

Frank J. Murphy, M.D., C.M., 1900–1972

His Life, Career, and the Murphy Eye

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FIRST suggested in 1941, the “Murphy eye” is the hole through the right tip of the endotracheal tube, between the leading edge of the bevel and the inflatable cuff.¹ By mid-century it appeared on most Magill endotracheal tubes, and the eponyms “Murphy eye” and “Murphy tube” became standard. The man Murphy, however, remains a relatively obscure historical figure in the specialty of anesthesiology.

Murphy’s life is well worth examining, however, in the context of anesthesiology emerging as a fully developed medical specialty, around the time America began to recover from the Great Depression. Frank J. Murphy, M.D., C.M. (1900–1972), began his training in the late 1920s, and judging by today’s standards, conditions were primitive. Residencies were apprenticeships with minimal formal didactics, professional meetings were infrequent, the only anesthesia

journal in North America was a quarterly supplement to a surgical journal, and a specialty certification board was only a remote future possibility. As the specialty grew, organizations were developed to further its professional mission on a regional and national basis. Through this period, the American Society of Anesthetists,[†] the American Board of Anesthesiology, and the journal *ANESTHESIOLOGY* increased educational activities in the specialty, to improve the quality of anesthesia care delivered in the community. Regulatory efforts based on national standards followed, and enforcement of the standards was occasionally called for, especially in the area of residency training.

The core of Murphy’s career spanned the years 1930–1960, and the impact of professional organizations can be seen repeatedly affecting his work, in early hospital practice, wartime service, running a university anesthesia service and a residency program, and finally in private practice. As the specialty matured, significant changes in Murphy’s career demonstrated the results of regulation, for good or ill. As we consider our progress from those primitive beginnings to our current regulated practice pattern, we see ourselves and Murphy as participants in the same process. Thus, as historical narrative, the more we learn about Murphy, the more we may learn about ourselves.

Early Years

Francis John Murphy was born on March 11, 1900, in Oldham, South Dakota.[‡] Both his mother, Cecilia Regan, and his father, Mike Murphy, were from Irish farm families.[§] The first of three sons, Francis was named after his mother’s brother and, like his uncle, preferred to be called Frank. All three Murphy brothers became physicians. Born 3 yr after Frank, Donald Joseph Murphy was linked to him closely for much of their lives.^{||} The youngest brother, Eugene (Gene) Murphy, practiced radiology in South Bend, Indiana, and had limited contact with his older brothers over the years (Jack O’Brien, personal communication, interviews, northern Idaho, September 28–October 1, 2009).

When Frank was 9 yr old, the family moved to a farm near High River, Alberta, Canada.[#] After finishing high school in 1918, Murphy applied for a Canadian permit to travel to the United States to attend Gonzaga University in Spokane, Washington, and affirmed his US citizenship on the appli-

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† After 1945, known as the American Society of Anesthesiologists.

‡ Murphy FJ. Biographical data for the American Society of Anesthesiologists Directory, September 20, 1946, American Society of Anesthesiologists Archives, Wood Library-Museum of Anesthesiology, Park Ridge, Illinois.

§ Family tree of the Regan and O’Donnell families, compiled by one of the cousins of Frank Murphy, typed approximately 1950. Papers of Frank J. Murphy, 4M Charolais Ranch, Spirit Lake, Idaho.

|| Murphy DJ. Membership Application, November 12, 1965, American Society of Anesthesiologists Archives, Wood Library-Museum of Anesthesiology, Park Ridge, Illinois.

Permit to Leave Canada, September 14, 1918, signed by Frank J. Murphy, High River, Alberta, Canada.

