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BULLETIN OF ANESTHESIA HISTORY



VOLUME 25, NUMBER 1

JANUARY, 2007

C. Ronald Stephen (1916-2006)

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Ron Stephen was just a phenomenon. Born in Montreal, Quebec, Canada, he never lost his hearty "right you are" closing line at the end of a telephone conversation. He married Joan Vivien Tremaine on June 28, 1941, and subsequently in 1942 joined the Royal Canadian Army Medical Corps, where he initially encountered an-



esthesiology. Following his military service, in 1945, he completed postgraduate work in Anesthesia at the Radcliffe Infirmary in Oxford, England. He progressed in the Royal Canadian Army Medical Corps rising through the ranks to become a Lt. Colonel in 1946.

Moving to Montreal in 1946, he assumed the Anesthesia Directorship of the Montreal Neurological Institute for one year, before his tenure as Director of Anesthesia for Children's Memorial Hospital from 1947-1950. It was then that he burst upon the American anesthesiology scene as Director of Anesthesia at Duke Univer-

sity Medical Center. There Ron fought the good fight to establish the professional standing of anesthesiologists as equal to other specialists which continued for decades after his departure in 1966. He then assumed the leadership of the programs at Children's Medical Center in Dallas Texas and Washington University School of Medicine and Barnes and St. Louis Children's hospitals in St. Louis, where he is fondly remembered and honored by the yearly C. R. Stephen Lectureship.

During his long and illustrious career, Ron never lost sight of his love for family, education, and the specialty of anesthesiology. He and Joan devoted themselves to family and trainees, North American and international, whom they treated as family members, often hosting them at meals and providing sleeping accommodations in their own home. He authored over 160 scientific papers, two monographs, and was founding editor of the journal *Survey of Anesthesiology* and the second editor of the *Bulletin of Anesthesia History*. But even more importantly, he influenced countless anesthesiologists resulting in better care to patients, both here and abroad.

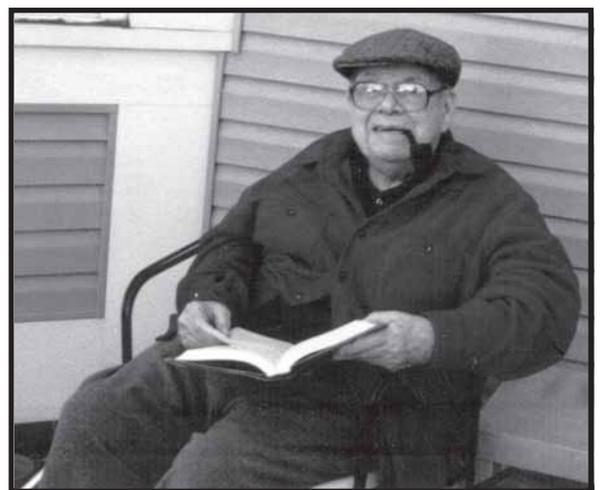
He was the President of the Academy of Anesthesiology and awarded that society's Citation of Merit in 1990. He was a long time member and served in many leadership capacities on the Board of Trustees of the Wood Library-Museum of the American Society of Anesthesiologists, and on the Council of the Anesthesia History Association. His particular love of the specialty, love of education, and love of medical history were

evident in his joy and delight in training the next generation of anesthesiologists. The Anesthesia History Association Resident Essay Award has been named in his honor and an endowment to continue that award in perpetuity is being set up from donations from his family and friends.

The word that best describes Ron, in my mind is "hearty." Everyone he greeted, every task he undertook, every project he completed, was always done with his full enthusiasm and heart. His strong determination and enthusiastic persistence influenced many more people than he will ever know but his inspiration continues today in our vigorous educational programs and strength as a respected medical specialty.

Contributions to the C. Ronald Stephen Endowment can be sent to:

Anesthesia History Association
UPMC St. Margaret Pain Medicine Ctr.
200 Delafield Road, Suite 2070
Pittsburgh, PA 15215



The Anesthesia History Association Invites Anesthesiologists, Nurse Anesthetists, Historians, Residents, and Students To Submit Papers

The SILVER ANNIVERSARY Annual Meeting of the Anesthesia History Association will be held at the Scarritt/Bennett Center in Nashville, TN on May 3-5, 2007.

This year's meeting features a Distinguished panel on "Civil War Medicine In Middle Tennessee"

"Free Papers" are invited, and those selected will be presented at the meeting and submitted for possible publication in the peer reviewed journal, *Bulletin of Anesthesia History*. "Free Paper" topics should be related to medicine and history with emphasis on anesthesia, professionalism, pain medicine, or critical care medicine. (See accompanying literature for further details.)



Physicians, Nurses, Nurse Anesthetists, and Historians are warmly invited and reduced registration fees are offered for residents, student nurse anesthetists, historians, and student historians.

Tours to sites in Franklin and Nashville related to the Civil War will be offered.

An opening banquet and full meal service will be offered on site.

It is anticipated that about 7 CME credits and 7 hours of CRNA Education Credits will be granted, but the application are not complete.

Comfortable dormitory type housing is offered at the site and several motels are very nearby.

INQUIRIES:
bradley.smith@vanderbilt.edu



WLM Fellows Reunion, Chicago, IL, October 16, 2006. From left: Patrick Sim, MLS, AJ Wright, MLS, William McNiece, M.D., Sandra Kopp, M.D., Shigemasa Ikeda, M.D., David Brown, M.D., J. Antonio Aldrete, M.D., Mark Schroeder, M.D., Doris K. Cope, M.D., Karen Bieterman, Douglas Bacon, M.D., Rafael Ortega, M.D., David Waisel, M.D., Brian Harrington, M.D., Christine Lan Mai, M.D., Dr. David Wilkinson, Kim Turner, M.D., John Forestner, M.D., Jonathan Berman, M.D., Babatunde Ogunnaike, M.D., Francis Whalen, M.D., Adolph H. Giesecke, Jr., M.D., Burdett Dunbar, M.D.

C. Ronald Stephen Resident Essay Award

2007

The Anesthesia History Association (AHA) sponsors an annual contest for the best essay on the history of anesthesia, pain medicine or intensive care. This contest is open to all residents and fellows in anesthesiology. The purpose of the contest is to promote interest in the history of anesthesia and to advance professionalism in the specialty.

The essays must be written in English and be approximately 3,000 words in length. The first-place winner receives a \$500 award, the second-place winner receives \$200 and the third-place winner \$100. The preliminary judging is done before the ASA Annual Meeting in October. That preliminary judging is used to pick the best five to 10 essays. These preliminary winners are invited to present their essays at the AHA Spring Meeting, and three winners are chosen on the basis of the content and presentation. The presentations of awards are made during the AHA Spring Meeting. Winners are required to submit their essays to the quarterly Bulletin of Anesthesia History for publication.

