



# BULLETIN OF ANESTHESIA HISTORY



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## C.T. Jackson's 30 November 1845 Letter to J.-B.A.L.L. Élie de Beaumont: "What a Beautiful Exemplification of Chemical Laws...!"

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One of the leading claimants to the discovery of general anesthesia was Harvard professor Charles Thomas Jackson, M.D. (1805-1880; see Fig. 1). A remarkable geologist, chemist and physician, Jackson prompted W.T.G. Morton's choice of ether for surgical anesthesia at the dentist's famous public demonstration in Boston on 16 October 1846. Although Morton and Jackson would co-patent use of ether anesthesia, the two would quickly turn on each other.<sup>1</sup>

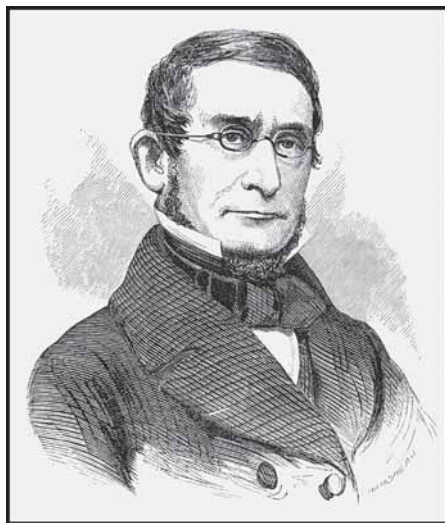


Fig. 1. Charles Thomas Jackson (1805-1880) as portrayed in the 27 June 1857 issue of Ballou's Pictorial Drawing-Room Companion.

In 1805, Charles Thomas Jackson was born to an affluent, patrician family in Plymouth, Massachusetts. Orphaned by 13 years of age, a teenaged Jackson placated his guardian, a brother-in-law, by studying Latin and Greek. He tutored under a nearby classicist and then boarded at neighboring Lancaster Academy. As a preparatory school for Harvard, Lancaster versed Jackson in classical studies while affording him an education, on the side, in mathematics and natural philosophy. The last pursuit blended chemistry and physics in a foundation that Jackson applied towards earth sciences like geology and mineralogy.<sup>2</sup> Before and during his medical studies at Harvard, Jackson spent his summers collecting rocks and mineral specimens in New England and Nova Scotia. Indeed, Jackson's summers exploring the latter's copper-bearing traprock prepared the budding geologist for surveying similar formations in Michigan that he would report in the letter transcribed below.

From 1829-32, while officially engaged in postgraduate medical studies abroad, Jackson surreptitiously began attending lectures and summer sessions at Paris' *École des Mines*. He cultivated a cordial professional relationship at France's "School of Mines" with its celebrated professor of geology, Jean-Baptiste Armand Louis Léonce Élie de Beaumont (1798-1874). Inspired by Élie de Beaumont's ongoing survey of France's geology, Jackson spent 1835-43 mapping the geology of Maine, Rhode Is-

land, and New Hampshire.

Written nearly a year before Morton's public demonstration of surgical anesthesia, Jackson's 30 November 1845 letter to Élie de Beaumont offers a glimpse into the first 16 years during which Jackson and he had communicated professionally. Élie de Beaumont geologically surveyed France; Jackson, much of New England and, by 1847, parts of northern Michigan.<sup>3,4,5</sup> To his American colleague, Élie de Beaumont had just shipped the first volume of the Parisian's *Leçons de Géologie pratique*, his newly published 1843-44 lecture series.<sup>6</sup> Jackson's letter below reciprocates with his own excitement over the "beautiful exemplification of chemical laws" demonstrated by the copper-rich lands of Michigan. Soon exploiting his friendship with Élie de Beaumont (the future secretary of France's *Académie des sciences*), Jackson would present his priority claims over W.T.G. Morton as the discoverer of anesthesia. Note that Jackson's future preoccupation with the Ether Controversy would contribute to his eventual firing as the lead geologist in the Lake Superior surveys. This humiliation would haunt Jackson professionally.

Provenance of this letter is limited. As one of a collection of missives sent to Élie de Beaumont, this 30 November 1845 letter was acquired in December of 2005 at auction in Paris by David H. Lowenherz,

Continued on Page 4

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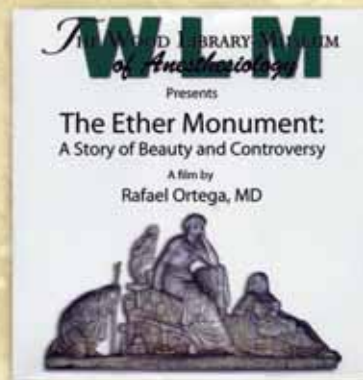
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# Professionalism in Action: Gilbert E. Kinyon, M.D.

By Doris K. Cope, M.D.

Editor-in-Chief, *Bulletin of Anesthesia History*  
Professor and Vice Chairman for Pain Medicine  
Department of Anesthesiology  
University of Pittsburgh School of Medicine

On February 27, 2010, I was honored to attend the memorial service of one of our finest, Dr. Gilbert E. Kinyon, in his home parish in San Diego, California. I remember him and his gracious wife Mary from long term professional association, but only in his passing did I comprehend the extent of his professionalism.



Photograph courtesy of the Wood-Library  
Museum of Anesthesiology, Park Ridge, IL

A good definition of professionalism is "the continued pursuit of excellence in a body of knowledge through education and practice, with a duty and a responsibility to serve individuals and society."<sup>1</sup>

Gil was unselfish in his service beginning at a young age when he demonstrated heroism over and beyond the call of duty, earning three Purple Hearts and two Bronze Stars in WWII. The stories told of his unselfish actions in war and peace clearly place him right at the heart of our greatest generation. A female anesthesiologist who he trained decades ago, paid a moving tribute to his personal kindness and willingness to take a change in the early 1960's in training then hiring a woman associate. His wife, Mary, men-

tioned that he often would give unsolicited funds, to financially struggling physicians from other countries and in death he endowed a professorship for his alma mater at the University of Iowa. His wife was quoted in the local press as saying "It was a joy to him, to be able to help."

Let his life be a candle to light the way for those of us to follow now and in the future. May we always remember that our profession, medicine, and our specialty: anesthesiology, critical care, and pain medicine, are a joy, when we are also "able to help."

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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 (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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## Jackson. . . *Continued from Page 1*

president of Lion Heart Autographs, Inc., of New York. After authentication by that Manhattan firm, the letter was curatorially purchased in December of 2006 after the author contacted Pres. Lowenherz privately on behalf of the Wood Library-Museum of Anesthesiology.

*Transcribed below is the first letter of an unpublished series of Jackson missives to Élie de Beaumont that the Wood Library-Museum of Anesthesiology acquired in 2006. Strikethroughs and underscored superscripts and words are original to Jackson's letter. The*



*Fig. 2. A diagram featuring Keweenaw Peninsula and the copper-rich locations cited by C.T. Jackson in this letter to Élie de Beaumont.*

*transcription includes bracketed clarifications and other superscripts (as numbered references or lettered endnotes) as curatorial annotations.*

Boston Nov 30<sup>th</sup> 1845

Prof[esso]r L. Élie De Beaumont,  
My Dear Sir,

I received your polite letter of 23<sup>d</sup> August last on my return from Lake Superior last October. I am much obliged to you for the favourable notice you have made public concerning my labours both in the Geological Survey of New Hampshire & of the mineral regions of Lake Superior.<sup>5</sup> [See Fig. 2]

I now send you a copy of my Report on the mines of the last mentioned district and shall soon be able to send you a Second Report giving an account of the present condition of the mines.<sup>7,8,9</sup>

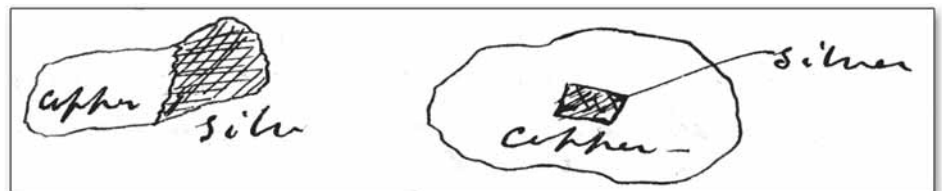
During the past summer I have been employed by the Lake Superior Copper Company to make mineralogical surveys and to give directions for the construction of mining & metallurgic works & have been eminently successful in my researches

& in other operations for the company.

