

IN HONOR OF



JOHN F. MURRAY, MD

This booklet was prepared to
accompany a symposium given in
honor of Dr. John F. Murray,
held on March 30, 2023. The selected
texts address the many contributions
of this great man to the field of
Pulmonary Medicine from those who
knew him well.

With appreciation,

*Courtney Broaddus, Phil Hopewell, Douglas Murray, Bernadette Glenn,
Darcy Tell, Katie O'Shea, Deb Grantz, and Diane Johnson*

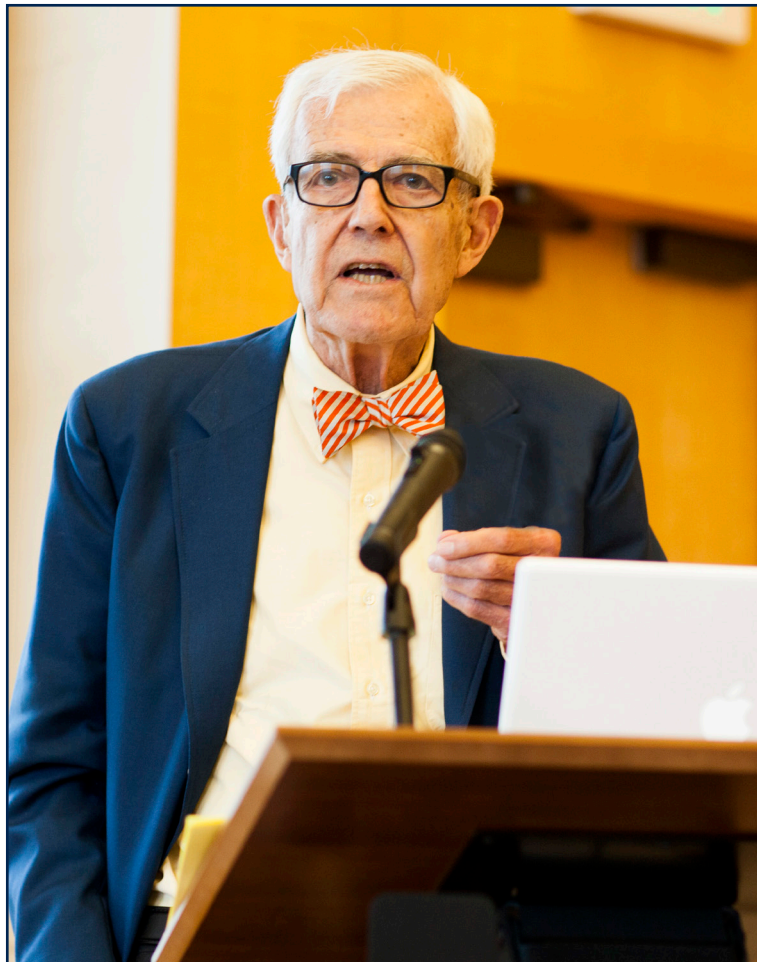
*"My romance with the lungs did not really flourish
until eight years after I started my medical career.
I had met the lungs, of course, while I was a medical student,
but I was indifferent to their magnificence.
I became more intimately involved with them
while I was a resident in internal medicine and research fellow,
but, I confess, in those days I was more enamored of the heart,
the organ that lay between the lungs, than of the lungs themselves.
My present infatuation grew out of a fortuitous misconception
at the University of California Los Angeles,
an important turning point in my career I will tell you about,
when I was informed that I had been hired to organize
and head the pulmonary division within the Department of Medicine.
Next, I was able to put it all together at the University of California San Francisco,
where I still hold forth as professor emeritus of medicine."*

John F. Murray, MD

FROM AN UNPUBLISHED MANUSCRIPT ENTITLED
"HOLD YOUR BREATH," C. 2003

JOHN F. MURRAY, MD

A Tribute



John Murray at the Investiture of the
Murray Distinguished Professorship, 2012.

PHILIP HOPEWELL
COURTNEY BROADDUS

John Murray, whose work played a large part in quantifying and projecting the need for pulmonary physicians in the United States, in creating mechanisms to fund training of future academicians in pulmonary medicine, and, subsequently, in determining the content of pulmonary training programs, had, himself, no formal training in pulmonary medicine, or, for that matter, no training in any subspecialty of internal medicine. Thus, this hugely influential figure in pulmonary medicine would not be qualified by current criteria to take the board examination in the subspecialty that, in many ways, he defined. But John Murray did things his own way.

Immediately following completion of his residency in internal medicine, John went to London to study hepatic blood flow in the laboratory of Sheila Sherlock, a founder of the science of hepatology.¹ It isn't clear how much of an influence Dame Sheila had on John, but she was said to be an outstanding clinician who did not suffer fools gladly, both qualities that John demonstrated throughout his career. (A few examples of these qualities are presented later.)

John returned from London to take up a faculty position at UCLA, where he focused more on circulatory and cardiac physiology and not so much on the physiology of the lung.^{2,3} He quickly rose through the academic ranks, becoming an Associate Professor of Medicine and Physiology in 1964, the same year that he sat for (and passed) the Pulmonary Board examination (despite the lack of formal training). Soon thereafter he took the first of his many sabbaticals (John never missed an

At SFGH, John developed a comprehensive clinical/academic pulmonary training program that included a respiratory intensive care unit, a chest disease specialty ward, and a modern pulmonary function laboratory, all of which, for many years, have served as important venues for training and clinical research.