Residents and fellows are encouraged to enter the contest for 2007. Submissions may be sent to:

William D. Hammonds, M.D.
Professor, Anesthesiology and Perioperative Medicine
Department of Anesthesiology
Medical College of Georgia
1120 Fifteenth Street
Augusta, GA 30912-2700
USA

whammonds@mcg.edu

Entries must be received on or before September 1, 2007

2006 Little Prize Winners

Each year the Anesthesia History Association awards the David M. Little Prize for the best work of anesthesia history published the previous year in English. The prize is named after Dr. David M. Little, longtime Chair of Anesthesia at Hartford Hospital in Connecticut. Dr. Little, who died in 1981, also wrote for many years the "Classical File" series of history columns for Survey of Anesthesiology. The award is announced each October at the Anesthesia History Association dinner meeting.

2006 Little Prize Co-Winners

Bacon DR, McGoldrick KE, Lema MJ, eds. The American Society of Anesthesiologists: A Century of Challenges and Progress. Wood Library-Museum, 2005. 226pp.

Lai D. Pentathal Postcards. West New York, NJ: Mark Blatty, 2005. 190pp.

2006 Little Prize Honorable Mentions

Brodsky JB. The evolution of thoracic anesthesia. *Thorac Surg Clin* 2005 Feb;15(1):1-10.

Costarino AT Jr, Downes JJ. Pediatric anesthesia historical perspective. *Anesthesiol Clin North America* 2005 Dec;23(4):573-95, vii.

Bulletin of Anesthesia History (ISSN 1522-8649) is published four times a year as a joint effort of the Anesthesia History Association and the Wood-Library Museum of Anesthesiology. The *Bulletin* was published as *Anesthesia History Association Newsletter* through Vol. 13, No. 3, July 1995.

The *Bulletin*, formerly indexed in Histline, is now indexed in several databases maintained by the U.S. National Library of Medicine as follows:

1. Monographs: Old citations to historical monographs (including books, audiovisuals, serials, book chapters, and meeting papers) are now in LOCATORplus (locatorplus.gov), NLM's web-based online public access catalog, where they may be searched separately from now on, along with newly created citations.

2. Journal Articles: Old citations to journals have been moved to PubMed (www.ncbi.nlm.nih.gov/PubMed), NLM's web-based retrieval system, where they may be searched separately along with newly created citations.

3. Integrated History Searches: NLM has online citations to both types of historical literature -- journal articles as well as monographs -- again accessible through a single search location, The Gateway (gateway.nlm.nih.gov).

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The Use of Digital Facial Animation to Present Anesthesia History

By *Rafael A. Ortega, MD*

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This article has been peer reviewed and accepted for publication in the Bulletin of Anesthesia History.

Introduction

Computer technology and digital animation continue to gain prominence in the realms of entertainment, education, and medicine. In cinematography, digital animation is now used almost routinely in science fiction movies.¹ Computer animation is widely used for individualized and web-based learning, and, in the classroom, computer animation has been employed as a didactic modality.² Virtual reality technology has also been adopted as a teaching tool in a variety of medical disciplines. For instance, an arthroscopic knee simulator allows the orthopedic surgeon to perform arthroscopic knee surgery as a training procedure as many times as necessary under virtual conditions.³ Additionally, the use of animated faces in plastic surgery, for example, allows patients to preview the effects that surgery will have on their facial expressions, and allows physicians to better plan and execute the surgical procedure.⁴

The broad arena of computerized graphic technology includes the specific subspecialty of facial animation, which can be defined as the use of an imaging program to give authentic movement and emotion to still photographs or portraits. This paper describes a novel application of this technology: the use of animated historical figures to narrate an important event in anesthesia history, specifically, the creation of the Ether Monument in the Boston Public Garden (1867-68).

How does digital facial animation work?

Since its origins in the 1970s, computerized facial animation has emerged as an intriguing and rewarding field of research.⁵

It has evolved from rudimentary cartoons⁶ to more realistic and life-like animations.⁷ Animation can be achieved in two dimensions (i.e. our project) or three-dimensions (i.e. films in which characters move about in a virtual setting, such as Pixar Animation's *Toy Story*). Two-dimensional animation utilizes only one spatial plane. Often, the resulting image appears to extend into a third dimension, but in reality only one perspective is shown.⁸ In contrast, three-dimensional animation, a more laborious and computer-intensive enterprise, allows for the final image to be rotated and viewed from multiple angles.

The creation of a three-dimensional avatar (virtual actor) requires the availability of a frontal and a profile view of the character, and it is essential that both views be generated at the same time. Three-dimensional characters allow for great artistic flexibility and creativity, as the full body of the avatar can move around in a virtual environment. Unfortunately, simultaneous frontal and side images do not exist for the characters selected for the project described in this article. We were therefore restricted to two-dimensional facial animation, which only allows for limited movement of the head, neck, and shoulders against a still or moving background. In spite of these dimensional constraints, the goal of the project was successfully achieved. That is, the story of the Ether Monument is presented by six 19th century individuals tied to the memorial's design, creation and controversies. With the exception of minor adaptations, the narrations presented by the virtual actors stem from their own writings and speeches. Considering that these publications appeared over a century ago, they well-exceed copy-

right time limits.

All the participants in the project were adults at the time the Monument was created. Given the limited number of images available for these historical figures no effort was made to find the image most temporarily related to the Ether Monument erection. Rather, the best image that would lend itself to digital facial animation was selected.

Using digital animation to describe the history of the Ether Monument

The creation of the Ether Monument, which commemorates the first public demonstration of a general inhaled anesthetic, is a crucial event in the history of anesthesia in the United States. After years of neglect, the Monument was recently restored; the Department of Anesthesiology at Boston University Medical Center has undertaken a variety of initiatives to increase public awareness of the Ether Monument's historical significance. The Department's endeavors include the creation of a website (www.ethermonument.org), the publication of a book⁹ and various articles on the topic,^{10, 11} and the presentation of educational exhibits. The digital facial animation of historical figures related to the Ether Monument is one of the strategies used to bring attention to the topic. Six characters were selected for this project: Thomas Green Morton (1819 – 1868), Oliver Wendell Holmes (1809 – 1894), John Quincy Adams Ward (1830 – 1910), Henry Jacob Bigelow (1818 – 1890), Henry Van Brunt (1832 – 1903), and Samuel Clemens (1835 – 1910).

