical Department of the University of California (now the University of California at San Francisco, UCSF), one of 8 women in a class of 59 [8]. She then studied at the Children’s Hospital of San Francisco (CHSF) founded by women physicians in 1875 [5], first as one of 6 interns, and later as a resident [9]. By 1898, she held the title of Anesthetist [10].

Herb graduated in 1892 from the Woman’s Medical College of Chicago. She interned at the Mary Thompson Hospital (founded in 1865 by women physicians), remaining there in various roles, including Superintendent, until 1897 when she moved to the Augustana Hospital in Chicago to practice anesthesia and pathology [11]. The hospital’s surgeon was Oschner, as noted above, an advocate for female anesthetists. By 1900, 13.0% of Chicago’s physicians and 13.8% of San Francisco’s physicians were female, training or practicing at the women’s hospitals. Nationally, only 5.6% of physicians were female [2].

As a student rotating to San Francisco’s City and County Hospital (the medical school did not have its own hospital then), Botsford was appalled by the illness that patients suffered with chloroform. Interning at CHSF, she saw equally bad results with ether. A close friend wrote:

"...Botsford...followed me in the surgical service (at CHSF)...She saw patients return from the operating room so saturated from ether that they were ill for a week from the effect of the anesthetic. She told one of the surgeons that she was going to specialize in anesthesia. He replied that she was crazy and could never make a success of it." [12]

Few operations were done then. For example, CHSF did only 3 operations in December 1903 and 4 the following month [13]. Both women pursued other medical work to survive. Herb practiced pathology, and Botsford maintained a general medical practice [14]. Herb was a widow [11], and Botsford separated from her physician-husband before entering medical school. Until her death, Botsford supported her niece and grand-niece [15].
Herb began her anesthesia career at the Augustana Hospital in 1897, working with Lawrence Prince (1859–1946), a pioneer of open drop ether and chloroform. She was also the hospital’s pathologist [11]. She probably earned no income from giving anesthesia because Augustana Hospital was a charitable institution [16]. Similarly, Botsford earned no anesthesia fees from her first five years in practice [12].

Herb published the first paper on anesthesia by a woman physician in 1898 [17]. In 1899, she became the first physician anesthetist (and the pathologist) at the Mayo Clinic. She left anesthesia to pursue pathology in 1904, studying in Europe and conducting research in Chicago, but in 1909 she was appointed chief anesthetist at Presbyterian Hospital and Rush Medical College in Chicago. Arthur Bevan, another surgeon-advocate for women physicians in anesthesia, was chief of surgery. Herb was the first woman on the medical school faculty [11].

No one taught Botsford anesthesia. Making careful observations, she learned by herself what was safe and effective. In 1910, Botsford became “Assistant in Surgery” (responsible for anesthesia) at the new UCSF hospital in San Francisco [18], the city’s only officially appointed anesthetist. This, the most prominent hospital in the state, had a single operating room. She received no salary from her academic position, but did develop a lucrative practice among San Francisco’s elite at a nearby private hospital. She also continued as anesthetist at CHSF. Unlike many at that time, she recognized the need to add supplemental oxygen to nitrous oxide, and specialized in nitrous oxide-oxygen anesthesia [19]. She published her first article, on nitrous oxide-oxygen anesthesia, in 1916 [20].

Internships became more important, but after 1900 few hospitals accepted women interns, channeling female medical graduates into the few hospitals that did, primarily the women’s hospitals. Working in such institutions, in a specialty “suitable” for women, Herb and Botsford attracted these interns. After anesthesia training with Herb in Chicago, women interns later assumed faculty positions at Rush and the University of Chicago. Anesthesia training with Botsford led interns to positions at UCSF, Stanford, or private hospitals in the San Francisco Bay Area. Stanford, then Cooper Medical School, had a Botsford-trained physician anesthetist, Caroline Palmer (1867–1947), from 1909 [21]. By the 1920s, Botsford or Palmer had trained women physician anesthetists for all but one of the major San Francisco Bay Area hospitals [4]. Herb’s and Botsford’s efforts attracted a disproportionately large number of women physician anesthetists to Chicago and San Francisco, a skewing of geographic distribution that continued until the 1940s (Fig. 16.4) [4].

Herb and Botsford were also active in the development of local, state, and national anesthesia societies. In 1922, Botsford led the effort to found the Anesthesia Section of the California Medical Association, and was the first president. She successfully lobbied for a state law requiring all interns to learn anesthesia [4]. In 1922, Herb became president of the first nationwide anesthesia society, the American Association of Anesthetists (AAA, founded in 1912 by Francis McMechan) [11]. and in 1930, Botsford was president of the Associated Anesthetists of the United States and Canada, an
organization that evolved from the AAA [4]. Eleanor Seymour (1877–1961) of Los Angeles, was another woman AAA president, in 1922–23 [22]. A 1903 University of Southern California medical graduate, Seymour interned at CHSF in 1903–1904, where she would have been influenced by Botsford. Like Herb, she had also practiced pathology [23]. She led a bitter legal fight in California against nurse anesthetists, and organized the first anesthesia society in Los Angeles, the Southern California Society of Anesthetists [24, 25].

Herb and Botsford were widely known, respected, and a little feared. When considering a move from Indiana to California in 1928, Arthur Guedel (1883–1956) asked Ralph Waters if he should go to Los Angeles or San Francisco. Waters replied,

"Now about San Francisco. I can give you a bit of dope. San Francisco and all the territory around is the private property of Botsford. It's female and doubtful will remain so, but as I understand it, extremely well handled. She is a bit of a czar on her throne at least that is the impression I have...make friends (but) don't try to invade her territory." [26]

Guedel wisely went to Los Angeles.

The Women Physician Anesthetists of World War I

As measured by membership in professional anesthesia organizations, increasing numbers of woman physicians practiced anesthesia in the decades before World War I. The need to pay membership dues endorsed their commitment to professional anesthesia. Other women physicians also practiced anesthesia, therefore numbers from membership directories probably underestimate the actual number of female physician anesthetists. The American Medical Association’s (AMA) annual directories of physicians began recording who was an AAA member in 1914, when 8 women were AAA members, 9% of AAA membership. Two years later, 15 women were members, 19% of AAA membership [29]. In 1915, only 3.6% of all physicians were women [30]. These data illustrate the relative popularity of anesthesia for women physicians, a popularity confirmed by a survey undertaken by the Council of National Defense’s Committee on Women Physicians, in preparation for World War I. Among women, only gynecology was more popular than anesthesia [31].