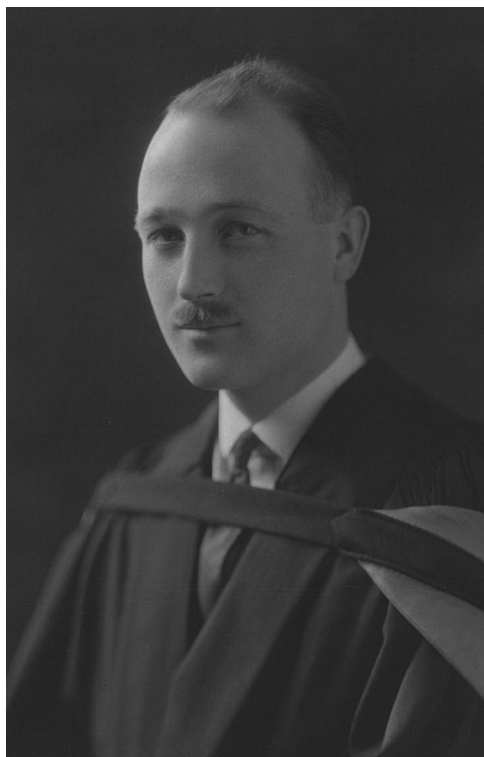


Fig. 1. Murphy on graduation from McGill Medical School, Montreal, 1925. Original portrait hangs at the 4M Charolais Ranch, Spirit Lake, Idaho.

cation form. He listed his height as 5'5" and his weight as 135 pounds, close to his adult stature. Murphy spent only 1 yr at Gonzaga and then transferred to the University of Alberta in Edmonton for a 4-yr combined premedical and basic science curriculum. Because the University of Alberta did not offer a medical degree at that time, he transferred to Montreal's McGill University for his last 2 yr, receiving his M.D., C.M. degree in 1925 (fig. 1).** This conjoined degree in medicine and surgery was commonly granted by Canadian medical schools of his day (C.M. refers to a Master of Surgery degree).²

Murphy often spoke of his poverty during his Montreal years. To save money, he worked on cattle cars managing livestock during travel to Montreal, putting his farm background to good use and riding for free. During the school year, hospitals supplied meals to medical students on weekdays, but over the weekends, some of the less affluent students like Murphy lived on bread and water. Murphy also mentioned to his family in later years that he had promised his parents to support his brothers Don and Gene during medical school with income from his future practice (Jack

** Diploma, McGill University, M.D., C.M. degree, conferred May 24, 1925. Papers of Frank J. Murphy, 4M Charolais Ranch, Spirit Lake, Idaho.

†† Mongeau M: A Legacy of Memories. A family memoir, written by Anne Murphy's niece, which contains biographical information on the Scullin family. Date unknown. Papers of Frank J. Murphy, 4M Charolais Ranch, Spirit Lake, Idaho.

O'Brien, personal communication, interviews, northern Idaho, September 28–October 1, 2009).

After graduation Murphy married Anne Scullin, a Montreal native and nurse at one of the McGill hospitals. Her father worked at the Montreal Customs House; her mother operated a family grocery store.†† Frank remained married to Anne his entire life.

During his first year after graduation, Murphy took a rotating internship in the Western Division of Montreal General Hospital. It is likely that he and other interns were recruited to administer anesthetics under an apprenticeship system. This was a common practice in Montreal, where the number of trained physician anesthetists was small and the clinical load was heavy.² In 1925, he became licensed to practice in the State of Maine and did a year of general medicine in Atlantic, a small island community near Bar Harbor.‡ A lobster pot full of fresh catch would often appear at their door, a gift of the local fishermen for the doctor and his wife. Anne would keep one to cook for herself and slip the others back into the bay since Frank did not care for lobster (Jack O'Brien, personal communication, September 2009).

In 1927, Murphy returned to Canada to begin training in anesthesia at Montreal General Hospital, where he came into contact with three important senior anesthetists. The first was Charles C. Stewart, M.D. (1888–1958), the hospital's Chief of Anaesthesia from 1928 to 1954, and a forceful early advocate for endotracheal anesthesia in Canada.³ The second was the eminent Wesley Bourne, M.D., C.M. (1886–1965), a respected physiologist, pharmacologist, and clinician who became the first Professor and Chair of Anaesthesia at McGill University near the end of his career and who was elected president of the American Society of Anesthetists, the only Canadian ever so honored.⁴ The third mentor was Harold Griffith, M.D. (1894–1985), who reported the first clinical use of curare in 1942.⁵ The anesthesia trainees regularly spent free afternoons helping the senior anesthetists with private cases in community hospitals, so clinical contact with these teachers was extensive. Later events suggest that Murphy kept in touch with Stewart, Bourne, and Griffith throughout his career.

