AAPG Honorees, 2013

DIETRICH H. WELTE
Sidney Powers Memorial Award

Citation— To Dietrich Welte, geoscientist and entrepreneur, the father of modern petroleum system modeling. His contributions to geoscience have been both diverse and far-sighted, but out of all his achievements it was the vision of rigorously translating chemical, physical and biological process descriptions into source, seal, reservoir and trap coordinates that was a game changer for modern petroleum geoscience.

Dietrich Welte is one of Europe's leading elder statesmen in geology and geochemistry. He was born on January 22, 1935 in Würzburg, Germany. He attended the University of Würzburg where he received his Ph.D in geology and geochemistry in 1959. His paper on distinguishing marine from limnic and terrestrial organic matter using odd- and even-numbered carbon chain abundances was his first publication and became an important tool for classifying source rocks and crude oils, later verified by the likes of Bray and Evans (1961, 1965). He was recruited by Shell International Oil Company and worked three years in their employ as a research geochemist, studying the origins of oil and gas. The next four years were spent in academia, having returned to the University of Würzburg as a faculty member. It was during this period that he produced his classic paper on the relation between petroleum and source rock, which won him the coveted President's Award of AAPG in 1966. In 1967 Dietrich returned for his second stint in industry, this time with Chevron Oil Field Research Company, starting off as a senior research geochemist and culminating as research coordinator for exploration. He applied his talents to help Chevron solve exploration problems in California, the Gulf Coast, and other areas of the Lower 48. Academia beckoned once again in 1970 and, answering the call, he returned to the German university system, establishing research and teaching activities first at Göttingen (until 1972) and then at Aachen where he held a professorial chair for 28 years. He founded the Institute of Petroleum and Organic Geochemistry at Kernforschungsanlage (KFA), now Forschungszentrum Jülich, in 1979. It was under his leadership that the institute gained a world-renowned reputation for its petroleum-related research activities, publishing 600 papers in international journals. His teamwork with Detlev Leythaeuser, Jurgen Rullkötter, Matthias Radke, Ralf Littke, Brian Horsfield, and many others is legendary. Following his entrepreneurial instincts, Dietrich founded Integrated Exploration Systems (IES) in 1983, a basin modeling company that rode the ups and downs of the industry, but which eventually flourished at the leading edge of technology. Having reached retirement age in 2000, Dietrich stepped down from his position as institute director at KFA, and also graduated to professor emeritus status at Aachen. However, in true style his horizons remained broad, leading Integrated Exploration Systems to bigger and better things, culminating in the acquisition of the company by Schlumberger in 2008, and actively participating in establishing the International University Bremen, now the Jacobs University, Germany. It should also be noted that over the past 10 years Dietrich has been striving for a "less politically driven accent" to the debate in Germany about "energy and climate", and that he remains active and forthright in this endeavor.

Dietrich Welte's field of scientific expertise is broad. We associate his name with groundbreaking scientific publications in the early 1960s when petroleum geochemistry was still in its infancy, publications that are the cornerstones of modern petroleum scientific concepts. His best-known paper on the relation between source and petroleum has been alluded to above. Also worthy of special mention are his works on

the carbon cycle and on the stable carbon isotopic composition of individual organic compounds in crude oils. The latter was the forerunner of a major current activity in organic geochemistry, now made possible by advances in analytical design. Dietrich's name is synonymous with basin modeling, having had the foresight to envisage its value in both earth science education and in the petroleum industry. Understanding the dynamics of earth processes, not the static end-result has been his quest, and his pioneering publications are classics. The concept of quantitative and predictive models describing geological processes was first published in 1972. His groundbreaking paper with Arif Yukler titled "Petroleum Origin and Accumulation: A Quantitative Model" was published in the *AAPG Bulletin* in 1981. Earth scientists everywhere, in academia and industry alike, associate the name Dietrich Welte with *Petroleum Formation and Occurrence*, the first comprehensive textbook in the field of petroleum geochemistry. First published in 1978 with coauthor Bernard Tissot, and expanded in 1984, this book presented an enlightened insight into the processes of petroleum formation, from basin through to molecular scales, and heralded the start of the discipline we know today. This book and Dietrich's contributions to basin modeling have played an important role in helping to bring together the various disciplines within earth science.

Dietrich Welte has represented his country and discipline on the international stage for nearly 30 years. He has been the German representative for the World Petroleum Congress since 1972 and been on its program committee since 1987. He was twice leader of the German science and technology delegation to China (1977, 1978) and member of other delegations to Israel, Canada, and Brazil. He has also been active in his native land, highlights being his election to the Rheinisch-Westphalischen Academy (1978) and the Senatskommission of the German Science Foundation (1989–96), as well as being president of the Geologische Vereinigung (1995–98). His efforts have not gone unrewarded. In 1995 he was awarded an honorary doctorate from Bochum University, and he has been recipient of the President's Award of AAPG (1966), the Clarence Karcher Medal of the University of Oklahoma (1979), the Alfred Treibs Award of the Geochemical Society (1983) the Carl Engler medal of the German Association of Oil, Gas and Coal Research (1986), and the Gustav-Steinmann Medal of the Geologische Vereinigung (1989).

During a professional career that spanned more than 40 years as a petroleum geologist, researcher, university professor, and consultant, Dietrich Welte has mentored 80 master's students, 50 Ph.D. students, and many postdocs and junior colleagues. Today most of these are working for the international petroleum industry worldwide. The roots of the leading research and teaching institutions in petroleum geoscience in Germany, namely at GFZ German Research Centre for Geosciences, and the Energy and Mineral Resources Group of Aachen University, lie with Dietrich Welte's institute in Jülich.

Dietrich's former colleagues wish him well, and are delighted that AAPG has chosen to acknowledge his career achievements via the Sidney Powers Award.

Brian Horsfield

Response

It gave me great pleasure and feelings of gratitude and deep emotion when I read on August 15th an e-mail from Ted Beaumont, president of AAPG, that I had been awarded the Sidney Powers Memorial Award 2013, the AAPG's highest award. It was one of those rare moments when, in an almost chaotic reminiscence, a thousand thoughts pass your mind:

My exciting and extremely nervous arrival as a Fulbright Scholar in New York after a 10-day journey across the Atlantic on an ocean liner in 1957; the shocking but very promising and fruitful contrast between needy post-war universities in Germany and a prosperous Pennsylvania State University; my entrance to the international petroleum industry with Shell and Chevron in the 1960s; the instructive and stimulating AAPG conferences; the challenging and exciting lecture tours with my colleague and friend Bernard Tissot; the special and sometimes awkward atmosphere of universities and academia in general; and, finally, in the 1990s as a matured professor and scientist, the experience with the strange and often abrasive and conflict prone world of politics and big bureaucratic machines.

It is indeed a wonderful experience to receive now, after such a long, interesting, and satisfying professional career in the geosciences, the Sidney Powers Award from the AAPG. It is a very pleasant coincidence that I receive this award under the presidency of

Ted Beaumont, who I met for the first time, when he was a rising, talented young geologist, during an AAPG course at the Institut Francais du Pétrol (IFP) in Rueil Malmaison, near Paris, in the 1970s.

Since those early years the professional world, the geosciences, the petroleum industry and the world around us, have undergone drastic changes. Geoscientific disciplines, formerly separated and often even isolated have grown together. The international petroleum industry experienced a shift concerning the dominating role of private companies towards the increasing importance of politically influenced national companies (NOCs). And we now live in a truly globalized world where there is permanent communication via the Internet and where we are indoctrinated continuously through politics and the media.

In the light of these developments I would like to address two different topics that geoscientists should be aware of: firstly, the obvious change in the geosciences toward a holistic approach and the striving for a better understanding of geoprocesses in space and time on different scales; and, secondly, the mega-theme and twin-issue of "energy and climate."

When I started in the geosciences in the 1960s, many important scientific-technical topics were still in their infancy or practically nonexistent. Examples of these are plate tectonics, seismic stratigraphy or bright spot technology, chemical kinetics in source rock studies, understanding petroleum migration and reservoir simulation. Moreover, the disciplines developing such scientific specialties were often categorized as specialist niches. Fortunately, different geoscientific disciplines cooperate much closer today and teamwork is very common. An important impulse for this interdisciplinary cooperation and a more holistic approach came from the "niche discipline" of organic geochemistry. The understanding of petroleum generation and maturation of source rocks was based on the observation that the complex chemical reactions to form petroleum out of kerogen could be described by the so called Arrhenius equation $k=A* e^{\frac{-Ea}{R*T}}$

k=reaction rate
A=frequency factor
E_a=activation energy of reaction
R=universal gas constant
T=absolute temperature in Kelvin

The establishment of this insight in the late 1970s and 1980s was a significant breakthrough. This equation showed very clearly that one key element to understanding petroleum formation, migration and preservation in traps was the reconstruction of the temperature history in a given sedimentary basin in space and time. Thus, basin evolution and subsidence, with all its ramifications spanning from the sedimentary fill to chemical reactions throughout the rock column, fluid movement and changing geometries due to tectonics came into focus as a whole. It was at the same time a change in paradigm from a static to a dynamic approach. Finally, with the introduction of numerical simulation of the relevant geoprocesses, the concept of petroleum systems modeling was born and implemented. This achievement would not have been possible without the teamwork and cross-cooperation of numerous talented scientists in different fields and in different places. Indeed, the numerical simulation of geoprocesses has opened up a new era, not only in the exploration and production of petroleum, but in the geosciences in general.

In the petroleum industry, it paved the way for a more focused collection of geological and geophysical data, better volumetric quantification and quality prediction of expected petroleum finds and, last but not least, better risk assessment. Such achievements are of special value in modern high-risk ventures, such as in ultra deep waters and with subsalt targets. In these times of mounting drilling costs, with wells costing easily over $100 million and increasing exploration costs in general, understanding and mastering the complexity of subsurface geoprocesses is indispensable. This, in turn, is only possible with modern petroleum systems modeling.

During the last 15 years of my professional career as a researcher and research manager in Germany's largest nuclear research center in Jülich (KFA-Jülich; later FZ-Jülich), with about 5000 employees, I was also busy running the small private company Integrated Exploration Systems (IES). During these years and into the new century I was exposed to, and in direct contact with, three different worlds: the world of science in general, the world of science-politics, and the world of international business, in connection with IES in the competitive world of the petroleum service industry.

It was during those years that the mega-theme and twin-issue of "energy and climate" became virulent. Politics and the media began to surpass each other in

spreading bad news about the use of fossil energy and the alleged damage to the climate. Proponents of nuclear energy started to use the CO_2 argument for their purposes. Especially after the nuclear accident in Chernobyl, Russia (1986) the anthropogenic CO_2 issue was leveraged in Germany, England, and elsewhere to improve the damaged position of the nuclear energy industry. The German Physical Society (DPG) and the German Meteorological Society (DMG) published a joint memorandum (1987), warning of a newly made climate change with catastrophic consequences due to greenhouse gases and, foremost, anthropogenic CO_2. The basis for this warning was computer models. Well-founded doubts about various assumptions made for the computer models, or scientifically established paleoclimate data not supporting the hypothesis that CO_2 is one of the main controlling factors on the Earth's climate, were continuously ignored. From now on the climate issue and "new" strategies for the provision of primary energy were definitely in the hands of the media and politicians. It is not by accident that in 1988, with massive German influence, the Intergovernmental Panel on Climate Change (IPCC) was founded and attached to the United Nations.

The repeatedly propagated claim by the media and politics of a man-made climate change has, since the late 1980s, pushed aside the chance of an honest scientific debate in many western countries. Science organizations, inclusive of those in the geosciences, failed to bring this issue back to objectivity. The reasons for this failure are certainly diverse, but one of many reasons is the close association of certain scientific circles with politics and the media.