opportunity for a sabbatical) at the UCSF Cardiovascular Research Institute (CVRI) under Julius Comroe.^{4,5} During that year he must have impressed Dr Comroe and Dr Lloyd (Holly) Smith, the recently-hired Chair of the Department of Medicine at UCSF because, shortly after returning to UCLA, he was recruited back to UCSF to lead the rejuvenation of Chest Service at San Francisco General Hospital (SFGH). At that time, SFGH was being integrated as a full component of the UCSF clinical training and research programs. John was an essential contributor to that integration. At SFGH, John developed a comprehensive clinical/academic pulmonary

training program that included a respiratory intensive care unit, a chest disease specialty ward, and a modern pulmonary function laboratory, all of which, for many years, have served as important venues for training and clinical research. John was part of an early wave of the “new breed” of chest physicians, a group that by-and-large did not have its roots in tuberculosis as the nearly sole focus of the specialty, although, as will be noted later, he did not ignore this still-important disease. Prior to John's arrival, the Chest Service at SFGH had been primarily concerned with tuberculosis and, thus, the existing physician staff was largely made up of “older style” chest clinicians, several of whom were well past their prime. A colleague recalls that during a weekly conference one of the older clinicians lit a cigarette (remember, this was the late 1960's) which prompted an admonishment from another attendee. At this point John said, “Leave----- alone. I'm encouraging him to smoke.”

John had a very productive research career that was largely focused on relevant clinical problems and the pathophysiology of lung diseases. But it was not so much his research that made him a leader in

He was very precise both in writing and in speaking. As an example, a sure way to raise his ire was to say in the course of a verbal or written clinical presentation “---the patient was diagnosed with---.” His universal response was “Patients are not diagnosed, diseases are.”

diseases are.” Likewise, excessive or imprecise verbiage was sure to draw fire from John. In reviewing a draft manuscript from an enthusiastic but disorganized fellow, John said, “Yes, you’ve identified the important points and then disguised them very effectively.”

Areas in which Dr Murray made important contributions

Much of John’s talent as a teacher as well as his skills in written communications plus his emphasis on solid scientific foundations for his teaching are reflected in the textbook of which he was the founding co-editor, *Murray & Nadel’s Textbook of Respiratory Medicine*, now in its 7th edition.



John Murray and the inaugural Murray Distinguished Professor Courtney Broaddus, 2012. She now serves as the editor-in-chief of the *Murray & Nadel’s Textbook*.

the field. His greater talent was his ability to identify relevant issues and to take a leadership role in developing approaches to addressing the issues. The skills that enabled him to lead so effectively were the ability to think and to communicate clearly, both verbally and in writing. He was very precise both in writing and in speaking. As an example, a sure way to raise his ire was to say in the course of a verbal or written clinical presentation “---the patient was diagnosed with---.”

His universal response was “Patients are not diagnosed,

Teaching and knowledge transfer in pulmonary and critical care medicine

The talents noted above served to make John a skilled teacher. From early in his career at SFGH, he chose Saturday mornings in the ICU, not generally a popular time among the housestaff for a teaching session, to discuss some aspect of clinical respiratory physiology that was illustrated by a patient in the unit, making the physiological principles relevant to critically ill patients. As an aside, it should be noted that he was a skilled clinician who regularly attended in the ICU. The value of these sessions was not lost even on the most sleep-deprived interns and residents, and they were widely regarded as extraordinary learning experiences.

Much of John’s talent as a teacher as well as his skills in written communications plus his emphasis on solid scientific foundations for his teaching are reflected in the textbook of which he was the founding co-editor, *Murray & Nadel’s Textbook of Respiratory Medicine*, now in its 7th edition. *Murray & Nadel’s* has influenced the practice of respiratory medicine throughout the world for generations. The first edition, published in 1988, was a hard-copy single volume of 1167 pages. The 7th edition is two volumes of 1848 pages, together with a fully digital version, 200 imbedded videos, and audio files. John kept up with all the technological changes and continued to exert an editorial hand until nearly the end of his life. The book will likely be his longest lasting legacy.

Adult Respiratory Distress Syndrome

Relatively soon after coming to SFGH, John's research focus shifted from examinations of blood flow and oxygen delivery under various conditions to studies of the pathophysiology and management of the recently described acute lung injury/adult (now "acute") respiratory distress syndrome (ARDS). This proved to be a clinical and research area that would occupy him for a large part of his career.⁶⁻¹⁰ ARDS is not a disease but a constellation of clinical, radiographic, and pathophysiologic features that result from a wide variety of insults but have in common excess fluid in the lungs caused by leaky

The imprecision of the terminology and the multiplicity of disorders associated with ARDS was an impediment to the conduct of good clinical research, which John, in his usual clear-thinking way, sought to remedy.

pulmonary capillaries. Because there was no single cause, not surprisingly, the term "ARDS" was applied imprecisely and inconsistently. The imprecision of the terminology and the multiplicity of disorders associated with ARDS was an impediment to the conduct of good clinical research, which John, in his usual clear-thinking way, sought to remedy. His initial approach was to appeal to the clinical and research communities to be much more specific in making a diagnosis

of ARDS and in specifying the cause as part of the diagnosis. He put this argument forward in a 1975 editorial entitled *The Adult Respiratory Distress Syndrome (May It Rest in Peace)* in which he concluded, with regard to the various diseases associated with ARDS, "Our knowledge about these diseases is woefully incomplete at present but undoubtedly will increase in the future. Accordingly, the classification will also change as new information becomes available. A decade from now, we might be quibbling over how much further splitting is advisable. But we should start by putting the axe to the ARDS log before we worry about how many pieces of kindling it will make."¹¹

In fact, over the next decade and in spite of the eloquent argument to make kindling of the ARDS log, little progress was made in improving the precision of the ARDS diagnosis. While advances were made in understanding the pathogenesis and management of ARDS, the lack of a generally accepted definition continued to hamper the field. John did not address this issue again until 1988 when he, together with UCSF colleagues, Michael Matthay, John Luce, and Michael Flick, proposed a standard definition for ARDS.¹² As the authors state, "We believe that much of the controversy concerning ARDS is explained by the lack of a satisfactory definition of this elusive syndrome. How can you collect, much less compare, epidemiologic data and mortality figures when there is no uniformly accepted (and used) definition? How can you study basic pathophysiologic mechanisms, understand natural history, and above all, evaluate new therapeutic approaches in what appears now to be an amalgam of many different disorders?" The group developed a 3-component definition as well as a severity grading score. This definition served as a framework for data collection that enabled more precise definitions of ARDS including the now-standard Berlin definition developed by an international consensus group in 2012.