There are now three shafts sunk in the copper lode in the Amygdaloidal trap<sup>A</sup> rocks and an adit level<sup>B</sup> has been sent in from the bend of the river's bank. All these works are in rich copper & silver bearing rocks and the amount of ore raised is now more than 800 tons. The ore yields on the average from 10 to 12 per cent of silver & copper by mere stamping & washing & the metals obtained consist of copper & silver the proportion of silver being from 13 to 75 lbs in 2000 lbs of copper. The value of the mine depends then mostly on the silver & a very large supply will be raised during the next year.

The silver is separated from the copper by roasting the latter metals and oxidizing the copper after which the oxide of copper is dissolved by dilute boiling sulphuric acid blue vitriol being formed while the silver remains unacted upon & is collected & melted into ingots. This is the method I employ in the assay of the ore & 20,000 grains of the washed metals yielded 470 grains of pure silver or 47 lb to the ton. I have also separated the metals by liquation<sup>C</sup> with lead & cupellation<sup>D</sup> of the lead. I analyzed also a great number of samples by means of nitric acid precipitating the silver as a chloride from the nitric solution.

I have sent you by the hands of Mr.



*Fig. 3. In this missive to Élie de Beaumont, C.T. Jackson illustrates "the singular segregation of fine silver from copper...."*

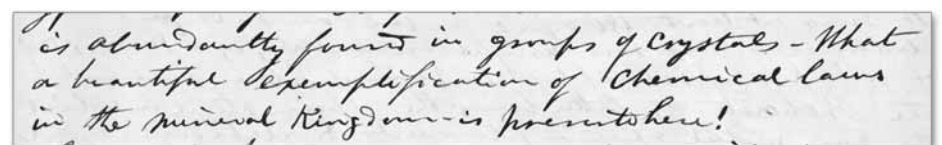
Whitney<sup>E</sup> who is on his way to Berlin two pieces of native copper & silver united together at the points of contact thus. [See Fig. 3]

These pieces show perfectly the singular segregation of fine silver from copper. A subject on which I formerly addressed you. I shall be very happy in furnishing you with large & handsome specimens of the metals in the rock but Mr. Whitney probably will not go to Paris directly & I

therefore shall avail myself of some other opportunity— the first that I hear of.

In the conglomerate rocks, (which belong to the New Red system<sup>F</sup> in all probability since the pebbles of slate in it contain impressions of ferns of the coal formation according to the observations of my friend Mr. J. Foster<sup>G</sup> of Ohio) occur large & regular veins of Calcareous spar<sup>H</sup> often 6 or 8 feet wide. These spar veins contain very large masses of native copper often regularly crystallized in octahedral & dodecahedral forms and large sheets of amorphous compact metallic copper. Some of these masses weigh 600 lbs each. The copper sometimes contains on the surface of the crystals particles & crystals of fine silver but the copper contains none of that metal alloyed with it. The walls of the Spar vein are encrusted very generally with Laumontite<sup>I</sup> formed I think by the action of the Spar on Sil[ica] & Al[umina] in the conglomerate. If a trap dyke crosses the vein then Analcime<sup>J</sup> is abundantly found in groups of crystals. What a beautiful exemplification of chemical laws in the mineral kingdom is presented here! [See Fig. 4]

In another place [Copper Harbour] we have a vein of silicate of copper Chrysocolla.<sup>K</sup> It is hydrous green silicate at its points of contact with the wall rock but black silicate in its middle. There we



*Fig. 4. C.T. Jackson's "beautiful exemplification of chemical laws" exclamation in this letter to Élie de Beaumont.*

see the effect of cooling the gelatinous silicate by the walls of the vein while its heated interior was filled with the Black silicate.<sup>9</sup> Where Calcareous spar was present compact black oxide of copper formed by precipitation of the deutoxide of copper<sup>L</sup> by action of hot lime water for the lime might have been originally caustic or calcined lime for lime water at a boiling heat throws down black oxide of copper.<sup>M</sup> Laumontite resulted from the combination of the silicæ

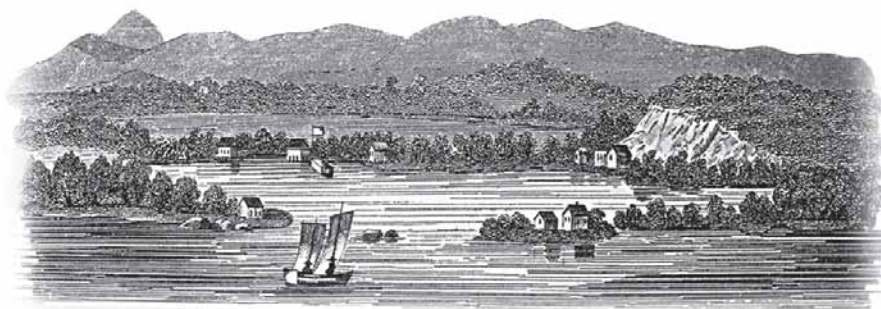


Fig. 5. "Birds Eye View of Copper Harbour" by "Ackermans Lith. N. York" as reproduced in C.T. Jackson's 1847 Report on the Geological and Mineralogical Survey of the Mineral Lands of...Michigan....

of the silicate of copper & the alumina of the wall rock with the lime and that mineral abounds in the vein. Analcime is also very abundant in that part of the vein nearest the trap rock which underlies the vein & enters into it in some places. The last mentioned locality is at Copper Harbour. [See Fig. 5] The one previously described is at Agate Harbour.

The most important and valuable copper & silver veins are on Eagle River. They are all in Amygdaloidal Trap rock & run N32°W S32°E while the Trap ranges through the red sandstone E.N.E W.S.W. The sandstones dip to the NW from 15° to 25° & most highly inclined next to the trap dykes. The copper & silver fill every crevice & all the cavities of the vesicular amygdaloid.<sup>N</sup> The vein is 11 feet wide & 6 feet of it contain silver. It runs at least 1800 feet for we can see it for that distance. It is now wrought extensively by a Mining Co<sup>z</sup> & will prove valuable. A vein of silver occurs in the Prehnite<sup>o</sup> the latter being the vein stone in which the pure metal exists in filaments & octahedral crystals.<sup>10</sup> A new vein of copper & silver was found the past season half a mile below the farther down the River & will soon be opened by the miners.

The French originally discovered this Great Lake & have so stamped upon its borders their language that it is the current language both of the French residents & of the Indians & the traders. Indeed the french [*sic*] tongue is the common language from the mouth of the St Laurence through the Great Lakes & down the Missipi [*sic*] River to its mouth. All the voyageurs<sup>p</sup> are Frenchmen.