Geoscientists know that climate change is a normal, natural phenomenon that occurred frequently during the Earth's history. They also know that the paleoclimate record of millions of years does not support the hypothesis of a decisive influence of atmospheric CO_2 on the Earth's climate. There is ample evidence that during the great ice ages in the Silurian and Carboniferous/Permian, atmospheric CO_2-concentrations were much higher than today. We know from ice core data, spanning several 100,000 years that it was the temperature which increased first and that the rise in atmospheric CO_2 was always lagging behind. Very recent investigations, covering the time span from 1980 till now, with very detailed records on temperature and CO_2 in space and time, confirm the cause and consequence argument of rising temperature and the subsequent liberation of CO_2 in the natural cycle.

As geoscientists, we are aware of the fact that there are great uncertainties in understanding the details of the natural carbon cycle with respect to its different sources and sinks and the inherent flow dynamics and quantities. Since the man-made CO_2 amounts to approximately 6% of the global CO_2-cycle, the impact of anthropogenic CO_2 is still obscured by the uncertainties within the much bigger natural cycle.

It is high time that we, as geoscientists, raise our voice loudly and inform the public everywhere that the CO_2 hypothesis, derived from purposely designed computer models, stands on weak ground and is far from being confirmed. From my own experience I know that a critical review of the CO_2 hypothesis, which is really necessary, only has a chance of success if it is made via a neutral, highly respected and scientifically competent platform, like the academy of sciences or a similar competent scientific organization. Given the global importance and emotional aura of this issue—"energy and climate"—it should be a joint effort between representatives from different countries.

My response concerning the Sidney Powers Award would be incomplete without commenting on my wonderful and stimulating time as a university professor: research and teaching, what a privileged profession. I remember well one of my former students from South America, who I met after many years at a research conference in Mexico. When talking about the time he spent with me as a student, he said "you had lots of fun teaching petroleum geochemistry, didn't you?" All I could say was, "yes I did!" I should also say that I received a lot of scientific stimulation from conversations with my Ph.D. students. I am very happy and proud of their careers in the international petroleum industry and their personal achievements.

The foundation and successful development of the Institute of Petroleum and Organic Geochemistry at the Kernforschungsanlage (KFA), now Forschungszentrum Jülich, would not have been possible without leading individuals like Brian Horsfield, Detlev Leythaeuser, Ralf Littke, Matthias Radke and Jürgen Rullkötter. Each of these was a renowned scientist in his own right, yet were loyal members of my institute. Indeed, together we were able to create and maintain

the congenial scientific spirit, which is necessary for a successful research institute.

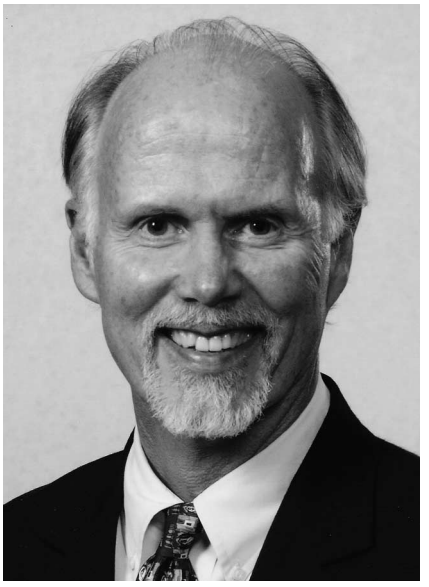
Based on the success story of our research institute and stimulated through my contacts and by friends in the petroleum industry, I dared to found Integrated Exploration Systems (IES) in 1983. It meant a lot of additional work and demanded great self confidence during the initial years to navigate the tortuous path of a small company in a very competitive business environment. As always, my wife Hildegunde not only gave me the necessary support, but most of all guaranteed the important emotional stability. I am most thankful for this.

Concerning this second success story, the one of Integrated Exploration Systems, I am very much indebted to the entire IES staff and above all, to two colleagues in particular, Thomas Hantschel and Bjorn Wygrala. These two individuals made an excellent duo—the bright young physicist paired with the broadly educated, open minded and communicative geologist—with whom I could work. Together, we managed to steer the IES company on its present course of success.

In 2008 Integrated Exploration Systems (IES), was acquired by Schlumberger Corporation. It was Ian Bryant, if I may say so, who felt and thought as an experienced geoscientist like we did in IES. This conceptual geoscientific and methodological coincidence triggered and concluded the acquisition. I am thankful for this and am pleased with the ongoing development of the former IES. I enjoy very much my ongoing work at Schlumberger and thereby the chance to remain in contact with the younger generation of geoscientists.

Concluding my response for the Sidney Powers Memorial Award 2013, I express the hope to meet some of my old friends from the AAPG at the conference in Pittsburgh in May 2013.

Dietrich Welte



STEPHEN A. SONNENBERG
Michel T. Halbouty Outstanding Leadership Award

Citation— To Stephen A. Sonnenberg, an outstanding leader, teacher, and author for his dedicated and distinguished leadership, for over 30 years of service and exceptional commitment to AAPG, his students, and fellow geologists and petroleum geosciences.

Stephen A. Sonnenberg, born in Billings, Montana, is a second-generation geologist. Growing up, Steve was captivated by science and an innate love of the outdoors. He has lived in Montana, Colorado, Oklahoma, Texas and Bolivia but calls Denver his "home" after living there for over 30 years.

Steve received B.S. and M.S. degrees in geology from Texas A&M University and a Ph.D. in geology from the Colorado School of Mines.

Spanning the past 36 years, Steve has worked for Exxon, Bass Enterprises, North America Resources, PanCanadian, EnCana, Kerr McGee and Anadarko in various geological, exploration/exploitation and management roles. Steve is a successful oil and gas finder with varied experiences in the Gulf Coast, Rocky Mountains, Mid-Continent, Pacific Northwest and the former Soviet Union (Turkmenistan and Uzbekistan). His recent emphasis has been on U.S. resource plays including Rocky Mountain unconventional resource plays in the Bakken Shale and the Niobrara Limestone which are unfolding now.

As a teacher, Steve has led multiple field trips and taught courses for AAPG, SIPES, RMAG, DPA-AAPG, Pertamina Oil, Nautilus, and Colorado School of Mines. In 2007, Steve achieved one of his major life goals, becoming a professor at Colorado School of Mines as the Charles Boettcher Distinguished Chair in Petroleum Geology. Steve currently runs three industry supported research projects at Colorado School of Mines: Bakken, Niobrara, and Vaca Muerta petroleum systems. These research projects are investigating fundamental aspects of unconventional petroleum systems while supporting 20 to 30 graduate students in their search for new knowledge.

Steve has authored numerous relevant practical and timely geological publications, primarily focused on the Rocky Mountains and Mid-Continent, but also extending to the former Soviet Union. Steve's research

contributions include the relationship between tectonics and sedimentation, sequence stratigraphy of Lower Pennsylvanian and Cretaceous rocks and reservoir description/characterization, as well as topics on professionalism for petroleum geoscientists.

Steve joined AAPG in 1975 and became an AAPG Certified Petroleum Geologist in 1983. During the last 37 years, he has served on many committees and in key leadership capacities for AAPG, including vice president (1995–96), president-elect (2002–03), president (2003–04), and chairman of the House of Delegates (2007–08). While serving in these roles, Steve was instrumental in writing the strategic plan, which envisions the future of AAPG as it grows into a global geological society. Because of his active involvement over many years in conventions, publications, DPA, Advisory Council, as well as GEvO, IP, IBA and Corporate Advisory committees, he brought an experienced perspective to the fundamental components in the strategic plan. Along with all the many well-deserved awards and honorariums, it is this deep and long term commitment to AAPG and its future that is recognized in Steve's service.

His extensive committee service record includes: Distinguished Lecture, Visiting Geologist, Education, Treatise of Petroleum Geology, Sample Preservation, Budget and Finance, Mentoring, Ethics, Resource Evaluation, International Pavilion, 100th Anniversary, Corporate Advisory, Conventions, Imperial Barrel, and Geologic Events Oversight Committee, Advisory Council (Chair), Division of Professional Affairs (Vice President and President) and the House of Delegates since 1983 (Rules and Procedures, Constitution and Bylaws, Resolutions, Credentials, Future of Earth Scientists, and Honors and Awards). Steve served as general chair for the 2001 Annual Convention and Exhibition in Denver and was later the technical program chair for the 2009 ACE Denver. He is technical program chair for the 2013 Denver AAPG/SPE/SEG Unconventional Technology Conference (URTeC) the first multi-disciplinary conference that brings the three professional disciplines of geology, geophysics and engineering together to focus on onshore U.S. unconventional resource plays. Steve actively supports the AAPG Foundation and became a Trustee Associate Member in 2000. Steve has been honored by AAPG with its Distinguished Service Award in 1999, Honorary Member Award in 2008, and has also been the recipient of eight Certificate of Merit awards. The DPA has also honored Steve with its Distinguished Service Award (2001) and Exemplary Service Award (2002). The House of Delegates awarded Steve with its Distinguished Member of the House Award (2011).

Steve also has an impressive record with the Rocky Mountain Association of Geologists (RMAG) as secretary (1984) and president (1991). His RMAG committee service includes program chairman, editor of *The Mountain Geologist* and several RMAG guidebooks. RMAG has awarded Steve the Distinguished Service Award (1992), 75th Anniversary Special Service Award (1998), Public Service Award (2003), and Honorary Membership (1996).

Steve has been president of the Rocky Mountain Section AAPG, Rocky Mountain Section SEPM, Colorado Section AIPG and the Colorado Scientific Society (1993 Honorary Member). Steve has been general chairman for two Rocky Mountain Section AAPG meetings (1990, 1997) and also a RMAG-Colorado Oil and Gas Association Convention (2006). He was elected a *Fellow* of the Geologic Society of America in 2003.

Steve has been honored by both of his alma maters, receiving the Young Alumnus, Outstanding Alumnus, and Mines Medal from Colorado School of Mines and the Geoscience and Earth Resource Council Distinguished Achievement Medal from Texas A&M University.

Public service is an important part of Steve's leadership. He has served two terms with the Colorado Oil and Gas Conservation Commission (appointed by two governors of Colorado from 1997–2003, including chair of the Commission from 1999–2003). His service during this time was particularly challenging and he was instrumental in making the transition for industry's increasing environmental responsibility while addressing the public's concerns and needs for a balanced solution. Steve has been a board member of the Colorado Energy Research Institute (2004–07) and the Colorado School of Mines Foundation (1995–97). He also has served on advisory committees for the departments of geology for both Texas A&M University and Colorado School of Mines. He is a recent founding member and president of the Colorado School of Mines Department of Geology and Geological Engineering Enhancement Committee.

Steve has always had an active interest in sports and outdoors activities. He attended Texas A&M

University on a swimming scholarship and currently enjoys hiking, biking, fly fishing, snow shoeing, and skiing in Colorado. Steve has also led more than 15 geological rafting excursions down the Grand Canyon much to the delight of those young and young-at-heart. These trips are the ultimate experience for geologists to see rock formations that are foundational to the historical geology of North America.

Steve derives great personal satisfaction by giving his time and talent back to our professional and scientific organizations. He considers this part of his professional responsibility but it is also his true passion. His enjoyment of working with others has achieved many benefits for AAPG, the Rocky Mountain Section, the Rocky Mountain Association of Geologists and the state of Colorado.

R. Randy Ray

Response

I am greatly honored to receive Michel T. Halbouty Outstanding Leadership Award and want to thank all who were responsible for my selection, especially the Advisory Council and the Executive Committee. Many thanks also go to my longtime friend, Randy Ray, for being my biographer.

I am a second generation petroleum geologist and grew up in the following "oil" towns as a result of my father, Frank, being in the oil and gas business: Billings, Montana; Cochabamba, Bolivia; Denver, Colorado; Houston, Texas; and Oklahoma City. I became interested in geology as natural fallout from enjoying science in high school and of course, my dad being a petroleum geologist. My dad always said find a career that you enjoy and look forward to each day. Needless to say, I have greatly enjoyed my career in the oil and gas business.