Each character, with the exception of Samuel Clemens, better known by his *nom de plume*, Mark Twain, is intimately related to the Ether Monument and/or the events

that prompted its creation. Morton carried out the celebrated demonstration at Massachusetts General Hospital in 1846, and Holmes termed the effects produced by ether "anesthesia". Van Brunt designed the memorial, and Adams Ward created the Monument's crowning sculpture and bas-reliefs. Lastly, Bigelow delivered the dedication speech stating the Monument was "to commemorate the triple and demonstrated discovery, not of a probable, an uncertain or untrustworthy, but of an inevitable, complete and safe anesthesia..."¹²

Although Twain is peripheral to the story, including him in this project enriches the character variety and underscores the discord which surrounds the historical discovery of inhalation anesthesia. Although the Monument does not mention a particular individual, much controversy exists regarding who deserves credit for the introduction of ether anesthesia. Mark Twain publicly denounced Morton's claims, stating that he "stole the discovery from another man." Twain believed Horace Wells, Morton's teacher, to be the true discoverer of ether anesthesia.¹³

The first recording of the human voice occurred in 1877,¹⁴ and cinematography emerged during the late nineteenth century.¹⁵ Although audio and video technology was available during the lifespan of our characters, there are no known recordings of the accents, intonations, or gestures that characterized these six individuals. The facial animations and voices of the characters were created using artistic license and reflect conjectures based on what is known of these individuals. Henry Van Brunt's voice was created by Andrew Ortega. The voices of the other five characters were created by Keith Greenfield, a Boston artist whose voice range and talent allowed for diverse and engaging renditions of the narratives. (Readers can view two samples – the first of Twain and the second of Van Brunt – by going to: www.bu.edu/av/courses/med/05sprgmedanesthesiology/002/Twain.mpg and www.bu.edu/av/courses/med/05sprgmedanesthesiology/002/VanBrunt.mpg.)

The Process of Digital Animation

The first step in animating a photograph or painting of an individual's face is to obtain a corresponding high-resolution digital file. (Low resolution images can be used, but the results will not be as convincing). The image may be digitally corrected for color and contrast before importing it to the animation program (CrazyTalk version 4.0 Media Studio,

Reallusion Inc., San Jose, CA). After importing the image, key facial reference points, such as the corners of the eyes and the mouth, must be clearly demarcated. This enables the computer application to assign realistic movements to appropriate regions of the face. Numerous additional instructions are necessary, including outlining the shape of the head and face and determining the relation of the eyebrows to the eyes. A detailed review of the program is beyond the intent of this paper.

Subsequently, a sound file with the narration to be animated is imported to the same application. Digital technology enables sophisticated algorithms to analyze the sound wave forms, imparting the appropriate synchronized movements to the face (i.e. the mouth, jaw, cheeks, brows, etc.). This process creates an animated portrait that convincingly enunciates the sound file. The program used, however, cannot interpret human emotion and assign the appropriate facial expressions to the narration. The individual designing the presentation can use his or her discretion to assign moods, emotions, and expressions to the animated model. Thus, nonverbal messages can be conveyed; a humorous sentence accompanied by a distrustful glance may suggest sarcasm while a serious statement spoken with rolling eyes may communicate disdain. The computer program does have scripted emotions such as sadness, regret, anger, desire, disgust, happiness, etc. However, the presentation author can experiment and control individual facial muscles and tailor specific anatomical details to achieve the desired effects (Figure 1).

Once the sound has been analyzed and matched with the appropriate features, the enlivened character can be placed in front

of a particular moving or still background. In our presentation, most characters were placed in the Boston Public Garden by the Ether Monument and/or the surrounding trees of this historical arboretum. Once again, Mark Twain is the exception because he was placed in front of his residence in Connecticut. Old celluloid movie characteristics such as dust, lines, and scratches were added to the digital video to create a vintage look. Additionally, pertinent images were interposed as the virtual character narrated the story. Background music was included. Classical compositions were used, except in Twain's case in which banjos set the Dixie mood.

The completed animation can be exported in a variety of formats, including files that can be used for video streaming on the internet or higher resolution formats that can be used in full-featured DVDs. To the best of our knowledge, all of the images used for the project are in the public domain.

Conclusion

The field of digital animation is rapidly evolving, and numerous applications for this innovative technology remain to be explored. At the forefront of these technological advances is the ability to convincingly confer human quality onto an avatar. In cinematography, this allows for realistic integration and interaction of animated characters with real-life actors. The ability to bestow emotion on digitally animated characters makes them eerily human, and is termed by some as "soul transference."¹⁶ The technology has the potential to transform both entertainment and educational arenas.

Computer technology and digital animation can be used to teach anesthesia his-

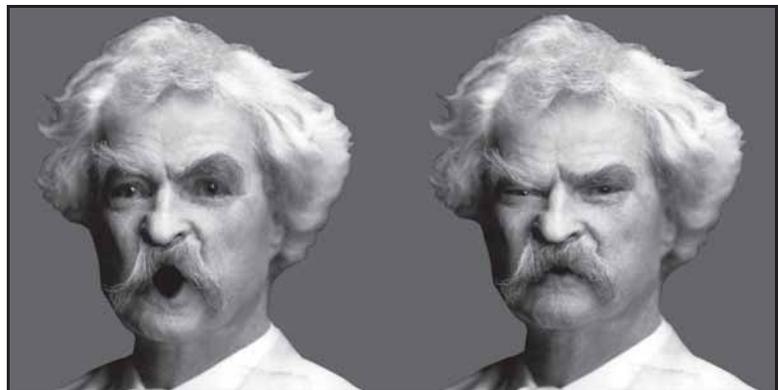


Fig. 1. Two frames of Mark Twain demonstrating digitally constructed expressions of surprise (left) and anger (right).

Digital. . . *Continued from Page 5*

tory. The use of facial animation enlivens the history of anesthesia and thus allows us to effectively and engagingly educate new generations of anesthesiologists on the origins and evolution of their specialty.

This project was possible through a Fellowship with the Wood Library-Museum of Anesthesiology. The completed animations were presented at the 2006 American Society of Anesthesiologists Annual Meeting in Chicago, and are available for viewing in at the Wood Library-Museum.

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YEAR 2008 LAUREATE OF THE HISTORY OF ANESTHESIA

Doris K. Cope, M.D., Chairman
www.asahq.org/wlm/

Nominations are invited for the person to be named the fourth Wood Library-Museum Laureate of the History of Anesthesia in the year 2008. Deadline for receipt of nominations is July 1, 2007.

