AHA

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Surgery in Hitler's Bunker

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Introduction

In 1995 a mutual friend introduced me to Ernst-Guenther Schenck, MD, PhD. Dr. Schenck had served with a surgical group in a SS division during World War II (WW2), and he patiently answered my questions about German anesthesia on the front line. Colonel Schenck had also lived a strange medical adventure during the battle of Berlin in April, 1945. He described that episode in several letters and sent me two small books he had published in Germany on his last days in Berlin.[1,2] In the 1970s, JP O'Donnell also interviewed Dr. Schenck for his book, The Bunker.[3] Shortly before his death in 1998, Dr. Schenck allowed me to translate his WW2 story for his American colleagues.

Professor Schenck's Biography

EG Schenck was born in Marburg/ Lahn in 1904. He obtained his PhD in biochemistry in Heidelberg in 1927 and his MD in Munster in 1928. After his training in internal medicine (including six months in surgery), he became assistant at the Heidelberg University Hospital while pursuing researches at the Heidelberg Wilhelm Institute. In August of 1938 he became chairman of a section of internal medicine at the Munich Schwabing Hospital. When war broke out in the Fall of 1939, he enlisted in the SS Leibstandarte division and was attached to a surgical group staffing a HVP(Haupt-Verband-Platz or Main Dressing Station). He saw combat in Norway, France, Greece, and the USSR. In 1940, while continuing to serve at the front, he was made Inspector of Nutrition for the SS troops and in 1943 assumed the same position for the whole German army. In 1944 he left the front for Berlin to advise the armed forces an their nutrition and to do research on meat substitutes.

He remained in Berlin during the city's siege and spent the last ten days of April, 1945, in the basement of the Chancellery doing surgery under extraordinary conditions. He was captured by the Russians on May 2, 1945, spent the next eight months caring for German POWs in Frankfurt/ Oder, then was sent to Moscow in the Spring of 1946 to be debriefed at the Red Army Nutrition Institute. He spent the next ten years as a POW in the Soviet Union, treating his compatriots and doing metabolic researches on his fellow POWs. He was repatriated in December, 1955, and resumed his work as internist and researcher at the Universities of Munich and Aachen. He published several books on the physiology and metabolism of debilitated camp victims and on his last days in Berlin, Professor Schenck died in Aachen on December 21, 1998. He was 94.

Here are some of Dr. Schenck's reminiscences of his professional work in WW2.

My Surgical Experiences on the Battlefield

From 1939 to 1994, I was an internist attached to a surgical group in the SS Leibstandarte division. I worked in a HVP (Main Dressing Station) during the campaigns of Norway, France, Greece, and the Soviet Union. A HVP was staffed by a medical company including two surgeons, several assistant surgeons, an internist, a dentist, and several medics dealing with instruments, anesthesia, and patient care. The anesthetist (or Narkotiseur) was a young medic chosen for his intelligence and education. He had received no formal anesthesia training and worked under the surgeon's close supervision, learning "on the job." We had no anesthesia textbooks. I never gave anesthesia as I had neither the time nor the experience to do so. Moreover, anesthesia was not a physician's responsibility.

A HVP was set up in a house, a basement, a barn, or a tent hidden in a copse, 4-5 miles behind the frontline. It had basic surgical instruments and supplies, mobile OR table and headlight, and a portable x-ray machine, but no laboratory or blood bank. It was set up to treat life-threatening injuries (chest or airway wounds, hemorrhages, shock) and to prepare a wounded patient for immediate, safe evacuation to the divisional FL (Feld-Lazarett or Field Hospital) where specialists would perform more complex surgery and observe the patient postoperatively. The FL was less mobile than the HVP and was placed in a large building 10-12 miles behind the front.

As an internist I selected the patients for surgery according to the urgency of their condition, started the i.v. fluids, injected the preoperative doses of morphine and scopolamine and prepared the wound for the surgeons. This included, when possible, local infiltration of novocaine. This allowed painless handling and examination of the patient, especially when x-rays were needed. I was always impressed seeing how much quieter and less "shocky" were the patients I could infiltrate. I also had to comfort our moribund patients with a shot of morphine, a kind word, and, occasionally, a cigarette.

Our only local anesthetic was a 0.5 or 1% novocaine solution that we prepared daily from procaine crystals. Small wounds were sutured under local infiltration. We never used spinal or regional blocks. Our general anesthetics were ether, ethyl-chloride, and, rarely, chloroform. They were open-dropped on a Schimmelbush mask. We had no anesthetic machine, but could provide positive pressure ventilate with the Wehrmacht's Draeger oxygenator, which included an O_2 tank, a mask, and a timed

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AHA2003 Spring Meeting Program

Wednesday, April 30, 2003

9:00 AM – 11:00 AM - *Morning Tour*
Ether Dome and Bullfinch Building
Elliott Miller, MD

12:30 PM – 3:00 PM - *Afternoon Tour*
Mount Auburn Cemetery, Cambridge
Elliott Miller, MD

6:30 PM – 8:30 PM - *Opening Reception*
The Westin Copley Place

Thursday, May 1, 2003 - *All events at The Westin Copley Place*

7:00 AM – 7:45 AM - *Registration/Continental Breakfast*

8:00 AM – 8:50 AM - *Opening Plenary Lecture*
Lt. Kornfield, World War II Physician-Anesthetist: Why His Story Matters
David Waisel, MD

9:00 AM – 10:30 AM - *Concurrent Sessions*

Session A
Dr. Mary Botsford (1865-1939) of San Francisco: More Answers
Selma Harrison Calmes, MD

Stuart Cullen: My Years with Him in Iowa
Kenneth Sugioka, MD, FRCA

John Snow: Midwife of "Shock"?
Kim Pelis, PhD

Session B
Keeping the Airway Open: Who Was First?
Ray J. Defalque, MD and A.J. Wright, MLS

Impact of Benevolence and a Golden Age of Anesthesia for Obstetrics
Donald H. Wallace, MD

A Bridge to Two Worlds: Shih-Hsun Ngai and Sino-Chinese Anesthesia
Patrick Sim, MLS

10:30 AM – 11:00 AM - *Refreshment Break*

11:00 AM – 12:00 NOON - *Concurrent Residents' Sessions*

Session C
James T. Gwathmey: An Advocate for Colonic Analgesia During Labor & Delivery
L. Tungpalan, MD; D. Bacon, MD; P. Mergens, MD; R. Caswell, MD and G. Vasdev, MD

Memories of Sir Robert Macintosh's Last Resident
Radha Arunkumar, MD and William Hammonds, MD, MPH
[winner of the 2002 Anesthesia History Association Resident Essay Award]

Restarting the Heart
Miriam Anixter, MD

Session D
The Use of Dextran in the Korean War
K. Bockstahler and David Waisel, MD

Blue Skies Forever: The Enduring Legacy of Sir C.V. Raman and the Origins of the Ohmeda RASCAL
Senthilkumar Sadhasivam, MD and David Lai, MD

The History of Subcutaneous Oxygen Therapy
Timothy Curry, MD, Douglas Bacon, MD and Richard Rho, MD

12:00 NOON – 1:30 PM - *Luncheon Plenary Session*
Subspecialty Training in Pediatric Anesthesia: An Historical Audiovisual Perspective

This presentation will feature two training films made by the prescient M. Digby Leigh. The first, a silent film, was made in 1942 at Montreal Children's Hospital. The second film was made in 1962 at Los Angeles Children's Hospital. The presentation will also feature narrated commentary by C. Ronald Stephen MD.

Robert S. Holzman MD, FAAP
Senior Associate in Anesthesia, Children's Hospital, Boston
Associate Professor of Anaesthesia, Harvard Medical School

Burdett S. Dunbar MD
Professor of Anesthesiology, Baylor College of Medicine

Patrick Sim, MLS
Librarian, Wood Library –Museum of Anesthesiology

Narration by C. Ronald Stephen, MD

2:00 PM – 3:30 PM - *Concurrent Sessions*

Session E
Famous Writers and Anesthetic Agents
A.J. Wright, MLS

The Image of the Anesthesiologist in the Movies
Yoel Donchin, MD and Michael Beigel, PhD

The "Phantom Anesthetist of Mattoon": Dispelling the Hysteria
Scott Maruna

Session F
Perspectives on Ambulatory Anesthesia: The 60s, 70s and 80s
Burdett S. Dunbar, MD

The Expansion of Practice by Mid-level Practitioners, an Historical Perspective
William D. Hammonds, MD, MPH

"Hatch": A Failed Aqualumnus
Selma Harrison Calmes, MD

The History of Pediatric Caudal Anesthesia
Mark Mandabach, MD

Announcement of the Year 2004 Laureate of the History of Anesthesia

Nicholas M. Greene, M.D., Honorary Chairman
Doris K. Cope, M.D., Chairman

Nominations are invited for the person to be named the third Wood Library-Museum Laureate of the History of Anesthesia in the year 2004.

This Wood Library-Museum Program, established in 1994, has as its purpose creation of increased recognition of the richness and importance of the history of our specialty by recognition of 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.

The Laureate Program is international. Nominations for the award are sought by physicians, not just anesthesiologists, as well as medical historians regardless of where they live.

Additional information regarding the Laureate Program may be obtained by contacting the WLM Laureate Committee at the Wood Library-Museum, 520 N. Northwest Highway, Park Ridge, Illinois 60068-2573.

The name of the individual selected by the Laureate Committee to be the year 2004 Laureate will be announced in October, 2003 during the annual meeting of the American Society of Anesthesiologists in order to assure that the honoree will be free of other commitments in October, 2004, for the subsequent ASA Annual Meeting. At this time the honoree will be given a suitably inscribed medal, an appropriate certificate for framing, and an honorarium of $3,000. The proceedings do not include a lecture by the newly inducted Laureate, though a 3-4 minute acceptance speech would be in order. The honoree and spouse will be provided a round-trip tourist class airfare from their home. A $175 per diem for 3 days in Las Vegas, NV, will be provided.