I attended Texas A&M University on a swimming scholarship. After completing my bachelor's degree and I elected to stay at A&M and work on a master's degree under Bob Berg. Bob had a special way of getting students excited about various aspects about petroleum geology. I went to work for Exxon Company, USA in Houston, which was a great experience for me. I worked in exploration onshore Gulf of Mexico in the Wilcox and Edwards trends. During this time, I decided that I would like to pursue a Ph.D. degree in geology and applied to Colorado School of Mines where I was accepted. I went with the idea of studying under Bob Weimer to further my understanding of petroleum geology stratigraphy and sedimentation. I feel especially honored to have had two Sidney Powers medalists as my main advisors and teachers at A&M and Mines.

After getting out of Mines, the job market was hot during 1981. I elected to stay in Denver for my career instead of moving back to Texas. That decision along with mergers, acquisitions, companies exiting Denver has given me an enjoyable and sometimes bumpy career in the Rockies. Throughout my career I have learned the importance of having a strong network, always having the highest ethics and professionalism, and enjoying what I do. I have worked for a major company, small and large independents, and for myself in my career. The biggest thrill I have had is having new field wildcats come in. I can remember logging several discoveries in the middle of the night and feeling the excitement of watching the logs indicate pay and success. The reason I went back to Mines to get a Ph.D. was to teach and do research one day in my career. So I always wanted to have a part of my career in the academic world and thus am now back at Mines teaching petroleum geology to the next generation of geologists, geophysicists, and petroleum engineers. Success as a petroleum geologist comes from having two important attributes: vision and imagination. I hope to instill these qualities into my students.

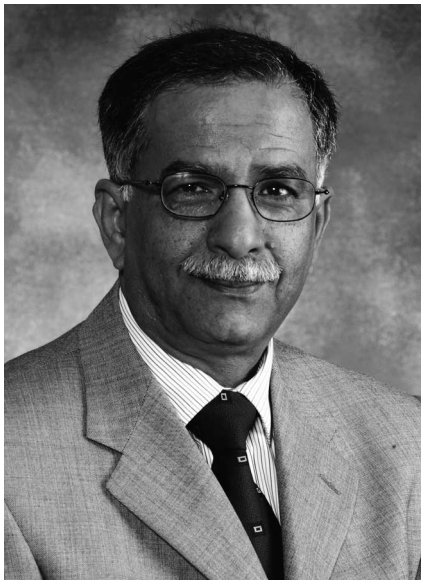
While I was at the School of Mines, Bob Weimer emphasized the importance of professionalism, supporting the profession, getting active in professional societies. I became hooked on the Rocky Mountain Association of Geologists, and later AAPG along with several other organizations. I have greatly enjoyed working on conventions, various committees, and being elected to many leadership positions. The highlight of my professional society career was serving as AAPG president and representing AAPG to the world.

The Michel T. Halbouty Outstanding Leadership Award is given in recognition of outstanding and exceptional leadership in the petroleum geosciences. John Quincy Adams was quoted as saying: "If your actions inspire others to dream more, learn more, do more, and become more, you are a leader." I try to live by that quote and hope things I have done have influenced others. There are many lessons one learns in a career and here are some of my thoughts on leadership. My recommendations for tomorrow's leaders are as follows:

1. Always have the highest ethical standards
2. Be a professional every day
3. Read the books
4. Build your net
5. Learn how to "push back"
6. Maintain your technical skills
7. Always remember your employee may be your boss someday
8. Maintain balance in your life
9. Support your profession by being active in professional societies
10. Enjoy what you do and maintain a sense of humor!

AAPG has played a key role for me in learning about leadership. The satisfaction I have from being involved in AAPG is immeasurable.

Stephen A. Sonnenberg



ABDULLA A. AL NAIM
Honorary Member Award

Citation— To Abdulla Al Naim, veteran explorationist and courageous leader who has inspired hundreds of geoscientists to take well-reasoned risks, test new ideas and discover hydrocarbons.

Honorary Membership is awarded to "persons who have distinguished themselves by their service and devotion to the science and profession of petroleum geology and to the association." Abdulla Al Naim fits this description very well. During his long-time membership in AAPG, he has been active on many fronts. During his career with Saudi Aramco, he has risen to the position of vice president for exploration, a distinguished leadership role in one of the world's great oil and gas companies.

Abdulla was born and raised in Dammam, on the east coast of Saudi Arabia, literally between oil facilities and within sight of Aramco's headquarters in Dhahran. He developed a strong interest in geology during his school years, influenced by a geologist friend of his father, and went on to study geology at the University of Riyadh (King Saud University). He started his long career with Aramco in 1978 immediately after completing his bachelor's degree. The company was later renamed Saudi Aramco in 1988, after it was completely acquired by the Saudi Arabian Government.

Abdulla started his career as a well site geologist, and worked throughout the 1980s as a geologist in the exploration and exploitation divisions, which gave him a thorough knowledge of petroleum geology, drilling operations, and reservoir management. However, his leadership skills were recognized by the company, which led to a number of administrative assignments, and, in 1991, he became manager of the Geology Department, during a period which saw the implementation of 3D seismic surveys and building of elaborate computer models of the world's largest oil reservoirs.

Abdulla's true passion was exploration, and he probably felt rewarded in 1996 when he was assigned as manager of the Area Exploration Department, shortly after the company initiated an extensive exploration program to meet the increasing domestic demand for gas. This was an exciting period with emerging play concepts targeting Paleozoic sandstones, and under his leadership, a significant number of new gas condensate fields were discovered in the greater Ghawar area, starting with Waqr in 1998 and continuing until now. He also initiated the acquisition of very large 3D surveys for exploration that have since merged to cover a substantial portion of Saudi Arabia and its offshore margins.

Following short assignments in the Exploration Operations Department (2002), and Reservoir Characterization Department (2004), Abdulla was made executive director of the Exploration Organization in 2004 and then appointed to his current position as vice president of exploration in 2006. He briefly held the position of acting vice president of petroleum engineering and development during 2008–09, responsible for the management of Saudi Aramco's oil and gas fields.

Under Abdulla's leadership, exploration for oil and gas expanded to all sedimentary basins in Saudi Arabia, including offshore areas in the Arabian Gulf and the Red Sea. This effort resulted in several major Khuff gas discoveries in salt domes in the Arabian Gulf, gas discoveries in Ordovician sandstones in northern Saudi Arabia, oil discoveries in Cretaceous carbonates in the Empty Quarters, and the recent offshore gas discovery in the Red Sea. Going

beyond conventional targets, the exploration program is targeting unconventional plays in Silurian shales, tight Paleozoic sandstones, and Jurassic source rocks.

Abdulla leadership is reflected by the success of his organization in growing gas reserves and replacing annual oil production. He oversaw a major growth of Saudi Aramco's Exploration Organization, reflected in the large scale of seismic, non-seismic, and drilling operations. To meet this growth, the workforce was increased to nearly 1000, particularly with young geoscientists. He has supported the diversification of the workforce and the hiring and training of a new generation of geoscientists.

In terms of service to the geological profession, Abdulla was instrumental in founding the Dhahran Geological Society, an AAPG affiliate, and served as its first president in 1989. He has served AAPG as a member of its International Committee in 1989, as president of the Middle East Region during 2004–06, and is currently serving on its Corporate Advisory Board. He has consistently helped in providing corporate support for AAPG conferences, workshops, field trips, Datapages, and publications at the local and international level.

The biannual GEO conference and exhibition is the largest geoscience event in the Middle East, and its strong technical program is organized by AAPG. Abdulla has served on the technical and executive committees of every GEO conference since its inception in 1994, and chaired the conference in 2006. He has been particularly enthusiastic for the training of new generations of geoscientists through courses, advanced degrees, and field seminars, through contributions of complete libraries of AAPG publications to geoscience departments, and through visits and summer programs for students. Recognizing the need for basic geological skills in this digital age, he initiated a "back to basics" program of core workshops and field trips for Aramco geoscientists.

In terms of service to petroleum geology, Abdulla has maintained Saudi Aramco's commitment to the extensive acquisition of geological, geophysical, and geochemical data such as cores. Experience has shown that these investments continue to yield exploration and scientific dividends well into the future. He has been an invited speaker at several AAPG and other petroleum conferences. He has approved the provision of subsurface datasets for research and education at local universities, and encouraged publications by Aramco geoscientists in various scientific journals.

Abdulla is foremost a warm, caring, and empowering leader, and one who is passionate about exploration. His humble learning style, trust in the capabilities of others, optimism and boldness to take risks and try new ideas has earned him respect and admiration within the local and international geological community. These traits have also inspired others to be bold and creative in exploring further and deeper for oil and gas.

Abdulkader M. Afifi

Response

I consider this award as one for all geoscientists in the Middle East because for a great deal of time I have spoken on their behalf – expressing our thirst for knowledge in the region, wanting to develop our countries' resources in the most optimal way and exploring for new resources.

Besides my passion for my family I have been blessed with two additional passions: First is my passion for geology and second an eagerness to help others. It is really great when your passion and your hobby becomes your job. Then your job becomes a hobby and you are paid money for having fun. You will certainly do very well if you are enjoying your job. This is why my advice to all young professionals is always to look for the aspect of your work that you enjoy the most; to basically follow your heart and your passion.

To help others you have to know your subject thoroughly then you must be enthusiastic about helping others by fulfilling their needs—providing that "service" that they require, and that you have developed an expertise in. Being enthusiastic only works if you have a very high level of interest in a subject and if you are passionate about a subject then the quality of your service will be high and therefore appreciated by the recipients of this service.

It wasn't until my third year of college at King Saud University in Riyadh that I got swept away with geology, mainly thanks to two inspirational professors that I had. I joined Saudi Aramco immediately after graduation and proceeded to have a marvelous career in wellsite geology, reservoir geology, and hydrology, geophysical operations, and exploration. So many of my supervisors were passionate about their profession that it was passed on to me, and I thank them for that. I received lots of encouragement to write technical papers and make presentations at AAPG, SPE, DGS, IPTC, EAGE

conferences or forums and by 1989 I had made connections with enough other enthusiastic explorationists in Saudi Arabia that we were inspired to found the Dhahran Geosciences Society, the first geoscience society in the Middle East, of which I was the first President.

The "Middle East Geo Conferences," popularly known as "GEO" conferences were initiated, and it has been my great pleasure to be able to present papers at almost every GEO conference and to be part of the organizing committee since 1994.

Something interesting happened as the years passed by and I gained seniority in the Saudi Aramco organization—I now had the opportunity to make strong "suggestions" that other professionals in the company should dedicate more of their own time to develop their own passion for their profession by preparing and publishing papers. It gave me great pleasure to see the participating professionals get more involved in their technical societies and develop their expertise.

I continue to encourage attendance at local and international workshops, seminars, conferences and most especially geological field trips in the Kingdom of Saudi Arabia and abroad. This passion for helping others is focused on helping them to help themselves by active participation in technical societies like the AAPG and DGS. It is vitally important to our companies and our countries that the young professionals in the oil and gas industry should concentrate their efforts on the aspects of geology that they are individually passionate about. By writing papers and brainstorming with other like-minded people they will develop themselves, improve their own performance and careers, and make their employers more successful too.

As you all know, petroleum exploration involves taking risks—calculated risks—however at times you need to be courageous, some would say "aggressive" for instance with exploration programs and when trying untested technologies for the first time. My experience from over the past 35 years is that providing you perform your best analysis, it usually turns out that it was very worthwhile to look on the positive side and take that chance! I have to reiterate this comment—a successful explorationist is almost always the one who not only knows his subject but he never loses his optimism.

In conclusion, my deep interest in geology has brought me wonderful friendships as I came to know many outstanding geoscientists from countries around the world. Many of my friends are here tonight and I thank them all for their enthusiasm over the years and the time we shared. Thank you very much for honoring me with this Honorary Member Award.