Montreal was a point of contact between innovators in airway management in England and investigators in North America. Ether insufflation using small endotracheal catheters had been introduced in Montreal around 1912 by F. W. Nagle, M.D. (sole anesthetist at the Royal Victoria Hospital, 1890–1918).⁶ The experience of Ivan W. Magill (1888–1986) (Westminster Hospital, London, United Kingdom) with airway management for reconstruction of facial injuries during World War I was influential in popularizing insufflation and pointed toward greater use of endotracheal anesthesia in a wide variety of procedures. With insufflation, patients breathed spontaneously as anesthesia gas was delivered through flexible small bore tubes inserted into the trachea or pharynx, and vapor was exhaled freely through the natural airway. By 1925 Griffith in Montreal was abandoning insufflation and moving on toward techniques using cuffed large-

bore endotracheal tubes that would allow to-and-fro respiratory exchange.⁷ Murphy would have seen these innovations in airway management as they first developed.

Anesthesia Practice

Murphy initially planned to stay in Montreal, but in 1930, he moved to Detroit to become a very young Chief of Anesthesia at Harper Hospital. His brother Donald, after graduating from medical school in 1931, also came to Harper Hospital for training in surgery and stayed on to practice general surgery for 30 years. During their early years in Detroit, Frank and Anne Murphy started a family. Their two daughters, Margaret and Elizabeth, were born in 1931 and 1934.

Murphy earned certification by the American Board of Anesthesiology in 1939, number 60 on the list of diplomates.^{‡‡} Murphy joined the Wayne County Medical Society, the American Medical Association, and three anesthesia organizations: the Michigan Society of Anesthetists, the American Society of Anesthetists, and the Associated Anesthetists of the United States and Canada, one of the organizations founded by Francis H. McMechan, M.D. (1879–1939), an early organizer of regional and national anesthesia groups.^{§§} Murphy first met John S. Lundy, M.D. (1894–1973), the influential Chief of Anesthesia at the Mayo Clinic, when they jointly commented on a paper at McMechan's Congress of Anesthetists in October 1934.^{|||} Lundy would have been familiar with Murphy's work in Detroit, because three reviews of publications by Murphy appeared in *Anesthesia Abstracts*, which Lundy edited at the Mayo Clinic.^{1,8,9} Murphy was elected to membership in the elite Anesthetists' Travel Club late in 1941, nominated by his three mentors in Montreal, who were long-term members.^{##} For reasons not entirely clear, John Lundy, the founder of the Travel Club, objected to Murphy's election after the fact.^{***} Murphy remained the 39th and last member of this renowned organization and became a charter member of its successor, the Academy of Anesthesiology.

During his Detroit years, Murphy published a series of short papers dealing with atelectasis, preoperative medication, and shock, all concisely and clearly written.^{8–10} His

most impressive publication was written in 1940, criticizing the use of high concentrations of nitrous oxide in hypoxic gas mixtures during "secondary saturation" inhalation anesthetics.¹¹ The great popularizer of these techniques was E. I. McKesson, D.D.S., M.D. (1881–1935), the inventor and manufacturer of the first anesthesia machine with controlled-flow nitrous oxide-oxygen blenders. Murphy questioned the safety of the technique in the first sentences of his article: "Unfortunately some recognized authorities have set forth the dictum that anoxemia during the administration of nitrous oxide is a normal and harmless condition."¹² This has been thought to be true especially if the person administering the anesthetic agent has had a large number of previous asphyxiations to his credit."¹¹ The reference to one of McKesson's publications leaves little doubt as to the identity of at least one of the recognized authorities mentioned, and the accusation of previous asphyxiations is hard to dismiss lightly. After listing the advantages and disadvantages of nitrous oxide, Murphy pointed directly to hypoxemia as the cause of most injuries attributed to nitrous oxide anesthetics: "The abandonment of the secondary saturation technique . . . will soon prove that asphyxia, not anesthesia with nitrous oxide, is responsible for the untoward effects which recently have been receiving attention."