Though the post of Laureate is not associated with prescribed duties, it carries with it the WLM Trustees' expectation that the Laureate will remain active in publication of historical materials and will continue to contribute to the education of anesthesiologists and others through lectures and participation in appropriate panels and seminars.

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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 (http://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 (http://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 (http://gateway.nlm.nih.gov).

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Manuscripts *may* be submitted on disk using Word for Windows or other PC text program. Please save files in RICH TEXT FORMAT (.rtf) if possible and submit a hard copy printout in addition to the disk. Illustrations/photos may be submitted as original hard copy or electronically. Photographs should be original glossy prints, **NOT photocopies, laser prints or slides**. If submitted electronically, images must be at least 300 dpi and saved as tif files. Photocopies of line drawings or other artwork are **NOT** acceptable for publication.

Corrections:

In the January 2003 issue of the Bulletin, the author of the book reviews on Tarnished Idol and I Awaken to Glory was incorrectly listed as Dr. Peter McDermott. The correct author of the book reviews was Dr. Donald Caton. The editorial staff apologizes for the oversight.

Please note that the WLM 2004 Laureate of the History of Anesthesia will be presented at the 2004 ASA Annual Meeting in Las Vegas, NV.

Bunker. . .*Continued from Page 1*

trigger. Short, minor procedures were usually done under ether or ethyl-chloride "Rausch" (the brief initial stage of analgesia preceding full anesthesia). Ethyl-chloride was frequently used to speed up ether inductions.

We had no bank blood or serum and shock was treated with i.v. crystalloids (Normosol or Tutofusin) or Periston (a colloidal suspension of poly-vinyl-pyrridol in saline). For our rare transfusions we employed volunteers, preferably "universal donors" of type O, and never transfused more than 250-300 ml.

We used the Braun transfusion apparatus with heparinized syringes, tubings, and 3-way stopcocks. We found out early that the blood type tattooed on our soldiers in Germany was incorrect and we had to re-type donors and recipients or use previous donors, preferably of type O. We performed a simple cross- matching and the "biological" Oehlecker test: the first 60 ml of blood were transfused over one minute while the patient was closely observed for shivering. If no shivering occurred, the transfusion was then rapidly finished.

We had no antibiotics but generally sprayed the wounds with a sulfamide powder.

Our surgical teams worked in eight-hour shifts but during the large scale battles in Russia, all teams worked around the clock with only short breaks for a cigarette and a cup of coffee. We had no time to look at the patient, all we saw were hideous wounds to be treated at once before passing on to the next ones.

My Last Days in Berlin

On April 17, 1945, as the Russians drew near Berlin, we were ordered to escape to the West. I was allowed to remain in Berlin and was told to report to General Mohnke, the commanding officer of the "Zitadelle," the central section of the capital which included the old and the new Chancelleries and most ministries. Mohnke gave me Hitler's order to provide the "Zitadelle" with 300,000 rations. As a research nutritionist I was unfamiliar with those organization problems, but scrounging around Berlin, I managed to stock the new Chancellery and its basement with large amounts of food and four field kitchens. I moved into that basement on April 21st, and was assigned a room with two other officers.

The new Chancellery had been built by Albert Speer in 1938. In 1943, its basement was reinforced with concrete and it became an air shelter (bunker). That huge bunker had garages, large storerooms, quarters for various Nazi dignitaries and Mohnke's command post. There also was a medical suite with a small OR, an anteroom and a backroom for medical supplies. Two large storerooms behind the suite were later equipped with cots and converted into medical wards. This sick bay had been designed to treat minor injuries and give first aid to the severely wounded before their transfer to nearby hospitals. Our bunker was connected by a narrow 90-foot tunnel to the upper floor of Hitler's bunker built under the old Chancellery in 1939-40. I lived in that bunker from April 21st till May 1st, when I was ordered to break through the Russian lines with the occupants of Hitler's bunker.

A couple of days after I moved into that basement, the Russian guns started a tremendous and incessant barrage which continued over the next eight days. The constant noise and shaking was nerve-shattering. We expected to be buried alive under the crumbling surrounding buildings with each shell. Throngs of refugees seeking protection from the shelling started invading the bunker and the situation soon became chaotic. The ventilators broke down, we lost the water pressure and the toilets became clogged. It became difficult to breath that hot, damp stifling air with its sickening smell of feces. Two noisy Diesel generators provided electricity on and off for our sick bay and some of the main stations but the rest of the bunker was plunged into darkness despite an occasional candle or acetylene lamp. Medics kept bringing in large numbers of wounded, civilians, young soldiers of the Hitler Youth and foreign SS volunteers. Many had been horribly maimed by shell fragments and collapsing walls.

On my first evening in the bunker I had gone outside for a breath of fresh air. At the garage entrance I found an old man with both legs crushed. I took him downstairs to the sick bay. The anteroom was packed with wounded. A surgeon was operating, helped by a nurse, while at the head of the table another nurse was pouring ether on an Esmarch mask. The scub nurse noticed me and asked me to help. I returned to the anteroom and started to prepare the patients for surgery, injecting morphine and scopolamine, infiltrating wounds with novocaine, and helping move the patients on and off the OR table. I tried to comfort the patients beyond help with a shot of morphine and a few cheerful words. I never spoke with the surgeon. Two hours and several operations later, he turned around, removed his gloves and mask, and shaking my hand, introduced himself "Professor Werner Haase." He was a tall, gaunt, handsome man in his mid-forties, with silver hair. He looked exhausted, was very dyspneic and coughed incessantly. He haltingly told me that he had terminal tuberculosis, had lost one lung, and had a therapeutic pneumothorax on the other side. I found out later that he was chief of surgery at the famous Charite hospital. When Hitler became Chancellor and moved to Berlin in 1933, Dr Haase had become his personal physician, but in 1936, he had returned to his surgical duties at the Charite. When Hitler returned to Berlin in April of 1945, he asked Dr. Haase to join him in the bunker as his physician.

I offered Dr Haase my help but told him that I was an internist and nutritionist without surgical skills. He smiled but eagerly accepted my help. Over the next ten days I worked around the clock in that casualty station. I initially gave pre- and postoperative care and assisted Dr Haase in difficult thoracic, abdominal, or spinal procedures but I progressively took over more and more operations when Haase, exhausted, had to lay down on a cot he had placed in the backroom. Once or twice a day he left us to visit Hitler. I kept operating as more and more wounded piled up in the anteroom. The scrub nurse Erna and I soon formed a well-knit and efficient team. She had immense surgical experience and would encourage and guide me with a few words, giving me a wink and a smile after each successful operation. The other nurse, whose name I have forgotten, kept open-dropping ether under my direction. When I needed help, I summoned Dr. Haase from his cot; he stood behind me, and in halting whispers, talked me through difficult procedures. I did about 380-400 major procedures alone or under his guidance. Orderlies carried our patients on and off the OR table and to the postoperative wards. They also took the dead and the amputated limbs outside and buried them in shell craters around the Chancellery. A few days after my arrival we were joined by 20 girls of the Hitler Youth who were seeking protection from the Russian soldiers. We gave them Red Cross uniforms and arm bands and they did a tremendous job helping us.

As the days passed, the situation in our hot, damp and malodorous bunker kept worsening. Hordes of refugees kept coming in, masses of wounded were brought in, many of them moribund and beyond medical help, or horribly mutilated. The

generators kept breaking down. Our cooks continued to prepare soup and stew but we ran out of drinking water. During the hours of darkness, courageous volunteers ran to the Spree river and brought back buckets of dirty, foul smelling water that we boiled. We started to run low in medical supplies, especially dressings. When the shelling eased up at night, I asked Dr. Haase to take over for a couple of hours and made quick forays to the Chancelleries and the nearby first aid stations but returned empty handed, although I found a large supply of bed sheets in the new Chancellery. We tore them to make dressings. We also re-used old dressings after washing and sterilizing them. When I returned to the OR to relieve Dr. Haase, I found an increasing number of wounded waiting for surgery. I started working like a robot, pushing my stiff body against the table to keep from failing, too tired to change gloves, gown and mask after each operation. I simply washed my gloved hands in a basin of Zephyran between cases. My gown, cap and mask were caked with blood. An orderly kept sponging the sweat and blood off my face and glasses. From time to time I stopped to sip some Nescafe laced with cognac or lay back on the backroom cot for a few minutes. After each operation I glanced at the anteroom, hoping to see fewer patients but their number kept increasing.

My only thought was to sleep. I started resenting those patients, who, I felt, had stupidly run into exploding shells or crumbling buildings, but I soon would get hold of myself and realized how lucky I was to be safely indoors, even if dead tired. Dr. Haase occasionally relieved me so that I could catch a few moments of sleep or make quick postoperative rounds with our Red Cross helpers.

During Dr. Haase's absences, I had to improvise many procedures and made mistakes which took a long time to correct. Nurse Erna kept guiding and encouraging me silently. We had become too tired to speak. I saw injuries that I had only read about in textbooks. I remember a patient with gas gangrene, whose both legs were grotesquely swollen with crepitating gas and with an ugly red-grayish color. I started making deep incisions in the dead tissues while Dr. Haase behind me kept repeating, "Deeper, deeper longer, longer." I also saw shocked, cyanotic wounded with large open or tension pneumothoraces. We had no continuous suction; I treated the tension pneumothoraces with a chest tube and a split finger cot and closed the large open ones with skin flaps forming one-way valves. I hesitated to call Dr. Haase who seemed to be near death and only summoned him when I was desperate. We never had any medical help. SS Colonel Dr. L. Stumpfegger, Hitler's other physician, came in for a few minutes each day to report to Hitler but never offered to help, although he was an orthopedic surgeon. In fact we never saw any Nazi dignitary, except Goebels who always had a kind and gracious word for our patients.