Abdulla Al Naim

JEANNE ELIZABETH HARRIS
Honorary Member Award

Citation— To Jeanne Elizabeth Harris, friend to all and prospector *par excellence*, for her loyalty, commitment, hard work, and leadership in the petroleum industry and AAPG.

Jeanne Harris thinks she's been nominated for the prestigious AAPG Honorary Member Award because of her work in the AAPG House of Delegates. Those of us who know Jeanne know that it is really because of her indefatigable enthusiasm, her unwillingness to take no for an answer, and her uncanny ability to help both friends and total strangers succeed.

Jeanne is what Malcolm Gladwell, in his bestseller *The Tipping Point*, calls a "connector," a person with an extraordinary knack of making friends. Connectors find everybody interesting. They have a foot in many different worlds, and they take steps to bring all those worlds together. Jeanne and I first met at Mobil in Denver in 1975. Soon after the industry imploded in 1986, she opened her own oil

company, and I took over my family's advertising business. One of my first challenges was to get 25,000 promotional figurines hand-painted in a very short period of time, but I knew very little about the field. So I turned to Jeanne, of course. It didn't matter that she knew absolutely nothing about the field. Through her extensive network she quickly found me an entire Vietnamese family who miraculously got the job done, beautifully, on time and under budget! Almost everyone who knows Jeanne has a similar story.

Jeanne applied her skills as a connector as a founding member of the Association for Women Geoscientists and in creating its first scholarship. The AWG Chrysalis Scholarship is awarded to graduate women geoscientists with big goals and a history of helping their communities. Jeanne chaired the Chrysalis Committee for 20 years, awarding more than 70 scholarships. How successful were the winners? One was a woman with four children who completed her Ph.D. and became head of the U.S. State Department's Science and Math Program for Girls in Africa and South America. Another winner, whose goal was to help emerging countries, later represented native Canadians in evaluating their minerals and negotiating with private companies. Another very successful winner was Denise Cox, now serving as AAPG Secretary.

Jeanne credits her mother and her two aunts as her greatest role models. While raising Jeanne and her five brothers, her mother Chris ran a laundry, completed both her M.S. and Ph.D., and became a college president, at a time when only 1% of college presidents were women. Jeanne's Aunt Margie was the first woman Chief Judge of a District Court in Michigan, while her Aunt Nealie was the second woman Federal Appeals Court Judge, and one of two finalists for the seat on the Supreme Court that was eventually awarded to Sandra Day O'Connor. These strong women seemed to Jeanne to be just "normal women with husbands and children," but they were—and still are—inspiring leaders and role models with their great wisdom and quiet determination.

Jeanne got hooked on geology as a career when she took two introductory courses at the University of Michigan to satisfy her science requirement. Before getting into the oil and gas industry, she had "lots of jobs" in geology, geophysics, computers, and other fields including mental retardation, zooplankton, earthquakes, underground nuclear blasts, and the seismic identification of artillery, coal mines, and salt.

She counts her discovery of the Greasewood Field in Wyoming as her most important geologic accomplishment, which may have opened up a new play with potential all across Wyoming: "All you have to do is map many different isopachs to figure out the history through time, make sure you have a source rock in the system and good heat flow, and offset a well with a flat decline." Well, sure.

There's another thing you should know about Jeanne. She is utterly fearless, with what Malcolm Gladwell, in *Outliers*, calls "low power distance." Gladwell describes a series of plane crashes that took place with greater frequency than expected. From the cockpit recordings, he shows that when culturally low-status crewmembers saw serious problems ahead of time, they wouldn't risk offending the high-status pilots and air controllers by alerting them – so the planes kept crashing. When the airlines re-trained the crews in "low power distance" relationships, the crashes stopped. Jeanne will take on anybody, regardless of their position, about anything, regardless of the risk, and the plane won't crash. She could teach classes in the merits of low power distance. In the same vein, she's an expert in "degrees of separation," a game in which people analyze how many contacts it would take them to reach a famous person. The average number of degrees of separation is six. I bet Jeanne could reach the POTUS in three.

Jeanne grew up in rural Michigan and earned her B.S. and M.S. degrees from the University of Michigan. After moving to Denver, she worked for Mobil, Natural Gas Corporation of California, and Equity Oil Company. In 1978 she met her future husband Robert Groth on a well in Wyoming. Jeanne considers marrying Robert "the most important choice I have made in my life." In 1986 they started G&H Production Company, LLC, where they have generated more than 65 prospects from Nevada to Montana, purchased land, drilled wells, and operated several field discoveries. Jeanne also has international oil and gas expertise in Africa, Belize, Canada, Mexico, and Thailand.

Jeanne is not just a joiner but participates wholeheartedly in everything she does, and she has risen to the top of the professional societies to which she belongs: AWG-Denver president, AWG national vice president, AWG Foundation president, RMAG first vice president, and chair of many committees, several AAPG

committee chairs and the secretary and first "Editor" of the House of Delegates. She received the AWG-Denver Woman of the Year and the AWG Distinguished Service Awards, the PG&E Community Service Award, the World Who's Who of Women Award for Contributions to the Geosciences, the RMAG and AAPG Distinguished Service Awards, the AAPG Long Service Award, and Honorary Membership in RMAG.

The time has come to elevate Jeanne Harris to the rank of AAPG Honorary Member. Congratulations to both AAPG and Jeanne!

Suzanne Webel

Response

I am so pleased to be chosen for Honorary Membership. When President Ted Beaumont called to let me know, I just smiled all day—maybe all week! To join the ranks of my mentors like Jack Parker, Norm Foster, and Bob Weimer was quite a thrill. Thank you all so much for this honor!

I grew up in an amazing family, as the second oldest with five brothers. In rural Michigan we were always playing sports or off in the woods building something. My father with my mother ran their own businesses, from a laundry to a furniture store, but in the mid-1960s the auto industry took a hit, the store went under, and my parents divorced. My mother, an economist, went back to get her Ph.D. while I was in college and later became a college president. My aunts, Margie and Nealie, both attorneys, became famous judges, and my Aunt Peg and Uncle Jerry, a double amputee from WWII, invented screws used in cars and was later CEO of over 20 international companies. All of my brothers have run their own successful businesses. Growing up, things weren't always easy, but they were always interesting.

When I joined AAPG in 1978, it was a very exciting time. However, in 1966 when I decided to major in geology at the University of Michigan, there had been no jobs for geologists in years. I loved the classes but was I making a mistake? My wonderful Aunt Margie, told me to go ahead. She said, "If you like it that much, you will find a way to use it." It was great advice. I got a fantastic education there, especially from my advisors, Henry Pollack and Rob VanderVoo, and my great friend Donna Jurdy.

In 1975 Mobil hired me and some amazing people that soon became my friends and cohorts: Vicki Cowart, former Colorado State Geologist and now CEO of Planned Parenthood of the Rockies, Sally Zinke, past SEG President, Janell Edman, a great geochemist, Suzanne Webel, president of several Colorado organizations, and Dave Suek, vice president of Stephens Energy. How could I not succeed with these kinds of friends behind me! What luck and timing!

My mentors at Mobil were so important. I started as a geophysicist (Mobil paid them more), and Clyde Kerns and Bob Kettle were key mentors. When I switched to geology in 1978, my boss Jerry Cooper supported my decision. He saw to it that I got trained in geology, encouraged risk taking, and taught me about company politics. Paavo Pumala, Andy Alpha, and Dave Morrow helped me to become an explorationist, challenging me constantly to learn and take risks. We all worked hard and had a good time together. At Mobil everyone went to professional meetings. Every Friday we walked over together to RMAG. Mobil also supported my risk taking by drilling a rank wildcat and the deepest well in Nevada based on Dave Suek's, Sally Zinke's and my work. What an eight-month ride, and, yes, it used to take eight months to drill a well!

On Mobil's Overthrust wildcat in Afton, WY, I met my husband and partner, Robert Groth. I like to say, "We argued for 6 months, but fortunately, the well lasted eight." We discussed everything. Robert was never boring then nor is he 30 years later. The best decision I made in my life was to marry him. Our son David and his wife/our daughter Rachel are amazing young people we are blessed to have in our lives.

In 1980 I went to Natural Gas of California to startup the Utah Hingeline exploration team. I had the best boss ever, Jim Daily, and hired two of the best geologists I have ever worked with, Judy Rudloff and Bob Bereskin. It was during this time that I helped form the Association of Women Geoscientists and AWG Foundation where I learned so much about leadership, management, creativity, and how to get things done. I was the second president of AWGF, and I helped start many of its programs, including the Chrysalis Scholarship which I chaired for 20 years. This is where I picked up the next set of life friends, like Nancy Banta, with Getty Oil International and Laurie Langer, my favorite engineer who always thinks out of the box. It was also 1980 when I met the amazing Susan Morrice, and we became fast friends. Luck and timing again!

Then in December 1985 Robert and I both lost our jobs. We were

married with a one year old son, and we were also helping to support my father who had early onset Alzheimer's. So, in typical Groth and Harris fashion, we decided January 1986 was just the right time to start up G&H Production Company, LLC. It was pretty similar to deciding to major in geology in 1966. Mobil, RMAG and AAPG friends were right there for us and helped us get started, especially Dave and Cindy Suek, Susan Morrice and her husband, Alex Cranberg, Will von Drehle, Judy Rudloff, and my favorite landman Russell Spencer. We remained active in RMAG where Robert became treasurer, and I became first vice president. I also became more involved in AAPG and learned so much from Pat Gratton, Bob Countryman, Sandi Barber, and so many others whose friendships I truly value. Good Old Gals (Robbie Gries, Randi Martinsen, Anny Coury, Penny Frush, Christine Turner, Mary Beth Cooper, Cindy Stewart, and Nancy Darnell) invited me in and became a special part of my life. What a magnificent group of women!

My friends and family are the most important things in my life and having them there allows me to take a lot of risk. I also like to surround myself with people who are smarter than I am so that I can learn from them. Thank you all, my dear friends and family who have always been there for me. I am so honored to receive this award. It could not have happened without your support and friendship.

Jeanne E. Harris

KENNETH E. PETERS
Honorary Member Award

Citation— To Kenneth E. Peters, for his distinguished scientific career in industry, government, academia, the service sector, and AAPG and whose keen interest in educating and mentoring students contributed to the successful careers of many petroleum geoscientists.

I have known Kenneth E. Peters as a colleague and friend for over 30 years so I can write this biography from first hand experience. Ken has had a remarkable, high impact career in organic geochemistry that started while he was attending UCLA and continues today. His contributions are in basic research, applied research and popularized research, a breadth of influence that few can match. Since the late 1970s, Ken authored or coauthored about 120 papers and books, some of which have been cited hundreds of times. He has worked with over 135 different coauthors. His most frequent coauthors were Michael Moldowan (19), Ian Kaplan (13), Les Magoon (9) and Cliff Walters (8), all accomplished geochemists and geologists.

What is truly spectacular about Ken's publication record is that for most of his 34 years in the profession he was employed by the oil industry (Chevron, Mobil, ExxonMobil, Schlumberger) where outside publications are comparatively rare. Nevertheless, Ken authored or coauthored 30 papers while at Chevron, 24 while at Mobil, and 11 in just three years at ExxonMobil. While at the U.S. Geological Survey he participated in 23 publications. His remaining publications were completed with his present employer, Schlumberger, and as a consulting professor at Stanford University. At Stanford Ken is actively involved in the Basin and Petroleum System Modeling (BPSM) Industrial Affiliates Program where he instructs and mentors Ph.D. candidates.

Ken made numerous contributions to basic research. For example, he proved the origin of 25-norhopanes in petroleum and solved a longstanding geochemical controversy. He pioneered the use of molecular mechanics to explain the stereo selective biodegration of these biomarkers in petroleum. Ken made several major contributions to applied research. For example, he combined organic geochemistry and sequence stratigraphy to create a new exploration model that challenged existing deep-water deltaic models to predict black oil in deep water settings. Ken is most recognized for popularizing research in his publications on chemo metrics, Rock-Eval pyrolysis, hydrous pyrolysis, biomarkers, and the petroleum system. Because of Ken's diverse contributions, he is widely referenced in the literature as he continues his research in

organic geochemistry and basin and petroleum system modeling.