This program, established in 1994, has as its purpose increased recognition of the richness and importance of the history of our specialty by recognizing the work of scholars who have made singular contributions to the field. The honor is awarded every four years by the WLM Laureate Committee to an individual who has a demonstrable record of contributing over the years outstanding, original materials related to the history of our specialty as reflected by articles published in peer-reviewed journals, and/or in monographs. The first Laureate, Dr. Gwenifer Wilson of Sydney, Australia was honored in 1996. The second Co-Laureates were Norman A. Bergman, M.D, F.R.C.A., and Thomas B. Boulton, M.D., Ch.B., F.R.C.A. in 2000. The third Laureate was Donald Caton, M.D. in 2004.

The Laureate Program is international. Nominations are sought by physicians, not just anesthesiologists, as well as medical historians from the international history community.

Additional information may be obtained by contacting the WLM Laureate Committee at the Wood Library-Museum, 520 N. Northwest Highway, Park Ridge, Illinois 60068-2573. Please see the WLM website – [/www.asahq.org/wlm/](http://www.asahq.org/wlm/) – for more information.

Ralph Waters and His Kansas City Practice: 1924-27

By Robert A. Strickland, M.D.
 Department of Anesthesiology
 Wake Forest University School of Medicine
 Winston-Salem, North Carolina

Ralph Waters, M.D. (October 9, 1883-December 19, 1979), is a well-known icon in academic, American, and international anesthesiology. Much is known about Dr. Waters while he was at the University of Wisconsin and to a lesser degree while he was in Sioux City, Iowa. However, very little information exists about his years in Kansas City, Missouri. Much of the following material was obtained from a variety of sources in Kansas City, including the Metropolitan Medical Association, formerly the Jackson County Medical Society (JCMS), the Jackson County Landmark Commission Archives, the Jackson County Library, and phone books and directories of that era.

ation, dated January 17, 1925 (figures 1-4), it is noted that his undergraduate degree, granted in 1907, was from Western Reserve University. He attended medical school at Western Reserve University, graduating in 1912. Dr. Waters was authorized to practice medicine by the Missouri State Board of Health on December

Fig. 1. JCMS Membership Application. (Courtesy of Metropolitan Medical Society, Kansas City, Missouri)

At the age of 41, Waters and his family moved to Kansas City in the autumn of 1924.¹ At this time, Kansas City was a thriving metropolis in the Midwest, with a Kansas City population of approximately 438,000, and a greater Kansas City population of 580,000.¹ It was a larger town than Sioux City, and Waters may have felt that his profession could have advanced by a change in location.

In Waters' JCMS Membership Appli-

cation, dated January 17, 1925 (figures 1-4), it is noted that his undergraduate degree, granted in 1907, was from Western Reserve University. He attended medical school at Western Reserve University, graduating in 1912. Dr. Waters was authorized to practice medicine by the Missouri State Board of Health on December

Kansas City, he was a member of the Woodbury County, Iowa, Medical Association; the American Association of Anesthetists; and the Midwestern Association of Anesthetists. He also was a past president of the Woodbury County Medical Association and of the Midwestern Association of

Fig. 2. JCMS Membership Certificate. (Courtesy of Metropolitan Medical Society, Kansas City, Missouri)

9, 1924, and he registered with the county clerk of Jackson County on January 12, 1925, listing his specialty as Anesthesia. His previous practice site was Sioux City, Iowa, from 1913 to 1924. When he moved to

Anesthetists. Figure 5 is his Medical Society transfer card to Madison, Wisconsin, dated October 6, 1927, approximately nine months after his first move to University of Wisconsin.

His initial residence was the Buckingham Hotel (figure 6), 31st & Forest, only a couple of blocks from his first office.² It can be conjectured that he lived briefly in this hotel awaiting the arrival of his family from Sioux City. By early 1925,

Fig. 3. Membership Transfer Card. (Courtesy of Metropolitan Medical Society, Kansas City, Missouri)

1. City Directory, Kansas City, 1925.
 2. 1924 Kansas City phone book.

Waters. . . Continued from Page 7

1. Name in full. *Ralph M. Waters*
 2. Date of Birth. *Oct. 9, 1883*
 3. Place of Birth. *Franklin Co., Ohio*
 4. Location. *Franklin Co., Ohio* Postoffice *Woodbury* County
 5. Previous Locations *None*
 6. Preliminary Education *A.B. W.R.U. 1907*
 7. Medical College. *Western Reserve* Year of Graduation. *1907*
 8. Date of State Certificate. *1913*
 9. Society Membership *Woodbury - Iowa, A.M.A., Kansas Valley* State and County
 10. Official Positions *Sac. Kansas Valley, Pres. Sec. & Pres. Woodbury Co. Member American & Mid. Western* Social Society
 11. Ins. Examiner for *Assoc. of Anesthetists, Pres. Pres. Mid. Western*
 12. Specialty. *Anesthetics* Remarks

Fig. 4. Membership Transfer Card, 2nd page. (Courtesy of Metropolitan Medical Society, Kansas City, Missouri)

he lived in a house at 6112 The Paseo, a small and unassuming bungalow-style home at what was then the outskirts of the metropolitan area. (figure 7)³ He and his family remained in this house for the next two years, and this was still listed as his residence in 1928.⁴ This house, although significantly renovated, still stands today.

His first office was at 31st and Troost in the Wirthman Building, which a few years earlier housed Walt Disney's studio. The Wirthman Building was razed in 1997. In mid-1926, he relocated his downtown anesthesia clinic to the Argyle Building at 12th & McGee. This building, although needing repair in many areas, stands today.

Dr. Waters' hospital practice was at Research Hospital, formerly called German Hospital before the First World War. (figure 8) Research Hospital has played a significant role in medical care and education in Kansas City for almost a century,² and it is not surprising that he would choose this facility for his hospital practice.