We had no blood nor i.v. fluids to treat shock and no antibiotics. We simply covered the wounds with a sulfamide powder. We had to use our procaine and ether sparingly.

On April 30th, shortly after midnight, I had just finished a jejunal repair. I had been fighting to tuck the distended guts with my slippery gloves into the peritoneal cavity, asking the nurse to start dropping ether again to relax the abdominal muscles. To save ether, I generally did the intra-peritoneal part of a procedure under very light anesthesia. Exhausted, after closing the skin, I went to lay down for a few minutes. Dr. Haase came in, woke me up, and told me that Hitler wanted to see us. We followed him through the tunnel leading to the upper floor of the Fuehrer's bunker. Hitler was standing on the staircase leading to his private quarters below.

Continued on Next Page

Anesthesia History Association
Eighth Annual Resident Essay Contest 2003

The Anesthesia History Association (AHA) sponsors an annual Resident Essay Contest with the prize presented at the ASA Annual Meeting.

Three typed copies of a 1000-3000 word essay written in English and related to the history of anesthesia, pain medicine or critical care should be submitted to:

William D. Hammonds, M.D., M.P.H.
Professor of Anesthesia
Director of Pain Outcomes Research
Department of Anesthesia
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200 Hawkins Drive, 6JCP
Iowa City, IA 53342-1079
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william-hammonds@uiowa.edu

The entrant must have written the essay either during his/her residency or within one year of completion of residency. Residents in any nation are eligible, but the essay MUST be submitted in English.

This award , which has a $500.00 honorarium, will be presented at the AHA's annual dinner meeting to be held in October, 2003, in San Francisco, California. This dinner is always held during the annual meeting of the American Society of Anesthesiologists.

All entries must be received on or before August 23, 2003.

Bunker. . .

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It was the first time I saw him so close and this was a ghastly sight: with a stooped neck and back, he could hardly lift his face to look at us; his eyes, with yellow scierae were sunk into a frozen, deeply creased face and gave a glassy stare. We saluted. He thanked us for our help with the wounded, shook hands with nurse Erna and made a small, stiff bow towards the other nurse. The latter started crying, became hysterical and started shouting Nazi slogans "Heil Hitler, Sieg Heil, etc." Professor Haase gently grabbed her arm, Hitler looked at her silently and mumbled, as to himself, "One must face one's fate with courage." He then turned around as we saluted again. As he left, he nodded to Dr. Haase to follow him downstairs to his private suite. I had to use the toilet and followed them a few minutes later, entering a long corridor with several doors. One was open and I saw Hitler and Haase sitting at a table, whispering to each other. Hitler's left hand, holding his glasses, was resting on the table and shaking violently. He had squeezed his left leg between his chair and the table to keep it from shaking. I then suddenly realized that I was seeing a patient with severe Parkinson's disease, probably secondary to cerebral arteriosclerosis.

Dr. Haase told me later that they had discussed the most reliable methods of suicide and complete cremation. Haase had recommended biting a capsule of cyanide while pulling the trigger of a pistol placed against the temple. Gasoline cremation would destroy all traces of the body. Hitler had thanked Haase with a capsule of cyanide and had invited him to join him in his death.

I immediately returned to our OR where the nurses had prepared the next patient for surgery. I continued to operate until late in the morning of the 30th. 1 had just finished a frustrating thigh amputation when Dr. Haase returned. Upon release of the tourniquet blood started to spurt from several arteries I had failed to tie. As I was frantically trying to suture those vessels and our anesthetist had resumed pouring ether, Dr. Haase came behind me and whispered in my ear, "The Fuehrer will take his life today at 300 PM," then went to lay down while I finished my operation. I continued to operate throughout the day, with a few minutes off for a cup of Nescafe or a few winks. Shortly before 300 PM, Dr. Haase gently tapped me on the shoulder, told me to carry on, and left. He returned around 500 PM, waited for me to finish an operation, and nodded to follow him in the backroom. Lying down, coughing and gasping for air, he whispered, "The Fuehrer is dead." I returned to the OR, told the nurses and after crying for a few moments, we resumed working.

The shelling had increased and we were told that the Russians were within 500 yards from the Chancellery. People started to commit suicide throughout the bunker and I was ordered to provide euthanasia for our patients to prevent their falling into the Russians' hands. This, I refused to do, as I felt that this was a decision for a patient to make, not for his physicians. None of our patients, even the dying ones, received more than an analgesic dose of morphine.

I kept operating through the night of the 30th and most of the next day, April 1st. That day Mohnke ordered me to be ready by 1100 PM to leave with his group. He was going to lead the occupants of Hitler's bunker across the Russian lines.

The Russians were now surrounding both Chancelleries, a truce was being negotiated, the shelling had abated and the incessant flow of wounded had stopped.

I visited my patients, told them that I had been ordered to leave, but that Dr. Haase, our nurses and our Red Cross aides would continue to look after them. I saluted Haase, shook hands with the nurses, and making my way through the dark corridors filled with dirty dressings joined Mohnke and his group outside.

Over the next 36 hours, while around us Berlin was a sea of flames and a mass of collapsing buildings, we crawled through the subways and across street rubble. I remember one subway station where a car had been placed an a side rail and four or five exhausted surgeons were operating by candle light.

I was captured by the Russians on May 3rd. In September, 1945, I was sent to Frankfurt/Oder where the Russians had converted the Wohrmacht barracks into a huge hospital for German POWs. I treated my sick compatriots there for the next few months while suffering myself of hepatitis and severe dysentery. In that hospital I was reunited with the nurses, Red Cross aides, and many of the patients I had left in the bunker. They had been captured on May 2nd by Russian medics who had treated them well and had protected them from the frenzied, drunken Soviet troops, though they had been unable to give them any medical care. I met again an officer I had treated in the bunker for a severe chest wound. He had been a famous opera singer before the war and as I was closing his chest I thought that his opera career was over. I thus was pleasantly surprised when I heard his beautiful voice during a show in our camp theatre.

Another patient I met in Frankfurt was an officer I had treated in Berlin. His name was Engels and he was the nephew of the famous Communist philosopher. His English father had him repatriated shortly after I met him. Our nurses and Red Cross helpers were also sent back to Germany in the Spring of 1946. Later when I was a POW in the Soviet Union, I learned that the Russians had found out that Professor Haase had been Hitler's personal physician and had sent him to Moscow where he died from his tuberculosis in 1947.

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Jay Jacoby, M.D., Ph.D., (1917-2003)

by Peter McDermott, M.D., Ph.D.

In his fifty-eight years as a teacher Jay Jacoby influenced the lives and education of thousands of physicians and caused hundreds, including me, to choose anesthesiology as a specialty. He died March 13, 2003 of heart failure at Good Samaritan Hospital in West Palm Beach, Florida. Our grief at his loss is more than tempered by our admiration, gratitude, and affection. His was a long, productive, wonderful life, and we are his beneficiaries. He is survived by his wife of 61 years, Helene, daughters Jane Kent, Carolyn Sloane, and Elizabeth Feldbaum, a brother and seven grandchildren.

He became a professor of anesthesiology at Ohio State University Medical School when he was 29, and he was a teacher to the end of his days, setting up residencies at Marquette University Medical School (now the Medical College of Wisconsin) and Jefferson Medical College (now Thomas Jefferson University Hospital). Upon his "retirement," he returned to Ohio State as emeritus professor in 1988, and, following his next "retirement" in 2001, he taught at the Veteran's hospital in West Palm Beach. He was bewitching, attracting as much as 20% of medical school graduating classes into the specialty. Eight of his residents became chairs of academic departments.

He met students their freshman year, practically at the front door, and was involved in their education throughout the basic sciences and early clinical experiences. He was passionate about anesthesiology as a medical specialty and zealous in demonstrating how much it had to offer both to patients and to other specialties. He extended the skills of airway management, vigilant monitoring of clinical parameters, and the principles of pharmacology and physiology that are integral to intra-operative anesthesia care to those outside the operating suite. The post-anesthesia care unit and other intensive care units were the result. Techniques and systems of resuscitation – kits and code blue teams – became the practical extension of airway management to the bedside. Jacoby was a leader in this development.

His recent autobiographical memoir recounts his early years. He was born in New York City and received his premedical and medical education at the University of Minnesota.* World War II and the United States Army sent him to the northern tip of Baffin Island where he served as physician at a military gas station (it was a refueling point and anticipated an imminent invasion by Japanese forces). While he was stationed there he killed a polar bear as a favor to some local Eskimos. They got the meat, he kept the pelt. He later served in the European theatre and benefited from exposure to British anesthetic practices and the experience of battlefield trauma care. After the war he obtained a Ph.D. and completed an anesthesiology residency at the University of Chicago. Robert Zollinger, Chief of Surgery at Ohio State, invited him to set up an anesthesia department there, and so began his long service as an educator and an inspiration.

Lt. Jacoby pictured sitting on an unexploded bomb shortly after the war ended in Europe. Reprinted with permission from the Wood Library-Museum of Anesthesiology and Donald Caton, M.D., and Kathryn E. McGoldrick, M.D., eds. Careers in Anesthesiology, vol. vii, 2002.

I'm sure that there are a multitude of anecdotes about Jacoby from his many residents. Johnny Jones told me that he had developed a kind of quick draw laryngoscopy technique, doing a wrist flip to turn on the lamp and lock the blade in place. He saw Jacoby peering into the OR and decided to impress him. Jay watched as the blade flew across the room and landed next to the door. He also watched as Johnny ran across the room to retrieve his equipment and proceed with intubation.