World War I revealed an ambivalence concerning recruitment of women physician anesthetists. By 1916, the Army and the Red Cross had organized base hospitals centered at major university hospitals where the staff worked together daily. Surgical units, with nurse or physician anesthetists, were the core of these base hospitals. When the US entered the war in April, 1917, 33 base hospitals were nearly ready; 6 sailed for Europe that month [32]. However, there were no physician anesthetists in the Army [33]. Although women physicians wanted to serve, the Army’s Judge Advocate
General ruled in August 1917 that the term "citizens," used in 1916 legislation to expand the Army Medical Corps, did not include women. Because they could not vote, they were not considered to be citizens, and because they were not citizens, women could not be commissioned medical officers [31].

Increasing casualties made the Army desperate for anesthetists. Male physician anesthetists were still rare. Nurses were trained in anesthesia as rapidly as possible, but these efforts were insufficient. In March 1918, the Army reconsidered its position, and women physician anesthetists were offered employment as "contract surgeons," medical specialists hired temporarily. This lowly position had no rank or benefits, no command authority and the pay of a first lieutenant [31].

The Army advertised that: "women between the ages of 23 and 45, born in the United States, who are graduates of reputable medical schools and who are skilled in the administration of anesthesia, are eligible for employment...." Recruitment was actually broader. If not trained already, women physicians could be sent to "an intensive course of instruction in the administration of anesthetics [34]." Only five of the 16 women physician anesthetists recruited had practiced anesthesia before the war. Only 2 were sent for training, one to the Mayo Clinic and the other to an Army general hospital. Eleven went overseas, at least 2 to forward combat units. Anesthetists were the only female contract surgeons sent overseas [31].

Anne Tjomsland (1880–1968) and Frances Haines (1882–1966) were the first female physician anesthetists to go overseas, both with units formed in 1916: Tjomsland for Bellevue’s Base Hospital No. 1 and Haines for Rush-Presbyterian’s Base Hospital No. 13. Both of these essential members of their units were refused commissions because they were female. Their Base Hospitals' chief surgeons battled Army bureaucracy to no avail, and both women had to sign on as contract surgeons [31].

There is little information on Tjomsland, but Haines wrote of her war-time experiences. A 1913 graduate of the University of Nebraska College of Medicine, she interned at Chicago’s Mary Thompson Hospital and became an anesthetist in Herb’s department in 1916 [35]. Arriving in France on June 10, 1918, she oversaw anesthesia at a 1,500 bed hospital in Limoges [36]. Ether was in short supply and to conserve the agent, she developed a technique that used its analgesic effects only, something not normally done at the time. This was done with open drop ether, demonstrating Haines’ considerable skill:

“One night in Limoges at 10 PM, I began the anesthetic for the removal of the entire left lung of a soldier whose large arteries, wounded in battle, bled whenever the sterile gauze packing was even partially removed. His heart kept actively beating, right in the field of operation. Had he taken one sudden deep breath, the surgeons’ instruments could have slipped and punctured more blood vessels. I kept the patient breathing quietly and smoothly throughout the operation. The surgeons commended me. The patient recovered.”

Haines also trained enlisted men and corpsmen to give anesthesia. She served for 16 months as a contract surgeon, the second-longest serving female contract surgeon [31]. Haines published her anesthesia experiences in collections of World War I anesthesia articles [37]. Reports in the medical women’s literature [38], and testimony at Congressional hearings [39] document the expertise of these female physician anesthetists.

After her return, Haines practiced anesthesia in Chicago. She served as president of the Mid-Western Association of Anesthetists in 1926 [40]. Poor health ended her anesthesia practice, and a 1964 radio show on her effort to get an Army pension described a surreal tragedy:

“...Dr. Haines still maintains a tiny, cramped office in downtown Chicago, where, if she's lucky, she may treat two patients a day. Often she earns as little as a dollar a day. These small fees are hardly worth her making the long bus trip from her small north side apartment each day. But she has no choice. If she doesn’t, she will starve.”

Her Army pension was denied, and she died destitute in 1966 [41].

Finally convinced of women physician anesthetists’ usefulness, the Army established Anesthetic Unit I in September 1918, the only time such a unit title was used. Once overseas, its 7 women physician anesthetists and 2 male medical officers relieved anesthesia staff in various units, especially Base Hospital No. 15 stationed in the Argonne [31].

On home territory, the women contract surgeons were assigned to various Army hospitals, where they gave anesthesia and taught others (primarily nurses) to give anesthesia. Botsford served as a contract surgeon at San Francisco’s Letterman Army Hospital, in addition to teaching anesthesia at the Medical Department of the University of California [42]. This assignment allowed her to continue her private practice and provide for her two dependents. Another woman physician, Rose Bowers of Indiana, was ordered "to report to the Surgical Unit as Anesthetist" at Camp Grant in Rockford, Illinois, just as the 1918 influenza epidemic hit. Within 6 days, the number of hospital beds increased from 610 to 4,102. All military functions ceased, and Bowers spent the rest of the war caring for patients with influenza [43].

World War I provided opportunities for the women physician anesthetists to prove their skills, and they did. Many of these women continued in anesthesia after the war.

1920 to World War II

World War I opened a 19 month window of opportunities for American women to enter medical school and pursue internships, opportunities that lessened with the end of the war. Several other factors also decreased the number of women physicians after the war. American medical schools decreased from 166 in 1904, to 76 by 1930, as marginal schools
closed in the accelerating move to scientific medicine. Most schools imposed a quota, usually 5% or less, for women and minorities such as Jews and African Americans. Admission increasingly required baccalaureate degrees, and the cost of medical education increased, making it unaffordable for many women. In 1920, 5.0% of physicians were women; by 1930, this had decreased to 4.4% (Fig. 16.1). When World War II began, the US had 7,708 women physicians, fewer than in 1910 [44]. And women had trouble obtaining the increasingly required internships. In 1921, 40 of 482 AMA approved hospitals accepted women interns. In the 1930s, 250 female medical graduates competed annually for the 185 internships open to women, while 4,844 male graduates competed for 6,154 positions [30].

Discouraging though this inter-war period was for most women physicians, it seemed attractive for women physician anesthetists. Women were there at the founding of anesthetic institutions and served as leaders in those institutions. Three chaired anesthesiology departments in 1920: Herb at Rush, Botsford at UCSF, and her trainee Palmer at Stanford, and these important leaders influenced the geographic distribution of women physician anesthetists, as previously noted (Fig. 16.4). But women physician anesthetists spread throughout the country, appearing in smaller towns, from Oregon to Texas to New York [45].

One change having little immediate effect was passage of the 19th amendment to the Constitution of the US on August 26, 1920, giving women the right to vote. In 1918, the Senate refused to pass the amendment, but women began feeling their power. The National Woman’s Party responded by attacking anti-suffrage Senators, suggesting that they should not be re-elected. In 1919, the Senate passed the amendment by 56 votes to 25.

First Resident: Mary Ross of Iowa

Anesthesia residencies as we know them today did not officially exist until 1927, but some physicians sought training in anesthesia. The year after her 1922 medical school graduation from the University of Iowa, Mary Ross (later Gillespie, 1895–1980) trained in anesthesia with Louis Harding (1866–1959), the self-taught physician in charge of anesthesia at Iowa. She received a Certificate of Residency Training in Anesthesia in 1923. This training is considered to be the first formal residency in anesthesia [46].