Acquired Immunodeficiency Syndrome

Early in the 1980s, San Francisco was the West Coast epicenter of what came to be called AIDS and SFGH was quickly flooded with young, previously healthy, men with severe acute lung diseases. John

realized that this new disease was going to be a major problem and that the lungs would frequently be involved. He requested and received support from the Division of Lung Diseases at NHLBI to convene the first meeting on the pulmonary complications of HIV infection. The investigators and clinicians attending the meeting pooled their experience, and from that pool emerged the outlines of the spectrum of lung disease in HIV infection.¹³ This led to a large multicenter study across the US that provided a much more complete picture of HIV-related lung diseases. John then went his own way and conducted a series of studies in Africa to examine the spectrum of lung diseases in HIV infection under much different epidemiological and resource conditions.¹⁴

Tuberculosis

Although, as noted above, John did not have his roots in tuberculosis and was not focused on the disease in his early career, he recognized that it remained a significant global health issue, especially in the context of HIV infection, which was ravaging Africa. In 1989, John was selected to give the annual

Rather than presenting his own research, as was customary, he chose to use this high-profile forum to deliver the message that tuberculosis was a resurgent global threat: the title of the presentation was *The white plague: down and out, or up and coming?*¹⁵

Amberson Lecture at the International Conference of the American Thoracic Society. Rather than presenting his own research, as was customary, he chose to use this high-profile forum to deliver the message that tuberculosis was a resurgent global threat: the title of the presentation was *The white plague: down and out, or up and coming?*¹⁵ As Dr. Murray stated in his introduction, “I wanted to talk about tuberculosis because, as I will show you, the incidence of the disease is increasing dramatically in the United States and in several

other countries.” He went on to emphasize the influence of HIV infection on the global incidence of tuberculosis. “It follows that tuberculosis should be a special problem in sub-Saharan Africa where there is a high prevalence of HIV infection in many countries that also have an extremely high prevalence of tuberculosis; in some of these countries, the annual rates of new tuberculous infection are among the highest in the world. And, as expected, data are beginning to be reported showing that HIV infection is having a powerful effect on tuberculosis in Central Africa.” To provide context, this presentation was given only 4 years after the first publication of the effects of HIV infection on tuberculosis in Africa when the association was still very underappreciated. John concluded, “Finally, I hope I have convinced you that tuberculosis is not down and out; it has relocated from developed to developing countries where socioeconomic conditions favor its persistence. And, at least for the two decades of the 1980s and 1990s, tuberculosis is up and coming, especially where HIV is prevalent.” The presentation provided an important wake-up call to chest physicians as well as to policy-makers that tuberculosis was, in fact, up and coming and deserved substantial global attention as well as financial support.

Putting his money where his mouth was, John continued to sound the alarm on the devastating association between tuberculosis and HIV infection.^{16,17} In addition, he proceeded to develop research collaborations within Africa that enabled him to conduct a series of studies especially focused on the diagnosis of tuberculosis in persons with HIV infection, as well as on the spectrum of lung diseases in

the presence of HIV infection.^{14,18} One of the important observations emanating from these studies was that, in high-tuberculosis-prevalence areas, the most common pulmonary manifestation of HIV infection was, not surprisingly, tuberculosis, and that *Pneumocystis pneumonia*, very common in the US and Europe, was surprisingly uncommon in Africa.

The subspecialty of pulmonary medicine

In 1970, John was asked to chair a joint committee of the American Thoracic Society and the American College of Chest Physicians to assess the current and future needs for pulmonary physicians in the United States.¹⁹ After a comprehensive assessment of five topic areas, the committee concluded as follows: “The Committee believes that the data from the survey present an accurate but depressing picture of the status of professional manpower in pulmonary diseases in the United States. Clearly there are significant shortages of chest physicians practicing in hospitals and clinics, and teaching and carrying out research in medical schools and other institutions. Furthermore, not enough chest physicians are being trained to fill the existing vacant positions and those anticipated during the next 2 years.” A direct result of the recommendations from this committee was the creation of the National



Brian Graham, Phil Hopewell, Courtney Broaddus, and John Murray (left to right): the four Chiefs of the SFGH Pulmonary Division.

Pulmonary Faculty Training Program funded by the (then) National Heart and Lung Institute.²⁰ The main goal for this innovative program was to strengthen pulmonary faculties at schools of medicine and osteopathy in the United States which did not yet have adequate training programs in respiratory diseases. This training program has led to a series of training grants in pulmonary and critical care medicine that persist today. The final foundational piece of the training programs was the development of the goals and content of training programs in pulmonary medicine by the Subspecialty Board on Pulmonary Disease of the American Board of Internal Medicine, of which John was a vocal member.²¹

In the early 1970s, the selection of trainees in medical subspecialties was a bit of a wild west affair, with no rules to govern and to provide uniformity in the process. To standardize the process of trainee selection in pulmonary medicine and to ensure that applicants were treated fairly, John catalyzed the creation of the “Western Uniform Acceptance Date” program. The program initially involved four western training programs, the Universities of Oklahoma, Washington, Colorado and UCSF. Other institutions subsequently joined, and the program became the pulmonary matching program, the first subspecialty matching program in the country.