I remember one Friday afternoon during residency and a drunken vagrant who was admitted with multiple gashes inflicted when he fell down with a bag-full of bottles. He was a difficult intubation and had a full stomach. After a series of brutal attempts to secure an airway and a wrestling match with a combative patient, someone asked if Jay were still in the building. I got him and watched him take charge. I will never forget the transformation that then occurred. Jay began to talk with the man. He explained what they were trying to do and why. His tone was gentle and respectful and, by treating the man with dignity, he changed a dangerous situation into a cooperative endeavor in which a grateful patient practically inhaled the naso-tracheal tube. There was no doubt in my mind from that time on that techniques and procedures occupied a secondary universe. It was the patient that mattered. To care for a patient, his dignity must be preserved. Many can *treat* a patient, a doctor adds *care* to the equation.

Jay encouraged his residents to subscribe to the journals and join professional organizations. He sponsored many of us as we became members of ASA. It is perhaps no small measure of his influence that three of us will have become ASA President by 2005. He had much to do with

Continued on Next Page

**Donald Caton and Katherine E. McGoldrick, eds. Careers in Anesthesiology: Autobiographical Memoirs, vol. vii, (Wood Library-Museum: Park Ridge, 2002).*

Jay Jacoby, M.D., Ph.D., 1917-2003

by Eugene P. Sinclair, M.D.

Jay Jacoby was an intern on December 7, 1941 the day of the attack on Pearl Harbor. He immediately volunteered for military service and was assigned to the Army as a general medical officer. When his first commanding officer learned of Jay's obstetrical experience and the fact that obstetricians took turns giving anesthesia for each others' patients, he assigned Jay as an anesthetist.

Jay learned the skills needed to be an anesthetist while caring for wounded military personnel in a variety of assignments in and near combat zones. In his autobiography, published last year in the Careers in Anesthesiology series of the Wood Library-Museum of Anesthesiology, he states that halfway through the war he decided to "stay with anesthesia." As his anesthesia skill and knowledge grew, he became infected with a fiery enthusiasm for the discipline that never cooled.

He could never learn or teach enough about his chosen profession. Jay came to Milwaukee as Chair of the Department of Anesthesiology at Marquette University School of Medicine in the late 1950's. Although his reputation as an outstanding teacher and clinician preceded him, he exceeded his reputation.

Upon arrival he immediately arranged lectures for medical students. To those who attended his lectures, his passion for anesthesiology was contagious. No one left without enormous respect for the field. Recruitment into anesthesiology skyrocketed. In the operating room his compassion and skill in caring for patients set a standard against which I still measure myself.

Jay Jacoby, M.D., Ph.D. Reprinted with permission from the Wood Library-Museum of Anesthesiology and Donald Caton, M.D., and Kathryn E. McGoldrick, M.D., eds. Careers in Anesthesiology, vol. vii, 2002.

Each of us is formed as a person in some way by a few outstanding, memorable role models. In my case I owe the selection of my profession and the love that I have for it to this gentle, soft-spoken man who chose to "stay with anesthesia" and never relented in his desire to teach, to learn and to work in his chosen field. Having had Jay Jacoby as a teacher and role model is an honor and privilege. None of us who were fortunate enough to know him will forget his lessons or example.

Jay J. Jacoby, M.D.

by Neil Swissman, M.D.
ASA President, 2000-2001

Jay J. Jacoby, M.D., a pioneering anesthesiologist, passed away March 7, 2003. He was affectionately called the "pied piper" of anesthesiology, attracting many medical students to the specialty at a time when it was not a popular choice, and is credited with many advances in the specialty as well as in patient care.

The essence of Jay Jacoby's professional life is best represented in the words that follow written by him.

> This is the year 2002 and I have been a doctor for more than 60 years, having graduated from medical school in 1941. At first, there were very few trained anesthetists. Anesthetics were administered by family members, nurses, intems or junior surgeons. In those days the surgeon was captain of the ship; the anesthetist obeyed orders. An amazing change has occurred: the anesthesiologist is now the equal of the surgeon. The change has come about because the skill and the knowledge of the anesthesiologist is now recognized and appreciated.
>
> I became a teacher during the war and have been a teacher ever since! I learned a new technique in the Army and promised to teach it to others. I have been doing that ever since, having been a professor of anesthesia in three medical schools and a department chair for almost 40 years at Ohio State University, Marquette University, and Jefferson Medical College. Now I am back at The Ohio State University. I am still practicing and I am the oldest active professor in the specialty. The changes in medicine are unbelievable; people live many years longer. The specialty of anesthesia has been the leader in safety, changing the death rate from 1: 1,500 to 1:200,000. As the oldest practicing professor of anesthesia in the United States, I have had the experience of crossing the bridge from medieval to modern practice.*

Jay Jacoby has significant impact on the many lives and will be missed by all who share a passion for the specialty he loved.

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Jacoby. . .

Continued from Page 7

the transformation of the gifted, young specialty of anesthesiology. His warmth, wit, and good nature will be long remembered and greatly missed.

Wendell C. Stevens, M.D., (1931-2003)

by Harry Kingston MB, FRCA, MBA
Emeritus Professor and former Chairman
Oregon Health Sciences University

Angela Kendrick, MD
Assistant Professor
Oregon Health Sciences University

It is with great sadness that we report the death of our mentor and colleague, Wendell Stevens, MD. Those of you who knew Wendell will agree that he was undoubtedly the finest example of a humanitarian, scholarly and principled man. It is difficult to summarize his career in a few paragraphs.

Wendell Stevens was born in Mason City, Iowa. Both his undergraduate and postgraduate training were at the University of Iowa, Iowa City. He obtained an MD degree in 1956. Having completed his internship in Cleveland, Ohio, he spent a few years training to be a surgeon before deciding on a career in Anesthesiology. He was an anesthesiology resident in the Department of Anesthesiology at the University of Iowa, completing his residency in 1963. After three years in the Department as an Assistant Professor, he was recruited to the Department of Anesthesiology at UCSF. Between that time and 1977 he was promoted first to Associate Professor and then Professor of Anesthesiology. In 1978 he was appointed Professor and Chairman of the Department of Anesthesiology at the University of Iowa, a position he held until 1982 when he moved to Oregon Health Sciences University in Portland, Oregon. He was the Chairman of the Department from 1982-1992. In addition to his work in Oregon, he is probably best remembered as a director of the American Board of Anesthesiology from 1975-1988, and was President of the Board from 1987-1988. He was a member of the Joint Council on In-Training Examinations and a Specialist Site Visitor for the ACGME.

In addition to his academic life, he distinguished himself as a Naval Officer. In 1958-1960, he served on tours of duty to Antarctica and Arctic aboard the Icebreaker USS Edisto. He had prominent appointments in the American Society of Anesthesiology, the American Medical Association, the Christian Medical and Dental Society and was on the editorial boards of a number of journals.

He participated on surgical teams in Belize, the Dominican Republic, Ecuador, Jamaica, Mexico, Turkmenistan, and trained nurse anesthetists in Kenya and Nigeria.

Wendell Stevens, MD. Photo courtesy of the Dept. of Anesthesiology, Oregon Health Sciences University.

However, for those of us who knew him well, his academic credentials were only a part of the man. What made Wendell such an extraordinary human being was the personal characteristics he demonstrated in his daily life. We can all recall his numerous acts of kindness which, almost without exception, were known only to those impacted by his generosity. These acts could be as simple as lending his car to a family for a ski-trip, to something as profound as quietly offering help and sustenance to a family who had suffered great hardship and had nothing at all.

Dr. Stevens is survived by Lola, his wife of 44 years; his three children, Amy, Eric and Mitchell, and five grandchildren.

His dedication to the residency program, clinical excellence and his pursuit of scholarly ventures was an inspiration to all members of the Department. However, one thing we will all remember was his impish sense of humor – his quick wit and his amusing, self-deprecating remarks. Only the twinkle in his eyes indicated that he was teasing! Our colleagues at OHSU will miss him greatly, but will remember him with enduring fondness.

Should anyone wish to honor his memory with a financial offering, the family has agreed that donations can be made the Wendell Stevens Memorial Fund which has been established in his honor.

Checks should be made out to: OHSU Foundation. In the “memo” space indicate “Wendell Stevens Memorial Fund”. Address: OHSU Foundation, 1121 SW Salmon Street, Portland, OR 97205.

Anesthesia History at the ASA Annual Meeting
October 2003

Forum on the History of Anesthesia

Sponsored by the Wood Library-Museum of Anesthesiology

Before It's Lost: Capturing the History of Subspecialization in Anesthesiology

Objectives: The attendee will understand the impetus behind the formation of subspeciality societies in anesthesiology. The attendee will also learn about the documentary evidence and means to preserve the early history of sub-specialization.

Moderator: Douglas R. Bacon, M.D., M.A.
Associate Professor of Anesthesiology and the History of Medicine
Mayo Clinic, Rochester, MN

The Perils and Pitfalls of Documenting Recent History—Can the WLM help?
Douglas R. Bacon, M.D., M.A.