Most respectfully & truly your friend & ob[edien]t serv[an]t  
C.T. Jackson

### Acknowledgments

The author is grateful for the assistance of autograph consultants David H. Lowenherz; Heather A. Wightman, M.A.; and Michel Sauvage. Graphics consultant William J. Lyle was also very helpful. In addition, the author thanks the staff of the Wood Library-Museum of Anesthesiology (American Society of Anesthesiologists, Park Ridge, Illinois): Archivist Felicia A. Reilly, M.A.L.S.; Library Assistant Margaret M. Jenkins; Assistant Librarian Teresa D. Jimenez, M.S.L.I.S.; Collections Supervisor Judith A. Robins, M.A.; Librarian Karen R. Biertman, M.L.I.S.; and P.M. Wood Distinguished Librarian Patrick P. Sim, M.L.S. All images are courtesy of the Wood Library-Museum of Anesthesiology.

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three minerals from Lake Superior. *Bost J Natur Hist* 1847 [Dec];5(4):486-489.

### Endnotes

A. Derived from *amygdala*, the Latin word for almond, "amygdaloid(al)" refers to distinctive basaltic lava flows in which trapped bubbles leave behind almond-shaped or rounded cavities into which minerals, such as Calcite, have been deposited over time. Derived from Swedish *trappa* ("stair"), a trap dyke is a thick igneous wall of rock that has filled fracture spaces along a geological fault.

B. An adit is a nearly horizontal entrance to a mine.

C. Liquefaction is a metallurgical process which causes a metal (which happens to liquefy more readily) to separate from a given mixture by heating.

D. Cupellation or "fire assaying" is the refining of silver or gold by heating metal mixtures to high temperatures in a cupel (a shallow little cup; usually a porous one of bone ash) and then blasting them with air to oxidize unwanted metals.

E. Josiah Dwight Whitney (1819-1896) was born in Northampton, Massachusetts and then Yale-educated before volunteering with Jackson on the geological survey of New Hampshire. After studying geology and chemistry for five years on the Continent, Whitney, along with Foster (*below*), assisted Jackson in 1847 in the geological survey of northern Michigan. From the 1850s to 1868, Whitney geologically surveyed Iowa, Illinois, Wisconsin, and then California. A geology professor at Harvard from 1865 *in absentia* and from 1874 in person, Whitney was honored by two namesakes: the continental United States' first glacier (Mt. Shasta's Whitney Glacier) and highest summit (Mt. Whitney).

F. The "New Red system" is Jackson's reference to layers of rock in North America which some geologists considered analogous to those publicized in Great Britain's geology, where "New Red" Sandstone beds overlay carboniferous beds which overlay even more ancient "Old Red" Sandstone.

G. John Wells Foster (1815-1873) was born in Brimfield, Massachusetts and educated at Connecticut's Wesleyan University before practicing law in Ohio. He began surveying Ohio geologically in 1837 and for coal in particular by 1844. After Whitney (*above*) and he began assisting Jackson in 1847 in geologically surveying lands bordering Lake Superior, the younger men finished the survey of Wisconsin and northern Michigan three years later, after Jackson's dismissal. In 1869 Foster would preside over the American Association for the Advancement of Science.

H. Defined by Jackson as "crystallized carbonate of lime," Calcareous Spar is Calcite formulated as CaCO<sub>3</sub>.

I. Jackson characterized Laumontite as "a mineral composed of silex, alumina, lime, and water" which "falls to fine powder on exposure to dry air." Later known as Laumontite, Laumontite is an efflorescent zeolite of hydrated calcium aluminosilicate formulated as CaAl<sub>2</sub>Si<sub>4</sub>O<sub>12</sub>·4H<sub>2</sub>O. Named in honor of French mineralogist Gillel de Laumont (1747-1834), this clear to pink-colored mineral dehydrates in air, as Jackson observed, to a white powder. Zeolites are molecular sieves which are familiar to the modern clinician for their use in oxygen concentrators and, in calcium-loaded forms, as hemostatic agents.

J. Formulated as Na<sub>2</sub>[Al<sub>2</sub>Si<sub>4</sub>O<sub>12</sub>].2H<sub>2</sub>O, Analcime is a mineral whose name is derived from *analkimos* ("forceless" in Greek). This etymology reflects the weak electrostatic charge which results from heating or rubbing this clear, white or gray triclinic zeolite.

## Jackson. . . *Continued from Page 5*

K. Chrysocolla is an orthorhombic green or blue-green copper silicate formulated as  $(\text{Cu,Al})_2\text{H}_2\text{Si}_2\text{O}_5(\text{OH})_4 \cdot n\text{H}_2\text{O}$ .

L. Also known as red copper oxide or cuprite, deutoxide of copper is cubic cuprous oxide formulated as  $\text{Cu}_2\text{O}$ .

M. Also known as Melaconite or Tenorite, the gray or black oxide of copper is monoclinic cupric oxide formulated as  $\text{CuO}$ . This oxide frequently contains traces of sulfur, iron, arsenic, and/or manganese.

N. "Vesicular" refers to amygdaloidal (*see above*) formations in which the rounded bubble cavities have remained empty and not been filled in by mineral deposits.

O. Prehnite is a clear, white, yellow, yellow-green or gray calcium aluminosilicate formulated as  $\text{Ca}_2\text{Si}_2\text{Al}_4\text{O}_{12}(\text{OH})_2$ . Prehnite was named after its Dutch discoverer, Col. Hendrik von Prehn (1733-1785).

P. Comprised guides, woodsmen, and boatmen, "voyageurs" transported materiel between stations of fur companies.

## The C. Ronald Stephen Resident Essay Contest

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. Additionally this contest offers residents and fellows the opportunity to present their paper at a national meeting and to publish the results of their research. The Resident Essay Contest is named for Dr. C. Ronald Stephen, an anesthesiologist, who was a revered teacher, researcher, clinician and anesthesia historian. Dr. Stephen died at age 90 in 2006.

The essays must be written in English and be approximately 3,000 to 5,000 words in length. Judging will be in two stages. In the first stage the finalists will be chosen. These finalists will be announced at the AHA dinner meeting during the American Society of Anesthesiologists annual meeting. From these finalists, the winners will be chosen on the basis of both content and delivery during the spring meeting of the AHA. All the finalists will present their papers in a session of the AHA attended by a panel of judges. The panel of judges will make their final decision based on originality, appropriateness of topic, quality of the research, and delivery. Because the final judging will be at the time of the presentation at the spring meeting of the AHA, all who enter must agree to attend the meeting at which the presentations are made. Essays must be submitted by the 10th of September 2010, in order to be eligible for presentation at the spring AHA meeting of the following calendar year. If not received by that date they will be considered for the next year's contest.

The first, second, and third place winners receive \$500 \$200 and \$100 respectively. Awards will be made during the AHA spring meeting. The three winners are required to submit their essays to the peer-reviewed Bulletin of Anesthesia History for possible publication.

To enter, essays should be sent to:

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 Professor, Department of Anesthesiology and Perioperative Medicine  
 Medical College of Georgia  
 1120 15th Street  
 Augusta, GA 30912  
 whammonds@mcg.edu

**Entries must be received on or before September 10, 2010.**

# P. Prithvi Raj, MD, FFARCS: Regional Anesthesia Pioneer

By Lakshmi Nair, M.D.

Resident in Anesthesiology

University of Texas Southwestern Medical Center  
and

Adolph Giesecke, M.D.