The American Thoracic Society

John played an important role in the evolution of the American Thoracic Society. He assumed the editorship of the (then) *American Review of Respiratory Disease* in 1974 and proceeded to

enlarge the scope and size of the editorial board, as well as to implement rigorous criteria in judging manuscripts.²² He sought and published a broader range of papers than had been customary for the journal, reflecting the evolution of pulmonary medicine to encompass a wider array of topics,

John, as ATS President in 1981-82, was influential in the structure of the Society, spearheading the formation of specific scientific assemblies for the purpose of broadening the scientific base of the Society and providing a means by which younger members could assume leadership positions.

including critical care.

Importantly, during his editorship, John took a leading role with the International Committee of Medical Journal Editors (ICMJE). A committee of the ICMJE, chaired by John, met in Vancouver and agreed to implement a unified set of requirements for manuscripts. This meeting led to the establishment of the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (URMs). Part of the URM is the reference style, known as the “Vancouver style” after the meeting site.

John, as ATS President in 1981-82, was influential in the structure of the Society, spearheading the formation of specific scientific assemblies for the purpose of broadening the scientific base of the Society and providing a means by which younger members could assume leadership positions. He made important strides in securing increased administrative autonomy and fiscal flexibility from the Society’s then parent, the American Lung Association (ALA). This was a critical step in the process that, ultimately, led to the Society becoming independent of the ALA.

The International Union Against Tuberculosis and Lung Disease

John had a long association with the Union, facilitated by his living part-time in Paris within walking distance of the Union headquarters after his retirement from UCSF in 1994. He served in editorial positions with The Union’s journals for more than 30 years, most notably as an associate editor of the International Journal of Tuberculosis (now the International Journal of Tuberculosis and Lung Disease) since 1997. In addition to his roles with the journals, John was Chair of The Union’s Committee on Respiratory Disease from 1986-1988, Chair of Scientific Committees in 1991-92, and Chair of the Executive Committee and Council from 1992 to 1994. In these roles, he introduced major reforms and innovations, including broadening The Union’s focus from tuberculosis to include other

John’s involvement with the Union and its global mission, plus his focus on tuberculosis and HIV-associated lung diseases, not surprisingly led him to emphasize the moral imperative of a more equitable distribution of health care.

lung health issues. Specific structural changes that John promoted and that were accepted by the Executive Committee included the creation of scientific sections focused on specific areas of interest within the organization. In addition, he argued that the Union should hold annual meetings rather than having an international conference every fourth year, a suggestion that has proved to be highly successful. For his contributions to the Union, John was

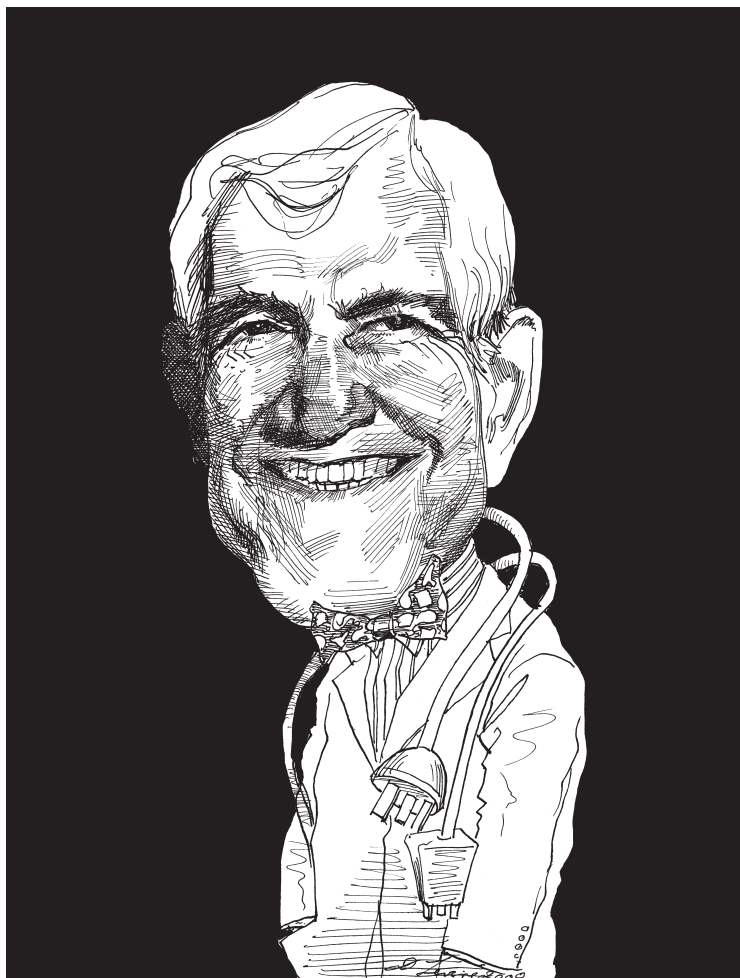
awarded the Union’s highest honor, The Union Medal, in 2011. As noted in the Union’s online tribute to John, “Dr Murray was an essential part of The Union’s past and present” and “one of the architects of the modern Union.”

John's involvement with the Union and its global mission, plus his focus on tuberculosis and HIV-associated lung diseases, not surprisingly led him to emphasize the moral imperative of a more equitable distribution of health care. In his millennial lecture to the European Respiratory Society delivered in 2001 entitled, "A Thousand Years of Pulmonary Medicine: Good News and Bad," in which he reviewed progress in pulmonary medicine during the past 1000 years, he stated, "But as I have emphasized, this progress has favoured the lives of a small fraction of the world's population a great deal more than it has improved the lives of the much larger remainder. One of the challenges for the millennium that is just beginning, clearly, is to correct this imbalance to ensure that all people share the benefits of contemporary medicine."²³

Concluding comments

All of the foregoing attributes John Murray's writing skills to John himself. It should be noted, however, that John's wife, Diane Johnson (Dinny), while best-known as a novelist, is also a critic, biographer, and essayist. It seems highly likely that John sought and valued Dinny's input, her critique of his drafts, at least in some of his less technical undertakings. But the collaboration was at least to some degree bidirectional: John is a thinly-disguised character in several of Dinny's novels and explicitly mentioned in a dedication of one. So far as we are aware there are only two publications the two of them undertook together, both reviews and both in the *New York Review of Books*.^{24,25} Perhaps not surprisingly, the subjects of the reviews are several books on serious illness and death, and the reviews written by John and Dinny nicely present the focus of the books in a larger medical context (John) while at the same time placing the stories as a whole in a larger social, cultural, and literary context (Dinny).