Dorothy Diamond (also spelled Dimond) (1896–1975), a 1922 medical graduate of the University of Minnesota, interned in 1922–1923 at CHSF, where she would have been taught by Botsford [47]. In 1924–1926, she followed Ross’ example of training with Harding. Diamond replaced Harding in 1930 as chief of anesthesia at Iowa, until September 1937. Stuart Cullen, assumed the chair (a Division of Surgery) at Iowa in 1938 [46].

Residents: The Women of Wisconsin

Ralph Waters, considered the father of academic anesthesia in the US, began the residency in anesthesia at the University of Wisconsin (UW) in 1927. This pivotal residency, directed or through its heirs, trained most future leaders of academic anesthesia in the US and several other countries. In the years Waters reigned, women made up 16.4 percent of the anesthesiology residents, a percent exceeded only by women in pediatrics (Fig. 16.5). Waters’ first 2 trainees were women, and 3 of the first 6 were women. At the time, this differed from other UW departments which had nearly all male trainees, except for pediatrics [48]. The first 2 anesthesia trainees were single but married while in practice, and could not be traced further in anesthesia [49]. As then expected, they probably stopped practice after marrying.

The third woman trainee, Martha Kohl (1901–1985), illustrates the difficulties then faced by married professional women. She was accepted because of an outstanding recommendation from Waters’ close friend, pharmacologist Chauncey Leake (1896–1978), who had recently moved from Madison to San Francisco to chair the pharmacology department at UCSF. After 2 years at the University of Wisconsin medical school, Kohl got a masters’ degree in pharmacology working under Leake [50]. She then transferred to Rush in Chicago for her remaining years of medical school and her internship. (Internship was required at Rush before the MD was granted [51].) She wrote to Waters to say that, she was “on the anesthesia service as an intern at Presbyterian Hospital under the direction of Dr. Isabella Herb for four and a half months. I have arranged for at least a month of work in my present internship (at CHSF) in anesthesia under the direction of Dr. Mary Botsford…” [52].” She obtained her MD in 1931 [51].

Leake’s recommendation also indicated that Kohl had a husband and a child, something not mentioned in Kohl’s own letter. She reached Madison on April 4, 1931, but left on July 1, 1932. Writing to Leake in June 1932, Waters observed “she is somewhat uncertain about her family affairs…” and asked if there were opportunities for Kohl in San Francisco [53]. Leake reported that Botsford had 3 good opportunities [54], but Kohl went instead to Eau de Clair, Wisconsin, to general practice, some anesthesia and lots of obstetrics [55]. She had a second baby in November, 1933 [56]. She disappeared from anesthesia directories after 1935. The 1940 AMA directory of physicians listed her as specializing in obstetrics and gynecology [57]. She was licensed in California in 1944, practicing general medicine [58] and divorced her husband in 1945 [56].

A 1942 letter, gave Waters’ impression of Kohl:

“…during her service I was considerably disappointed in Leake (for his recommendation). She is good-looking and has brains and is capable, but she proved to be extremely nervous and easily upset...She, however, did a fairly good year’s work in
Fig. 16.5 Female and total residents in various specialties at the University of Wisconsin Medical School from 1927 through 1949

spite of physical handicap...the last time I saw her, she said her husband was in the military service and the care of the children was pretty much up to her..." He also noted she was found to have "some disturbance of the internal secretions and got better with treatment." [55]

Speaking of Kohl again, Waters revealed his aversion to women, including competent women:

"I have a woman resident who has been with me a year and a half who, as women go, is as good as any. Neither you nor I like women, so I presume you would not consider her. She knows, however, inhalation anesthesia in all its phases...with the possible exception of endotracheal work. She can however, do endo and work reasonably well. She can take care of major blocks, has done hundreds of spinalis and a significant number of transarcals. She likes to teach, and I think is a good teacher. The only serious objection I have to her is that she is a woman..." [59]

These first 3 female residents were an inauspicious start for the Wisconsin department, failing to elevate Waters' attitude towards medical women. In a letter to Guedel, he wrote "...M.D. ladies...are useless in the profession. I am through with them. Ladies are nice socially but not (as) professionals [60]." Another 5 years passed before a fourth woman trainee came to Madison. Fortunately, she was outstanding.

Virginia Apgar

Virginia Apgar (1909–1974), a unique, charming and charismatic character became America's best-known anesthesiologist, male or female (Fig. 16.6). A 1933 graduate of Columbia University's medical school, she wanted to be a surgeon. But Alan Whipple, chair of surgery at Columbia wanted medical anesthesia at Columbia (only nurse anesthetists gave anesthesia at Columbia then). He saw Apgar as the best candidate to accomplish this, and persuaded her of the wisdom of that course. Apgar wrote to Francis McMechan (1879–1939) (then organizing national and regional anesthesia societies), asking about places to train [61]. McMechan wrote to Waters: "She seems to be an unusually ambitious
person and might prove to be an excellent find for the specialty irrespective of her sex. Do what you can for her [62].” She stayed at Columbia, working with nurse anesthetists during the 2 ½ years it took her to find anesthesia training. She finally came to the University of Wisconsin as a “visitor,” arriving on January 2, 1937 [63]. (“Visitors” were common then; only a few 3-year “resident” positions with room and board were available because of limited state budgets caused by the Great Depression).

Apgar faced the usual problem of housing for women physicians. House staff were poorly paid (Eger remembers getting $25 per month as an intern in 1955), and free room and board made survival possible. Lack of housing was used to explain the rejection of women house staff, although plenty of housing seemed available for nurses. Apgar initially slept in Waters’ office for 2 weeks and, after moving several times, found a room in the maids’ quarters. She recorded in her diary of being excluded from dinners after anesthesia meetings: “Stag dinner—MAD!” [61] Botsford also recorded her anger at exclusion from similar events.

In September 1937, Apgar returned to New York City as a resident in the new Bellevue program under Emery Ravenstine (1895–1960). At this time, Waters sent his partially trained staff to Ravenstine, to help Ravenstine succeed in a difficult situation. Ravenstine, a Waters’ trainee and former UW faculty member, had rejected Apgar for a training position in April 1936 [64]. Her training with Waters must have made her acceptable this time around. Apgar wrote to Waters as she ended her time at Bellevue, “Did a small bird tell me you are risking two positions on women this next year? I hope you will not be disappointed...please don’t expect anything less of them and make them work like the devil, for there is nothing worse than a poor woman anesthetist [65].” Another woman physician, Mary Lou Byrd (later Cowan, 1911–1994), started residency at Bellevue as Apgar left, so Apgar’s performance must have been satisfactory.