Emeritus Professor

Anesthesiology and Pain Management

University of Texas Southwestern Medical Center

*This article has been peer reviewed for publication in the July 2009 issue of the Bulletin of Anesthesia History.*

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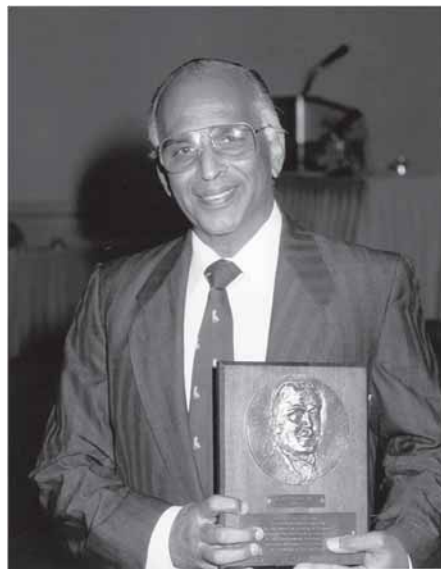
We gratefully acknowledge the permission and participation of Dr. Prithvi Raj and his wife Susan in providing essential material for this biography. We thank the staff of the Wood Library Museum of Anesthesiology for assistance with the references.

## Introduction

The name of Dr. Prithvi Raj is synonymous with regional anesthesia. His scientific studies in regional analgesia and pain management have placed dependable regional techniques into the armamentarium of every anesthesiologist and set standards in the field which endured for 25 years. He has been widely recognized for his pioneering work, winning prizes from many medical organizations. Most important was the Gaston Labat Award from ASRA (the American Society of Regional Anesthesia). His interesting and unpredictable career has led him all over the world. He has improved education and training by opening pain centers and creating fellowships all across the country. He has founded societies, which are dedicated to research and education in regional analgesia and pain management. The purpose of this paper is to describe some important aspects of his life and career, emphasizing those innovations which he produced while at the University of Texas Southwestern Medical School.

## Childhood and Education

Prithvi Raj demonstrated his independent spirit and strength of conviction as a child. He was born in 1931 and grew up in his mother's hometown of Bagri Sajjanpur, a small village approximately 100 miles west of Jaipur, Rajasthan, India. After World War II, his high school education was completed at Saint Alautious High School, in Madras, India. He wanted to be



*Figure 1. Dr. Raj receives the Gaston Labat Award from ASRA, 1990. Photograph is from Dr. Raj.*

an orthopedic surgeon although his father was opposed to the idea, thinking that business is a better career. He ran away from home to stay with his uncle in Madras, where he continued his education. His father realized his determination, accepted his ambitious plan, and enrolled him in Mysore Medical College.

Following his medical education and internship in India, Dr. Raj became a House officer at General Hospital in Ashton under Lyne, Manchester in 1958. In 1961 he became a registrar in orthopedic surgery in the same hospital and in 1962 he became an orthopedic registrar in Darlington Hospital, Darlington, England. Here he met and married his wife, Susan Martin, who was training as a nurse. Both were filled with the spirit of adventure, and decided to visit the United States for a few years. Raj entered a rotating internship at

St. Mary's Hospital, Waterbury, Connecticut, during which he learned the disappointing reality that his orthopedics training in England would not be recognized, and he would have to repeat his residency in the US. At this point, one of his former medical school classmates, Dr. Nagraj Rao, Assistant Professor at UTSWMS was recruiting residents in anesthesiology at Parkland Memorial Hospital in Dallas, Texas. Rao prompted Raj to consider anesthesiology. Believing that anesthesiology was a growing specialty with innumerable opportunities, Dr. Raj accepted a position from the charismatic chairman, Dr. Pepper Jenkins in 1963. Tragically, soon after, President John F. Kennedy was assassinated in Dallas. The enormous impact of this event affected Dr. Raj, and his family and friends tried to discourage him from



*Figure 2. This photograph of Prithvi Raj as a medical student was taken from his transcript from Mysore Medical College. Photo is from Dr. Raj.*

## Raj. . . *Continued from Page 7*

coming to Texas. Looking back, he was happy not to have acceded to their advice. He considers his period in Dallas to be one of the happiest in his life.

Dr. Raj recalls many fond memories during his time at UT Southwestern, and among the most precious was his association with Dr. Jenkins. He remembers being pleasantly surprised when Pepper Jenkins himself greeted Susan and him in the Emergency Department of Parkland Memorial Hospital when they arrived in Dallas. The Emergency Room door was close to the parking lot and the elevators to anesthesiology. Dr. Jenkins not only mentored him in the operating room, but also personally helped him open his bank account and was a co-signer for his car and apartment. Dr. Raj fondly states that Dr. Jenkins is the "prime reason my professional life really began." He recounts that



Figure 3. Susan Martin and Dr. Prithvi Raj were married in 1963 in Darlington, England. Photograph is from Dr. Raj.

his experience at Parkland as "unforgettable" and his training as "excellent and stood me in great stead wherever I have gone."

After two years of residency and a year of fellowship in Dallas, Raj had to leave the country for two years to be eligible to apply for a permanent resident visa. Dr. Jenkins suggested further post-graduate fellowship abroad during this period, and Raj chose to go to Norway, "Land of the Midnight Sun," for one year. He then returned to England as Senior Registrar in Anaesthetics at the University of Birmingham and passed the FFARCS examination. He was invited to return in 1969 as an Assistant Professor at UT Southwestern. He remained at UT Southwestern until 1974, when he was invited by Dr. Ron Katz to be

associate professor and vice chairman in the department of anesthesiology at UCLA and director of anesthesia at Wadsworth VA Hospital, Los Angeles.

### The Southwestern Years

During this period from 1969-1974, Raj's fertile mind explored many areas of interest. His research ranged from acute epiglottitis,<sup>1</sup> respiratory function tests, enzymatic drug metabolism,<sup>2</sup> and techniques for fiberoptic laryngoscopy<sup>3</sup> to mechanisms of intravenous regional anesthesia,<sup>4</sup> use of peripheral nerve stimulators for location of nerves,<sup>5</sup> infraclavicular block technique,<sup>6</sup> a new single-position supine approach to sciatic-femoral nerve blocks,<sup>7</sup> and the pharmacokinetics of repeated bolus versus infusion techniques for prolonged regional analgesia.<sup>8</sup>

The diverse experience was interesting but Raj knew that to be academically successful he must focus his efforts to a single topic. He felt the most satisfaction from his research involving regional anesthesia, and he decided to focus his attention and future research to this area.

In 1972, Raj published an article discussing the controversy surrounding the site of action of intravenous regional anesthesia.<sup>4</sup> Conventional wisdom held that the local anesthetic drug was transported via the venous-capillary network to the nerve endings where it had its effect. Nerve conduction studies, radiopaque dye studies, and radioisotope studies had been done in the past with conflicting results. In Raj's project, twenty healthy volunteers were used in a total of six experiments. Intravenous cannulas were placed in various sites (median cubital vein, dorsum of the hand, forearm), a double-cuff tourniquet was placed on the arm and inflated after exsanguination with an Esmarch bandage. Forty ml. of a 0.5% lidocaine-Renograffin-60 mixture was injected. Serial radiographs and clinical examinations of the entire arm were taken after each 10 ml. increment. The contrast material concentrated around the elbow irrespective of the site of injection. No contrast was seen distal to the proxi-

mal phalanges. Anesthesia developed in the tips of the fingers first and reached the elbow last. Nerve conduction studies in the final experiment were decreased above the block from the axilla to the hand and unaltered below from the elbow to the hand). Raj concluded that the anesthetic mixture traveled in the vascular channels of the main nerves around the elbow. Once in the core of the nerve, the anesthetic diffused outward toward the perineurium, thus explaining the development of anesthesia from the distal fingertips to the proximal forearm. His conclusion based on knowledge of nerve physiology in 1972 has only recently been called into question.