Ironically, given John's interests in both ARDS and tuberculosis, he died on March 24, World TB Day, and the proximate cause of death was ARDS due to COVID-19. We suspect John would be gratified to know that the ARDS from which he died had a known specific cause and was not simply an ill-defined constellation of clinical and radiographic features with all the imprecision and uncertainty that entails.



John F. Murray, M.D., by
David Levine, 2000, printed with a review of
Murray's *Intensive Care* that ran in the August 10,
2000, issue of the New York Review of Books.
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Note: The references cited are intended to be illustrative of Dr Murray's work in the areas discussed.

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On Mentors And Mentoring

The Murray Standard

BY PHIL GOLD

From CTS news inspirations

EDITOR'S NOTE: In lieu of our usual President's message, we offer this moving remembrance of Dr. John Murray by Dr. Philip Gold. In part story of mentor and mentee, it is also a history of CTS and pulmonary and critical care medicine told through the perspective of two former society presidents. Our profession was founded in response to a great scourge, battled HIV and now finds itself at the frontlines of another devastating pandemic. This marvelous essay encapsulates our rich heritage not just of excellence, but of compassion and integrity. National Teachers Appreciation week was May 5-8 and we humbly acknowledge the debt we owe to mentors such as John Murray and Phil Gold who illuminate and help us realize the good within ourselves.

I sharpened my diagnostic reasoning tools but, as so many have done in the past, I committed the fatal and most common sin of anchoring. I got “stumped.” Upon reflection, one of my priors was a patient that I cared for as a resident in medicine in the 60’s at UCLA, a woman with disseminated histoplasmosis. At the time the diagnosis was made by a clinical laboratory technician who noted tiny yeast forms within the macrophages on her peripheral smear. What I remember most about the case was the brilliant analysis and discussion of her illness by the Chief (in fact the only) Chest Physician at UCLA, Dr. John F. Murray, then a young, charismatic, Assistant Professor.

The Stump the Professor session was held not long after the death of Dr. Murray, my friend and mentor for more than 60 years. Following the denouement and discussion of the stump case, I took the opportunity to make a teaching point about mentoring with my zoom colleagues and students by sharing memories of Dr. Murray as an example of what they should aspire to as doctors, teachers and mentors themselves.

In 1959 when I was a sophomore medical student a flash of insight convinced me that I was not cut out to be a psychiatrist, my goal on entering medical school. A small but gifted faculty in medicine at UCLA provided several role models and, among

them a standout was John Murray. He was accessible, brilliant and considered a “triple threat”, a great bedside clinician, an inspiring teacher and a top notch, productive scientific investigator. I boldly sought him out and asked if I could spend the summer working in his laboratory. He listened carefully and asked me why I was interested in his work. I must have convinced him I was serious for he generously supported my application for a summer research grant offered by the Lung Association of Los Angeles County. I received funding and the project led to my first two publications, one in the Journal of Clinical Investigation and the second in the Journal of Applied Physiology. In addition to learning much about how physiologic research is done from John, I learned that he was an excellent writer who cared not only about valid data and interpretation but about punctuation, spelling and grammar. His example prepared me well for the sharp editing pencil wielded

He was accessible, brilliant and considered a “triple threat”, a great bedside clinician, an inspiring teacher and a top notch, productive scientific investigator.

by Dr. Julius Comroe when reviewing my pulmonary function reports some years later at the Cardiovascular Research Institute (CVRI).

Most importantly, after that first summer in Dr. Murray’s laboratory, I spent the next six years working in his lab. He trusted

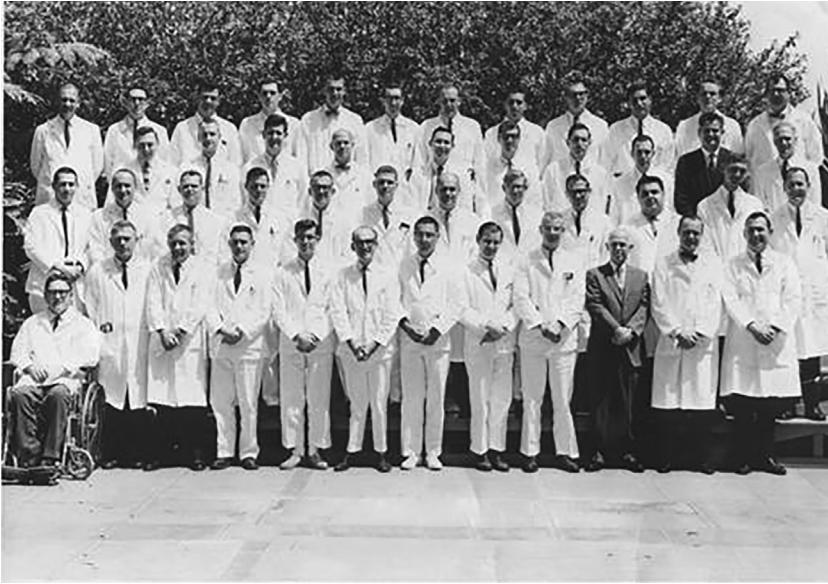
me with the keys to his laboratory/office which became a safe and quiet haven for study and a surreptitious source of ethyl alcohol for student and resident parties.