Two of Ken's publications received the Best Paper Award by the Organic Geochemistry Division of the Geochemical Society. For the first award, he is a coauthor in a *Nature* journal article on Cretaceous black shale. For the other best paper, Ken is first author of an article in the *AAPG Bulletin* on the petroleum geochemistry of oil from the Beatrice oil field in the North Sea. He used a novel method to show co-sourcing from Devonian and Jurassic source rocks.

Ken has done as much or more than any high-profile organic geochemist to popularize research so that its content can be better understood by others interested in applying the methods. The most obvious contributions are his two editions of *The Biomarker Guide*. The first edition is considered a classic with 754 citations and has been out of print since 1995. The second edition published in 2005 is a more comprehensive two-volume set that has much broader appeal. This book is found in oil company offices and laboratories worldwide. The two-volume set went into the second printing in 2006. The second edition is now available in Chinese.

Ken completed *The Biomarker Guide* during off-hours while working full time at Mobil and ExxonMobil. Work completed while at the U.S. Geological Survey included completion of several chapters, the glossary, index, many figures, and revisions of the typescript and galley proofs. Even though there were two other coauthors, most of the work was Ken's responsibility. The publisher indicated that sales in the first few months after release far exceeded their expectations. Ken's hope has been realized in that this book has increased scientific cooperation between petroleum geochemists, geologists, and experts in other disciplines, particularly environmental scientists. He used the book to teach several graduate courses in the Geology and Environmental Science Department at Stanford University.

While at the U.S. Geological Survey Ken embarked on a new line of investigation that has dictated the direction of his career since 2000: numerical modeling of sedimentary basins and petroleum systems. He was involved in building the first basin-wide 3D model of the San Joaquin Basin in California to use in the assessment of oil and gas resources. Ken mapped the richness and quality of three source rocks and modeled the generation, migration, and accumulation of oil and gas in the basin. He was also involved in a similar effort on the North Slope of Alaska 3D model for use in an assessment. The model was subsequently expanded and sold to the petroleum industry. As a result of this work and the integration of petroleum geochemistry into these efforts, he became involved in developing the Stanford University Industrial Affiliates program for Basin and Petroleum System Modeling starting in 2005. This program has developed to include over 11 affiliate members from the petroleum industry multiple courses, one of which Ken instructs, that can lead to a M.S. or Ph.D. degree in modeling, thus fulfilling an important need for the petroleum industry. During this time, Ken went to work as Science Advisor for Schlumberger Information.

Ken has distinguished himself as an active member of AAPG by being an associate editor for 3 three-year terms from 1989 to 2012. He served as chairman of the AAPG Research Committee from 2007–10 and remains an active member of the committee. He organized a Hedberg Research Conference in BPSM and successfully lobbied for another. Ken was honored to be the AAPG Distinguished Lecturer 2008 and 2009. For these contributions Ken has earned and therefore deserves to be an Honorary Member of the AAPG.

Leslie B. Magoon

Response

This prestigious honor allows me to (1) express my gratitude to friends and colleagues in AAPG, and (2) provide our younger members with some advice. I humbly accept this award and acknowledge those who nominated me, past and current presidents Paul Weimer and Ted Beaumont, the Executive Committee, my management and coworkers at Schlumberger, my colleagues and students in the Basin and Petroleum System Modeling (BPSM) program at Stanford University, and Les Magoon for his kind biographical comments.

My first paper in *AAPG Bulletin* was published in 1977; my latest contribution is in early 2013. I joined AAPG in 1980 as a young petroleum geochemist with Chevron. AAPG publications, including the *Bulletin*, caught my attention because of their high quality. Former *Bulletin* editor Gretchen Gillis and current editor Steve Laubach continue the proud tradition of a premier scientific journal. AAPG annual meetings are exciting for the talks and posters,

but also for contacts on the exhibition floor. AAPG Hedberg Research Conferences are routinely excellent. These meetings and publications are great partly because of our dedicated AAPG staff in Tulsa, e.g., Jim Blankenship, Debbi Boonstra, Andrea Sharrer, and Beverly Molyneux. As I reflect on my career, AAPG people and products played a major role in my personal growth. Interaction with AAPG people still gives me the greatest satisfaction and I have several life-long friends to prove it.

I apologize for inevitable omissions from the following list of key people in my career. My Mom and Dad (English and chemistry teachers) taught me communication, self-discipline, and creative thinking. I was fortunate to know Bob Webb, who convinced me to take my first geology courses at UCSB. Joel Leventhal introduced me to geochemistry and my master's degree supervisor, Preston Cloud. Preston's 1970 book *Adventures in Earth History* sparked my interest in the revolutionary geoscience discoveries of the late 1960s as described by Stephen Gould, Konrad Krauskopf, Harold Urey, and Tuzo Wilson. My professional idols were Ian Kaplan, Dietrich Welte, and John Hunt. Ian at UCLA was a great mentor who taught me to be ready to summarize the status of my Ph.D. research at a moment's notice. Dietrich Welte pioneered petroleum system modeling and coauthored *Petroleum Formation and Occurrence* and *Petroleum and Basin Evolution*, which I read many times. John Hunt wrote *Petroleum Geochemistry and Geology* and his indomitable spirit was a guidepost for my career. These three men have been tough acts to follow. Finally, I thank my wife Vanessa and son Brent, for enduring my frequent absence from home.

A good colleague is not threatened by the best people, but seeks them as coworkers. I am privileged to have collaborated with Mike Moldowan, Gerard Demaison, Bob Carlson, Martin Schoell, Jeremy Dahl, Frank Picha, and Marek Kacewicz (Chevron), Cliff Walters, John Snedden, Dave Curry, and Zhibin Wei (ExxonMobil), Les Magoon, Ken Bird, Tom Lorenson, Paul Lillis, and Mike Lewan (USGS), John Zumberge and Stephen Brown (Geomark Research), Oliver Schenk, Thomas Hantschel, Bjorn Wygrala, Drew Pomerantz, Eric Lehne, Delphine Coutrot, and Xavier Nouvelle (Schlumberger), Brian Rohrback and Scott Ramos (Info Metrix), Nick Harris (University of Alberta), Martin Fowler (Talisman Energy), and Ed Duncan (Great Bear Petroleum). Finally, I gratefully acknowledge the technical expertise and mentoring of Jim Stinnett (Mobil) and Ian Bryant (Schlumberger).

The best students are not afraid to ask tough questions. I thank my many students over the years at UC Berkeley and Stanford, in Chevron, Mobil, and ExxonMobil corporate schools, and in courses for Oil & Gas Consultants International, EAGE, and NExT. I thank my colleagues (e.g., Allegra Scheirer, Stephan Graham, Tapan Mukerji, Noelle Schoellkopf) and students (e.g., Ye Wang, Keisha Durant, Meng He, Tess Menotti, Blair Burgreen, Danica Dralus) in the Basin and Petroleum System Modeling (BPSM) Industrial Affiliates Program at Stanford University for keeping me honest by asking those tough questions.

This response gives me the opportunity to provide some advice. "Give back" to the profession! I *volunteered* to give posters and talks at AAPG meetings, organize technical sessions, serve as Associate Editor, chair the Research Committee, run a Hedberg Research Conference and publish the results (*AAPG Hedberg Series 4*), serve as Distinguished Lecturer, and write papers and books. These activities contributed more to my growth than anything else. By giving, you receive.

In 2011, a major oil company wrote "Population and income growth are the two most powerful driving forces behind the demand for energy." No! *Because* of inexpensive energy the population can grow and have high standards of living. Without inexpensive energy much of the world's population would starve. If our industry is unable to communicate the importance of what we do, then it is no wonder that the public is confused.

The public generally has little science training. For example, about 40%-50% of the U.S. public rejects Darwinian evolution in favor of creationism or intelligent design. The public is not dumb. All they need are scientists willing to devote the effort to explain what we do and why it is important. Our politicians understand the importance of effort for re-election. Many of them are eager to direct economies and the future of nations based on "consensus" science and misguided thoughts on energy and the environment. Consensus is a political term that has no place in science.

The Achilles' heel of today's science is fierce competition for limited funds and a system that rewards sheer numbers of publications, sometimes at the

expense of ethics. Unfortunately, not all scientists are ethical, dispassionate, and objective. This partly accounts for a disturbing increase in the number of scientific papers retracted after publication over the last decade; from about 30 each year to more than 400 in 2011.

The above picture is not pretty, but there is hope. By "giving back" and taking a science-based stand on current issues, young scientists in AAPG and other organizations can exert a positive influence on the public, government, and even old scientists like me.

Thanks again for recognizing me with this award.

Ken Peters

DANIEL J. TEARPOCK
Honorary Member Award

Citation— To Daniel J. Tearpock, for his dedication to improving our industry through his contributions to the AAPG and DPA and by having taught and mentored thousands of geoscientists around the world.

Few people in our industry have had as large an impact on the careers of so many geoscientists and petroleum engineers around the world as Daniel John Tearpock. Through his best-selling text book and signature class *Applied Subsurface Geological Mapping* and his philosophical doctrine, the Ten Habits of Highly Successful Oil Finders, Dan has helped thousands of individuals and dozens of companies to be more successful oil finders.

Dan Tearpock is the founder and chairman emeritus of Subsurface Consultants & Associates, LLC (SCA), which is an international petroleum consultancy and training firm. Dan built SCA into an internationally recognized, client-focused company that offers world-class training and high quality consulting and staff placement. SCA's expertise now reaches around the world from Houston to Malaysia.

Dan is a successful oil finder who has always led by example. He really does practice what he teaches, and he has taught thousands. He has also infected those he has taught or coached with his passion for geology and for making high quality subsurface interpretations. More importantly, every one of his pupils, young and old have come away from the experience a better and more knowledgeable subsurface interpreter.

The driving forces behind Dan's professional success are his passion for geology and for the oil and gas business, and his desire to share his knowledge and enthusiasm with others through teaching and mentoring. Never one to rest on his laurels, Dan has continually sought out more and better ways to educate, inspire, and motivate young geologists both in the United States and around the world, and to create programs that promote professionalism, ethics, and cooperation among the different contributing professionals to the petroleum industry.

Raised in Pennsylvania coal-mining country, Dan's childhood was spent exploring the woods and mines close to his house, collecting fossils, quartz, and other minerals and dreaming of exploring other planets. As a boy, his career path was already clear: he wanted to become a geologist.

Upon graduating from Bloomsburg University in 1970 with a B.A. in earth sciences, Dan faced a tough job market in his chosen field. In response, he took strong initiative and started a computer consulting company, a business whose sale two years later provided part of the funds needed to return to school for his master's degree in geology from Temple University (1977).

After a two-year stint with Sperry Vickers conducting studies in geothermal energy development, Dan took his first job in the petroleum industry with Atwater Consultants. He left Atwater in 1983. By 1985, he was a senior geologic engineer with Tenneco Oil Company in Lafayette, Louisiana. It was during this time that his talent for training and geoscience education began to emerge.

During his time at Tenneco, Dan redeveloped the corporate geosciences training manual and program in subsurface interpretation and mapping, and was soon recognized as the company's worldwide subsurface mapping expert. His knowledge in this area is the foundation for the three textbooks he was to coauthor

and published in the years to come: *Applied Subsurface Geological Mapping, Quick Look Techniques for Prospect Evaluation, and Applied Geological Mapping with Structural Methods.*

Also while at Tenneco, Dan was responsible for conducting exploration and development studies through the application of geological, geophysical, and engineering data, and served as a technical subsurface advisor to geologists and geophysicists.