On 1 January 1938, Apgar became Director of the Division of Anesthesia, and Attending Anesthetist at Columbia. Beginning the difficult job of developing academic anesthesia, she followed Waters’ plan, focusing first on medical student teaching, then clinical care, and lastly research. World War II imposed enormous difficulties. In spite of these, she attracted residents, wrote papers, and did research, some with surgeons [61].

Her first 3 residents were men, for she did not immediately want women, writing to Waters in 1938: “If you have any applications for residencies which you cannot use (not women yet) maybe they would like to get a breath of Madison in NYC [66].” She sought advice from Waters for years on the problems she faced as a prominent woman in this developing specialty [67].

Waters probably instigated Apgar’s 1940 selection as treasurer of the American Society of Anesthetists (later the American Society of Anesthesiologists, or ASA), a position held from 1929 by the powerful but then ailing ASA founder, Paul Wood (1894–1963). Apgar contributed greatly to the stabilization of the fledgling ASA. The organization’s finances were poorly managed; there was no budget, a non-standard method was used for accounting, dues collection was erratic, and the launch of the journal Anesthesiology threatened to financially overwhelm the organization. Despite conflicts with Paul Wood, Apgar solved these problems, placing the ASA and the journal on a sound financial basis. Although it was clear that she had done a good job as Treasurer, she was the last woman officer to hold a significant ASA position for 27 years [27].

In the mid-1940s, a crisis arose concerning the state of anesthesia research at Columbia. As at other institutions, clinical demands exceeded the capacities of the available staff, precluding a sustained research focus. Apgar searched for a vice-chair for research, but there were few suitable candidates who wanted to be only a vice-chair. Ultimately, Emanuel Papper (1915–2002) came from Bellevue in 1949 as chief of the division. He became chair of a free-standing department at Columbia in 1952. After a year’s sabbatical leave and now freed from the burdens of administration, Apgar moved laterally into obstetric anesthesia, a neglected area in which she had always been interested [61].

A medical student asked the question at a casual breakfast in the hospital cafeteria: How do you evaluate a newborn baby? “Easy,” Apgar said, and in a moment, wrote down the “Apgar Score”. After testing for validity, it was published in 1953, becoming the world-wide method to evaluate how well newborns made the transition to extra-uterine life. The beauty and power of the Apgar Score was its simplicity; it could be determined easily and quickly, and required no fancy apparatus. She and her team documented that, contrary to previous thought, hypoxia and acidosis were abnormal after birth and should be treated. Low Apgar Scores meant hypoxia and acidosis and indicated a need for prompt resuscitation. Using the Apgar Score and other measures, they found that maternal and neonatal outcomes improved when regional rather than general anesthesia was used for delivery. Thus they began the move to regional anesthesia for obstetrics, incidentally comparing various methods of neonatal resuscitation [68].

In 1959, Apgar became director of the National Foundation’s (previously the March of Dimes) new effort to decrease the incidence of birth defects, later becoming Vice President for Research at the Foundation [61]. Because of her work on newborns, many thought she was an obstetrician or pediatrician, not suspecting that she was an anesthesiologist. Efforts led by the American Academy of Pediatrics and its Neonatal Section resulted in release of a US postage stamp in her honor in 1994, a fitting acknowledgement because Apgar was a dedicated stamp collector [69]. Since 1975, the section has maintained an annual Virginia Apgar Award in Perinatal
Pediatrics. The ASA’s Distinguished Service Award, its highest honor, was awarded to Apgar, the first woman to receive it, in 1961 [70].

Another Successful Woman of the 1930s, Gertie Marx

A new source of US women physicians appeared in the 1930s: Jews fleeing Nazi Germany. Anesthesia training positions were available, and many of these immigrants found anesthesia to be their only opportunity. This small group included another notable woman, Gertie (Gesti in German) Marx (1912–2004), the “Mother of Obstetric Anesthesia.” At the University of Frankfurt in Germany in 1931, nearly 40% of her medical school classmates were women, however anti-democratic legislation in 1933 prohibited the graduation of Jews. She completed the final semester for her MD at the University of Bern in 1936, and moved to the US in 1937. She had trouble finding an internship because of the so-called housing problem for women physicians. She found a rotating internship at Beth Israel in New York City when a male intern candidate withdrew and a room then magically opened for her in the student nurses’ quarters. Her first rotation was surgery, but this tiny person was too weak to hold retractors. She was instead assigned to anesthesia for the next 4 months, and loved it. Anesthesia became her life’s work.

Her long career (she practiced until age 85) focused on obstetric anesthesia. She reintroduced spinal anesthesia for obstetrics, documented the problems and treatments of aorto-caval compression in pregnant patients, advocated epidural analgesia for labor, and in 1969 co-founded the Society for Obstetric Anesthesia and Perinatology [71]. She received the ASA Distinguished Service Award in 1988 [85], and is remembered with great affection as a terrifyingly effective teacher who, Eger says, could skewer you with a question.

Women Chairs End for a While

Apgar and Marx established themselves just as the early women physician anesthetist leaders finished their careers. Botsford retired in 1932 and died in 1939. Herb retired in 1941 and died in 1943. Francis McMechan, the pivotal leader of the AAA, who had strongly supported women physicians in anesthesia, died in 1939. These deaths marked the end of that early era of professional anesthesia. There were still remnants however, women chairs of anesthesia departments, such as they were at the time. In 1940, 4 women chairs were in place: Isabella Herb at Rush, Dorothy Wood (1894–1963) at UCSF (soon to be replaced by Waters-trained Hugh Hathaway), Huberta Livingstone (1905–1980), another Herb trainee, at the University of Chicago and Virginia Apgar at Columbia. This was down from 5 in 1932: Herb at Rush, Botsford at UCSF, Palmer at Stanford, Livingstone at the University of Chicago and Diamond at Iowa. Julia Arrowood (later Mason, 1900–1984) would be appointed Acting Chair at the Massachusetts General Hospital (MGH) from 1943–45, replacing Henry Beecher (1904–1984), who left for war service [72]. Hers was a difficult position, as MGH epitomized the white male establishment hostile to women. Harvard admitted no female medical students until 1945, and MGH only rarely employed female faculty and interns.

One might argue that these women did not chair free-standing departments, separate from the surgery department, but that was the usual situation then. All but one or two early departments were divisions or sections in surgery. As late as 1965, 40% of US anesthesia “departments” were sections of a surgery department [73]. All the divisions/sections-departments headed by women were organized for didactic and clinical teaching of students, interns and, in some cases, residents. Men replaced the women chairs just before or during World War II, leaving only Apgar at Columbia until 1949, Huberta Livingstone at the University of Chicago until 1952, and Alice McNeal (1897–1964), another Herb trainee, at the University of Alabama at Birmingham from 1948 to 1961. Then there would be none until 1974, when Dola Thompson became chair at the University of Arkansas. A 1949 University of Arkansas medical graduate, she interned with her surgeon-husband at CHSF [74].