Murphy chose *Surgery, Gynecology, and Obstetrics*, a prominent surgical journal, to publish this paper, and not the *American Journal of Surgery Quarterly Supplement of Anesthesia and Analgesia*, founded by Francis McMechan. McKesson had been an editor of McMechan's journal and had served as president of the National Anesthesia Research Society, founded in 1919 by McMechan, who described this group as "an organization financed by manufacturers of anesthetics and apparatus."¹³ Only 1 yr after McMechan's death in 1939, it was unlikely that his journal would publish a paper that criticized a prominent former editor or would offend commercial sponsors. The next year, however, Murphy published his most important paper, on the improved intratracheal catheter with the extra eye, in *Anesthesia and Analgesia*.¹

The Murphy Eye

Simple endotracheal tubes were used in the 1930s, fashioned by individual practitioners from standard urethral catheter and rectal tube stock; manufactured endotracheal tubes did not become available until the 1940s. In his 1941 article, Murphy described two designs for "intratracheal catheters" that introduced the idea that multiple-orificed tubes could increase the safety of endotracheal anesthetics (fig. 2).¹ The tubes had one hole on the end, cut diagonally across the tip, resembling the familiar bevel described by Magill two decades before, to facilitate passing the tube through the vocal cords. Murphy's significant alteration to the Magill tube added one or two oval-shaped holes to the side of the tube, describing their purpose that "should one or both of the eyes become obstructed with mucus, breathing is not ob-

‡‡ Diplomate Certificate Number 60, Frank J. Murphy, American Board of Anesthesiology. Papers of Frank J. Murphy, 4M Charolais Ranch, Spirit Lake, Idaho.

§§ Murphy FJ. Biographical Data for the American Society of Anesthesiologists Directory, September 20, 1946. American Society of Anesthesiologists Archives, Wood Library-Museum of Anesthesiology, Park Ridge, Illinois.

||| Program of the Thirteenth Annual Congress of Anesthetists, October 15–19, 1934, Boston, Massachusetts. International Anesthesia Research Society Archives, Wood Library-Museum of Anesthesiology, Park Ridge, Illinois.

Letter, Harold Griffith to John Lundy, December 8, 1941. John Silas Lundy Collection, Wood Library-Museum of Anesthesiology, Park Ridge, Illinois.

*** Letter, John Lundy to Harold Griffith, December 12, 1941. John Silas Lundy Collection, Wood Library-Museum of Anesthesiology, Park Ridge, Illinois.

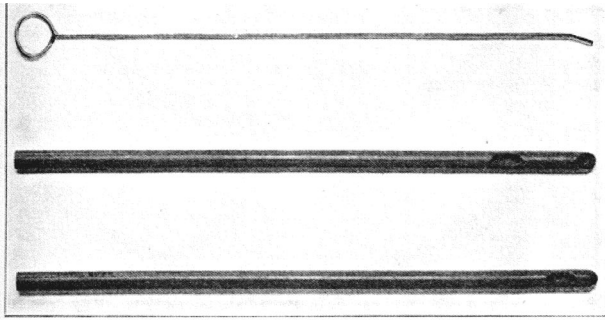


Fig. 2. An illustration from Murphy's first report of his intratracheal tube design.¹ Side holes were placed in straight red rubber rectal tube stock, with beveled whistle tips. The metal stylet was used to stiffen the tubes for endotracheal intubation. Use of single or multiple "eyes" was described in the text, and tubes made from curved hard rubber stock were also illustrated in the article. The tubes were uncuffed, and the use of wide diameter tubing with pharyngeal packs was suggested when positive pressure ventilation was used. Copyright © International Anesthesia Research Society, reprinted with permission.

structed." Murphy called the side holes "eyes," a term previously used to refer to the holes on the end of small insufflation tubes manufactured in the 1920s.¹⁴

Murphy did not mention anatomical obstruction as another cause of occlusion of a single outlet on the tube. The next year, John Lundy, in his comprehensive textbook of anesthesia, commented on obstruction of endotracheal tubes with long diagonal bevels, when the tip was placed on the medial wall of the right mainstem bronchus.¹⁵ He suggested cutting a hole into the bevel of the tube to allow gas to flow into the trachea. Anatomical obstruction was also well illustrated in Gillespie's book on tracheal intubation (fig. 3).¹⁶ Lundy may have known of Murphy's tube design before his textbook was published, or he may have independently recognized anatomical obstruction on the bevel and proposed a solution similar to Murphy's for the second problem. Murphy gets precedence by date of publication, and his innovation altered endotracheal tube design almost immediately. It was a simple solution to two simple problems, anatomical obstruction and mechanical obstruction by secretions.