The "Guest Discussion" was provided by Dr. Burnell Brown of Tucson, Arizona. Dr. Brown quoted some studies that seemed to contradict Raj's conclusion. He returned to the 1908 theory of Dr. August Bier,<sup>9</sup> founder and namesake of the block, which states that the mechanism of action



Figure 4. Note the greater amount of contrast around the elbow despite its injection of contrast/anesthetic mixture into the dorsum of the hand. Figure is from *Anesthesia Analgesia*<sup>4</sup> with permission of the author and publisher.

occurs at both the nerve trunks and the nerve endings. In spite of Dr. Brown's doubts, Raj's conclusion that the action is on the main nerve trunks remains valid in 2008.

In 1973, Dr. Raj published an article which helped the anesthesiologist confirm the position of the needle and improve the success of the block.<sup>5</sup> This study evolved from an interesting patient encounter. He was confronted with a tetraplegic patient, for whom general anesthesia was not considered safe. The patient was to have an upper extremity surgery, but had signifi-

cant residual sensation in the area to be operated. Regional analgesia was indicated, but intravenous regional analgesia was not possible because the planned incision was too high in the arm. The patient had inadequate sensation for reliable paresthesia. Dr. Raj recounts that “a thought occurred to me at that time that one could stimulate a peripheral nerve below the site of the lesion of the spinal cord and elicit a function of the motor nerves, thus identifying the proper site for injection of the local anesthetic.” The neuromuscular blockade monitor was used with ordinary unshathed (un-insulated) needles. Dr. Raj induced movement in the hand confirming proximity to the median, ulnar, or radial nerves. He deposited local anesthetic solution and the surgery was completed successfully. This incident initiated his further studies concerning the electrophysiology of peripheral nerve stimulation.

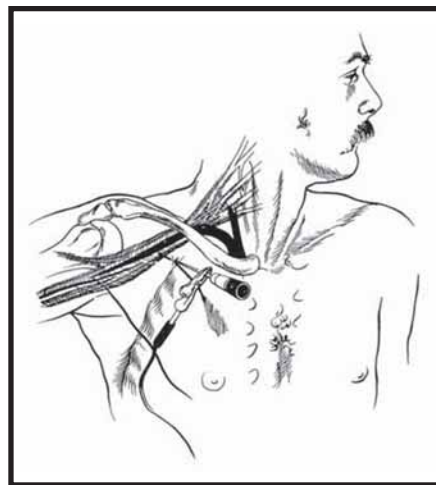
Dr. Raj believes that success of regional anesthesia depends upon accurate placement of local anesthetic solution in close proximity to the nerves. The simple and useful technique of stimulation for nerve localization improves the accuracy of needle placement. Dr. Raj noted that sheathed needles “can alter the feel of various tissue planes making accurate anatomic location more difficult.” Thus, the accuracy and simplicity of unshathed needles reduced the number of errors in performing the block. In his 1973 article,<sup>5</sup> Dr. Raj described this technique for an interscalene block. Initially, he confirmed that the density of a stimulating current leaving an unshielded hypodermic needle is greatest at the tip of the needle. Using this information and once the interscalene landmarks were identified, the ground electrode was attached to the opposite limb. The exploring electrode was connected to the hub of the needle via an alligator clamp. The voltage was adjusted and the stimulator was set to a twitch frequency of one pulse/second. The needle was slowly advanced while the arm and forearm were closely observed for muscle movements. Movements of the fingers confirmed that the tip of the needle was in proximity to nerve trunks. The needle was moved to find maximal contraction, and at this point, after negative aspiration, one to two milliliters of anesthetic solution was injected. A diminished muscle contraction confirmed optimal position and the remaining solution was injected. Without a doubt, the success rate of upper extremity block was increased by Dr. Raj’s technique and it was standard practice for 25 years. It has recently been replaced by an ultra-



*Figure 5. The peripheral nerve stimulator used with an electrode lead and alligator clamp for an interscalene block. Figure is reproduced from Anesthesia & Analgesia<sup>5</sup> with permission of editors and author.*

sound guided technique.

With the use of peripheral nerve stimulators for nerve location already described and in practice, Raj began a search for new ideas. The supraclavicular and axillary nerve blocks were most commonly used for upper extremity analgesia before the 1970s. Then Dr. Alon Winnie described the interscalene block and the modified supraclavicular block, which gained immediate acceptance due to the superficial anatomical relationship of the nerves. Raj realized that the entire infraclavicular region had been ignored. With stimulation to identify the nerves, Raj felt that a deep infraclavicular block was practical.<sup>6</sup> Since the brachial plexus was surrounded by a sheath, closely related to the subclavian and axillary arteries, no other vital organs were liable to be injured. He explains, that



*Figure 6. Infraclavicular approach to brachial plexus described by Dr. Raj. Note the needle is directed laterally into the axilla, away from the lung. Figure is reproduced from Anesthesia & Analgesia<sup>6</sup> with permission of the editors and author.*

“the lung was too far medial and protected by the rib cage, and if one abducted the arm, one could move the axillary space away from the chest and thus make it safer to block the brachial plexus. Directing the needle laterally from the site of entry also made it safer overall.” In spite of the advantages, this block has not achieved the popularity that it deserves.

Additionally, Raj described the supine approach to the sciatic-femoral nerve block to permit injured patients to remain in the comfortable supine position while both sciatic and femoral nerves are blocked.<sup>7</sup> With the use of nerve stimulators, the block has become practical although it is not in common practice today.

Dr. Raj’s research continued into the pharmacokinetics of continuous infusions (epidural, brachial plexus and peripheral nerves).<sup>8</sup> During his tenure in Dallas, Dr. Raj assumed responsibility for pain management for in-patients and out-patients. One particular patient, a terminally ill 35 year-old with cancer pain requested relief from her hip and lower extremity pain. Raj placed an epidural catheter and used bupivacaine in a single bolus. Her pain was relieved for approximately three and half hours, and with the second bolus, her pain was relieved for a subsequent two and half hours. Over the next twenty four hours, Dr. Raj gave several boluses with decreasing intervals of pain relief. This phenomenon has been described as tachyphylaxis. At this point, Dr. Raj connected the epidural catheter to a bottle containing 0.25% bupivacaine and opened it completely and found that the rate of flow after injecting a 10 ml. bolus would not exceed 10 ml. per hour due to the resistance of the catheter. At that time, pumps were not used in regional anesthesia, but subsequently both pressure-dependent and volume-dependent pumps were introduced to facilitate continuous infusion.<sup>10</sup> In 2008, continuous regional analgesia has become a common clinical practice. More than one drug is injected at any given time, and the injection is precisely monitored and computerized to give small fractions intermittently or continuously, depending on the patient’s necessity. Pharmacokinetically, a steady state is reached in five half-lives. Tachyphylaxis does not develop. Dr. Raj’s research directly contributed to this clinical advance in regional anesthesia.