World War II

Despite the anticipated need for more anesthesiologists as World War II approached, many anesthesia residencies provided women. Residency lists by specialty published in the AMA’s annual Directory of Physicians did not note exclusion by gender until 1940. That year, 33 hospitals were approved for an anesthesia residency, and only half accepted women applicants. New York City, a major center for academic anesthesia, had 8 approved residencies, but only 3 accepted women. All 3 approved California hospitals accepted women, likely reflecting Botsford’s legacy. Women headed 3 residency programs (Stanford, the University of Chicago and Columbia) [75].

In preparation for war, the Army began ordering male medical officers to anesthesia training programs [76]. A Subcommittee on Anesthesia of the National Defense Council was formed in 1940, enlisting prominent male chairmen and ASA leaders. It developed short training courses and the necessary didactic material. In July 1942, the Surgeon General appointed Ralph Tovell as consultant in anesthesia for the European Theater [77]. As in World War I, base hospitals were organized at major hospitals, and these units
planned to include their usual female physician anesthetists, for example Apgar at Columbia (Base Hospital No. 2) and Alice McNeal at Rush-Presbyterian in Chicago (Base Hospital No. 13). (McNeal was a 1921 Rush medical graduate working in Herb’s department [78]) And, again as in World War I, women physicians would not be commissioned officers, only less-prestigious and less-paid contract surgeons. Surgeon General James Magee proclaimed in 1942 that “Women should not belong [31].”

Medical women fought back, their argument focusing on the importance of women physicians in anesthesia. Writing to Magee on February 18, 1942, Emily Barringer, president of the American Medical Women’s Association (AMWA), used women physicians’ status as anesthetists as the main reason to commission medical women:

“The field of anæsthesia is one in which women physicians have excelled and a field where many of the objections to a woman physician do not apply. At the present moment there are two anæsthetists who have applied to your office for permission to serve in the Unit from the Hospital to which they are attached. I refer to Dr. Alice McNeal of Chicago and Dr. Virginia Apgar of New York City. And I am asking you to please be willing to change your mind and appoint these two women in the Medical Reserve Corps, and let them go forward with their Units...By appointing these two outstanding women you will hearten all the women physicians of America...” [79]

Magee resisted, and the units left without their physician anesthetists. The New York Times and Time magazine reported McNeal’s situation to the public [80]. (It is not clear why Apgar’s situation was not also publicized.) A nation-wide lobbying campaign for commissions for medical women, especially anesthetists, drew support from unions and charitable organizations. Success came on April 16, 1943, when President Roosevelt signed the Sparkman-Johnson Bill, allowing women physicians to serve in the Army and Navy Medical Corps [2].

However, only 4 women physicians became Army anesthesiologists in World War II, out of 76 women commissioned as medical officers. Two of the 4 attended the new war-time short courses in anesthesia at Bellevue and Walter Reed. The Navy commissioned 57 female physicians, but only 2 were anesthesiologists. Only 1 of the 6 women, Bernice Walters, continued in anesthesia after the war, becoming a career Navy medical officer. She was the first woman physician assigned to a Navy ship in war time, during the Korean War [31]. Another woman doctor, Louise DeVore, was in Honolulu visiting her sister when Pearl Harbor was bombed. She rushed to Tripler Army Hospital to help, and gave anesthesia there for the next nine months as a “United States civil service worker attached to military service.” Despite requests from her commanding officer, she was never commissioned [81].

In contrast to World War I, the military did not recruit female anesthesiologists for World War II. Although the numbers of soldiers and sailors serving in the armed forces in World War II exceeded those in World War I by 4 to 5-fold, only 6 female anesthesiologists served in World War II, in contrast to 16 in World War I. One went overseas (to England), compared to 11 in World War I, when women were placed in front-line situations.

The war-time shortage of men increased medical school, internship and residency opportunities for the available women. In addition to filling slots in established residencies, women became the first residents in new anesthesia programs that were to develop modern, post-war anesthesiology. Margo Deming (1914-1998) was the first resident at the University of Pennsylvania (HUP), beginning in October, 1942 [82]. In 1946 she became the first chief of anesthesia at Children’s Hospital of Philadelphia and was a pioneer in pediatric anesthesia. Later she was chief of anesthesia at Philadelphia General Hospital. She was never acknowledged by the department as the first HUP resident [83]. Three women became the first residents at Charity Hospital, New Orleans, in 1941 when John Adriani became chair [84].

World War II changed American anesthesiology to a recognized, prestigious, more affluent and desirable specialty [77]—that left women behind. Many of the men trained in anesthesia by the armed services sought further anesthesia training after the war and filled positions previously held by women. And, the aging, earlier generation of women physician anesthetists was not replaced because fewer women became medical students and physicians. As noted above, men moved into anesthesia after World War II because they had been pressed into service as anesthetists and discovered that they liked the specialty. In addition, the war prompted employers to provide health insurance (wage controls meant they could not attract workers with increased wages). Anesthesiologists got paid just like the professionals they were—he/she sent a large bill. And, the insurance company, not the patient, paid the bill.

1950-2000

The civil rights movement and the Vietnam War began in the mid-1950s and both escalated in the 1960s, affecting many areas of American society, particularly medicine. Laws and legal actions increased the flow of women into medical schools. They included: The Civil Rights Act of 1964 (banning discrimination on the basis of color, religion or national origin), a sex-discrimination law suit against every medical school in the country in 1970, an amendment to the Public Health Service Act (banning employment discrimination in medical and other health professional schools), and in 1972, passage of Title IX of the Higher Education Act (banning discrimination in admissions and salaries in institutions receiving federal funds). Within two years after Title IX passed, women’s applications to medical schools
tripled. The number of women accepted to medical schools increased from 824 in 1964–5, to 1,295 in 1970–71 and to 3,392 in 1974–75 [30].

In 1964, the year the Civil Rights Act passed, Apgar described women’s status in anesthesia as a pamphlet published by the American Medical Women’s Association for women medical students. It documented the situation for women in anesthesia as the 1960s began. The final section, “Anesthesiology as a Career for Women,” revealed what today might be considered patronizing and sexist stereotypes:

“women were ideally fitted for this specialty because tact and diplomacy are part of their nature (with a few exceptions). Team work comes easily. Manual dexterity is a by-product of those who are expert at sewing or knitting.” Apgar discussed the potential problems for women of her time, especially those with children: “Married women anesthesiologists with children are not, in general, popular as members of a group practice. They are, of necessity, less dependable than men.”

She noted that women did much of the low-prestige medical student and intern teaching and held few of the higher prestige administrative positions. She ended with statistics: Women constituted 11% of the ASA membership in 1963, but comprised only 6% of the physician population [85], implying that anesthesiology continued to be an attractive specialty for women.