When Tenneco was sold in 1988, Dan seized an opportunity to again strike out on his own. Leveraging strong relationships built over his career at Tenneco, Dan's new company, Subsurface Consultants & Associates, LLC, grew quickly from a four-person shop of ex-Tenneco employees to an international consulting and training firm with multiple branch offices. At the same time, Dan's *Applied Subsurface Geological Mapping* book grew in recognition and served as a stellar introduction to the professional philosophy driving SCA. It became a Prentice Hall Technical best seller in 18 months.

While working hard at growing his business, Dan also understood the importance of active participation in professional societies, both as an effective networking tool and as a way to give back to the industry. Over the years, he has been a frequent public speaker, a prolific author of professional papers, an officer for organizations such as the AAPG Division of Professional Affairs and JCORET (a multi-disciplinary organization which he helped found), and a member of many committees too numerous to name.

Much of his professional focus has been around effectively educating geoscientists as to what makes a good prospect, and many of us are familiar with his famous phrase, "Don't be so quick to drill that next dry hole." Dan has also been dedicated to increasing and standardizing professional standards and ethics within the petroleum industry, as demonstrated by his activities within the DPA and other organizations. He was also honored to participate as a visiting faculty member at the University of Southern California's Viterbi School of Engineering Professional Program in 2009, and has been offered the opportunity to teach classes in petroleum geology at his alma mater, Bloomsburg University.

Dan was the 62nd member to be inducted into the Russian Academy of Natural Sciences, U.S. Section, and was the 40th person to receive the Kapitsa Medal.

His success as a businessman also received notice: In 1996 and 1998, he was an Entrepreneur of the Year Finalist, a distinction sponsored by *USA Today*, NASDAQ, Ernest & Young, LLP and the Kauffman Foundation.

The course of his career has taken him around the world, for both work and pleasure. His wide-ranging professional travels have included significant time in the Middle East, Europe, Venezuela, Thailand, Canada, Malaysia, and Korea, and he has found enjoyment vacationing in Spain, England, the Mayan Riviera, and the North American Rockies, among many other destinations.

In 2012, after 24 years as chairman and CEO, Dan chose to take on a new role in the company he built—that of chairman emeritus. That decision coincided with a year of significant recognition in the industry, including receipt of the DPA Heritage Award, nomination to the Bloomsburg University College of Science and Technology Advisory Board, and the award for which he is being recognized today, the AAPG Honorary Member Award.

Dan has three daughters, five grandsons, and one great-granddaughter, and shares a beautiful home in West Houston with his wife Diana. When first starting out, it must have been difficult to imagine the course his life and career have taken, but his passion and dedication, while not taking him to far-off planets, have certainly made a mark on the world of geology.

Robert C. Shoup

Response

I wish to thank the people for the nomination, the Honors and Awards Committee, the Advisory Council and the Executive Committee of AAPG for bestowing this honor and award upon me. When I decided to change my career from astrogeology (I will explain later) to petroleum geology, AAPG was a MUST society to join. It provided a number of resources for learning and growing in my career, not just by reading the *Bulletin* and *Explorer*, but through attending seminars, conferences, publishing papers, serving on various committees, joining the DPA and networking with the best darn geologists in the world.

I joined AAPG in 1979. Being very interested in professionalism and ethics, I joined the Division of Professional affairs in 1989 and have had a fantastic ride ever since. I served on a number of committees and various executive offices culminating as president of the DPA (2010–11). In my career I gained significant knowledge, enjoyed exciting projects and build

friendships all over the world. For a great career, we must give back to our industry as much as we can. By giving, we Receive!

I would be remiss if I did not thank the most important influence in my life, the one who helped me through my whole life and continues to help me today. And that is our Lord and Savior, Jesus Christ. Without Him and the Blessed Trinity on our side, we can accomplish nothing.

I grew up in Pennsylvania in the Village of Mocanaqua. With a population of 646, it is the largest community in Conyngham township. The town was named after an Indian princess. Mocanaqua lies on a small flood plain of the Susquehanna River at a major bend in the river where it eroded a massive gap in the Penobscot Mountain.

Mocanaqua lies near the heart of the anthracite coal region of Pennsylvania. Anthracite coal is the most metamorphosed and richest coal in carbon content. Many people, including my family, emigrated from Europe and found work as coal miners.

It was this anthracite coal, which in a way directed me to the world of geology. As a young lad of 7-8, I used to go exploring on Penobscot mountain including some of the deserted mines and caves. I soon found my first fern fossils in the shale associated with the coal. I found all types of rocks, minerals and fossils; with Lepidodendron, an extinct coal forest tree, being my favorite. One might say I was hooked on rocks and minerals, which laid the foundation for my future career. I also had an interest in astronomy and space exploration. So I decided I would become an astrogeologist and travel to other planets to study their geology; a startrecky I was indeed.

Alas, after undergraduate school, I realized that my childhood dream would never come true. So now I thought—what other profession could I pursue in the field of geology. During graduate school the answer became apparent—petroleum geology.

My first job was is Jackson, Mississippi. Wanting to learn as much about the world of petroleum geology, I asked a number of people, "Who is the best petroleum geologist in Mississippi?" One name clearly stood out; Ed Looper, who worked for the Mississippi State Geological Survey. I called Mr. Looper and asked if I could meet with him; I had a proposition. He agreed and within a few days we met. I told him that I understood from many people that he was the best petroleum geologist in Mississippi. Ed, being a very humble man did not agree with that statement but wanted to hear my proposition. I told him, I wanted him to mentor me, to teach me as much as he could in practical, applied petroleum geology in the next 6 months to a year. And of course, I would pay him for his time.

We spent evenings after work. Ed would teach and mentor me. He gave me homework assignments, like correlating logs, picking faults and making structure, fault, and net pay maps. And, of course I cannot forget the reading assignments he gave me each week. He was a mild mannered mentor and a darned good geologist. After around 6 months, we had to end the mentoring, but I learned a lot from Ed. When it came time to pay him, he would not take a dime, the sign of a true mentor. I asked his wife what he really wanted more than anything. She responded very quickly, one of the new large color TVs. That weekend I went out and bought him that TV. I met him at a conference about 10 years later and he told me the TV was still working fine.

If I were to mention all my mentors, I would need a paper consisting of several thousand words, but I must mention Emery Steffenhagan of Shell Oil. When I moved to New Orleans, I kept hearing his name come up as a great geoscientist. Well, I decided to find him. I learned that he had retired from Shell and was working on his second career at the MMS in New Orleans. He was actually getting ready to leave the MMS. The chairman of the board of the company I was working for had been taught and mentored by Steff many years earlier. He said if I could get him to consider a job, the company would hire him. And sure enough it worked out. Over the next 3 years I learned more from his mentoring then I would have learned in 7 years at a company that had no mentors. I dedicated my first textbook on petroleum geology to Steff.

My top mentor list would be incomplete if I did not mention my advisor in graduate school, Dr. Richard Bischke. He taught me the fundamentals of seismic interpretation and structural geology. In the late 1980s when I decided to write my first textbook, I asked Dick if he would coauthor a chapter on structural geology and he agreed. When I formed Subsurface Consultants & Associates, LLC., Dr. Bischke joined the company as our chief structural geophysicist. He was a great professor, advisor, mentor and most of all, a great friend.

My career would never have happened without the support of my parents, John and

Laura Tearpock. From the time I went to kindergarten, they always were sure I would go to college. I must also thank my lovely wife Diana for understanding all the hours of work it took to run a company and the significant amount of world travel that was involved.

In closing, I thank the Advisory Council, Executive Committee and those that nominated me for this special honor. God Bless.

Dan Tearpock

WILLIAM A. ZAGORSKI
Norman H. Foster
Outstanding Explorer Award

Citation— To William A. Zagorski, whose unconventional thinking and unique ideas for exploration led to significant rethinking of existing fields and the early development of the Marcellus Shale play in the Appalachian Basin. His passion for geology and emphasis on the "big picture" provide an example for success well worth emulating.

Bill is a product of Pittsburgh, having been born, raised, and schooled there. It is fitting that his pioneering work led to a revitalization of the area through a rebirth of the petroleum business. From an early age Bill was drawn to geology, fascinated by dinosaurs, volcanoes, and rock collecting. He credits his father, Valentine A. Zagorski, a postal worker and union leader, for influencing his love of science by taking him rock hunting at nearby Pymatuning, Pennsylvania, and encouraging his interest in astronomy and chemistry. His parents instilled a strong work ethic, which he has exhibited throughout life.

He began his university career at Penn State's Behrend/Erie Campus as a chemistry major with a minor in mineralogy, but quickly learned that geology was a lot more fun. After two years, he transferred to the University of Pittsburgh, graduating with a bachelor's degree in geology in 1980. He credits Dr. Tom Anderson (who would later serve as his thesis advisor) and the late Dr. Norm Flint as his main influences while at Pitt.

Bill's first professional job in 1980 was with a Pittsburgh independent, Atlas Energy Group, Inc. and his first geologic assignment was in Washington County, Pennsylvania, coincidentally within several miles of his later achievements for which he is being honored. While at Atlas he began working on the giant Silurian Clinton/Medina play of Ohio and Pennsylvania, a reservoir he would focus on for the next two decades.

Bill joined new independent Mark Resources Corporation in 1983. There he began his experience with shale gas exploration working a Devonian Shale project in southern Ohio, a northern extension of the Big Sandy Field. The Big Sandy Field was the first successful major shale play in the United States. Through this work, he was introduced to the stratigraphy and future potential of the Appalachian black shales in Kentucky, West Virginia, Pennsylvania, Ohio, and New York.

Bill was inspired by John Master's groundbreaking work on basin-centered trapping mechanisms in the Western Canadian Deep Basin. He applied these concepts to the huge Clinton/Medina fields of Ohio and Pennsylvania and was the first geologist to recognize the presence of up-dip water and the sub-normal pressure profile characteristic of basin center trapping. His recognition of this concept led to the generation of a prospect that would become Mark Resources' crown jewel, their huge Cooperstown Field, and eventually led to the drilling of thousands of gas wells. He would further use this regional concept and studies of the Cooperstown Field to earn his Master of Science degree at the University of Pittsburgh in 1992. Afterwards he collaborated with Bob Ryder of the United States Geologic Survey with their regional characterization of the Silurian Clinton/Medina Sandstone play in the Appalachian Basin.

Bill was strongly influenced at Mark Resources by its cofounder, the late John Grego, a talented and very successful Appalachian Basin geologist who encouraged Bill to think big and work hard. Unfortunately, we lost John way too early. President Peter Mark believed in Bill enough to provide him the opportunity to step up and lead the company's exploration and development efforts following John's untimely death. This gave

him opportunities to lead the company into new areas, including the Roosevelt/Bluebell Altamont Field in Uinta County, Utah and the Lirrette Field in Terrebone Parish, Louisiana. Bill developed other Appalachian Basin exploration plays and concepts that led to significant acreage acquisition and drilling efforts targeting the Clinton Sandstone in Ohio, the Silurian Lockport Dolomite in Pennsylvania, and the Queenston Sandstone play in New York.

In late 1992, Lomak Petroleum, Inc. (became Range Resources in 1998) acquired the assets of Mark Resources and asked Bill to join their team. In his role as senior geologist and later manager of geology, Bill created prospects throughout the Appalachian Basin targeting a broad spectrum of reservoirs. Much of his exploration and development work at Lomak continued to focus on the Clinton/Medina and Knox Unconformity plays in northwest Pennsylvania as well as on extensive acquisition review work throughout the Appalachian, Illinois and Michigan Basins. Bill eventually became vice president of geology at Range. While at Range and its Appalachian Basin subsidiary Great Lakes Energy Partners, Bill continued to churn out prospects and ideas pursuing prospects targeting the Upper Devonian Sands, Huntersville Chert and Oriskany Sandstone, the Silurian Clinton/Medina play, the Trenton Black River, and Knox Unconformity reservoirs in Pennsylvania, New York, and West Virginia. During this period, he delineated a regional unconventional exploration play targeting the shallow Trenton/Black River in New York, which led to successful Utica/Trenton field discoveries in the Clyde Field of Wayne County, New York in conjunction with Triana Energy, Inc.