#### **Career after Southwestern**

From 1974 on, Dr. Raj focused all of his efforts on regional anesthesia. His dedication to the field was resolute. He moved

*Continued on Page 10*

**Raj.** . . . *Continued from Page 9*

from Dallas to Los Angeles (1974-1976) where he was director of anesthesia at Wadsworth VA Hospital, then returned to Dallas in private pain practice. Raj was then invited by Dr. Phil Bridenbaugh, Chairman of Anesthesiology in Cincinnati, to start a new pain center (1979-1986). In Cincinnati, Dr. Raj started the first one year pain fellowship program and he wrote the First edition of *Practical Management of Pain*.<sup>11</sup>

Additionally, Dr. Raj proposed a new technique for splanchnic nerve blocks. Celiac plexus and splanchnic nerve blocks have been described since 1914.<sup>12</sup> These reports provide strong clinical evidence that neurolysis of the celiac plexus or splanchnic nerves is very effective for patients suffering from pancreatic cancer pain. The problem has always been the serious complication of paraplegia, secondary to injection of alcohol or phenol. Many attempts have been made by clinical researchers to



*Figure 7. Drs Alon P. Winnie and P. Prithvi Raj greet each other at a meeting of the ASA. The two with other colleagues re-established the American Society of Regional Anesthesia. Photo is from Dr Raj.*

find an alternative to alcohol or phenol ablation. Dr. Raj proposed radiofrequency ablation of splanchnic nerves as a safer alternative.<sup>13</sup>

He presented these significant contributions to regional anesthesia as exhibits at American Society of Anesthesiologists (ASA), New York Postgraduate Assembly, and other national meetings. During these meetings, he became close friends with Dr. Alon Winnie and discussed many times the paucity of publication of regional anesthesia in the major anesthesia journals. The two were collaborators along with many others to reestablish the American Society of Regional Anesthesia (ASRA) in 1975. The society had its origin in the 1920s



*Figure 8. ASRA Workshop took place in 1975. Photograph is from Dr. Raj.*

and was vigorous until World War II when it dissolved. Their goal was to promote regional anesthesia by publication of a journal, a yearly educational meeting, and live demonstrations and models. Dr. Raj became the President of ASRA from 1985 to 1987 and winner of the Labat Award in

1990. The award was named after Gaston Labat, a pioneer of regional anesthesia. He also won the ASRA Distinguished Service Award in 2005.

He was instrumental in the development of the Texas Pain Society (TPS) along with Drs. Gabor Racz and C. Stratton Hill and the World Institute of Pain (WIP). The missions of WIP are to promote practice of pain manage-

page and the reader sees the underlying vessels and nerves, and finally one can view the skeleton emphasizing the bony landmarks necessary to do the block.

In 1991, he moved to Atlanta to organize a pain clinic as a satellite of the Medical College of Georgia. He returned to University of California, Los Angeles from 1994-1996 to develop a pain fellowship program. In 1996, he was invited by his friend Dr. Gabor Racz, Chairman of Anesthesiology at Texas Tech University and Director of the International Pain Institute, to be Associate Director of the Pain Institute. Dr. Raj was in Lubbock from 1996 to 2003, when at the age of 72, he retired. All of the moves served to advance his academic career, and he never wavered from his commitment to improve the practice of regional anesthesia and the management of acute and chronic pain.

*Figure 9. Grand opening of the Pain Center at UTHSC, Houston was attended by Drs. PP Raj, Robert Merin, Philip Bromage, Gabor Racz and Michael Cousins. Photo is from Dr. Raj.*

ment all over the world, to standardize training of pain physicians, to hold international congresses, and to examine and certify physicians as Fellows of Interventional Pain Practice (FIPP).

In 1986, he joined Dr. Joseph Gabel, Chairman of Anesthesiology at the University of Texas Health Science Center in Houston, Texas, to start a pain fellowship program. While in Houston, he published his classic and beautifully illustrated text of regional analgesia (*Illustrated Manual of Regional Anesthesia*).<sup>14</sup> The reader sees the surface landmarks on a clear page, which when turned, reveal the anatomy of the muscles below the skin. Turn that



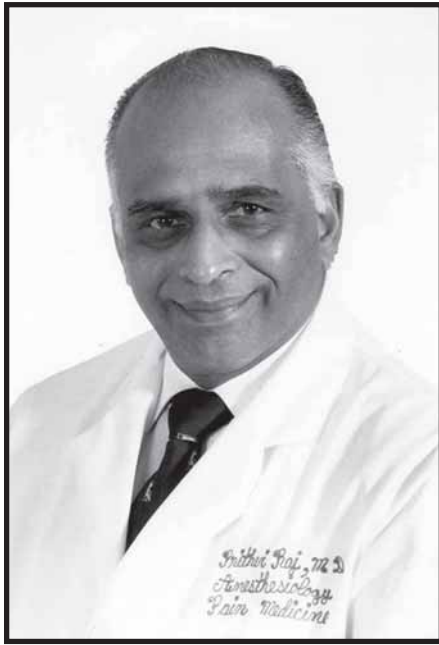


Figure 10. Dr. P Prithvi Raj became Professor Emeritus, Texas Tech University, Lubbock, Texas, in 2003. Photo is from Dr. Raj.

### Summary

At a time when regional anesthesia was a curious alternative, Dr. Raj developed techniques to improve the success of the blocks and make regional analgesia more acceptable to the average anesthesiologist. His abundant research and numerous articles, books, lectures and demonstrations on regional anesthesia and pain management have established him as a world leader in the field. He has described new blocks and new techniques of doing old blocks. He has described the mechanism of action of intravenous regional analgesia. He has improved education and training by opening pain centers across the country, each of which has offered pain fellowship opportunities. He has founded societies dedicated to research and education in regional analgesia and pain management. Regional anesthesia and pain management will forever be linked with the name of Dr. Prithvi Raj. University of Texas Southwestern Medical Center is proud to have been a part of his early development.

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# Pediatric Anesthesiologists Contributions to the Development of Pediatric Critical Care Medicine: A historical interview with Mark C. Rogers and the history of pediatric intensive care medicine at Johns Hopkins Hospital

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I visited Mark Rogers at his summer home on a private island on the Chesapeake just 30 minutes south of Baltimore last February for what is going to be a series of interviews about the history of pediatric anesthesia. Little did I know that my journey would take me through a glimpse of an era where pediatric critical care as we know it today did not exist. Imagine a time when spending 6 months in the operating room with pediatric patients meant that you were the most qualified pediatric anesthesiologist in the hospital. A period when radiology films were dipped by hand at midnight and a blood gas stat meant calling in an irate technician from home to run the test. This was a time well before the formal training that today's pediatric anesthesiology and PICU fellows face. This was the 1960s!

Many might know Mark Rogers for his leadership as the Chairman of the Department of Anesthesiology and Critical Care Medicine and the Director of the Pediatric Intensive Care Unit at Johns Hopkins in the 1980s. Perhaps, many own a copy of the Rogers' Textbook of Pediatric Intensive Care, "the bible" of pediatric critical care textbooks because of its comprehensiveness. Some might know of his contributions in developing critical care medicine abroad in countries such as Thailand or his efforts at creating World Congresses of Pediatric Intensive Care meetings. Even



few might know of this business career and of the multi-million dollar investment projects in cancer research in which he is currently involved.

**Christine Mai (CM):** Dr. Rogers, can you tell us a little bit about your background? Where was the hometown that you grew up in?

**Mark Rogers (MR):** I grew up in a small apartment in the Bronx. Neither of my parents went to college and both worked in a clothing store, but hoped for me to go to college. It was a classic case of parents aspiring for education as a path for their children to a better life. My parents looked at the life of my mother's brother, a physi-

cian. He was the first family member to get a higher education. They encouraged me from childhood to become a physician.

**CM:** What was it like to be a pediatric resident in the 1960s? What were your first intensive care unit experiences like?

**MR:** On August 1<sup>st</sup>, 1969, one month into my pediatric internship, I arrived for the newborn experience at what was then Boston Lying-In Hospital, the obstetric hospital at Harvard. In the 1960s, intensive care was rudimentary and limited to ventilators and intravenous fluids. It was a challenge to obtain ventilators that could adequately ventilate children. The only ventilator we had in 1969 was a Harvard ventilator that was used for experiments. Also, you could only get two blood gases a day. We were limited to one or two sets of blood gases for the entire nursery at night. You had to call a technician to come in from home to run the blood gas analysis and they were always not anxious to come in. At night, the radiologists would go home and shut down the automatic film developer. I would be responsible for "hand-dipping" x-rays and reading them myself. My first experiences were just terrible, absolutely terrible!