Women medical students and graduates progressively increased in numbers without a parallel increase in acceptance. Ten years after Apgar’s pamphlet, Mary Howell, the first woman serving as a dean at Harvard Medical School, wrote a pivotal article, “What medical schools teach about women [86],” on what was happening in medical schools and residencies. The article profoundly influenced women physicians, especially older ones. They realized, many for the first time, that the issues they faced did not have to happen. Memoirs by two women anesthesiologists documented the situation in anesthesia from the 1960s [87, 88].

As the number of women medical graduates increased, the total number of women in anesthesiology residencies and practice increased, in part a “mass effect” from the increased total numbers of female physicians. From the time of Apgar’s observation to the present, the percentage of anesthesiologists who were women has progressively increased (Fig. 16.7). However, on a percent basis (percent of total women physicians who are in anesthesia), entry of women into anesthesia has actually fallen [89]. To many, it seemed that there were no problems for women in anesthesia, but that was not quite the case.

In the 1980s and 1990s, women anesthesiologists worked to correct the limited presence of women leaders in the organizations that represent anesthesiologists. In 1983, Anne Barlow, then medical director at Abbott Laboratories and president of the American Medical Women’s Association (AMWA), convened a group of 20 women anesthesiologist leaders during an ASA meeting. All agreed that a committee on women’s issues was needed in the ASA and that male-specific organizational bylaws were a concern.

The next year, Caryl Guth of California surveyed other specialty organizations which were represented in the American Medical Association’s House of Delegates and which were the same size as the ASA (then 18,000). All seven had committees on women’s issues and had revised their bylaws to be gender neutral. The ASA had neither committees on women’s issues nor gender neutral bylaws. Guth wrote to the ASA president-elect in 1986, requesting formation of an ad hoc committee on women and that the ASA sponsor a panel each year on women’s issues at the ASA meeting. (Two informal sessions had already been held.) Both requests were denied [90].

In 1986, Wilkinson and Linde published the first analysis of women in academic anesthesiology [91]. This documented the lower academic advancement of women compared to men, and the lower board-certification rate. As Apgar noted 20 years earlier, women were more involved in teaching and patient care, with fewer research and administrative duties. There were 3 women academic chairs, less than there were in 1940.

At the 1986 House of Delegates meeting during the ASA meeting, Texan Betty Stephenson (1927–2006), presented a resolution to degender the language of the ASA’s Bylaws.
ASA's Executive Secretary said it would be too burdensome to undertake, and the issue was referred to the bylaws committee (all male), asking, “Do the bylaws need to be degendered?” The answer was “no,” reasoning that a footnote on page 1 of the bylaws stated that all masculine pronouns were to be considered gender-neutral. Stephenson became ASA president in 1991, the first and only woman ASA president. Other unsuccessful attempts were made, and the issue fostered until ASA President Peter McDermott acted:

“In October 1992, I became ASA president and issued an order degendering the language of ASA bylaws and other documents. It would have been embarrassing to have the issue debated by old white men. I also selected the first woman Ravenstine lecturer—Betty Bamforth—and established the women’s forum at the ASA annual meeting that morphed into the Committee on Professional Diversity. My first partner, Kay Belton, sensitized me to gender discrimination, and my three daughters take no prisoners when it comes to asserting the importance of women.”
(Private communication to S. Calmes and E. Eger, July 28, 2010)

At the 1993 ASA meeting, the California delegation to the House of Delegates proposed formation of an ad hoc committee on women’s issues, and it passed. The committee was formed in 1994 as the Committee on Women’s Issues [90], renamed the Committee on Professional Diversity in 1996 [92]. It now focuses on all issues of diversity. No other committee or activity in the organization focuses on women.

2000 to the Present

A 2004 survey [27] found that 5 of the 7 major specialty organizations (not anesthesia) had a woman president that year. Two had women immediate past-presidents, and 1 had a woman president-elect. Only the American College of Surgeons had not had a woman president by 2004, but did in 2005–6 [93], and in 2011 has a second woman president [94]. The ASA's single woman president served in 1991, 20 years ago. However, Jane Fitch is the President-Elect for the ASA in 2013. As in Guth’s 1984 survey, female contributions to ASA governance differed from that of other equivalent size specialty organizations, making the ASA unique among medical specialty organizations.

A 2008 article on the situation for women in academic anesthesiology [95], the second on this subject, compared 2006 data (the most recent available at that time) to 1985 data, and reported a mixed picture. The percentage of women anesthesiologists progressively increased (Fig. 16.7). Other areas of improvement included the number of female chairs (a 100% increase in a decade) [96], an increased presence of female American Board of Anesthesiology examiners, and an increase in women serving in leadership positions in the increased number of subspecialty anesthesia organizations. These new subspecialty areas led to more opportunities for women to be leaders. For example, women anesthesiologists have been important leaders in the move to out-patient surgery. Nine of the 22 presidents of the Society for Ambulatory Anesthesia, founded in 1974, have been women [97].

Women first joined editorial boards of the modern anesthesiology journals in 1978 (Anaesthesia and Intensive Care), in 1980 (Anesthesia & Analgesia), and in 1987 (Anesthesiology). By 2011, 4 women were editors at Anesthesia and Analgesia and 2 at Anesthesiology. Nonetheless, a study of the gender of specialty and editorial boards reported found anesthesia was 1 of 6 specialties, out of 21, in which women were significantly under-represented compared to the number of women in the specialty [98].

Of female anesthesiology faculty in 2006, 6.5% were full professors, compared with 17.7% of male faculty. This had not changed significantly since 1986. No other specialty had a lower percentage of women full professors [95]. On the other hand, in 2010 women occupied many prestigious chairs in anesthesia, including those at the Massachusetts General Hospital (Harvard), University of Washington (becoming Dean at the University of Iowa in 2012), Columbia, UCLA, Yale, and SUNY Upstate Medical Center, as well as the University of Arkansas, University of Texas at Houston, Syracuse, Northwestern, University of Nebraska, University of Oklahoma, and New York Medical College. And in 2000, 27% of residents were females; this increased to 38% in 2010.

Contributions by Women Outside the US

The striking differences among countries in opportunities for women in medicine and the differences in the development of professional anesthesia among countries make a world-wide view of this subject difficult. Several consultants outside the US supplied their assessment of the leadership roles women have assumed outside the US. Information was difficult to collect, and some major countries, such as Japan and India, did not contribute. But the numbers in such roles appear to have been limited. As one consultant put it, “…considering the number of women practising anaesthesia in Europe at the present time, there have been very few women of note in the history of anaesthesia outside of the USA.” To describe those who have made contributions, we have taken an exemplar approach, citing the contributions and when they were made.