During those exciting years of learning, I watched as Dr. Murray and other young faculty members prepared for the challenge of Internal Medicine Board examinations not knowing that less than ten years later I would do the same. Several months after I passed my written Board examination in 1968, I flew to San Francisco for the final hurdle, the oral exam. I remember it as if it were yesterday. The examination was held in the dimly lit VA hospital and I was assigned two patients. The first was in a noisy open ward and had chronic pancreatitis with a pseudocyst, the second had a stroke following aortic valve surgery and was aphasic. When the day was done, I returned to my hotel room exhausted and dejected, certain I had failed. Later that night Dr. Murray called to say hello and let me know he had just finished enjoying dinner with my senior examiner of that day, Dr. James Hammarsten. After a suitable pause during which I might have suffered a stroke myself, he told me I passed the examination saving me six weeks of

anxious waiting. Mentors look after their mentees.

But I digress. Little did I know that my time in the dog lab doing intubations, cut downs and right heart catheterizations was outstanding preparation for the skills I would one day need as an intensivist. When Dr. Murray travelled to the CVRI in San Francisco during my year as a senior resident, he returned with a

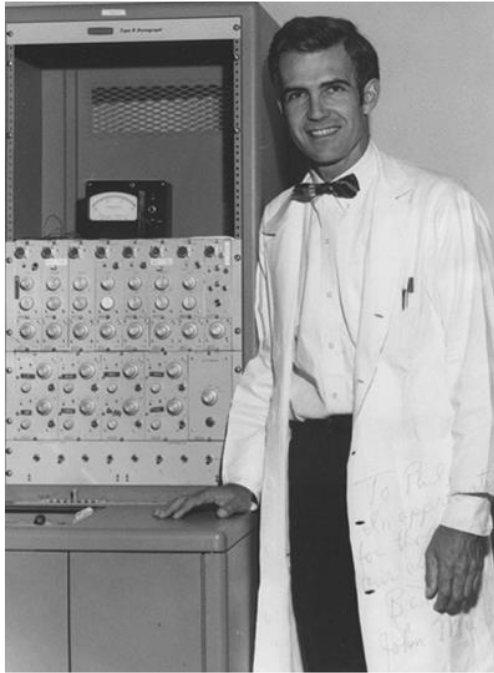
blood gas machine, essentially a fabricated plexiglass water bath, housing Clark and Severinghaus electrodes. He taught me how to obtain radial arterial blood samples using a Seldinger needle and how to operate the blood gas instrument. The Seldinger needle was large and needed frequent sharpening. I was often a test subject until recurrent radial hematomas discouraged me from volunteering. Dr. Murray, a resident colleague and I were the only ones capable of



John Murray and Phil Gold with the internal medicine faculty and housestaff at UCLA, 1962-3. Both are in the back row; John Murray is 5th from the left, Phil Gold is 7th from the left.

analyzing arterial blood gas specimens at UCLA at the time and I honed my skills by offering the service to fellow internal medicine house staff caring for patients with heart and lung disease.

When I was half way through my Chief Resident year, Dr. Murray, who by that time insisted I call him John, summoned me to his office. He wanted to tell me he had been recruited by Dr. Julius Comroe to join the CVRI and the UCSF faculty. I had, of course, developed a keen interest in the lung and in pulmonary physiology under John's tutelage. Dr. Comroe was a pulmonary rock star and his book, *The Lung*, was my bible. John indicated he had received permission to recruit one fellow and wondered if I might be interested in joining him in San Francisco at the San Francisco General Hospital where he was to be the Chief of the Pulmonary Service. I would split my time between the CVRI and the General Hospital, learning at one and learning and doing at the other. I was flattered and eager to accept but it took much cajoling before my wife, Roberta, gave her blessing and I was able to say an excited yes.



John Murray in front of a multichannel recorder in the pulmonary lab, previously the TB unit at SFGH, c. 1970.

Much of what I learned at the time came from watching John's engaged, cooperative and enthusiastic style of leadership and problem solving. Indeed, there were many problems to be solved.

A mentor provides tools, opportunities and support. In San Francisco, the CVRI environment was intellectually and scientifically rigorous and challenging. Roberta and I met and were befriended by trainees and faculty from all over the world. Work was demanding and there was so much to learn. In those days before calculators and computers, I had to master the slide rule and obtain the rudiments of calculus, statistics and measurement theory. It was the heyday of Haight-Ashbury and Flower Power, a movement which often caught my attention in Golden Gate Park as I hustled between our home in Marin, the CVRI on Parnassus Hill and the General Hospital in the Mission. John was always supportive and encouraging but had the wisdom and forbearance to allow me considerable independence in the completion of two critical tasks. The first was to build a Pulmonary Function Laboratory at the General Hospital and the second was to work with him to develop the General Hospital's Intensive Care Unit. Both opportunities provided an essential foundation for a career in pulmonology, a term which had not yet been coined. Much of what I learned at the time came from watching John's engaged, cooperative and enthusiastic style of leadership and problem solving. Indeed, there were many problems to be solved. San Francisco General was a busy, underfunded, inner city Hospital with a grand history, a remarkably talented staff and a serious lack of resources. I recall stashing antibiotic samples from pharmaceutical reps in my office drawer to meet the needs of patients when the hospital's pharmacy budget ran dry half way through the year. I spent hours in the darker recesses of Central Services scrounging for the bits and pieces of equipment necessary to make our pulmonary function laboratory functional. Small victories like finding the right piece of tubing or stopcock would make my day. Our radiology department contained decades of old films in dusty jackets and was so poorly staffed that physicians had to wander the stacks searching for needed old films. As often as not the searches were unsuccessful.