The position of the eye under the bevel on the right leading edge of the endotracheal tube also helps preserve ventilation of the right upper lobe orifice when the tube is advanced past the carina into the right mainstem bronchus. Whereas a Magill tube without a Murphy eye might not ventilate the right upper lobe adequately during right endobronchial intubation, a Murphy tube would preserve ventilation to the right upper lobe under most circumstances. Whether Murphy ever recognized this additional function of the eye is not known.

Later evolution of the endotracheal tube placed the Murphy eye past the cuff next to the leading edge of the bevel. Gillespie wrongly credits Murphy as the inventor of both the eye and the cuff inflation tube that is integrated into the wall of the endotracheal tube.¹⁶ This integrated "pilot tube" for cuff inflation was actually first suggested by Ralph Tovell,

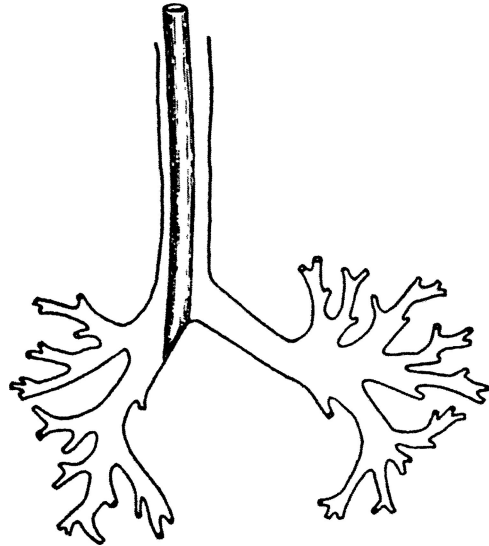


Fig. 3. Anatomical obstruction of an early endotracheal tube with a long bevel against the medial wall of the right mainstem bronchus. John Lundy pointed out that this could be relieved by cutting a hole on the right tip of the tube opposite the bevel.¹⁵ Lundy was the first to point out that anatomic obstruction of the endotracheal tube, in addition to blocking by secretions, could be corrected by a Murphy eye. Illustration from Gillespie NA, *Endotracheal Anesthesia*. Copyright © 1963 by the Board of Regents of the University of Wisconsin System. Reprinted by permission of The University of Wisconsin Press.¹⁶

M.D. (1901–1967), at the Mayo Clinic.¹⁷ Murphy used such integrated tubes in his practice, and Murphy's family has one of these tubes, initialed "F.J.M." by Murphy himself, preserved among his papers. None of the first uncuffed Murphy eye tubes, as pictured in the original report, survive in his personal files.

World War II

Frank Murphy enlisted in the United States Navy in April 1942 (fig. 4.). He was first sent to the naval hospital in Bremerton, Washington, and then quickly reassigned to help set up a naval recruit training center in northern Idaho. After Pearl Harbor, naval training centers were built on large inland lakes to provide protection from possible enemy air attack. Farragut Naval Training Center was situated on Lake Pend Oreille in the Idaho panhandle, fifty miles northeast of Spokane, Washington. Murphy helped open the base hospital and organized the anesthesia service. During the war, Farragut became a temporary home for almost 300,000 navy recruits. At any one time, its population was roughly 50,000, made up of recruits, active duty staff, and prisoners of war used as laborers. It was twice the size of Boise, the largest city in Idaho at that time.

In nearby Spirit Lake, Murphy found a small lakeside cottage to house his family. Anne and the two daughters lived there until the end of the war. Farragut was twenty miles away, so Frank could only make it home on weekends. The



Fig. 4. Commander Frank J. Murphy, USN. Picture from *The Bedside Examiner* (November 30, 1945, Page 7), the Farragut Hospital newspaper, when Murphy returned from Hawaii to assist with closing the base. From the papers of Frank J. Murphy, 4M Charolais Ranch, Spirit Lake, Idaho.

girls finished up most of their primary schooling in Spirit Lake; after Detroit, they found the rural setting a delightful change. Murphy was pleased by this, because the pine-covered hills with bottomland full of farms and ranches was so similar to his boyhood home in High River, only 200 miles to the northeast. The family always thought Frank was a rancher at heart, and it was somewhat ironic that he joined the Navy only to be shipped inland to a spot so near to his farming roots. The daughters settled securely into the Idaho panhandle, and eventually both returned there as adults. Anne and Frank were drawn back to Idaho as well, to spend their final years.