3. City Directory, Kansas City, 1925.

4. City Directory, Kansas City, 1928.

5. Lundy to Waters, May 21, 1924, Courtesy of Mayo Clinic Archives.

6. Waters to Lundy, Dec 23, 1925, Courtesy of Mayo Clinic Archives.

7. Lundy to Waters, March 27, 1926, Courtesy of Mayo Clinic Archives.

8. Personal communication, Carolyn Stickney Beck, Ph.D., Mayo Historical Suite.

9. Waters to Lundy, January 3, 1927, Courtesy of Mayo Clinic Archives.

10. Lundy to Waters, January 5, 1927, Courtesy of Mayo Clinic Archives.

11. Waters to Lundy, February 3, 1927, Courtesy of Mayo Clinic Archives.

In 1926, Dr. Waters spent July through September with Dr. John Lundy at the Mayo Clinic learning regional anesthesia technics.³ At this time Lundy would have been 32 years of age and Waters 42 years of age. Waters was well established in a 14 year career in anesthesia, while Lundy's career was approximately six years old. The correspondence between

pain greatly limited his professional activities for several months. During this time Waters wrote Lundy stating, "while I was laid up, a letter came from the University of Wisconsin offering me the anesthesia there. . . . You see I like the climate in your territory so well that this idea sort of appealed to me."⁹ Waters stated that he would begin in Madison "the first of February." Lundy replied, "I am very glad to see you come to the University of Wisconsin, and I think that it is a proper move for you to make."¹⁰ This move indeed occurred quickly as evidenced by a letter written by Waters on University of Wisconsin stationery to Lundy in early February.¹¹

While in Kansas City, Waters published three papers on carbon dioxide absorption and on ether anesthesia (this paper was published

twice).^{4,6}

Dr. *C. J. Gillelaw* Secretary, *Jackson* County (*Iowa*) Medical Society.
 Dear Doctor:
 You are hereby officially notified that this Society has received into its membership Dr. *Ralph M. Waters* who presented a transfer card from your Society dated *Sept. 26*, 1927 with his application for membership in our Society. His name should now be removed from the roster of your members.
 H. Kaus H. Keere Secretary,
 Dane County (*Wis.*) Medical Society.

Fig. 5. Membership Transfer Card (JCMS to Dane County, 1927). (Courtesy of Metropolitan Medical Society, Kansas City, Missouri)

these two individuals began in 1924 when Waters asked Lundy to speak at an upcoming meeting.⁵ After a couple of other letters, Waters wrote to Lundy stating that he was moving his downtown clinic (presumably from the Wirthman Building to the Argyle Building) and that he was interested in spending time with Lundy learning regional anesthesia.⁶ Subsequent letters allowed for plans to develop so that Waters could begin a "voluntary assistantship in regional anesthesia" at the Mayo Clinic.⁷ Mayo archives reveal that Dr. Waters was officially at the Clinic from July 5 through September 15, 1926.⁸

Upon his return to Kansas City, subsequent letters to Lundy reveal that he implemented some of these regional anesthesia technics in his practice, but severe back



Fig. 6. Hotel Buckingham, circa 1930, Waters' first residence in Kansas City. (Courtesy of the Kansas City, Missouri, Public Library)



Fig. 7. Waters' House at 6112 The Paseo, circa 1940.
(Reproduced from the Kansas City Landmarks Commission)

1. Gillespie N. Ralph Milton Waters: A brief biography. *Br J Anaesth* 1949;21:197-214.

2. Soward JL. Hospital Hill. An Illustrated Account of Public Healthcare Institutions in Kansas City, Missouri. Kansas City: Truman Medical Center Charitable Foundation, 1995.

3. Strickland R. Lundy's early correspondence with the patriarchs of anesthesiology. *Anesthesia History Association*. Williamsburg, VA, 1997.

4. Waters R. Clinical scope and utility of carbon dioxide (sic) filtration in inhalation anesthesia. *Anesth Analg* 1924;3:20-2.

5. Waters R. Ether anesthesia. *J Mo State Med Assoc* 1925;22:401-2.

6. Waters R. Ether anesthesia. *Anesth Analg* 1926;5:41-3.



Fig. 8. Before its demolition in 1977, this was an entrance to German Hospital and the subsequent Research Hospital. (Reproduced with permission from Hospital Hill. An Illustrated Account of Public Healthcare Institutions in Kansas City, Missouri. Kansas City: Truman Medical Center Charitable Foundation, 1995, pg. 133.)

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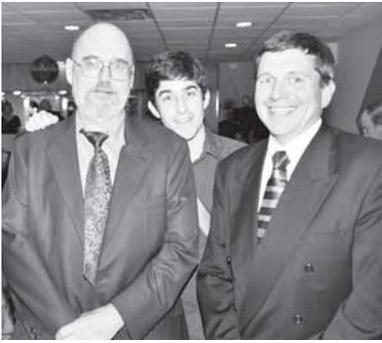
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**AHA 2006 Dinner Meeting
Chicago, IL, October 17, 2006**



Photographs by Jonathan Berman, M.D., and Harry P. Bloomberg

Book Review: Books from the Past

Dr. Alston's delightful review reminded the Book Editor that he used a Goldman Inhaler in London in the 1960s. It consisted of a small bowl placed in series with the ether vaporizer on the top rack of a Boyle's machine. One poured about 20 ml. of halothane into the bowl and screwed it on tight and then used the horizontal dial on the top to divert a portion of the fresh gas flow onto the halothane meniscus. Because one had no idea of the inspired percentage of halothane, prayer was helpful.

Aids to Anaesthesia by Victor Goldman, L.R.C.P., MR.C.S., D.A., major R.A.M.C. London: Bailliere, Tindall & Cox, 1941.

*By Theodore A. Alston, M.D., Ph.D.
Massachusetts General Hospital
Harvard Medical School*

Well worth its 1941 price of 5 shillings, this pocket-sized handbook enjoyed a fourth edition in 1957. Called "sometimes too dogmatic" by a *Lancet* reviewer, the book was crafted by a master of anesthesia. Victor Goldman, shown in Figure 1, received his Diploma in Anaesthesia while at the Royal Free Hospital in London in 1936. A prolific writer, he championed safety in anesthesia, especially for procedures. To that end he invented laryngoscopes, masks, inhalers and vaporizers.

His book is a concise, richly illustrated, very readable account of the anesthesia techniques of that day. The relaxed writing style has an appeal that was apparent in 1941 but also comes through today. The following excerpts were selected as quaint and sometimes dogmatic, but the 235-page book also contains solid details as to the practical anesthesia science of 1941.

"The more potent inhalation anaesthetic agents prevent the oxygen which may be carried round in the blood stream... from being used by the cells of the higher centers" (p. 25). This was leading theory of anesthesia.

"There is a slight necrosis of the liver cells, which can be demonstrated after prolonged ether anaesthesia" (p. 28).

"The airway must be maintained until the patient is fully conscious, and a nurse must be detailed to specifically watch over him, with instructions to send for the doctor if the breathing becomes obstructed or the patient's colour differs at all from normal" (p. 32).