1950–1980

Australia–New Zealand In 1935, Mary Burnell (Fig. 24.9; 1907–1996) became the first female member of the Australian Society of Anaesthetists. In 1953, she was elected president of the Society, the first woman attaining that position.
Pat Mackay was a founding member of the Australian Patient Safety Foundation and President of the Australian Society of Anaesthetists from 1966–1968. She was Chairman of the Victorian Consultative Council on Anaesthetic Morbidity and Mortality from 1991 to 2005, and named 2001 Woman Doctor of the Year. (Courtesy of Dr. Patricia Macay, OAM)

She served as Dean of the Faculty of Anaesthetists, Royal Australasian College of Surgeons in 1966–67, the first female Dean of the Faculty. She had a sense of humor as indicated in a story told by Gwen Wilson: On one occasion,

“after an hour’s fruitless argument and nit-picking over a minor issue, a firm voice said, ‘Mr Chairman, I’ve had a lot of committee experience and I know this committee is both tired and hungry. I propose we go to lunch’. The meeting broke up laughing, and on return after lunch, the matter was settled in less than five minutes.”

Professor Tess Cramond (née Brophy) (1926 -) was the first female Fellow of the Australian Medical Association (AMA). She formed the Pain Clinic at the Royal Brisbane Hospital in 1967 where she directed the Multidisciplinary Pain Centre, now the Professor Tess Cramond Multidisciplinary Pain Centre. She was Dean of the Faculty of Anaesthetists of the Royal Australian College of Surgeons from 1972–3. From 1978 to 1993, she was Professor of Anaesthesics at the University of Queensland, the first female professor of anaesthesia in Australia. Accolades include an Order of the British Empire (OBE) in 1977, the Gold Medal of the Faculty of Anaesthetists of the Royal Australian College of Surgeons in 1982, an Advance Australia Award in 1986, Officer of the Order of Australia (AO) in 1991, a Red Cross Long Service Award 1994, and the AMA Women in Medicine Award.

Neridah Dilworth established paediatric anaesthesia in Western Australia. She became the first Director of Anaesthetics at Princess Margaret Hospital for Children in December 1960, remaining Director until her retirement in 1992. With Peter Brine, she started the first ICU in Perth. “Physicians and the medical superintendent, who were unable to accept that anaesthetists could care appropriately for critically ill patients” opposed their efforts. The Australian Society of Anesthesiologists Western Australian Section named an award in her honour in 1988. She was awarded a Member of the Order of Australia (AM) in 1993, for services to medicine, particularly in paediatric anaesthesia, subsequently receiving the Australian Society of Anaesthesiologists Medal.

While in London in the 1930s, Margaret (Greta) McClelland (1905–1990) documented the adverse interaction between trichlorethylene and soda lime. She returned to Melbourne in 1946, and became the first director of paediatric anaesthesia at the Royal Children’s Hospital. She was President of the Australian Society of Anaesthetists in 1964, and received the OBE in 1975.

Patricia Mackay (nee Wilson; Fig. 16.8) was a founding member of the Australian Patient Safety Foundation. She was Secretary, then Treasurer of the Australian Society of Anaesthetists, becoming President from 1966 to 1968. In 1984, she was appointed Chairman and Head of the Department of Anaesthesia at the Royal Melbourne Hospital, a position she held until 1992. She established the first acute pain management unit in Victoria. She received the Order of Australia Medal (OAM) in the Queen’s Birthday Honours on 9 June 2008, after serving as Chairman of the Victorian Consultative Council on Anaesthetic Mortality and Morbidity (VCAMM) from 1991 until 2005. As Chairman of VCAMM she authored the 5th, 6th, 7th and 8th Reports of the Council (in 1993, 1996, 2000 and 2004). In 2000, she was awarded the Australian and New Zealand College of Anaesthetists Medal and shortly later received an award as the Woman Doctor of the Year by the Australian Medical Association.

Gwen Wilson (1916–1998) was one of the first female physicians to specialize in anesthesia in Australia. She has fame as a historian, having authored two books, one on the Australian Society of Anaesthetists, and another on anesthesia in Australia-New Zealand, “One Grand Chain”. She was the first Laureate of the History of Anesthesia awarded by the Wood Library Museum [99].

Israel Florella Magora contributed to the development of intrathecal opioids for the management of pain, being a
co-author of the first report of epidural opioid for the management of postoperative pain [6].

**The Netherlands** Affectionately known as “The Missus,” Doreen Vermeulen-Cranch (Fig. 16.10; 1915–2011; Amsterdam) trained in the UK during World War II at University Hospital, London, with experience with chest cases at the Brompton Hospital. She was asked to improve anesthesia at Amsterdams’s University Hospital. She was the first trained anesthetist in the Netherlands, convinced the surgeons of the need for professional anesthesia, especially for chest cases, and was appointed Professor of Anesthesiology in 1958. This was the first chair of anesthesiology on the Continent, and the first ever held by a woman in anesthesiology in Europe [100].

**Russia** Elena Damir (Fig. 16.9) was one of three leaders of Russian anesthesia during the 1950s to 80s, the only prominent woman known at the beginning of Russian anesthesiology. After anesthesia training in Moscow, she went to Copenhagen for the World Health Organization training course. She chaired the Dept of Anesthesia at Botkin Hospital in Moscow from 1959–1998 and was active in the World Federation of Societies of Anesthesiology (WFSA).

**United Kingdom** Margaret Manford (1914–2007) focused on pediatric anesthesia at St Helier Children’s Hospital in the 1950s and 60s, doing so when this was not a time of specialization in anesthesia. She had numerous trainees and published a variety of papers with them. She had an affection for the underserved, doing work in the late 1960s in Vietnam and Bangladesh, and after retirement she worked with disadvantaged families in Kent.

**1980–Present**

**Australia–New Zealand** Kate Leslie (1962-), Associate Professor at the Royal Melbourne Hospital at the University of Melbourne, is known for her collaborative work on awareness during anaesthesia. She was President of the Australia-New Zealand College of Anaesthetists from 2010 to 2012.

Jeanette Thirlwell (author of this book’s essay on the History of Anesthesia Journals) has been the backbone of the journal, Anaesthesia and Intensive Care, since it began under the first editor, Ben Barry, in 1972. She was appointed as As-
sistant Editor in 1978, and remains as the executive editor, supervising all printing and publication.

There is a notable prominence of women leaders in anesthesia organizations. In 2013, the incumbent president of the Australian and New Zealand College of Anaesthetists is the third woman in a row to hold the position (a two year term), with the current Vice-President (and likely next President), also a woman.

China Ailun Luo, was elected President of the Chinese Society of Anesthesiologists in 1997, She was subsequently elected as a fellow of the Royal College of Anesthetists.

Greece Helena Askitopolou from Heraklion in Crete, is active as a historian of early Greek contributions to anesthesia [101].

Mexico Estella Melman is Professor and Chair; Dept of Anesthesia, Hospital Infantil de Mexico, Mexico, D.F. She has played a prominent role in pediatric and regional anesthesia since the 1970s and authored one of the essays in this book.