At the MGH, my anesthesia mentors were Drs. Richard Kitz, Myron Laver, and Ed Lowenstein. Dick Kitz had spoken to me about becoming a Chair even during my residency years. Neither of us knew that I would become Chair at Hopkins four years later.

For my PICU experience, Drs. Daniel Shannon and David Todres were very helpful mentors. My liberal arts education at Columbia allowed me to write creative manuscripts and convert our observations on patients into a series of papers which

we shared as authors. It worked out well for all of us.

**CM:** Why did you want to become a pediatric intensivist?

**MR:** During my training, I was exposed to people who were running coronary care units and surgical intensive care units. It was clear that there were beginnings of neonatal units; however, there was still much work to be done. As a clinical physiologist, I thought the work would be intellectually challenging. I enjoyed the business of caring for critically ill patients. As I began to formulate ultimately how I was going to train myself in intensive care it was clear that there was a mixture of things that didn't exist at the time.

**CM:** Such as?

**MR:** There was intensive care training in Neonatology, in Adult Coronary Care, even some in adult surgery and trauma. Yet, there was none in the intensive care of children. Likewise, in that era, pediatric pulmonary training was mostly about cystic fibrosis. Similarly, Pediatric Cardiology focused on diagnosing congenital heart disease, rather than on post-surgical support

and ventilation following surgery.

**CM:** How did you tailor your training to become a pediatric critical care intensivist?

**MR:** My original training was in pediatrics at MGH and Boston Children's Hospital, then pediatric cardiology at Duke under Dr. Madison Spach. I discovered that I was not so much interested in the cath labs as I was in caring for patients in the post-op period. I would go to the operating room for pediatric cardiology cases and it was common for the kids to die in surgery or in the post-operative period. I discovered that surgeons just wanted to operate and it was the interns who took care of the patients post-operatively. At Duke, at the time, it was the tradition that you could promote a medical student to become an intern -- early. So, you might have someone in his third or fourth month as a senior medical student who has never started an IV or calculated fluids caring for 2-3 lbs babies post-operatively. The degrees of precision associated with caring for children were so large that I began to see tremendous amount of



opportunities.

In order to become an intensivist, I was already trained in pediatrics and pediatric cardiology. I was not interested in pulmonology because at that time, pulmonary training meant cystic fibrosis. I wasn't interested in that. Therefore, I decided to become an anesthesiologist. When I went into anesthesia, it was truly unusual because anesthesia during that era was not a popular specialty. Many advised me not to go into anesthesia. I had academic credentials, published works as a medical student and they all told me I was crazy. That either meant I was crazy or really smart, and I thought I was really smart. So I went back to Mass. General Hospital and trained in anesthesia with Dr. Richard Kitz and then to Boston Children's Hospital with Dr. Robert Smith for pediatric anesthesia.

**CM:** What was it like to create a Pediatric Intensive Care Unit from the ground up?

**MR:** When we started the Pediatric Intensive Care Unit, there was great resistance. The surgeons wanted to be in charge of their patients even though they were always in the operating room. The pediatricians wanted to be in charge of their patients even though they were unavailable because they were in their offices. Given my personality, I was able to handle dealing with these issues of continuity of care. We had standards for documentation. The hospital standards propagated that faculty members had to be present to document the provided care. Therefore, residents and training staff had supervision because faculty members had to be present to document for billing purposes. Winning these battles allowed us to grow as a comprehensive training program.

#### Mark C. Rogers, M.D., M.B.A. Biographical Time Line

- 1942: Place of birth, New York, N.Y. Hometown: Bronx, N.Y.
- 1964: Bachelor of Arts degree from Columbia University
- 1969: Doctor of Medicine degree from Upstate Medical Center, State University of New York (Syracuse)
- 1968-1969: NIH research fellow in Cardiology in the Department of Medicine, Upstate Medical Center
- 1969-1970: Pediatric internship at Boston's Massachusetts General Hospital
- 1970-1971: Pediatric residency at Boston's Children's Hospital
- 1971-1973: Pediatric Cardiology fellow at Duke University Medical Center
- 1973-1975: Anesthesia residency at Boston's Massachusetts General Hospital
- 1973-1975: Clinical Fellow in Anesthesia and Pediatrics at Harvard Medical School
- 1975-1977: Major in the United States Army Medical Corps
- 1975-1977: Director of Newborn Service at Ireland Army Hospital in Fort Knox, Ky
- 1977: Assistant Professor of Anesthesia and Pediatrics at The Johns Hopkins University School of Medicine and the Director of Pediatric Intensive Care Unit at Johns Hopkins Hospital
- 1980: Professor, Division Chief in Pediatric Anesthesia, Chairman in the Department of Anesthesiology and Critical Care Medicine, Associate Dean for Clinical Practice
- 1987: First edition of Rogers' Textbook of Pediatric Intensive Care
- 1991: Master of Business Administration degree from The Wharton School of the University of Pennsylvania
- 1992: First World Congress of Pediatric Intensive Care meeting in Baltimore
- 1993: Vice Chancellor of Health Systems, Duke University Medical Center, and Executive Director and Chief Executive Officer, Duke University Hospital
- 1996: Senior Vice President of Corporate Development and Chief Technology Officer of The Perkin-Elmer Corporation
- 1997: President of Paramount Capital
- 1997: Founder, Officer, or Director of Genta Incorporated, Adherex Technologies Inc., PolaRx Biopharmaceuticals Inc., and Aptamera
- 2004: Chairman of the Boards of Director of Aptamera, Inc.
- 2007: Chairman and Chief Executive Officer with Bradmer Pharmaceuticals Inc., and Chairman of Cardiome Pharma Corporation

*Continued on Page 14*

**Rogers.** . . . *Continued from Page 13*

**CM:** What was your vision or model of how to structure a Pediatric Critical Care Unit?

**MR:** Because of my background, I had a vision for Pediatric Intensive Care, particularly the mold and path for it that was different from Jack Downes. Jack is a wonderful person, an anesthesiologist from Children's Hospital of Philadelphia who made great contributions. His interests were in postoperative care, primarily ventilatory and cardiopulmonary care. Like Jack, Al Conn, an anesthesiologist from Hospital for Sick Children in Toronto, Canada, was another great contributor to the specialty of Pediatric Intensive Care in North America. I was a pediatrician interested in a broader series of complex issues such as infectious disease, seizure disorder, and sepsis. The core of the field that was described by Jack Downes and Al Conn were cardiopulmonary support which was traditionally postoperative care. My own orientation was to describe a field which was a subspecialty of pediatrics in addition to being a subspecialty of anesthesia.

**CM:** How has pediatric critical care medicine changed from the 1960s to today?

**MR:** One or two major events that resulted in the acceptance of pediatric intensive care as a field of medicine involved neurologic intensive care. Issues such as head trauma associated-injuries and rapid transport to the hospital, the resuscitation of near-drowning victims and the recognition of neurologic deficits, Reye's Syndrome subsequently were thought but never proven to be related to aspirin, and the concept of intracranial pressure related cerebral blood flow all became very important. These were areas in medicine that had no antecedent groups of people capable of responding. The pediatric neurologist at that time was not used to doing this, the pediatric neurosurgeons could put in a bolt but could not stay around the intensive care units to give medications and monitor the patient during the next 36 hours. Therefore, mastering the management of intracranial pressure and therapeutic hypothermia, administration of barbiturates in the setting of head trauma, Reye's syndrome, near-drowning, related conditions post-hypoxia, and being able to manage these entities were the "art forms" that began to separate pediatric

critical care medicine from its roots of cardiopulmonary disease. That resulted in a multitude of research opportunities, which led to discussions, networks and ultimately, the first World Congress supported by Johns Hopkins and held at the Marriott in downtown Baltimore in 1992. People with an interest in pediatric intensive care from around the world, including Moscow and South America were present, which helped solidified the beginning of the World Congress of Pediatric Intensive Care meetings.