"The most experienced anaesthetist may be surprised that no reference has been



Fig. 1. Victor Goldman, 1903-1993. This image was provided by the Association of Anaesthetists of Great Britain and Ireland and was used to announce their 2006 Goldman Meeting. The Goldman vaporizer was long in use, and the Victor Goldman Unit of the Eastman Dental Institute, London, was opened in 1993.

made to conjunctival and corneal reflexes, but... the danger of damaging a patient's eyes whilst eliciting them... has led the author to disregard them completely when teaching students" (pp. 36-7).

"The outdoor worker, such as the policeman or postman, and men who are publicans or athletes, are difficult subjects for anaesthesia. The artist, the musician and the scientific worker are usually people with excitable mentalities and specially benefit from the administration of basal anaesthesia... The ginger-haired male, for instance, is notorious for difficulty under anaesthesia" (p. 39).

"If there is any reason to suspect cardiac disease, the breath-holding test should be employed. The patient is instructed to take a deep breath and hold it. The anaes-

thetist then pinches the patient's nose and notes the time which elapses before the patient is forced to breathe. It may be taken as a general rule that if this period is longer than thirty seconds the patient is fit to receive a general anaesthetic. In cases of serious cardiac disease an electrocardiograph should be taken" (pp. 40-1).

"It is advisable for the patient to be admitted to hospital or nursing home for forty-eight hours before the time of the operation. This will enable him to become accustomed to the new surroundings and to grow acquainted with those who are to look after him" (p. 41).

"If the operation is to take place in the morning, the patient should be given a cup of tea and a little toast not less than three hours before the time of the operation. If however, it is timed for the afternoon, the patient should have the normal breakfast, and be given a cup of Bovril [a pungent beef extract drink] or tea, and a little toast or bread and butter, not later than three hours before the operation" (p. 42).

"Chloroform should always be dropped on to one spot on the mask instead of flooding it, as is the practice while administering ether. It is a wise precaution to mark with ink a circle about the size of a sixpence in the center of the mask before the commencement of the anaesthesia... Great care must be taken to ensure that neither

chloroform vapour nor liquid reaches the eyes... Should the patient show signs of struggling, any restraint must be mild, so that there is no risk of this causing a reflex cardiac failure" (pp. 56-9). "Cover the eyes if necessary after induction with a piece of cellophane, such as is used to protect packets of cigarettes" (p. 127).

"[An] extra concentration of ether will be found necessary for high abdominal operations and for procedures in which the patient is of such resistant types as the postman and the ex-Serviceman" (p. 79).

"If vinyl ether is kept for more than twenty-four hours after the container has been opened it rapidly loses its potency, and thus greater quantities are required to effect anaesthesia" (p. 87).

"In order to counteract the respiratory depression it is advisable to add 2 c.c. of nikethamide to the water, when dissolving the solid, before injection of each gramme of pentothal." An antidote for pentothal is picrotoxin (pp. 102-3).

"[In deep ether convulsions, the] temperature rises considerably, the rectal temperature often reaching 108 F." On page 130, Goldman may be describing malignant hyperthermia.

"It should be remembered that a marked flush over the cheek-bones, especially in females, may be due to mitral disease or rouge" (p. 174).

"[Of dental patients,] types in which trouble may be expected are the open-air type--theseaman or postman--the heavy chronic drinker, the thin wiry Cockney type, etc. For these ethyl chloride is kept handy... The chronic drinker should be encouraged to drink even a little more than usual" (p. 175). "Men are requested to remove collar and tie and to put the front stud in a safe place. The pocket used should be noted, as its location is frequently forgotten after anaesthesia" (p. 176).

"It is too often forgotten that the best method of premedication is to gain the patient's confidence... We should never forget that what is to us a daily occurrence is, to the patient, a journey to the unknown" (p. 119). This 1941 Goldman wisdom was quantified by Egbert, Battit, Turndorf, and Beecher in 1963.

Book Review: Recent Books

For Fear of Pain: British Surgery, 1790-1850 by Peter Stanley, The Wellcome Series in the History of Medicine, Amsterdam – New York, N.Y., Rodopi B.V., 2003.

By Gerald Zeitlin, M.D.

The transformative power of anesthesia is even better understood against the backdrop of painful surgery than it is against modern reference marks. In his excellent book, *For Fear of Pain: British Surgery, 1790-1850*, Peter Stanley creates a detailed overview of surgery in Britain before anesthesia. In it he shows how, during the run-up to universal acceptance of chemical anesthesia as a human and humanitarian necessity, surgeons, medical students, patients, and British society in general during the Georgian through early Victorian periods coped with and subsequently recast the realities of what are regarded as unthinkable brutalities today. Most importantly, perhaps, Stanley's book draws a sympathetic picture of how this era of human endeavor contains important legacies from which we may continue to draw lessons today.

Student of the history of anesthesia know the definitive treatment of the emergence and acceptance of chemical anesthesia in the world is Martin S. Pernick's *A Calculus of Suffering: Pain, Professionalism, and Anesthesia in Nineteenth Century America* (New York, Columbia University Press, 1985).

While not nearly so comprehensive as Pernick's study, Stanley's nonetheless covers much of the same ground with a British accent and Scottish economy, though the author himself is Australian. Each of the eleven chapters, and the Prologue, Introduction, and Epilogue, reads like a standalone essay on a particular aspect of surgery before anesthesia without sacrificing its status as a distinct chapter in a whole story. One could read this book back to front, as I did, beginning with "The rights of pain": The Acceptance of Anaesthesia - the chapter where I thought my greatest interest would lie - as readily as from front to back - or anywhere in between - without losing the sense of medicine's ambivalence over both the infliction and relief of surgical pain.

For instance, the first chapter, "Surgeons and operators": The Surgeon's World" reveals the contemporary British medical scene to be no more or less refined or regulated than our own corresponding

Jacksonian period in America. It can be skipped at no cost to the experienced medical history student except the risk of missing some entertaining stuff extracted from source materials such as private practitioners' journals, diaries and ledgers or public records. For instance, using a contemporary's words, Stanley describes the early nineteenth century medical world as "'mixed, jumbled, brayed and blended,'" one in which nearly four thousand qualified or "regular" physicians, surgeons, apothecaries and druggists served Londoners in competition with thousands more "irregulars" such as "'corn-doctors, horse-doctors, tooth-doctors and quack-doctors.'" Similarly, in the same chapter, we read: "The army employed just 142 surgeons in 1793 but over 950 by 1815" and that the East India Company's "Bengal presidency directory" listed 155 surgeons in 1793, a number which increased to 379 by 1837. These facts, while reassuring us that Stanley's research was thorough, illuminate Stanley's central theme as the accumulation of enough highlights might brighten a scene.