In 1944, Murphy was moved to Hawaii to serve for 16 months as Chief of Anesthesia at Pearl Harbor Naval Hospital.‡ After the war ended, he returned to Farragut to help close the base. When Murphy left the Navy in March 1946, he had decided against returning to Detroit, because he and the family wanted to stay in the west. (Jack O'Brien, personal communication, interviews, September 2009). Murphy opened an anesthesia practice in Spokane, moving the family there from Spirit Lake.‡ But then, unexpectedly, Murphy received a job offer that was hard to turn down: Chief of Anesthesia at the University of California Hospital, San Francisco.

San Francisco

The Chief of Anesthesia at the University of California Hospital in San Francisco had suddenly resigned in 1946 and,

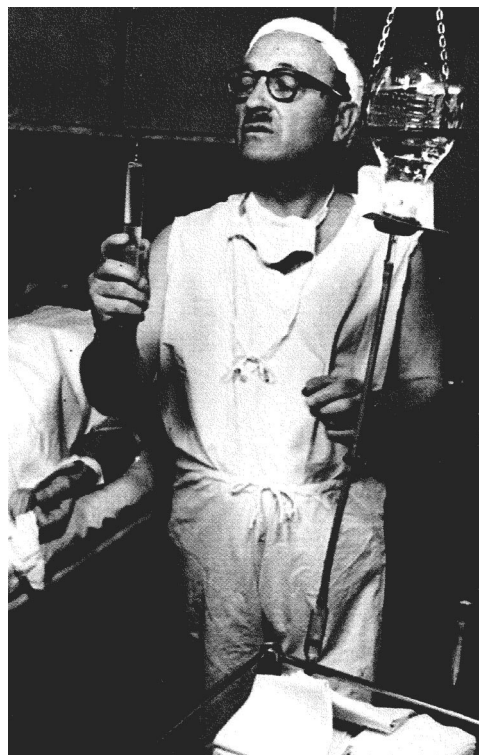


Fig. 5. Murphy preparing an induction dose of Viadril (21-hydroxy-pregnanedione) as part of a research project at the University of California Hospital, San Francisco, California, 1955.

according to very reliable rumors, some of the surgeons who had returned from the war suggested Frank Murphy for the job, thinking he might be available following discharge from the Navy. Murphy was almost certainly hired on a typical University of California contract then used that allowed him to collect fees on cases, hire faculty assistants at salary, and set his own salary based on revenues (William K. Hamilton, M.D., personal communication, e-mail, August 16, 2006). The department was run as a division of the Department of Surgery, and ultimate administrative responsibility was not under Murphy's control. Anesthetics were done by residents, nurse anesthetists, and medical students. Murphy hired two capable anesthesiologists, Frank DeBon and Neri Guadagni, to help with supervision and teaching. The department was up and running by October 1946.

Murphy and his staff provided clinical support for some collaborative research studies with basic science departments of the medical school, mostly dealing with new steroid intravenous anesthetics. Murphy published the first large clinical series of anesthetics using Viadril (21-hydroxy-pregnanedione), an intravenous induction agent, and presented this study at major meetings (fig. 5).¹⁸ The workload was heavy, so much of the research was done by the basic scientists, and anesthesia resident supervision and clinical teaching was often minimal. One young female anesthesiologist, Marjorie Noble, who left the staff when Murphy arrived, gave the following account 50 years later:

“Well, Dr. Murphy was just out of the service ... He proceeded to make a hundred thousand a year. He collected his own fees, and in those days in 1947 or so, that was a huge amount of money. He paid two young men twenty thousand a year, or so we understood, to do the work.”¹⁹

In the early 1950s, these rumors were spread through the anesthesia community in San Francisco by local anesthesiologists who wanted to open up the University Hospital for private practice. Complaints about the situation at the University reached the American Society of Anesthesiologists and the American Board of Anesthesiology in New York, reporting inadequate resident training. In response, the American Board of Anesthesiology conducted two separate inspections in 1957 that were not regularly scheduled residency reviews (anonymous personal communication, two telephone interviews, two different sources, May 20, 2005, and August 24, 2006.)††† Both inspectors agreed that the residents were receiving minimal instruction; the surgeons, the hospital, and the university, however, were very satisfied with the quality of patient care and efficiency. Both the reviewers remembered Murphy as pleasant, personable, and cooperative during the interviews.