I must say none of these deficits or hardships made much of an impression at the time. Coming to work each day was a pleasure and an adventure. One thing we did have was an abundance of real

estate. Tuberculosis was still a major problem in the inner city but the number of patients had declined over the years allowing us to repurpose some of the TB unit and create an ICU. It was in this unit that we began to learn about ventilators though there were not so many to choose from, and how to safely and effectively use them in the treatment of respiratory failure. After a brief trip to Los Angeles, John returned with a number of “floating” catheters

One of the most important lessons I learned from working beside John in the ICU was that, as critical as excellent doctoring skills were, measurement and an understanding of physiology were equally vital in the care of the critically ill.

acquired from Dr. Jeremy Swan. My experience with cut downs in the dog lab stood me in good stead as it would be several years before the availability of percutaneous insertion kits. One of the most important lessons I learned from working beside John in the ICU was that, as critical as excellent doctoring skills were, measurement and an understanding of physiology were equally vital in the care of the critically ill. In selected cases, we floated catheters, measured pressures

and flows and used the data to make inferences and arrive at understandings of why our patients were ill and how we might rectify their abnormal physiology. Who knew that in future years the zeal with which the Swan-Ganz catheter would be applied might lead to patient harms or, at least, not reach intended goals? Nonetheless, recognition of the importance of physiology in critical illness was a vital lesson John shared implicitly and explicitly until it became a way of thinking.

Observing John and working beside him in the ICU at that time, I arrived at another epiphany. I came to understand that his listening skills, humanity and compassion were every bit as important, if not more so, than his mastery of data. Although, or perhaps because he was the boss, he took ownership of each patient on our service, another indelible lesson in how one should care for patients.

I came to understand that his listening skills, humanity and compassion were every bit as important, if not more so, than his mastery of data.

Reflecting now on those days at SFGH, I am so grateful for the privilege of working as John’s fellow. I knew then that he would always be the yardstick by which I would measure the kind of doctor I hoped to be and the kind of doctors I would one day train.

All good things must come to an end and so they did for me in the second year of fellowship when I received a draft notice and the “opportunity” to apply for a military commission. John had surrounded himself with a close-knit group of bright and devoted workers and they provided me with great

comfort and support. I was more than fortunate to parlay my experience at the CVRI and San Francisco General Hospital into a position as Assistant Chief and later Chief of Pulmonary Diseases at Tripler General Hospital, the “pink palace” overlooking Pearl Harbor in Hawaii. Upon my return from basic training in San Antonio where I had been joined by a number of former UCLA and UCSF residents, my family and I were met at the San Francisco Airport by members of the SFGH crew and transported, with mountains of luggage, to the Matson Terminal where we boarded the Lurline and hosted a monumental and memorable Bon Voyage as we said our goodbyes.

The opportunities John afforded me at the SFGH were of enormous benefit in developing a Pulmonary Laboratory at Tripler where the transition from fellow to faculty was a profound growth experience. I tried my best to model John’s example as a bedside teacher. He was thorough in obtaining a history and meticulous and skilled in performing a physical examination. He was patient, encouraging and asked many questions of his students. He thought out loud so students could learn the art and science of clinical reasoning. He was gentle and kind and it was obvious that he loved what he was doing. Those lessons were the gifts John gave me and that I tried to pass on as I assumed the role of teacher. During my time at Tripler, one of the highlights was the opportunity to welcome John as a Visiting Professor.

His lecture was a classic John Murray endeavor, important, well organized, clear, erudite and eloquent.

After years of John’s mentorship, I knew I could count on him for objective and sound advice. Months after the Internal Medicine Boards, I asked him if he thought I should take the Pulmonary Board examination. At the time few specialty physicians, even academics, had specialty credentials. John told me in no uncertain terms I should take the Boards. At that time there was no official requirement as to the length of fellowship training and John said he would endorse my candidacy. He correctly predicted that within a relatively short time subspecialty credentialing would become a specialty practice requirement.

I applied for the Board examination and with John’s blessing (he was by that time a member of the Board) was accepted. In the fall of 1969, I travelled, once again, to San Francisco to, of all places, SFGH where I joined the eight others taking the examination. It

was in two parts the first of which was the examination of a patient and presentation of the findings, x rays, clinical and pulmonary function data and pathology slides if available. My patient was a delightful and cooperative elderly woman with stage IV cavitary sarcoid with a large right upper lobe mycetoma. Yes, she had amphoric breath sounds in the right upper chest. Dr. Arthur Olsen of the Mayo Clinic was my examiner. When he finished my interrogation, I met with Dr. Attilio Renzetti of Utah. For an hour he peppered me with questions about pulmonary function tests, threw up x rays and asked me to interpret them (the most

Since what was for me a memorable occasion, there have been legions of fellows, among them ATS Presidents, Trudeau Medalists and Amberson Lecturers, who, with me, owe an unredeemable debt to John Murray.

anxiety provoking was a normal chest radiograph) and then sat me down at a microscope and asked me to interpret a number of pathology slides. Finally, after 4-6 hours the entire ordeal was over. I returned to my hotel room exhausted. Once again, later that evening John called. On that occasion he wasted no time on preliminaries but, with a beaming smile in his voice, told me how proud he was and how well I had done in

the examination. I was his first Board Certified Pulmonary Fellow. Since what was for me a memorable occasion, there have been legions of fellows, among them ATS Presidents, Trudeau Medalists and Amberson Lecturers, who, with me, owe an unredeemable debt to John Murray. I can imagine nothing John would appreciate more than the knowledge that we are paying that debt forward.