Indeed, it is the "characters, aspirations and achievements of the prominent surgeons of Britain and especially their relations with their pupils and patients ..." that Stanley intends to form "...the core of this study." And it is in this goal's service that the primary source materials used reveal glimpses of the souls of the surgeons whose portraits hang in the halls and galleries of British hospitals and museums and the patients who, most anonymously, rest in British graveyards. Through trenchant observations recorded by journalists and diarists - both truculent and tender - real human suffering and heroism is displayed. From such sources Stanley constructs wonderful images, like this one from Chapter 9, 'Our little patient': Surgeons and Children:

"Astley Cooper, the most celebrated operating surgeon of his time, is recorded to have lost control of his emotions only once. A Quaker friend brought him his grandchild, a toddler, to ascertain whether Cooper could cut off a naevus - a birthmark.

Continued on Page 14

Stanley. . . *Continued from Page 13*

The child smiled so sweetly at Cooper that he turned away and burst into tears. Cooper's reaction, while uncharacteristic of both him and his colleagues, is understandable. And yet, both Cooper and other surgeons did, of course, operate upon children. Painful surgery performed on children is the most distressing aspect for modern readers: as it was for contemporaries."

From such tales and details Stanley limns his portrait of the era. Yet it is from those found in the Epilogue, 'Long fixed in the memory: The Legacy of Painful Surgery,' that one gets the most vivid sense of the impact painful surgery had on the people - great and forgotten, patients and surgeons - who experienced this necessary barbarity.

"The trauma of performing, undergoing or even hearing painful surgery surely did not simply evaporate with the introduction of chloroform," Stanley reminds us.

One gets the sense that a long hangover afflicted the profession after the era, that a sort of collective post traumatic stress disorder continued to influence technique and attitudes well past chemical anesthesia's introduction. In one anecdote we read:

"In 1841, the year before his death,

Charles Bell described the sight of a patient on the table. He recalled 'the limbs stiffened though (sic) agonizing pain; the face turgid, the eyes prominent and suffused....' Elsewhere we read that within fifty years of anesthesia's introduction a conventional view of the era - one that we might recognize today - had already developed. In 1896, for instance, the editor of the British journal *The Hospital*, marking anesthesia's fiftieth anniversary, opined that "Anaesthesia...had enabled 'a class of men' to practice surgery who 'would not have been willing - would not, indeed, have been able - to practice surgery at all' before 1846;" and that the surgeon of the painful surgery era was "at best, a 'cultured man, with the skill of the competent butcher.'"

So harsh are the judgments of history that we sometimes denigrate the vanquished - in this case the heroic surgeons and stoic patients of the era - while aggrandizing the victors, the come-lately 'artists' who went on to develop ever more elegant surgeries under the leisure and comfort of chemical anesthesia. If honest, as Stanley's asks us to be, modern readers of history must acknowledge that the era of painful surgery also has its simulacra in other unmet challenges yet facing the medical profession, such as better post-operative pain management or even access to medical services and medical justice.

As a final thought it is useful to think of perhaps another benefit of the era of painful surgery. In English classes it is often taught that the great Romantic poet, John Keats (1795-1821), demurred from continuing his medical education after witnessing surgery, in 1814. If true - and there is no reason to doubt that it is not - might one not be justly tempt to count among the benefits of painful surgery the redirection of Keats's talents away from medicine toward the poet's profession? And if so, might one also be forced to acknowledge that but for the absence of the transformative power of anesthesia, "Ode to a Grecian Urn" or "To Autumn" might never has been written?

Perhaps it is a stretch to think this way. Yet who can say how many others, like Keats, though in their other fields of endeavor, might have been dissuaded from medicine, too, because of its horrors, to a different lasting benefit for humanity? Looking back, then, in our horror and condescension on the era of painful surgery, perhaps we should use such thoughts to help us heed Peter Stanley's injunctions against judging over harshly those who born on the wrong side of some historical bright line. If there is a lesson to be learned from *For Fear of Pain*, it might just be that complacency, not daring, perpetuates more harm than good.



WLM Board of Trustees, Chicago, IL, October 14, 2006. From left - Row 1: Douglas Bacon, M.D., Lydia Conlay, M.D., William Hammonds, M.D.; Row 2: Elliott Miller, M.D., Mark Warner, M.D., Susan Vassallo, M.D., George Bause, M.D., Kathryn McGoldrick, M.D.; Row 3: Selma Calmes, M.D., Adolph H. Giesecke, Jr., M.D., Doris K. Cope, M.D., Jeffrey Cusick, M.D., Shiva Birdi, M.D., M. Smith, M.D.; Row 4: Bradley Smith, M.D., Charles Tandy, M.D., Mark Schroeder, M.D., Jonathan Berman, M.D.

This Month in Anesthesia History*

by A.J. Wright, M.L.S.

Associate Professor of Anesthesiology

Director, Section on the History of Anesthesia

University of Alabama at Birmingham

1736 January 19: James Watt is born. Watt, of workable steam engine fame, developed a partnership in the mid-1780s with Thomas Beddoes as Beddoes attempted to market his therapeutic applications of Priestley's "factitious airs" or gases. Watt developed equipment for Beddoes' use; some of this equipment was later used in Bristol during the nitrous oxide experiments of 1799 and 1800. Watt, his wife, and one of his sons, James Jr., participated along with numerous others in those experiments.

1779 January 18: Peter Mark Roget is born in London, England. After graduation from medical school in Edinburgh, Roget spent 1799 in Bristol working with Thomas Beddoes and Humphry Davy on their famous nitrous oxide research. Roget later wrote the *Encyclopaedia Britannica* entry on Beddoes and near the end of his life created the thesaurus for which he is so well known [the first edition was published in 1852]. A prolific author, Roget also invented an improved slide rule used until the development of pocket calculators, and the pocket chessboard. He did research on vision physiology which he published in 1825 that is the conceptual basis for motion pictures. Roget died on September 17, 1869. [For more information, see Wright AJ. Peter Mark Roget and the Bristol nitrous oxide experiments. *Bull Anesthesia History* 19(3): 16-19, July 2001].

1809 January 19: American writer Edgar Allen Poe is born. Lesser-known among his works are three tales dealing with mesmerism, or what we now know as hypnotism. Mesmerism was developed in the late eighteenth-century by Viennese physician Franz Anton Mesmer [1734-1816] and for decades was associated with quackery. However, several physicians in the 1830s and 1840s in England and India used and promoted it as surgical pain relief until the introduction of ether by Morton. Poe's stories featuring mesmerism are "A Tale of the Ragged Mountains," "The Facts in the Case of M. Valdemar" and "Mesmerism Revelation." One recent his-

tory of mesmerism is Alison Winter's *Mesmerized: Powers of Mind in Victorian Britain* [1998]. Poe died in Baltimore on October 7, 1849.