The Association of University Anesthesiologists
William K. Hamilton, M.D.
Professor Emeritus of Anesthesia
University of California, San Francisco, CA

The Society of Cardiovascular Anesthesiologists
Roger Moore, M.D.
Past President, Society of Cardiovascular Anesthesiologists
Assistant Treasurer, American Society of Anesthesiologists

Society for Education in Anesthesia—The History of Teaching?
Phil Liu, M.D.
Professor of Anesthesiology
Harvard Medical School, Boston, MA

Society for Obstetrical Anesthesia and Perinatology—Caring for Mom and Baby
Gary Vasdev, M.D.
Assistant Professor of Anesthesiology
Director of Obstetrical Anesthesia
Mayo Clinic, Rochester, MN

The American Society of Regional Anesthesia-Even Better the Second Time
David Brown, M.D.
Professor and Chair, Department of Anesthesia
University of Iowa

Society of Neurosurgical Anesthesia—Focused on the Brain
Maurice Albin, M.D., MSc.
Professor of Anesthesiology
University of Alabama at Birmingham

Society for Ambulatory Anesthesia
Lydia Conlay, M.D., Ph.D.
Professor and Chairman, Department of Anesthesiology
Baylor College of Medicine, Houston, TX

Society for Pediatric Anesthesia
Mark Rockoff, M.D.
Professor of Anaesthesia, Harvard Medical School
Vice Chairman, Department of Anesthesia
Children's Hospital, Boston, MA

Panel on History

APGAR at 50: A Celebration of the Remarkable Anesthesiologist Who Changed Neonatal Assessment and Obstetric Anesthesia

Objective: After attending this panel the learner will gain an appreciation for the development of the APGAR score. The learner will also learn about the challenges of academic practice and the social milieu of anesthesiology in the late 1940s and 50s.

The learner will also gain an understanding of a small part of the history of anesthesiology that has everyday application.

Moderators:

Douglas R. Bacon, M.D., M.A.
Associate Professor of Anesthesiology
Mayo Clinic, Rochester, MN

Maurice Albin, M.D., M.Sc.(Anes.)
Professor of Anesthesiology
University of Alabama at Birmingham

1. Obstetrical Anesthesia in 1950—
Issues without Answer?
David Waisel, M.D.
Assistant Professor of Anaesthesia
Harvard Medical School, Boston, MA

2. Neonatal Resuscitation:
An Historical Perspective
George Gregory, M.D.
Professor of Anesthesiology, UCSF

3. The Columbia Department:
A microcosm of Academic
Anesthesiology in the 1950s
Douglas R. Bacon, M.D., M.A.

4. Virginia Apgar—
Anesthesiologist Extraordinare
Selma Calmes, M.D.
Professor and Chair
Dept. of Anesthesiology, UCLA

5. The APGAR Score
Randy W. Calicott, M.D.
Assistant Professor of Anesthesiology
Wake Forest University
Winston-Salem, NC

6. I Remember Ginny
Frank Moya, M.D.
Chairman, Frank Moya Continuing
Education Programs, Inc.
Coral Gables, FL

MedNuggets

by Fred J. Spielman, M.D.
Professor
Department of Anesthesiology, University of North Carolina

The researches of physicians interested in anaesthesia have revolutionized both the science and art in the last decade by the production of apparatus for and methods of administrating anaesthetic agents that have made possible great advances in surgery.

–John J. Buettner
New York State Journal of Medicine 22:52, 1922

The operator would do well to possess a better knowledge of the entire subject of narcosis in order to understand that more intelligent assistance will be obtained if he acquiants the anaesthetist with all the outstanding factors of any one case, respects his opinion, and trusts him in the conduct of his own part of the work.

–Wesley Bourne
American College of Surgeons 14:31, 1930

Perhaps in no other branch of anaesthesia, with the possible exception of prenarcosis, did I meet with such divergence of opinion in different centers as in regards to spinal anesthesia. Drugs and methods which were lauded in one place were decried and condemned in the next.

–Gilbert Troup
The Medical Journal of Australia 2:857, 1935

The problem of lowering anesthetic death rates is primarily one for the anesthetist to solve. Complete cooperation should be guaranteed to the surgeon's colleague, the trained physician anesthetist, who by a wise selection of drugs and methods, works toward the common end of saving the lives of those who submit to operation.

–Edward M. Livingston
American Journal of Surgery 19:67, 1933

In cases of acute peritonitis the turning of the patient in order to induce spinal anesthesia may spread the infection. Therefore, local anesthesia combined with nitrous oxide analgesia or ethylene should be used for the slightest operation required to establish drainage.

–George Crile
Surgical Clinics of North America 16:1037, 1936

To the nurse, anaesthesia will prove a stepping-stone to something better than she had originally chosen, a higher and more dignified position, and will appeal in its own way to her ambition and pride.

–J. Montgomery Baldy
Surgery, Gynecology and Obstetrics 8:545, 1909

Let it be granted that the greatest single threat to the specialty of anesthesia is the possibility-the actuality in too many places- that the anesthetist will fail to participate in medicine as a whole, forgetting that he is first physician and second anesthetist.

–Henry K. Beecher
Journal of the American Medical Association 172:449, 1960

In spite of the marvelous progress which has been made in the science of medicine and surgery during recent years, anaesthesia remains an oppressive influence to operators and patients. Although anaesthesia was welcomed as a gift from heaven after centuries of pain, it was followed almost at once by cases of immediate death of young and apparently healthy persons, caused by the use of ether or chloroform.

–Jose de Mendonca
Surgery, Gynecology and Obstetrics 37:408, 1923

If anaesthesia is what we understand it to be, the most dangerous branch of therapeutics, the deliberate administration of drugs, which are calculated to produce unconsciousness, abolish reflexes, and if indiscreetly used, result in death, few will deny that the choice of the anaesthetic agent and method of administration is the exclusive right and duty of the physician.

–Paluel J. Flagg
The Art of Anaesthesia p. 340, 1944

Spinal anesthesia is dangerous. The literature is replete with reports of serious complications which follow what had seemed to be perfect technic of administration. Too often death steals in and takes the patient from under the anesthesiologist's hand. He is startled by the "suddenness" of the lethal outcome. Unfortunately, only his realization of disaster is sudden. In actuality the patient has been slipping away for some time, quietly, inconspicuously, without fuss or noise, before the anesthesiologist becomes "suddenly" aware of what is impending.

–Editorial
Anesthesiology 11:254, 1950

To many women the memory of the unrelieved pain of a first labour acts as a severe depressant as the prospect of a second approaching ordeal faces her, and forms an additional strain definitely prejudicial to the welfare of both mother and child.

–Editorial
The Canadian Medical Association Journal 23:564, 1930

It has been said, with an element of truth, that progress in surgery is dependent upon advances in the field of anaesthesia.

–J.P. Payne
British Journal of Anaesthesia 25:134, 1953

The dangers from anaesthesia lie with the anaesthetizer rather than with the anaesthetic. The teaching of anaesthesia should occupy a prominent position in the curriculum of every medical college.

–James E. Moore
Annals of Surgery 54:416, 1911

Unlike the surgeon's, the anaesthetist's demand for skilled assistance in the theatre has not yet apart from isolated progressive centres, been deemed reasonable by hospital authorities.

–William W. Mushin
Anaesthesia for the Poor Risk p. 46, 1948

However trivial the operation, no anesthetic should be given without having everything ready that may be required in an emergency. This includes instruments for tracheotomy, oxygen, normal saline solution, prepared and ready for instant use.

–James T. Gwathmey
New York State Journal of Medicine 5:254, 1905

Respiration Apparatus of Lavoisier

by Richard Foregger, M.D.
Milwaukee, Wisconsin

In 1790 Lavoisier and his assistant Armand Séguin began a series of experiments on human respiration. Lavoisier's previous experiments on respiration had utilized animals as the test subject. The experiments on man and the scene with the workers in Lavoisier's laboratory were illustrated by two paintings made by Madame Lavoisier. These two drawings should be of interest to science historians, respiratory physiologists and anesthesiologists for the experiments shown therein may represent the earliest quantitative respiration studies on human beings. Moreover although a complete description of the apparatus used in these experiments has not been found, the drawings provide clues to the design and construction of the apparatus.[1]

According to Graham Lusk respiration physiologist and nutrition expert (1866-1932)[2] the two drawings by Madame Lavoisier were made from memory after the death of Lavoisier. Marie Lavoisier[3] was an accomplished artist who had studied under the famous French painter Jacques-Louis David.[4] The drawings were published for the first time in Édouard Grimaux's biography, Lavoisier, in 1888. In both illustrations, (figs. 1and 2) Séguin the test subject[5] sits in a chair breathing through a mask into a series of globes or bell jars. In both pictures, Madame Lavoisier is shown seated at a table taking notes of the experiment. In both pictures the pulse is being counted. Otherwise the two picture are dissimilar. In one experiment a weight is placed on Séguin's instep. The arrangement of the apparatus is also quite different in the two pictures. It was the opinion of Graham Lusk[6] that in the experiment showing Séguin at work (fig. 2) it seems as though valves were indicated through which inspired air was received from the atmosphere, while the expired air was driven through a tube into a bell jar under water. In the experiment showing the subject at rest (fig. 1) respiration takes place through an oblong box or canister near the face mask and it is quite possible that this contained the absorbing agent for carbon dioxide. Lavoisier used caustic alkali to absorb carbon dioxide in the majority of his respiration experiments, He does not mention the use of valves. Anesthesiologists will recognize that the long breathing tube would have offered considerable resistance to breathing. There are other questionable construction details which have been described.[7,8,9]

Figure 1. Experiments on physiology of respiration with subject at rest. Lavoisier stands at center manipulating a pneumatic trough providing oxygen. Armand Séguin is the test subject at left breathing oxygen through the long tube and a face mask. Marie Lavoisier is shown keeping the record. From Édouard Grimaux, Lavoisier, 1888, facing p. 122.