In 2003, Bill and his team at Range identified a large untested structural dome in Washington County, Pennsylvania, similar to the Henderson Dome and Kilgore Field in Mercer County, Pennsylvania. The Kilgore Field produces from the Silurian Lockport Dolomite and this was one of the original targets in the new Washington County prospect. The initial test well, Renz Unit #1 well, was drilled to 8,500 feet. Despite encouraging shows, the well was found to be dry in the target horizon after an unsuccessful completion attempt of the original vertical well and a subsequent attempt to test this interval horizontally. His initial interest in the Marcellus Shale was minor. "We knew we would be drilling through several prospective shale zones including the Marcellus, but considered them to be future bailout zones," said Bill. During drilling, large gas shows were observed and recorded in the Marcellus Shale. Interestingly, this exploration failure was the impetus that provided Bill the opportunity for his greatest success. The initial deep Renz Unit #1 well was dry in his target zone but turned out to be the first Marcellus well to be completed using modern techniques.

While discussions of plugging and abandoning the Renz well were occurring in 2004, Bill met with consulting geologist Gary Kornegay of Houston with whom Bill had worked in the Bluebell Altamont Field in Utah. Kornegay was presenting a Neal/Floyd Shale prospect in the Black Warrior Basin of Alabama. The review of the prospect involved introduction of the Barnett Shale as an analog to the Floyd. Bill then recognized that he had a similar resource play in Washington County, Pennsylvania. As Bill tells it: "That is when the light bulb turned on! Wow… we have this same potential here in our back yard." Convincing his management to plow more money into an already expensive failed project was no easy matter. Bill credits Range's management (specifically Jeff Ventura who had just started as Range's CEO in 2003) with having the vision to recognize the significance of the play. On October 23, 2004, a large Barnett-style water frac was used to treat a 90-foot gross interval of the Marcellus Shale in the Renz well. A flow test of 400 MCFPD and an over-pressured gradient was observed.

In 2005, recognizing the significance of this well, Bill along with senior geologist Doug Bowman and GIS supervisor Trisha Hennessey completed a regional study of the Marcellus and identified a number of focus areas. This study allowed Bill and his team to recommend the acquisition of 200,000 acres in an identified "Marcellus Southwest Core Area" of southwest Pennsylvania. With Jeff Ventura's support and guidance this gave Range a significant "first mover" advantage in the Marcellus play.

In 2007, Bill began work with Ray Walker, an established veteran of the Barnett Shale play, who had been assigned with opening a district office in southwestern Pennsylvania to focus specifically on the Marcellus play. In the summer of 2007, Range, under Ray Walker's engineering and management direction and Bill's geologic guidance, completed the first successful horizontal well in southwestern Pennsylvania. This milestone test is considered to

have been the catalyst of the development of the Marcellus Shale play, which has rapidly evolved into the largest natural gas field in the United States. Following this critical discovery, Bill and his team delineated the liquids-rich portion of the play that the USGS estimates to have recoverable reserves of 3.5 billion barrels. The Range team had additional "firsts" targeting other resource shale plays including the first successful completions in the Utica/Point Pleasant interval (Beaver County, Pennsylvania) and the Genesee Shale (Washington County, Pennsylvania) in 2009 and 2010.

Bill has been active in giving back to the geologic community through numerous papers and presentations over his 32-year career including presentations at AAPG's Discovery Thinking Conference, AAPG's Hedberg Conference and HGS' 2012 Legends Meeting. He was honored by his peers in the Pittsburgh Association of Petroleum Geologists in 2009, being named "Father of the Marcellus." The many subsequent awards include AAPG Eastern Section's Presidential Award and the Pittsburgh Business Times' Energy Leadership Award.

Bill credits many geologists for providing inspiration and direction in various aspects of exploration during his career. These include John A. Grego, Dr. Tom Anderson, Chris Laughrey, Mike Carlson, Bob Ryder, John Harper, Sam Pees, Mike Canich, Pat Imbrogno, Dick Beardsley, Doug Bowman, Jim Morris, Martin Emery, David Copley, John Martin, Jim Funk, and Mike Forrest.

Bill met his wife Stephanie Rollins at the very time Range was completing its initial Marcellus discovery wells. Stephanie was very supportive of Bill through the unfolding of the Marcellus story and many of Bill's major life challenges, moves, and changes. Stephanie believes that the Marcellus adventure is actually a love story. Bill and Stephanie were married in November 2010. They have two sons, Bradley and Aaron, and enjoy spending time with their family and many friends in the Pittsburgh area and traveling. Bill is also an avid guitarist, composing and publishing two CDs, with additional works in progress. His first CD, "Lakeside", was reviewed favorably by *Progression Magazine* in December 2009. In addition, he recently joined with several other oilfield friends whose band opened for the Outlaws late in 2012.

Throughout all his success in business and exploration, Bill retains a deeply humble nature and credits many others with helping him along the way. His many accomplishments, his ongoing contributions to understanding the geology of the Appalachian Basin, and his ability to see the big picture make Bill Zagorski a most worthy recipient of the Norman H. Foster Outstanding Explorer Award.

Gregory R. Wrightstone

Response

When I got the call from AAPG President Ted Beaumont, it was the realization of a dream to make noteworthy contributions to petroleum geology. I am truly honored to be selected by my colleagues and peers to receive the Norman H. Foster Award. There are so many who share or have shared in this moment. Family, friends, leaders who inspired me, dedicated and enthusiastic coworkers, mentors and advisors who provided vision and support as well as many colleagues whose ideas have inspired me over the years.

My love of geology began at an early age and has never left me since. I credit my father for encouraging and cultivating my love of geology and science. At the age of four I was filling tablets with drawings of dinosaurs and volcanoes. By the age of seven, my father was taking me on numerous rock collecting excursions at Pymatuning, Pennsylvania where a rich combination of glacial outwash, fossil filled stream beds, and an occasional arrowhead provided me the thrill of the find and the hunger to find that next buried treasure. This quest to find "things hidden" is what drives me. Growing up in my teens I was a hiker and explorer spending long hours on treks with friends often for many miles from home past mines and occasionally old oil and gas wells. For my parents, having a room full of rock samples, rocks in pants pockets, and other valuable "junk" surely may have either brought them either a smile or two or perhaps some cause for concern.

My college education began in 1975 at the Behrend State Campus of Penn State University in Erie, PA. I started with an ambitious plan to have a dual major combining chemistry with mineralogy. However a few classes in the lab convinced me to focus solely on geologic studies. In 1977, I transferred to the University of Pittsburgh as a geology major. What a memorable time that was. Plate tectonics had finally become accepted in most geologic circles. One of my first teachers at Pitt was Dr. William Cassidy who helped pioneer the discovery of meteorites in the ice flows of the Antarctica and the Arctic. Studies in

unconventional gas sources such as coal bed methane and shale gas were in their early formative periods. My two most influential teachers and advisors were the late Dr. Norman K. Flint and Dr. Thomas H. Anderson, now retired. Getting an "A" from Dr. Flint was a major challenge for anyone, and if he though too many students that scored too high on his most famous of tests, he would take your hard earned "A" and in a matter of moments take away your gold and give you a silver "B". Dr. Tom Anderson mentored me well in structural geology and I enjoyed the many field trips in the Appalachian Basin that he led. More importantly Tom inspired my creativity and we had many discussions covering the role of cross strike discontinuities and sedimentation in the Appalachian Basin as well as the evolution of various geologic plays concepts. Tom later was my thesis advisor when I choose to continue my graduate studies even while I was actively employed.

Fresh out of college with a bachelor's degree I was anxious to begin working. My career choice was easy, petroleum geology. For the next 10 years I would work with two Appalachian Basin independent exploration and development companies. My interests seemed to focus on larger, regional accumulations particularly the Silurian Clinton Medina Sandstone play as well as the Devonian shale plays in Kentucky, West Virginia, and Ohio. I was fascinated by observations of high resistivity reading and enhanced production in the tighter, deeper down dip portion of the Clinton Medina trend. A longtime friend, Chris Laughery, then at the Pennsylvania Geologic Survey, introduced to the early work of John Masters of Canadian Hunter and their initial unconventional finds in the Canadian Deep Basin play. This led me to a long interest and fascination with the work of John Masters and Canadian Hunter. I successfully applied similar models and approaches to early Clinton Medina Sandstone exploration in Pennsylvania and Ohio. This work figured prominently in my 1992 master's thesis at the University of Pittsburgh and later led to interesting collaborations with Bob Ryder with the USGS. I only met John Masters once through an introduction by Skip Hobbs III but was honored to see John in the audience at an HGS conference I spoke at in January 2012.

Another unconventional play that was important to me was the Bluebell Altamont Field in Utah, another basin center trap with an over pressure signature. It was here in the mid 1980s and early 1990s that I worked extensively on the Green River and Wasatch plays with Pennzoil geologist Gary Kornegay, who many years later, would figure prominently in my early efforts in the Marcellus.

In 1992, I was hired my Lomak Petroleum, Inc which would later become Range Resources Corporation in 1998. For the next 11 years I focused on various development plays and lease acquisition in Pennsylvania, Ohio, and New York, mostly associated with the Silurian Medina Sandstone and Upper Devonian Venango and Bradford and Elk Sandstone Groups. I focused heavily with the company's property acquisition efforts, then the major driver for the growth of the company under John Pinkerton's leadership. Around 2000 we started focusing on several interesting exploration plays, most significant was the Trenton Black River play.

Personally, I think the reemergence of the Trenton Black River play was the industry springboard that allowed the Marcellus play to be eventually discovered and commercialized. In the late 1990s, new high volume gas discoveries in a number of vertical tests in the Cottontree field of West Virginia and the Glodes Corners area of southern New York were attracting the attention of many majors again. Several companies including Range Resources embarked on ambitious acreage acquisition and exploration programs. The most important areas of interest for Range ended up being a large acreage position we began acquiring in 2000 in Washington County, Pennsylvania.

At Range, we acquired a sizeable lease position in Washington County, PA. Our studies identified a relatively large untested structural dome with seismic confirmed closure. Targets of interest were the Silurian Lockport Dolomite and the Lower Devonian Oriskany Sandstone below the Marcellus shale. During drilling operations in 2003 we encountered favorable shows in the Silurian target but were unsuccessful with completion attempts with the vertical well and a subsequent horizontal well. Discouraged by now a lucky chain of events then fortuitously came to pass. Gary Kornegay, my old collegue from the Bluebell Altamont field, called with an exciting new shale gas prospect in the Black Warrior Basin. I went to Houston to review his project. Gary's work was exceptionally detailed and intriguing. I asked to see an analog to compare the play with. He showed me work on the

Barnett Shale play which in 2004 had just reached another key point as horizontal drilling was in its early successful stages. I recall my excitement then remembering that we had just drilled through the Marcellus shale in the failed Washington County deep well and encountered similar good shows.

Now I had yet another idea to test on this southwest Pennsylvania acreage block! I presented the idea, albeit nervously, to Jeff Ventura (now CEO of Range), who championed the idea and play. He was fully supportive of a large Barnett style completion on completion of our original deep test, which worked surprisingly well on the first try. We spent the next year or two working on exploration fairways and leasing programs for the Marcellus play in Pennsylvania. I had a lot of help and support especially, from Doug Bowman, a fine exploration geologist and Jim Morris, a seasoned exploration geophysicist, in sharing the many technical challenges with me.