1813 January 21: James Marion Sims, an Alabama surgeon famous for his vesicovaginal operation while practicing in Montgomery, Alabama, is born. After Morton's October, 1846, public demonstration of ether anesthesia in Boston, Sims urged Georgia physician Crawford Long to publish an account of operations using ether that Long had performed in 1842. Long's account finally appeared in the December, 1849, issue of the *Southern Medical and Surgical Journal*. Sims was born in South Carolina and received his M.D. from Jefferson Medical College in Philadelphia in 1835. For some years he practiced in Montgomery, but in 1853 moved to New York where two years later he opened the world's first hospital for women. He served a term as President of the American Medical Association and died on November 13, 1883. For more information about Sims, see <http://www.whonamedit.com/doctor.cfm/2013.html>

1815 January 21: Horace Wells is born in Hartford, Vermont.

1842 January: In Rochester, New York, William E. Clarke administers ether on a towel to a Miss Hobbie, who then had a tooth removed by dentist Elijah Pope.

1842 January 11: American psychologist and philosopher William James is born in New York City. Among his many other accomplishments, James self-experimented with nitrous oxide inhalation and left a brief but vivid description of his experience, "The Subjective Effects of Nitrous Oxide," originally published in the journal *Mind* in 1882. James was also a long-time supporter of Benjamin Paul Blood, another self-experimenter with anesthetic gases who described his philosophy in *The Anaesthetic Revelation* [1874] and other works. James, brother of authors Henry James and Alice James, died in 1910.

1845 January: Horace Wells attempts to demonstrate anesthetic properties of ni-

trous oxide at Massachusetts General Hospital. The anesthetic was incomplete and the demonstration considered a failure.

1847 January 19: In Edinburgh James Young Simpson first uses ether for relief of childbirth pain.

1847 January 25: The first Caesarean section under general anesthesia is performed at St. Bartholomew's Hospital, London, just five weeks after James Robinson's first anesthetic administrations in that city. The surgeon is Mr. Skey and the anaesthetist Mr. Tracy. The child survived but the mother, who was only four feet tall and had a grossly deformed pelvis, died two days after the operation. [*Lancet* 1:139-140, 1847]

1847 January 28: John Snow begins to administer ether for major surgeries at St. George's Hospital in London.

1848 January 28: A patient in Newcastle, England, named Hannah Greener became the first fatality under chloroform anesthesia. [See Duncum BM. *The Development of Inhalation Anaesthesia*. 1947. Rep. London: Royal Society of Medicine Press, 1994, pp195-203]

1862 January 10: Samuel Colt dies. In the 1830s Colt, calling himself "Professor Coult" or "Doctor Coult" of "Calcutta, London and New York," toured the eastern United States giving demonstrations of nitrous oxide inhalation to raise money to put his revolver prototype into production. In 1835 he patented a revolving-breech pistol and founded the Patent Arms Company in Paterson, New Jersey. The company failed in 1842, but an order for 1,000 revolvers by the U.S. government five years later during the Mexican War allowed Colt to restart his business. Colt was born in Hartford, Connecticut, on July 10, 1814. The text of an advertisement for Colt's nitrous oxide demonstration in Portland, Maine, on October 13, 1832, can be found in Smith, Under the Influence: A History of Nitrous Oxide and Oxygen Anaesthesia [pp 37-38].

*For the full calendar, go to www.anes.uab.edu

Month. . . *Continued from Page 19*

1862 January 24: Novelist Edith Wharton is born in New York City. Among her numerous novels is *Twilight Sleep* [1927], a satirical portrait of the wealthy during the Jazz Age of the 1920s. The novel includes scenes of the administration of scopolamine for pain relief during childbirth, a popular method of the day called "twilight sleep." Wharton died in France on August 11, 1937.

1886 January 1: Edwin Bartlett dies in London of chloroform poisoning. In the spring his wife Adelaide and her lover, Wesleyan minister Reverend George Dyson, are tried and found innocent of the crime. The crime and trial become a spectacular event in London. English author Julian Symons' 1980 novel *Sweet Adelaide* is based on the case. [See also Farrell M. Adelaide Bartlett and the Pimlico mystery. *Br Med J* 309:1720-1723, 1994 and Clarke K. *The Pimlico Murder: The Strange Case of Adelaide Bartlett* (London, 1990)].

1913 January 18: American actor and

comedian Danny Kaye is born in Brooklyn, New York. One of Kaye's best known roles is in *The Secret Life of Walter Mitty*, a 1947 film based on a short story by James Thurber. Kaye plays the title character, a meek little man who has elaborate daydreams of greatness. In one of those fantasies, Mitty imagines himself as a surgeon who in the middle of an operation must use a fountain pen to repair the malfunctioning anesthesia machine. Kaye died in Los Angeles on March 3, 1987.

1923 January 21: A Clark gas apparatus is used by Dr. Arno B. Luckhardt to administer an ethylene-oxygen mixture to J.B. Carter, a medical student. This event was the first use of ethylene analgesia in a human. The experiment was repeated later the same day with Dr. Luckhardt and Mr. Carter exchanging roles. Since 1918 Luckhardt and R.C. Thompson had extensively studied the anesthetic and analgesic properties of an 80/20 mixture of ethylene and oxygen in animals. Their work had been stimulated by the 1908 experiments of botanists William Crocker and Lee Irv-

ing Knight on the effects of ethylene on carnations. Ethylene had been known for more than a century; in the late 1700s Joseph Priestley attributed its first preparation to Jan Ingenhousz, a Dutch botanist and physiologist. In 1849 British surgeon Thomas Nunneley investigated the gas, but did not recommend it as an anesthetic. In May 1923 Luckhardt and Carter reported on 106 cases of ethylene as a general anesthetic. Ethylene continued in use clinically for some three decades, despite several explosions associated with its administration. In recent years ethylene has been suggested as the agent responsible for the exalted states associated with the ancient Oracle of Delphi.

1942 January 23: Canadian anaesthetist Dr. Harold Griffith introduces curare into anesthetic practice. [See Gillies D, Wynands JE, Harold Randall Griffith. The pioneer of the use of muscle relaxants in anaesthesia. *Br J Anaesth* 58:943-945, 1986 and Bodman R, Gillies D. Harold Griffith: The Evolution of Modern Anaesthesia (1992)]

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