Graham Lusk tells of his visit to the apartment of Monsieur de Chazelles, the great grandnephew of Madame Lavoisier, in Paris in 1920.[9] At that time the painting by David of Lavoisier and his wife hung in the apartment. This 23 ft. x 33 ft. portrait was acquired by Mr. John D. Rockefeller in 1925 and is now in the Metropolitan Museum of Art, New York. He also says, "In the adjoining study of Monsieur de Chazelles, hang the two drawings by Madame Lavoisier which were executed after the death of Lavoisier and retouched by David, who was her teacher. These drawings (two sepias, 36cm. x 22cm.) represent her recollection of the first respiration ex-

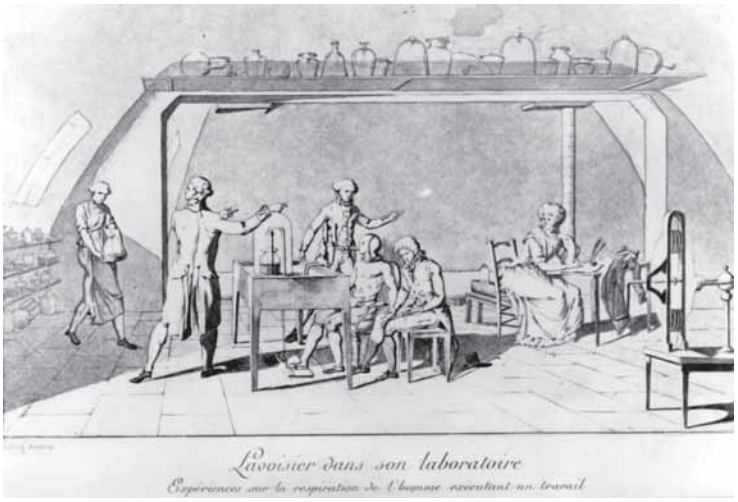

Figure 2. Experiments on physiology of respiration with subject performing work. The test subject, Armand Séguin is shown seated and working a foot treadle while breathing oxygen through a face mask. Lavoisier is shown to the left directing an assistant. Madame Lavoisier records the results. From Édouard Grimaux, Lavoisier, 1888. facing p. 128.

periments ever made on man." For a complete description and analysis of the work of Marie Lavoisier the reader is urged to consult the article by Mary Vidal.[3]

On a second trip in 1925,[10] Lusk visited at the summer home of Madame de Chazelles at the Chateau de la Canière, 6 km. from Aigueperse near Mount Puy-de-Dôme in the Department of Puy-de-Dôme, France. Lusk says that Monsieur de Chazelles has died since his visit in 1920 at more than 90 years of age. At that time Lusk was told that he was the first physiologist to see the collection of apparatus housed in the Château de la Canière, other visitors having been chemists or physicists.[11] Lusk relates that he, Professor Jean le Goff,[12] and Madame de Chazelles examined each bit of apparatus and compared the apparatus with the pictures drawn by Madame Lavoisier. He was particularly interested to find "the oblong box shown nearest the face mask in the second drawing of Madame Lavoisier (Grimaux p.128, fig. 2 herein) but a diligent search failed to reveal this particular oblong box."[13]

The surprise of Lusk's 1925 visit was the discovery of a face mask. The face mask was of copper and was fitted with two glass eyes similar to those used in diving bells. The mask continued so as to fully cover the nose. For some unknown reason the nose of the mask was perforated with holes. The edge of the mask was perforated for binding on to the head. Lusk believed that this mask was the device employed by Lavoisier in his respiration experiments on man and reported in 1790. He photographed the mask on this occasion and published the illustration.

Two masks used during the laboratory experiments of Lavoisier were exhibited at the exposition at Le Palais de La Découverte, November 1943 – January 1944, on the occasion of the second centennial of the birth of Lavoisier. There is a photograph of one of these masks in the catalog of the exposition[14] The two drawings of the respiration experiments were not included in the list of objects displayed at the exposition.

Although no complete description appears of the apparatus used by Lavoisier, the following short fragment published by Séguin in 1814, briefly describes the instrumental arrangement and establishes that carbon dioxide was absorbed by a chemical agent, caustic alkali, in some of the respiration experiment made on man. This would seem to follow readily from the knowledge that Lavoisier had usually employed caustic alkali for carbon dioxide absorption in the animal experiments. This does not preclude the possibility that a system employing valves to separate inspired air from expired air might also have been used. The two dissimilar drawings suggest that two different instrumental arrangements were used. More evidence is needed to resolve this question.

"J'ai employé dans ces nouvelles experiénces l'appareil dont nous nous étions servi, M. Lavoisier et moi, dans nos recherches sur la respiration." (I used in these new experiments the apparatus which Lavoisier and I had used in our experiments on respiration.)

"Je remplissais une grande cloche d'air atmosphérique, auquel je mêlais une quantité déterminée de fluide délétère; je me faisais ajuster la tête de cuivre; l'on me la collait sur le col avec de la poix, qu'on recouvrait de bandes de papier et de linge; je vissais sur l'ouverture de la calotte antérieure le tube communiquant avec la cloche, et, par ce moyen, je respirais l'air qui était à sa partie superiéure, et je faisais mon expiration à travers l'alcali caustique et l'on fassait passer dans la cloche, au fur et à mesure que son volume d'air diminuait des portions d'un semblable mélange, suffisantes pour entretenir toujours le même niveau.[15]

(I filled up a large bell-jar with atmospheric air to which I mixed a specific quantity of noxious gas: I adjusted the copper mask on my head, which was then pasted on my neck with glue and then covered with strips of paper and cloth; I screwed onto the opening of the anterior joint the tube communicating with the bell jar and by this means I breathed the air which was pure and I made my expiration through caustic alkali and then into the bell jar, and as the volume of air in the bell jar diminished portions of a similar mixture, sufficient to maintain the same concentration at all times were added.)*

Note that the author Séguin states, "I inhaled fresh air and expired through the caustic alkali," indicating that the gas flow on inspiration and expiration were in different directions. This would require unidirectional respiratory valves.

The article containing the above excerpt was read at the Académie Royale des Sciences, 15 February 1792. A footnote states that a report on the memoire was made to the Académie on 7 March 1792, by Laplace, Vicq d'Azyr, and Leroy. If this report could be located it is possible that it might contain information on the instrumental arrangement used in the respiration experiments of Lavoisier. Lavoisier and Séguin have also briefly reported on the results of their respiration experiments to the Société Philomatique de Paris.[16,17]

The originals of the two drawings of the respiration experiments were photographed for reproduction in Grimaux's book in 1888, at which time photography had not developed to its present advanced state. Hence observations and conclusions in regard to these two drawings up to the present have been based on inspection of smaller reprints copied from Grimaux's reproduction with the exception of the analysis of the actual available apparatus by Lusk. Improved photographic reproductions of the original drawings now exist and the Academy of Sciences has nice color photographs of them.[18,19,20] The two original engravings are still held by the heirs of Madame Lavoisier.

**Translation by R. Foregger.*

Endnotes and References

1. The apparatus was not described in the preliminary reading of the Premier Mémoire sur la Respiration des Animaux on Nov 13, 1790, because Lavoisier had brought it along for the audience to see for themselves. See Frederic Holmes. Lavoisier and the Chemistry of Life. Univ. of Wisconsin Press, Madison, Wisconsin. 1985, page 444.

2. For biography of Graham Lusk see, Eugene Du Bois, Biographical Memoirs, National Academy of Sciences. 1940, p. 95-142, and Amos Light. Graham Lusk. *Yale Journal of Biology and Medicine* 1934; 6:487-506.

3. For life of Marie Lavoisier (1758-1836) see, Denis Duveen. Madame Lavoisier. *Chymia* 1953; 4:13-29. For the relationship between the Lavoisiers and the painter Jacques-Louis David including a discussion of Marie Lavoisier's artistic, scientific, social and translation skills see, the outstanding article by Mary Vidal, David Among the Moderns: Art, Science and the Lavoisiers. *Journal of the History of Ideas* 1995 Oct; 56(4):595-623.

4. Jacques-Louis David (1748-1825) is generally considered the leading figure of the artistic school called Neo-Classicism. For biography see, Dowd, David Lloyd. Pageant-Master of the Republic – Jacques-Louis David and the French Revolution, 1948.

5. Armand Séguin (1767-1835) who was the assistant in the respiration experiments, later was raised to collaborator and co-author in his work with Lavoisier. For analysis of this relationship see, Holmes, Frederic. Lavoisier and the Chemistry of Life. 1985. For biography of Séguin see Dictionary of Scientific Biography, 1970-1980 and Biographie Universelle, 1843-1865.

6. Lusk, Graham. Some Influences of French Science on Medicine. *Proceedings of the Institute of Medicine of Chicago* 1921; 3:98-117. Also in *JAMA* 1921 Jan 1;76:1-8.

7. Holmes, Frederic. Lavoisier and the Chemistry of Life. Univ. of Wisconsin Press. 1985. See pp. 443-446 and 546.

8. Donovan, Arthur. Antoine Lavoisier: Science, Administration, and Revolution. Blackwell, Oxford. 1993. See p. 278-280.

9. Poirier, Jean-Pierre. Lavoisier: Chemist, Biologist, Economist. Univ. of Pennsylvania Press, Philadelphia, 1996. See page 301-305.

10. Lusk, Graham. Mementoes of Lavoisier. *JAMA* 1925 Oct 17; 85(16):1246-1247.

11. See Truchot, Pierre. Les Instruments de Lavoisier: Relation d'une visite à la Canière (Puy de Dome) où se trouvent réunis les appareils ayant servi

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History of Anaesthesia Society

ADVANCE NOTICE

Sixth International Symposium on the History of Anaesthesia
Queens' College Cambridge 15th to 18th September 2005

Substantial Cash Prize
(To be confirmed as the John Bullough Prize)

For all persons in training on 31st December 2004, there will be the opportunity to compete for the Trainee Prize at the Sixth International Symposium on the History of Anaesthesia. Essays on any topic in the history of anaesthesia will be accepted. This includes, but is not limited to anaesthesia, analgesia, pain medicine, critical care medicine, veterinary medicine. The best five papers will be presented before an international panel at the meeting, and the prize awarded, following adjudication. Papers deemed of sufficient merit, but not the final five, will also be offered the opportunity to present during the Symposium.