The first reviewer noted that community economic pressure was a significant factor causing the review and even reported attempts by local anesthesiologists to intrude during the review process. He finally concluded that although the residency training did not appear sufficient, it was not under par based on his perception of national standards. When news of this first evaluation stimulated even more complaints to the Board, a second reviewer was sent to inspect the program. Evaluating the residency on purely academic grounds, the second reviewer recommended suspension of the training program to the Board. After consultation, the University dismissed Frank Murphy as chief, and proceeded to restructure the training program to comply with the requirements of the Board. Murphy did not appeal the decision and told his family that the dismissal was all due to politics (Jack O'Brien, personal communication, interviews, September 2009).

The University administration then recruited a new Chief of Anesthesiology, Stuart Cullen, M.D. (former chair of the Department of Anesthesiology at the University of Iowa School of Medicine, and later Dean of the Medical School, University of California San Francisco) and established an independent Department of Anesthesiology in 1958. Neither Dr. Cullen nor any of the faculty he recruited had any involvement in the decision to remove Murphy. Drs. DeBon and Guadagni remained on the faculty after Murphy's departure.

††† These two interviews were with sources who requested anonymity. The American Board of Anesthesiology conducted all residency program reviews in this period on a confidential basis, and the reviewers both continue to respect this confidentiality. The outcomes of the reviews were of course publicly known at the time.

The End of a Career

During the early 1950s, the family began making weekend trips to look at ranch properties in California, Nevada, and Oregon, where Frank and Anne could retire. In 1953, Murphy purchased a cattle ranch in the Hoodoo Valley near Spirit Lake, Idaho. He named it the 4M Charolais Ranch, the 4M's referring to Frank, Anne, and the two daughters. Murphy hired his daughter Elizabeth's husband, Jack O'Brien, to run the ranch in the 1960s. Elizabeth and Jack lived there together until her death in 2004. Jack O'Brien still lives on the property, and it is there on the ranch that Murphy's papers, books, and equipment have been preserved.

After leaving the University of California, San Francisco, Murphy worked for a year in Burlingame, California. He later relocated to Billings, Montana, where he practiced from 1959 until he retired in 1970. He was joined in practice there by his brother Don Murphy, who had retired from his surgery practice in Detroit. Frank Murphy needed help covering the clinical load in Billings and sent his brother to the Virginia Mason Clinic in Seattle to take a year of training in anesthesiology (L. Donald Bridenbaugh, M.D., personal communication, by letter, September 22, 2006). Few of Frank's surgical and anesthesia colleagues in Billings had any idea that he had distinguished himself in the specialty, and he is remembered as a kindly gentleman rancher finishing his medical career. When Murphy retired to Idaho, his dream of cattle ranching was sadly ruined by a carcinoma of the bladder, diagnosed before he left Billings, that led to his death 2 yr later. He is buried in Coeur d'Alene, Idaho, with his wife, Anne, who was buried beside him in 1984.

Conclusions

Every year, millions of endotracheal tubes are used throughout the world, and almost every one of them has a Murphy eye. So now that we know something about Frank Murphy's story, what do we learn from it? As an anesthesiologist, the best measure of his skills and temperament may be the positive impression he left with his naval colleagues in Hawaii who recommended him for his position in San Francisco. Academically, his concise and clear writing suggests he was well trained and current with developments in the specialty. He was also unafraid of authority when it needed to be challenged to correct potentially harmful clinical practices. He could analyze a problem and devise a solution such as the Murphy eye, which is brilliant in its simplicity and has proven its utility. His career repeatedly demonstrated the value of friendships, contacts, and serendipity in opening new doors. Finally, his family remembers Murphy working diligently, always pursuing his ultimate goal of returning to the farmland that nurtured him.

But this is a somewhat cautionary tale as well. The end of Murphy's time in San Francisco was sad and problematic. The second reviewer ultimately decided that improvements were needed and that Murphy was not the person who could

accomplish this. At mid-century, some universities were setting higher standards for specialty training, as was the American Board of Anesthesiology. As much as Murphy earns respect as a clinician, innovator, and entrepreneur, the evolving standards of professionalism in anesthesiology at mid-century judged him to be less than adequate as an educator, an evaluation perhaps unhappy but ultimately fair. The Murphy Eye remains his legacy.