**CM:** Where do you see the future of pediatric critical care medicine going? What words of advice do you have for future physicians training in this field?

**MR:** From my perspective, what happened to pediatric intensive care, where is it presently, and where is it likely to go... There is a curve that I have in my mind of rapid differentiation, followed by a short upward curve, followed by a plateau, followed by a dash line that goes up which you may or may not get to again. I think that pediatric intensive care is on a plateau with slightly upward slope, in which the major breakthroughs that we aspired to 20-30 years ago have not come to fruition. We had gotten better at mastering technology. Much improvement has been made to make diagnoses earlier, to treat with newer antibiotics, to provide oxygen support through various ways you couldn't do before. But fundamentally we have not been able to affect very many of the diseases in ways that I find completely satisfying. We will have to go through another period of invention and creation, which is beyond my capacity to do at this point, in order to understand what the ongoing diseases are and find new paths to intercede. Those paths to intercede as well as the diagnoses could come from any place, but a pediatric intensivist who claims credit for finding them is going to have to do the research that made it possible to make these breakthroughs. Therefore, continued research in pediatric intensive care is what I think will continue the vibrancy of this specialty.

# The Seventh International Symposium on the History of Anesthesia

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The 7<sup>th</sup> International Symposium on the History of Anesthesia was held at Heraklion (Hersonissos), Crete, Greece, on October 1-3, 2009. This meeting follows the very successful meetings in Rotterdam, London, Atlanta, Hamburg, Santiago and Cambridge. At total of 73 papers, 13 posters and 3 plenary lectures were presented by the world's outstanding anesthesia historians. The Symposium was held under the auspices of the Faculty of Medicine, University of Crete. Professor Helen Askitopoulou, M.D., Ph.D., chairperson of the Department of Anaesthesiology of the University of Crete, was the Symposium President.

The opening ceremony was held in a outdoor amphitheater that did justice to the ancient Greeks. Professor Askitopoulou opened the event under warm and clear skies. Dr. Joseph Ruprecht, president of the first ISHA, added his greetings. As the Symposium was being held in the land of Hippocrates, Professor Stephanos Geroulanos, president of the International Hippocratic Foundation, added his greetings and Professor



A past Lewis H. Wright Memorial Lecturer for the WLM, John W. Severinghaus, M.D., presented "Hidden Fire Air, Hidden Letter: Oxygen's Historic Dilemmas." (Photo courtesy of George Bause.)



Past WLM Fellow Rajesh P. Haridas, MBChB, FANZCA, spoke about "W.T.G. Morton's Early Ether Inhalers: A Tale of Three Inhalers and Their Inscriptions." (Photo courtesy of George Bause)

Odysseas Zoras, Dean, University of Crete Medical School, declared the Symposium open.

Dr. David Wilkinson, Emeritus Consultant at St Bartholomew's Hospital, London, started us off in the right direction with an address, "Losing the Hippocratic tradition: a danger to our profession?" His address was followed by a concert of Greek choral music and a delightful walk-around buffet, accompanied by live music and airplanes on final approach.

The first day of papers was chock full of excitement as friends met friends and new friends were made. The venue featured a large coffee area surrounded by four lecture halls. Following the first 14 papers, Dr. John Severinghaus, emeritus professor from the University of California San Francisco, in the Honorary Lecture entitled "Hidden fire air, hidden letter: oxygen's historic dilemmas," took us on a "whodunit" involving 18<sup>th</sup> century pioneers Scheele, Priestly and Lavoisier and their

discovery of oxygen. Following 14 more papers, Dr. Alexandra Karetsou, past director of the Archaeological Museum of Heraklion, in preparation of our visit to the ancient city of Minos, took us on a tour of the Minoan Civilization from antiquity to 1250 BC. Shortly thereafter, we boarded 3 busses for the short trip to Knossos for a tour of the ruins. This was followed by a wonderful dinner at a popular Greek restaurant in the village of Archanes. It became obvious that the Greeks are not necessarily early to bed.

On the second day, again greeted by superb weather, we again gathered at the Tara Maris Convention Center. After 15 more papers, we listened to Georgia Kostopanagioutou, M.D., Ph.D., from Athens, give the second plenary lecture on "From aspirin to contemporary cox-2 inhibitors." After a brief pause, 15 more papers and lunch, Rahinder Mirakhur, M.D., from Belfast gave the third plenary lecture on the "History of neuromuscular block-



Past WLM President Kathryn E. McGoldrick, M.D., presented "Sir Frederic William Hewitt: The Man and His Airway." (Photo courtesy of George Bause)

Continued on Page 16

**ISHA. . .** *Continued from Page 15*

ade: from curare to sugammadex." Following 15 more presentations, we gathered for the congress closing.

The excitement of having spent two days in close fellowship with 210 world leaders in anesthesia history was electric. After many thanks and congratulations, Dr. Askitopoulou announced the winner of the outstanding presentation. MWM Stratling, M.D., from Luebeck carried off the prize with his presentation on the history of early respirators, based on his work in the archives of the Draeger Company.

Finally, the location of the next ISHA meeting was announced. Sydney! Dr. Rod Westhorpe from Melbourne will be the president for the 8<sup>th</sup> ISHA gathering in January 2013.

Lastly, our thanks go to George Kostopoulos and his crew from ERA Ltd



in Athens in their superb role as symposium secretariat. Their organization of the Congress was excellent, the audio and video services were outstanding and the fast Internet access was very welcome.

*WLM Honorary Curator George S. Bause, M.D., M.P.H., lectured on "The Pioneering Editor of the World's First Anesthesia Journal: Samuel J. Hayes of The Dental and Surgical Microcosm." (Photo courtesy of Rajesh Haridas)*

## Book Review

**Zimmer M. Histoire de l'Anesthesie. Methodes et Techniques au XIX Siecle Les Ulis (France), EDP Sciences Editions, 2008  
In French; Paperback, 757 pages, 59 Euros (about \$ 83.00)**

*by Ray Defalque, M.D.*

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Dr. Marguerite Zimmer, a dental surgeon in Strasbourg, holds a PhD in the History of Medicine and has extensively written on the history of anesthesia and dentistry and on the 19th Century anesthetic inhalers.

Dr. Zimmer's book reviews the 18<sup>th</sup> and 19<sup>th</sup> Centuries scientific works preceding the arrival of anesthesia, the discovery and development of ether, chloroform, ethyl chloride, nitrous oxide, chloral and several anesthetic mixtures as well as the anesthetic inhalers and machines from 1846 to 1900. Although she briefly describes the birth and evolution of anesthesia in the

U.S and in Great Britain, her emphasis is definitely on the development of anesthesia in France. The German pioneers are largely ignored.

Dr. Zimmer has exhaustively researched the French medical archives and has found many original documents on the history of anesthesia in her country. She places those documents in their historical context and present their content in great details. Many of those details may interest the French more than the foreign medical historians.

The margins of Dr. Zimmer's book show the portraits of the French scientists and

physicians she mentions in her text. Other margins have photocopies of the important pages of the documents she has discovered. These copies, unfortunately, are poorly photographed and the text is generally illegible.

The book has an extensive bibliography, but the latter does not follow the international usage and some of the references may thus disconcert the foreign reader. There is an exhaustive index of names but, strangely, no subject index, a regrettable omission for a book of this breadth.

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