All papers and presentations are to be in English which will be the language of the Symposium. All papers must be received by Dr. Adams by 11th January 2005

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Studies of Narcosis: Charles Ernest Overton Introduction*

by Peter M. Winter, M.D.
Leonard L. Firestone, M.D.
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It is unnecessary to describe the horror of surgery prior to the demonstration of ether anaesthesia at Massachusetts General Hospital in 1846. It was clearly a nightmare for patients and must have been little better for the medical personnel involved in so terrifying an undertaking. What is less obvious is that the introduction of anaesthesia accomplished far more than the abolition of intraoperative pain. The solution of the problem of pain enabled the evolution of virtually all of modern surgical therapeutics. Prior to this development, the major characteristic of a technically brilliant surgeon was speed - the ability to do a below-the-knee amputation in less than a minute made or unmade reputations. Intra-cavitary surgery; operations in the chest, abdomen or skull were largly unthinkable and when attempted, commonly led to the death of the patient, not because of pain *per se*, but because the surgeon had no time in which to think and take deliberate action.

So practical were the properties of anaesthetics, that their clinical use spread rapidly throughout the medical world without the least understanding of the mechanisms by which the agents worked. The drugs obviously produced unconsciousness and freedom from the perception of noxious stimuli. It was also desirable that they did so as rapidly as possible, and that such effects were completely reversible with few physiological side effects.

We would not dispute these requirements today. Within the context of then-current chemical knowledge, three agents appeared to fit all or some of this description. Diethyl ether, as used by Morton, became the standard for generations. Nitrous oxide provided all the correct attributes but one - sufficient potency to cause unconsciousness and surgical anaesthesia. Chloroform also provided the requisite analgesia and unconsciousness and was used for decades, despite its potentially lethal side effects.

The early lack of understanding and, indeed, concern about anaesthetic mechanisms of action should not be too surprising. Very few of the drugs then in use were understood in any detail. Drugs were found largely by trial and error in animals and humans. That they worked and were relatively safe was all that was required.

In the context of this pragmatic medical world, Ernest Overton was a fascinating exception. Bom in Cheshire, England, in 1865, Overton was a distant relative of Charles Darwin. His maternal grandfather, Reverend W. Darwin Fox was an entomologist, second cousin and close friend of Darwin. With his family, Overton moved to Switzerland at the age of seventeen and there completed his education. He received a PhD in Botany in 1899 from the University of Zurich having worked primarily with Professor Arnold Dodet. In 1907 he accepted the Chair in Pharmacology at the University of Lund, where he was to stay for the rest of his career.

Ernest Overton is primarily known in modem anaesthesiology for what has been called the Meyer-Overton rule of anaesthesia (Fig. 2.1), work which he published in 1899 and which was independently developed and published by Professor H.H. Meyer. This remarkably durable but mechanistically unerdightening correlation relates the potency of an anaesthetic to its

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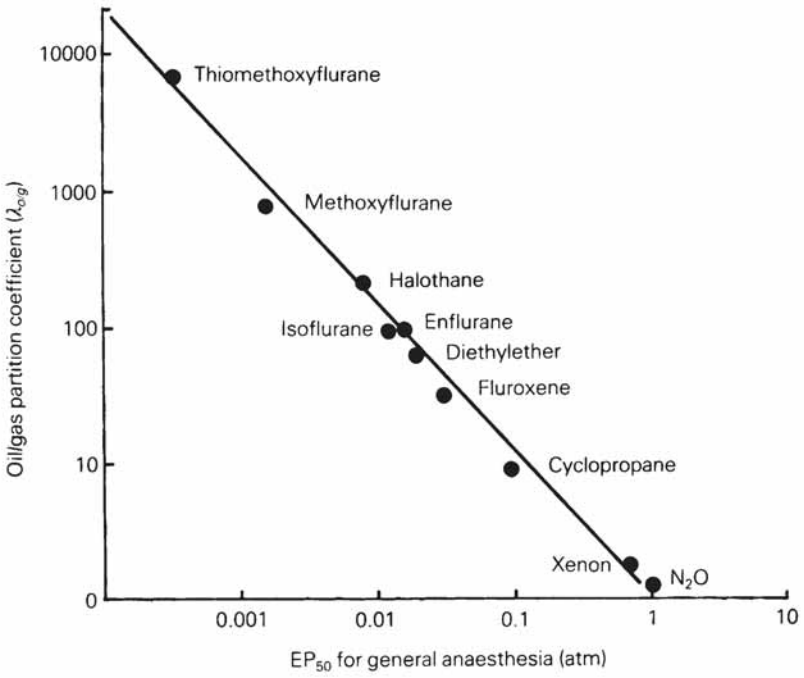

Fig. 2.1 *The Meyer-Overton rule of anaesthesia. A logarithmic plot of EP_{50} versus . is represented for structurally heterogeneous general anaesthetics. (EP_{50} is the median effective partial pressure in man which inhibits movement in response to a surgical stimulus and $\lambda_{o/g}$ is the oil/gas partition coefficient). A free, least squares fit of the data reveals a close correlation between the variables: the straight line has a slope of -1.07 ± 0.04 and a correlation coefficient (r) of -0.996. The EP_{50} for thiomethoxyflurane, a toxic volatile anaesthetic not in clinical use, was determined in dogs. The oil/gas partition coefficient ($\lambda_{o/g}$) is: litres of 'gas (expressed at 1 atm and 37°C) dissolved in 1 litre of solvent when the partial pressure of the gas above it is 1 atm. Determinations were in either olive oil or octanol, whose drug absorption properties are similar to those of the lipids in biological membranes. Sources for all values are compiled in reference 2.*

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Overton. . .

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solubility in lipid. The result gives an astonishingly close correlation over a wide potency range (three orders of magnitude for the data illustrated). The most potent inhalation anaesthetic known today, thiomethoxyflurane, has an oil/gas partition coefficient of 7230 and a MAC (minimum alveolar concentration, a measure of anaesthetic potency) of 0.035% atmospheres. The relatively impotent anaesthetic N_2O has a MAC of 1.05 atmospheres. Even noble gases not usually thought of as anaesthetics, such as nitrogen and hydrogen; have an effect predicted by their lipid solubility. Being relatively lipid insoluble, many atmospheres of these gases are required to produce obtundation. Thus, the lipid solubility-potency prediction for these gases must be corrected for the 'anti-anaesthetic' effect of increased pressure [1]. Once this is taken into account, however, the predictions become accurate. The anaesthetic potency for nitrogen has been measured to be about 40 atmospheres in mammals [2]. Sub-anaesthetic concentrations are the cause of the 'nitrogen narcosis' experienced by divers breathing compressed air. The anaesthetic effect of nitrogen is the depth-limiting factor in the use of air as a diving breathing mixture. At greater depths, helium and oxygen mixtures are used because the lipid solubility of helium is so low that it does not cause narcosis at any realistic depth. Based on the same calculation, even the nitrogen in air at atmospheric pressure may be shown to possess a depressant effect [3].

Overton's original interest was not in anaesthetics *per se*, but rather in cell permeability. Stemming from an interest in mechanisms of heredity, he was concerned with substances capable of rapid penetration of living cells. It must be remembered that in the biology of Overton's times, little was known of cell membranes or of their composition. Yet they seemed to allow living cells to resolve an apparently conflicting set of require- ments, differentiating self from environment, while at the same time, permitting rapid, simultaneous exchange of nutrients and wastes with the environment.

Indeed, it can be said that Overton's interest in anaesthetics originated when he determined that these agents could be used as probes, or markers, in his studies of cellular physiology: 'Narcosis phenomena are not only of enormous interest to the student of pharmacology but are also fundamental to biology in general and especially to cell physiology' (p. 26). This tradition continued into modern times with Ferguson's investigations of the bacterial actions of anaesthetic alcohols [41, and still flourishes today in the multidisciplinary neurosciences.

Although Overton was not the first to concern himself with and study the mechanisms of anaesthetic action, he was probably the first to quantify and compare their potencies. As stated in the *Studien* '... it is much more practical to use as a measure of the relative narcotic strength the lowest partial pressure of the various anaesthetics that are sufficient to produce narcosis' (p. 46). He asserts further that this measure is more important than the ratios of the amounts of anaestheties that must be mixed with air in order to achieve narcosis: 'Of primary importance is the concentration of the anaesthetic in the blood plasma, in the intercellular lymph and in the fluid surrounding the ganglia cells' (p. 46). Overton was also an able chemist and understood lucidly the concept of distribution coefficients and described their determination. And, he was among the first to use quantitative dose-response curves in biology.

In this monograph, Overton elegantly reviews the state, at the end of the nineteenth century, of thought about anaesthetic mechanisms. Claude Bernard, one of the most original and insightful scientists of his time, thought that anaesthetics acted by partial and reversible coagulation of cell protoplasm. Overton also refers to the hypothesis generated in 1847 by Bibra and Harless, who described the abilities of various anaesthetics to dissolve fats. They believed that anaesthetics worked by dissolving fat out of the brain and increasing it in the liver. Overton politely calls this 'a chance occurrence in the analytical results' (p. 68) and asserts that the reversibility of anaesthetics proves that the hypothesis cannot be correct.

He goes on to say, with astonishing insight, 'It is also very probable that the nonspecific narcotics exert their effect principally on the cholesterol and lecithin-related constituents of the cells, but not in the way visualized by Bibra and Harless. These compounds probably change the normal physical state of these cell constituents without causing them to be removed from the cells' (p. 70).