As my time in the army drew to a close, I knew I was better suited to the role of a clinician-teacher than that of an investigator. I had planned to return to the CVRI and begin a career in clinical research but it was time to rethink my future. As I had in the past, I turned to John for advice. It was an awkward conversation but John was gracious, thoughtful and clearly committed to my best interest. He agreed that my evaluation of my strengths was likely correct and supported me with valuable insights as I evaluated opportunities within the UCLA system. Ultimately I chose a position at the San Bernardino County Hospital. I knew former teachers and co-residents at the hospital and within the area but, most importantly, there was no pulmonary/critical care program there and I would have the opportunity to begin something of my own. It turned out to be another incredible opportunity for growth. At the end of my first year, having opened a pulmonary and blood gas laboratory and a six-bed respiratory care unit, I chose to celebrate with a day-long pulmonary symposium for the community. Ever supportive of my career, John and another

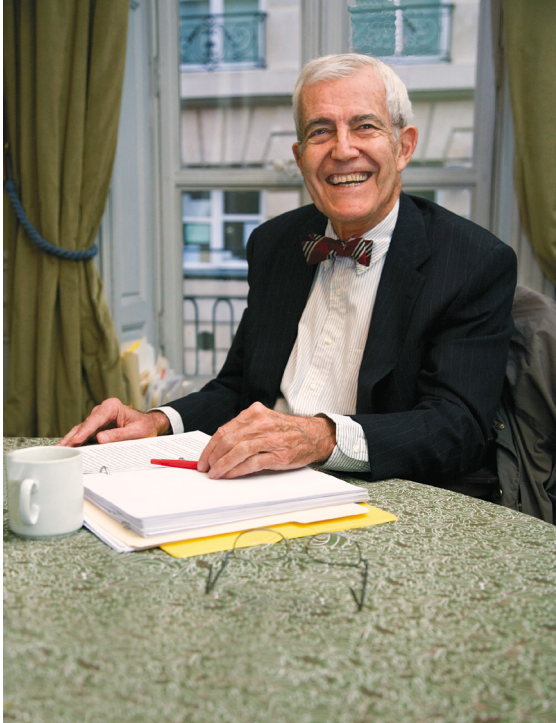
excellent CVRI mentor, Jay Nadel, flew down from San Francisco and Dr. Ken Moser, a helpful friend and mentor drove up from San Diego. Together they presented a tour de force learning experience I will never forget.

John's mentoring duties did not end at that time. In fact, they never did. John had assumed a role in the California Thoracic Society and within a short time became CTS President. The CTS was the "medical arm" of the California Lung Association. John's goal was to secure more resources for research and education and he recruited a new breed of physiologically trained lung doctors while respecting and celebrating the contributions of the old guard of Tuberculosis Specialists. John's advocacy for priority change within the Lung Association was vigorous, consistent and ultimately effective. It presaged the ideas he would later sow as ATS President, a path which ultimately led to ATS independence. John wasted no time and had no difficulty recruiting me into the CTS. As soon as I joined, he assigned me the task of developing a CTS educational program. With other young recruits we established the CTS Advanced Course in Pulmonary Disease. This was to be a small meeting with a narrow focus and an invited faculty of international reputation. It would last 2-3 days and, in addition to formal lectures in the morning and early evening, afford many opportunities for the faculty and attendees to share dining, skiing, conversation and ideas in an informal setting. Over the years pulmonary hypertension, cough, emphysema, ARDS and breath sounds were subjects we tackled. As important as these were, perhaps even more educational were the sessions during which participants would bring troubling and interesting cases along with x-rays and laboratory data to either stump colleagues or solicit thoughts and recommendations. These were held each evening after dinner and, for many, were the highlight of the meeting. No doubt the venue of the Advanced Course at the Ahwahnee Hotel in Yosemite contributed to its success. Over time, the Ahwahnee increased in popularity and price, eventually becoming too expensive to continue the program. Needless to say, the opportunity John provided several young pulmonary physicians to develop an extraordinary educational program was priceless.

Over the years, though less so in recent times, John and I communicated by mail or email. I would look forward to getting together each year at the ATS meeting where we would fill each other in on our latest comings and goings and, as is the wont of

those in their 80s and 90s, reminisce. Happily, we had many fun and funny times to remember. In addition to teaching me medicine and science, early on John shared his passion for opera and fly fishing with me. That sharing I consider one of his greatest gifts. Whenever we would get together it was our ritual to share our latest opera and fishing experiences.

Throughout their careers, most professionals will have mentors, some of whom serve either a particular or multiple roles. Listening, offering experienced advice, constructive criticism, moral or material support, serving as a role model, facilitating professional connections, providing opportunities and teaching life lessons are all within a mentor's job description. Relationships with mentors may be short term or life-long. I was incredibly fortunate to have a mentor who, as he did with medicine, teaching, science, writing, editing and administration, took his role as mentor seriously and at the same time enjoyed it thoroughly. I wrote this piece as a tribute to my mentor of 61 years, Dr. John F. Murray, with the hope that those who read it and are in search of a mentor or are engaged in mentoring might know how critical that role may be and what the gold, I should say, Murray standard is.



John F. Murray, MD (1927-2020) **UCSF Emeritus Professor of Medicine**

Dr. Murray had an immense impact on the field of pulmonary medicine locally, nationally, and internationally. He was dedicated to UCSF and to Zuckerberg San Francisco General Hospital and Trauma Center (ZSFG), where he was Division Chief of Pulmonary and Critical Care for 23 years (1966-89).

The John F. Murray, MD Distinguished Professorship in Pulmonary Medicine

A *Distinguished Professorship* is a tribute to Dr. Murray and a lasting recognition of the importance of his work. It supports the division of pulmonary medicine at ZSFG, providing funds otherwise not available to support junior faculty in their research, clinical care, and teaching. Much gratitude is due to the WHH Foundation for its anchor support.

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“I am honored by having my name associated with this but the main thing is it provides a chair to keep doing the things that I’ve spent 40 years of my professional lifetime doing at San Francisco General Hospital. I think they’re important to continue, and the chair will allow those activities to persist.”

– John F. Murray, MD (1927-2020)