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References

- Murphy FJ: Two improved intratracheal catheters. *Anesth Analg* 1941; 20:102-5
- Bevan JC, Pacelli MA: Wesley Bourne: The quintessential Canadian anaesthetist: A retrospective on the foundations of McGill Anesthesia. Montreal, McGill University Press, 1996, p 8
- Griffith HR: An anaesthetist's valediction. *Can Anaes Soc J* 1967; 14:373-81
- Griffith HR: Wesley Bourne. *BJA* 1951; 23:186-95
- Griffith HR, Johnson GE: Use of curare in general anesthesia. *ANESTHESIOLOGY* 1942; 3:418-20
- Nagle FW: Insufflation anesthesia. *Am J Surg, Quarterly Supplement of Anesthesia and Analgesia* 1914; 1:17-9
- Bodman R, Gillies D: Harold Griffith, The Evolution of Modern Anaesthesia. Toronto, Dundurn Press Limited, 1992, p 48
- Murphy FJ: The role of the anesthetist in relation to atelectasis. *Harper Hosp Bull* 1941; 1:13-5
- Murphy FJ: Pre-anesthetic medication. *Anesth Analg* 1940; 19:359-60
- Murphy FJ: Anesthesia in shock. *J Mich M Soc* 1940; 39:755-6
- Murphy FJ: Anesthesia and anoxemia in relation to the use of nitrous oxide. *Surg Gyn Obst* 1940; 70:741-3
- McKesson EI: Gas-and-oxygen anaesthesia in abdominal surgery; and "secondary saturation." *Proc R Soc Med* 1926; 19 (Sect Anaesth) 57-64
- Bodman R, Gillies D: Harold Griffith, The Evolution of Modern Anaesthesia. Toronto, Dundurn Press Limited, 1992, p 71
- Rowbotham S: Intratracheal anaesthesia by the nasal route for operations on the mouth and lips. *BMJ* 1920; pp 591-2
- Lundy JS: *Clinical Anesthesia*. Philadelphia, WB Saunders, 1942, p 453
- Gillespie NA: *Endotracheal Anesthesia*, 3rd edition. Revised and edited by Bamforth BJ, Siebecker KL. Madison, University of Wisconsin Press, 1963, p 132
- Tovell RM: *Proceedings of the Staff Meetings of the Mayo Clinic, 1936*. Referenced in Rehder K, Southorn P, Sessler A: *Art to Science*. Rochester, Minnesota, Mayo Clinic, 2000, p 35
- Murphy FJ, Guadagni NP, DeBon F: Use of steroid anesthesia in surgery. *JAMA* 1955; 158:1412-4
- Noble M: *Anesthesia in the 1940's, an oral history, The History of Anesthesia in Oregon*. Edited By Klein RL, Kendrick A. Portland, The Oregon Trail Publishing Company, 2004; pp 155-69

Appendix

Determining the professional and personal details of Murphy's story was difficult because of limited available sources. Murphy's written record survives in only a few scholarly publications and some short preserved letters. He left no strong historical or organizational legacy in the hospitals he served, and scarcely any local records of his clinical activities have survived.

Fortunately, the national organizations of the specialty became good sources of information on Murphy's history. The archives of the Anesthetists' Travel Club, the American Society of Anesthetists, and the American Board of Anesthesiology, preserved at the Wood Library-Museum of Anesthesiology (Park Ridge, Illinois), provided much useful biographical information. The Historical Unit of the Mayo Clinic (Rochester, Minnesota) was an essential source for the Anesthetists' Travel Club. Interviews with people who knew Murphy personally contributed even more details.

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Personal details were limited until Murphy's family was found in Idaho, thanks to clues from his obituary, and a lucky guess by Ann Ferguson, curator at the Bonner County Historical Society, Sand Point, Idaho. She suggested I call Jack O'Brien, down in the Hoodoo Valley, who turned out to be Murphy's son-in-law. Jack and his two daughters explored Murphy's files and equipment with me and have generously donated several of his original manuscripts and a "Murphy tube" to the Wood Library-Museum of Anesthesiology. I am deeply grateful for their friendship, hospitality, and generosity.