As readers of his work will learn, Overton, in the pursuit of his hypothesis of anaesthetic mechanisms, anticipated many clinical concepts later described more formally. He understood that opiates and inhalation anaesthetics were different classes of drugs, and referred to the former as 'basic narcotics' and the latter as 'nonspecific narcotics'. Overton's idea to employ a combination of opiates and gaseous anaesthetics to induce clinical anaesthesia represents a technique that is now routinely applied. This procedure is referred to as 'balanced anaesthesia' by contemporary clinical anaesthesiologists. He discussed the additivity of inhalation anaesthetics when considering drugs with a lethal dose below their anaesthetic dose, using additivity with drugs of known potency to derive the anaesthetic dose of the toxic substance.

He also understood something of the uptake and distribution of inhalation agents. Part of the appeal of using inhalation anaesthetics when studying drug effects, is the ability, after equilibration, to maintain a constant brain concentration of the agent, independent of metabolism and redistribution. Overton was aware of the importance of such control, and recognized that it could be achieved in aquatic animals by dissolving known concentrations of an agent in the aquarium water. Because of this, he found tadpoles to be useful experimental animals, and, indeed, his reasoning is still embraced by current investigators.

In his talk to The Leopoldina commemorating the one,hundredth anniversary of the birth of Overton, Paul Runar Collander said, 'Like Darwin, Overton had a striking intuitive ability to recognize the great fundamental problems and to see how they should be solved [5]. With training in botany, not medicine, he was freed of the pragmatic concerns of practitioners and pursued interests which have given us unique insights into one of the great riddles in medical science. Overton's work elegantly pointed subsequent investigation to a lipophihc site of action, and was such a conceptual leap, it has been asserted that little more progress has been made since his death in 1933. Indeed, the unyielding nature of this problem serves to strengthen our appreciation of the ,careful logic' [41 of the remarkable early observations contained in this volume. And for facilitating this appreciation, the anaesthesia world owes much to Dr Lipnick.

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From the Literature

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Note: In general, I have not examined articles that do not include a notation for the number of references, illustrations, etc. I do examine most books and book chapters. Books can be listed in this column more than once as new reviews appear. Older articles are included as I work through a large backlog of materials. Some listings are not directly related to anesthesia, pain or critical care but concern individuals important in the history of the specialty [i.e., Harvey Cushing or William Halsted]. I also include career profiles of living individuals. Non-English articles are so indicated. Columns for the past several years are available in the "Anesthesia History Files" at http://www.anes.uab.edu/aneshist/aneshist.htm as "Recent Articles on Anesthesia History." I urge readers to send me any citations, especially those not in English, that I may otherwise miss!—A.J. Wright ajwright@uab.edu

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The Book Corner

by Peter McDermott, M.D., Ph.D.

The Lunar Men: Five Friends Whose Curiosity Changed the World. By Jenny Uglow. New York: Farrar, Straus and Giroux, 2002. Pp. Xx + 588. $30.00 cloth.

The five friends in question are Erasmus Darwin, Matthew Boulton, James Watt, Josiah Wedgwood, and Joseph Priestley. They form the core of Uglow's dozen 18th century scientists who occupy that interval between the Scientific revolution of the 17th century and the 19th century's development of the sciences of biochemistry, pharmacology, and physiology.[1] Never one to shy away from a generalization, I suggest that 17th century science was marked by a changed way of looking at the world. It was driven by an ideological shift based upon mathematics, mechanics, and new observations made possible by lens technology. Its principal battles were with the tyrannies of the past – the errors imbedded in received wisdom and the systematic strictures of philosophy and religion. In many ways the 18th century was present-centered. It weighed, measured, and classified nature. After John Locke, empiricism, toleration, and skepticism became the predominant qualities of scientific and rational discourse. The certainties of Christian dogmas and confidence in a providentially guided universe were replaced in large part by rationally defensible opinions and probabilities. That is to say, *evidence* rather than *fact* became the foundation of the sciences.

The 18th century saw the application of mechanical principles to artisanal processes and technology at an accelerated pace. Uglow has captured the energy and optimism of the Enlightenment, the Industrial Revolution, and the application of practical knowledge in scientific investigations and in medical research. Art and science were not separate, nor were politics and industry. The transformation of science and society in the 18th century and several of the men responsible for building the factories and filling the museums, fueling a consumer society and fashioning an empire, and trumpeting "Progress," are brought to life. As she says:

This book smells of sweat and chemicals and oil, and resounds to the thud of pistons, the tick of clocks, the clinking of cash, the blasts of furnaces and the wheeze and snort of engines but it also speaks of bodies, courtships, children, paintings and poetry.

She makes a powerful case for paying closer attention to these men and to the ways in which they contributed to the formation of the modern world. They were transitional figures in a transitional age, deists and materialists, convinced that nature would cough up its secrets and that man would be the beneficiary. The Lunar Society of Birmingham, as they were known, met each month on the Monday closest to the full moon (the easier to find their way home at night) to talk, argue, drink, and laugh and to try out new ideas on one another. Although this fabric of multiple biographies is generally affectionate, Uglow reveals the personal weaknesses of her subjects and does not shrink from describing the unintended consequences of progress. Probably because she is an editor, not a historian, her style is lively and lucid. A highly recommended book.

[1] *The word "biology" was coined in the 19th century.*

Lavoisier. . .

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à Lavoisier. *Annales de Chemie et de Physique* 1879; 18:289-319 and Daumas, Maurice. Les Appareils d'expérimentation de Lavoisier. *Chymia* 1950; 3:45-62. Neither of these articles describe or discuss the apparatus used in the respiration experiments on man. Truchot identifies the owner of the Chateau and the equipment as Éttienne de Chazelles.

12. Professor Jean M. Le Goff (1864-). I have been unable to further identify this individual.

13. I do not observe an oblong box near the face mask in the second drawing of Madame Lavoisier (Grimaux p. 128, fig. 2 herein) as described by Lusk. This may be because he was describing the original larger sized painting which would probably reveal more detail.

14. Exposition à l'occasion du deuxième Centenaire de Lavoisier. Le Palais de la Découverte, Nov 1943-Jan 1944, Univ de Paris.

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This Month in Anesthesia History*

1578 April 1: William Harvey, the English physician who first described blood circulation, is born.

1760 April 13: Thomas Beddoes is born. In the late 1780s Dr. Beddoes began attempts to implement Joseph Priestley's idea for the therapeutic applications of "factitious airs" or gases. By 1798 Beddoes had established the Pneumatic Institute in Bristol, England, and hired the teenager Humphry Davy as Research Director. Their experiments with nitrous oxide began the following year. Beddoes authored the classic Observations on the Nature of Demonstrative Evidence [1793] and numerous other works.

1770 April 7: English poet William Wordsworth is born. In 1799 Wordsworth, when both were living in Bristol, asked Humphry Davy to read and suggest revisions to the manuscript for the second edition of *Lyrical Ballads*, the classic collection of poetry by Wordsworth and Samuel Taylor Coleridge. During this period Davy and Thomas Beddoes were engaged in their studies of nitrous oxide and other gases. Wordsworth later became Poet Laureate and authored *The Prelude* among many other poems.

1807 April 18: British physician and writer Dr. Erasmus Darwin dies. The grandfather of Charles Darwin, Erasmus was a member of the famed Lunar Society of scientists and industrialists who provided financial and other support to Dr. Thomas Beddoes' investigations of the medical uses of gases in the 1790s. Darwin was a prolific author on medical and scientific subjects and developed a theory of evolution decades before Charles.

1829 April 12: Dr. Jules Cloquet amputates a breast from a woman asleep under hypnosis.

1830 April 5: Henry Hill Hickman dies. Six years earlier Hickman had attempted anesthesia in a series of experiments on animals using carbon dioxide gas. Scientists in both France and England [including Humphry Davy!] failed to recognize Hickman's achievement. "Nevertheless, he deserves the credit of having been the first of the modern investigators to prove by experimentation on animals that the pain of surgical operation could be abolished by the inhalation of a gas." [Keys TE. The History of Surgical Anesthesia. Krieger, 1978, p.19].

1847 April 7: Physician/dentist Nathan Cooley Keep administers the first obstetric anesthetic in the United States. The patient was Fanny Longfellow, wife of poet Henry Wadsworth Longfellow. Under ether anesthesia, Fanny did not lose consciousness but felt no pain during the birth of her daughter.

1852 April 29: First edition of Peter Mark Roget's famous thesaurus is published in 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 Encyclopedia Britannica entry on Beddoes and near the end of his life created the thesaurus for which he is so well known. Roget also invented the slide rule and the pocket chessboard and did research on vision physiology later used as the basis for motion pictures.

1853 April 7: Dr. John Snow chloroforms Queen Victoria for the birth of Prince Leopold. This event removed much of the stigma then associated with pain relief in childbirth in Great Britain.

1856 April 12: Dr. Marshall Hall [1790-1857] describes artificial respiration in *The Lancet*.

1869 April 8: The great neurosurgeon Harvey William Cushing is born in Cleveland, Ohio. In 1894 Cushing and his fellow "house pup" at the Massachusetts General Hospital, E.A. Codman, developed the first anesthesia record.

1871 April 16: John Millington Synge, Irish dramatist and poet [Riders to the Sea] is born. In 1916 Synge published a fascinating account of his experiences under ether anesthesia: "I seemed to traverse whole epochs of desolation and bliss. All secrets were open before me...." {*Interstate Medical Journal* 23:45-49, 1916}. Synge's account is part of a large body of literature related to anesthesia and mystical experiences.

1887 April 27: George Thomas Morton, son of William T.G. Morton, performs first appendectomy.

1898 April: Henry Hillard describes induction of nitrous oxide anesthesia with face mask and maintenance of anesthesia with nasopharyngeal insufflation.

1923 April 7: First brain tumor operation under local anesthesia performed by Dr. K. Winfield Ney at Beth Israel Hospital in New York City.

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

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