United Kingdom Aileen Adams (1923-), an early neuroanesthetist, worked at Cambridge and made several political contributions. She was Dean of the Faculty of Anaesthetists, Royal College of Surgeons of England from 1985–1988. She also was President of the Section of Anaesthesiologists in the Royal Society of Medicine from 1985–1986 and President of the Section of the History of Medicine from 1994–1995. She was President of the History of Anesthesia Society from 1990–1992 and the British Society for the History of Medicine from 2003–2005.

Griselda Cooper was recently Vice-President of the Royal College of Anaesthetists (RCA). She was awarded an OBE recently for services to obstetric anesthesia.

Jean Horton (1924-) is a neuroanesthetist, who worked at Addenbrooke’s Hospital, Cambridge. Her teaching in Hong Kong and Lagos improved anesthesia care in those areas. She was a founding member of the History of Anaesthesia Society and was President in 1997–1999.

Judith Hulf, on the faculty at Middlesex Hospital and University College Hospital, London, recently completed her term as President of the RCA.

Jennifer Hunter is currently Professor of Anaesthesia, University of Liverpool where she studied the pharmacodynamics and pharmacokinetics of neuromuscular blocking drugs in health and disease, especially in critically ill patients, and in patients with chronic renal failure and liver disease. She was Editor-in-Chief of the British Journal of Anaesthesia from 1997–2005 and subsequently was made Honorary Chairman of the Board of the Journal.

Jean Lumley at Hammersmith Hospital, London, is presently Vice-President of the RCA.

Reflections on the History of Women Anesthesiologists Outside of the US

These exemplars suggest that female anesthesiologists have made greater progress in the United Kingdom and Australia than in other countries. We cannot say whether this reflects differences in interest or opportunity. It does correlate with the origins of anesthesia and, perhaps with an earlier acceptance of anesthesia as a specialty in the countries of origin. If so, the increasing worldwide acceptance of anesthesia as a specialty suggests that the worldwide prominence of female anesthesiologists will increase in the future.

Concluding Thoughts

In the first few decades of the 20th century, women physicians contributed definitively to anesthesia in the US, and in some parts of the country women physician anesthesiologists flourished. In part, this resulted from the efforts and vision of two physicians, Mary Botsford and Isabella Herb. In part, it resulted from a perception by surgeons that anesthesia was well-served by the psychic makeup of women. In part, it resulted from an unfavorable view of anesthesia, a specialty not worthy of a male physician’s attention.

But there were concurrent opposing factors. Changes in medical education, the decline of women’s medical institutions, and increasing technology (adding interest) contributed to the end of anesthesia as “women physicians’ work.” So did the increased interest in anesthesia by male physicians, exemplified by the great Ralph Waters, who despite his greatness failed to understand the potential of women physician anesthesiologists. Perhaps that should be surprising. Botsford and Herb had views in the 1900s and 1910s and 1920s that antedated but paralleled those expressed by Waters in the 1930s and 1940s on the development of anesthesia. All emphasized clinical care, teaching, research, and the development of professional organizations. Botsford and Herb were committed to, and convincingly espoused the critical issues for anesthesia of the time. They were important leaders who were comfortable in their roles as leaders at a time when women were not leaders in any other medical specialty. The two women published articles describing complications, recorded clinical effects of various anesthetic techniques, and analyzed how care might be improved. Both advocated preoperative visits by physician anesthesiologists and got surgeons to agree. They argued that an understanding and observation of the operation should guide the conduct of anesthesia. Both were charismatic teachers who had medical school faculty appointments (the first ones for anesthesia in their schools), and they educated medical students, interns and residents. Their recruitment of women physicians into anesthesia attests to their ability and charisma.
World War II produced changes that further shifted dominance in anesthesia towards men. Male, but not female, physicians were drafted into the armed services and forced to become anesthetists, like it or not. Many did like it, and they swelled the numbers of male physician anesthetists. The war made anesthesia financially rewarding by providing workers with health insurance benefits that allowed payment to anesthesiologists, and, in spite of injury, women physicians couldn’t enlist and be trained at no charge as anesthetists, as commissioned officers, until the end of the war. Too late! Most women couldn’t benefit from (didn’t have a chance to earn) the GI Bill of Rights. Thus male physician anesthetists increasingly dominated anesthesia in the 1940s and 1950s, despite the great contributions of a few women physician anesthetists such as Virginia Apgar.

Then came the 1960s and the 1970s and the confrontation of bigotry. There was and is a good side to bigotry. The anger, sometimes rage, that it generates, the sense of injustice, prompts women and men to civil disobedience and other acts that have transformed the world, a transformation that continues to this day. The primary vehicles of transformation in the US were the 1960s civil rights movement and the feminist movement. These changed the face of anesthesia in the last third of the 20th century and into the 21st century. Some changes are obvious. Women now equal, sometimes exceed, men in medical school admissions (well, they are smarter, and they get better grades, don’t they?) As anesthesiologists, they still lag although they’ve gained ground. Perhaps anesthesiology is less sought after by women, or perhaps until recently there were fewer role models. But that is changing now that women hold the chairs at some of the most prestigious departments in America.

Anesthesiology today differs qualitatively and quantitatively from that developed by Botsford and Herb in the early 1900s. These women from an earlier, simpler time left a legacy that influences today’s vastly different specialty which still, however, focuses on teaching, clinical care, and research. It wouldn’t hurt to remember that Herb and Botsford led the way a century ago.

References

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15. The 1920 and 1930 censuses record the niece and grand-niece living at the same address as Botsford, who was listed as head of the household. The niece had no occupation so probably kept house for Botsford, supporting Botsford’s work as a professional woman.
19. Others often noted her expertise, and she presented papers and wrote articles on this. Most striking was her advocacy for nitrous oxide in children in Botsford ME: Nitrous oxide-oxygen anesthesia in children. Anaesth Analg. 1923;2:193–6. (This technique was thought to be contraindicated for children at the time).


36. MS-50 I.1 Frances Edith Haines, Women in Military Service Memorial Foundation, Arlington, VA. Memorial Register no. 218489.


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53. RMW to CDL, June 3, 1932. UCSF Leake papers.

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55. RMW to WA Munn, July 20, 1942. Box 2, Anesthetists Wanted, #39–42. Waters Papers, UW.


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59. RMW to CN Chipman June 10, 1933. Waters correspondence GMC.

60. RMW to AEG Febraru 16, 1932. Waters Correspondence, GMC.


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63. RMW to AEG, July 15, 1932. AEG Correspondence, GMC.

64. Emery A. Rovenstine to RMW April 8, 1936. Box 14, Waters correspondence, Box 14. Waters archives, UW.

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96. Email communication CA Wong to SH Calmes, May 22, 2010.