In 2007, Range hired Barnett veteran Ray Walker (now COO of Range) to direct Range's technical efforts in the Marcellus and open a dedicated office in Canonsburg, Pennyslyvania. After many challenges the first noteworthy horizontal completion of the Marcellus was made in the summer of 2007, which initiated a rapid series of events bringing the Marcellus gas play into national and international prominence. After only five years the play has grown to be the largest gas-producing field in the United States producing an estimated 9 BCFPD at the end of 2012 with projections to reach 20 BCFPD before 2020. What an amazing blessing it has been to actively participate in the renaissance of our petroleum industry and now to be honored for a role I shared in the early commercialization of the Marcellus shale. And it seems that this is just the beginning now that interest in shale gas and source rock plays has now a worldwide phenomena.

My thanks above all to God Almighty with his grace and wisdom. My love and thanks to my wife Stephanie and our sons and family for all of their love and support. My gratitude and thanks go to Jeff Ventura and Ray Walker for their brilliant leadership, vision, and support. I wish to thank my many fellow geoscientists and coworkers with whom I worked long and hard with throughout the years. A special thank you also goes to colleagues Greg Wrightstone, Martin Emery, Jim Funk, Mike Forrest, and Mike Canich. I finally wish to thank AAPG for this great honor as well and AAPG president Ted Beaumont, AAPG past president Paul Weimer and Charles Sternbach for your support and encouragement. I accept the Norman H. Foster Award on all of your behalf with all of my thanks and gratitude.

William A. Zagorski

RONALD A. NELSON
Robert R. Berg
Outstanding Research Award

Citation— Ron Nelson's research has made significant contributions to the understanding of the origin, distribution, and effects of natural fractures in hydrocarbon reservoirs, and he has liberally shared that understanding with the industry.

It is my honor and pleasure to write the citation for Dr. Ronald A. Nelson for the AAPG Robert R. Berg Outstanding Research Award. Ron has made significant original contributions to the understanding of the origin, distribution, and effects of natural fractures in hydrocarbon reservoirs, but more importantly, perhaps, is the fact that Ron has liberally shared that understanding with the hydrocarbon industry through numerous publications, short courses, and field trips. In doing so he has advanced both the science and the application of that science to the improvement of efficiency in hydrocarbon exploration and production from naturally fractured reservoirs. Ron's book on these

reservoirs, derived from years of experience with a variety of fractured reservoirs and now in its second edition, is the industry standard. His volume provides a significant volume of quantitative data on fractured reservoirs, all in one book, and has been used by both companies and individuals worldwide. It is no surprise that Ron has been tremendously successful as a consultant.

Ron started his higher education at Northern Illinois University, graduating at the height of the era of student unrest in 1970. As an undergrad he cast around, toying initially with biology and chemistry until settling on a major in geology, and who knew that his initial specialization in paleontology would lead eventually to world acclaim in structural geology. Graduate work at Texas A&M University followed, with an M.Sc. (1972) in the geochemistry of igneous rock and a Ph.D. (1975) focused on structural geology, rock mechanics, and fractures. Graduate work, directed in part by Drs. David Stearns and John Handin, exposed Ron not only to the vast and ubiquitously fractured strata exposed in the great southwestern U.S. desert but also impressed on him the importance of laboratory work in contributing to the understanding the mechanics of fractures in rock. This broad exposure to a variety of the sciences set the stage for Ron's interest in interdisciplinary studies, which turns out to be a necessity for working with fractured reservoirs.

Cleaning the desert dust from his boots and with degree in hand, Ron started work at the well-respected Amoco Research Center, Tulsa Oklahoma in 1975, where he had been hired specifically to continue his work on structural geology and fractured reservoirs and where he soon led the newly developed Amoco Structural Geology Research group. As its first supervisor, Ron encouraged the essential interdisciplinary collaborations within this group. In 1986 Ron moved to a staff position in the Amoco International Africa and Middle East Region where he fostered Amoco's advancements in rift and thrust belt tectonics. As his career at Amoco progressed he moved easily and frequently back and forth between staff and managerial positions, giving him a unique perspective on the generation and application of technical advances in geology. After Amoco merged with BP in 1999, Ron had several roles including leader of the company wide Structural Geology Network, and head of the Fractured Reservoir Task Force.

In 2001 Ron retired from BP Amoco and started an independent fractured reservoir, structural geology, and rock mechanics consulting firm called Broken N Consulting, Inc. The name is derived from the brand for his ranch, located in southeast Texas and handy to Houston. Since then and continuing to the present he has worked with 48 different clients worldwide.

Publication is essential for anyone who wants their research to be vetted and recognized by the scientific community, as well as for anyone who wants their work to be not only widely disseminated but also widely used. Ron's publications are numerous, the main body of work comprising 98 publications on fractured reservoirs, structural geology, and rock mechanics (including 2 editions of his book *Geologic Analysis of Naturally Fractured Reservoirs*). These works contain Ron's commonly cited four-fold fractured-reservoir classification system as well as important quantitative fracture data, reservoir inhomogeneity plots, and fracture-intensity prediction data based on petrologic and rock mechanics parameters. Moreover they present commonly used fractured reservoir screening techniques and a fractured-reservoir workflow.

Ron's contributions beyond work are also manifold, ranging from the teaching of courses in fractured reservoirs and structural geology (over 70 classes taught industry wide), to service to the professional societies. Ron has been vice president (1993-94) and president (1995-96) of the Houston Geological Society, and he has served numerous roles for AAPG including vice president (2000-01) and AAPG Distinguished Lecturer (twice, 1982-83 and 1998).

Ron Nelson's research in structural geology and natural fractures has been exemplary, raising the awareness within industry of the significant problems and solutions associated with naturally fractured reservoirs. Ron's research has been indispensable in improving the efficiency of production from these difficult reservoirs.

John Lorenz

Response

I was very surprised and pleased when I got the call from AAPG president Ted Beaumont that I had received the Robert R. Berg award for Outstanding Research. It was very nice hearing this news from Ted. When he was AAPG science director many years ago, he was the one who convinced me to get

more involved with AAPG activities, which I did.

However, the award itself is very important to me, especially as it honors the research of Dr. Bob Berg. Bob was an insightful and effective scientist and served on both of my graduate committees at Texas A&M University. In fact, he was also our Geology Department chair when I got to A&M initially as a paleontologist. Even though I eventually became an igneous geochemist for my master's degree and a structural geologist and rock mechanics specialist for my Ph.D. degree and Bob was an accomplished stratigrapher and sedimentologist, he had a great impact on my academic career. This included his dedication to professional society activities. While he was department chair, he also served extra duty as president of the AIPG. This showed us as students the importance of service to our profession as well as to our employers. I think this fostered my interest in service to my chosen professional society, the AAPG.

In my education, I benefited from the guidance and support of several great teachers. In undergraduate school at Northern Illinois University I had two such teachers. The first was Dr. Stan Frost the department's paleontologist. He was inspiring in his enthusiasm and was the one that convinced me to change from biology and chemistry to geology. An independent undergraduate research project under Stan whetted my appetite for independent research. Also at Northern Illinois, I took classes from and worked in the lab and field for Dr. Sam Goldich, a famous isotope age dater of the Shield of North America. He instilled in me the discipline needed to move ahead with my career.

When I got to Texas A&M I taught paleontology lab for Dr. Bob Stanton a well-known ex-Shell paleoecologist and eclectic geologist. Along the way in my master's, my chemistry background raised its head and I received a Welch Foundation Fellowship working in igneous and trace element geochemistry with Dr. Tom Tieh. That degree involved working field and laboratory in the Eagle Mountains of West Texas. As I finished my master's, I was offered an opportunity to work on a Ph.D. degree in structural geology and rock mechanics working fractures at Lake Powell in Arizona and Utah from both a field and laboratory point of view. I had two great cochairs for that degree: Dr. Dave Stearns a great field-based structural geologist and now good friend, and Dr. John Handin a famous experimental rock mechanics researcher. Both taught me much and they were part of the Center for Tectonophysics with five structural geology professors of different specialties all of which came from the Shell Research Labs. This was truly an example of integrated research with a definite industry application bent. These people shaped my career and outlook.

Indeed, the majority of our professors at the time were ex-industry researchers and practitioners who fostered in us graduate students the excitement of applied research. In fact, most of us at the time went on to industry positions in the petroleum industry rather than taking university professorships which was the normal route for Ph.D. graduates at the time.

In my career, I have chosen to share my learnings and research with others in the industry. The most important aspect of my research has always been sharing with others. It has always been important to me that others benefit from what I have done and learned, hence my taking the time to create publications, talks, and courses, many of which were associated with AAPG. I believe that holding concepts proprietary does not necessarily advance us as an industry.

In terms of my research, I have taken an independent view to problem solving, particularly in fractured reservoirs. I have tried to find the crux of the problem whether it be assessment, well paths, intensity predictions, etc. using multidisciplinary approaches. I am very glad to see that much of my research over the years has been used by my colleagues across the industry. I hope that this usage has aided in our exploration and development of these complex reservoirs.

Finally, I would like to thank my friend and colleague Dr. John Lorenz for writing my citation and for nominating me for this award, and my wife Penny for putting up with my moaning after having agreed to yet another paper, presentation, course, or conference. As she reminds me it is always easier to agree to an endeavor than it is to actually get it done.

Ronald A. Nelson

J. FREDERICK SARG
Robert R. Berg
Outstanding Research Award

Citation— To J. Frederick (Rick) Sarg, for his work developing concepts of carbonate sequence stratigraphy, global applications in the subsurface, and continuing education of new stratigraphers.

Rick Sarg is one of those rare people who has combined outstanding field geology with leadership and advancing concepts in seismic stratigraphy. I am among many geologists who were introduced to Rick's "seismic scale" outcrops of the Permian Guadalupe Mountains and left with a better understanding of our basin or prospect. He also showed us how sequence stratigraphy, an approach that he helped develop at Exxon Production Research, can better help de-risk reservoir, source, seal, and trap.

It is fitting that Rick receive the Robert R. Berg Award at the Pittsburgh ACE as he attended Pitt, where as an undergraduate, he first developed in the Appalachian Mountains his deep appreciation for the importance of field geology. He then moved on to the University of Wisconsin and the tutelage of Dr. Lloyd Pray, who pointed Rick to the Guadalupe Mountains, the results incorporated in his seminal 1981 paper on the carbonate-evaporite transition of the Seven Rivers Formation of West Texas. At Madison, he also met his future wife Ann, a student helper in the Department of Geology.

After graduation, Rick joined Exxon Production Research at a pivotal time in the evolution of seismic and sequence stratigraphy. His ideas on how carbonate systems respond under long- and short-term eustatic changes were eventually published in his landmark 1988 paper. This paper rested upon the strong fundamental analysis of the Guadalupian sequence architecture. Critical new concepts illustrated in these and subsequent papers include how platform or bank growth (and thus seismic geometry) reflects conditions where the "carbonate factory" either keeps or catches up with sea-level changes and the resulting impact on facies types and distributions and diagenesis. In addition, he placed the puzzling discontinuous seismic reflections of the subsurface Permian Basin into a sequence stratigraphic context that illuminated patterns of aggradation and progradation that are signatures of the highstand, transgressive, and lowstand systems tracts. He then revealed how these patterns could be deciphered from cores, outcrops, well logs, and seismic sections, allowing the operational geologist to use these methods in his everyday workflow. He further fashioned these concepts into a series of short courses, which have been taught to several hundreds of industry and academic workers over his long career.

Following his time at EPR, Rick joined the ranks of the consulting geologists in Midland, Texas, translating these practical concepts into action for companies whose employees learned how to apply sequence stratigraphy in the search for oil and gas. His consultation included Mobil, who eventually hired him for both his knowledge and experience in applied sequence stratigraphy. At Mobil, Rick continued to expand his reach, applying his analysis to both carbonates and siliciclastics in worldwide locations such as Nova Scotia, Malaysia, Indonesia, Angola, the North Caspian Sea, Australia, and Kazakhstan. At the merger of Mobil and Exxon, he was named as ExxonMobil's coordinator of global stratigraphy, in recognition of his international impact and also his technical leadership skills. At ExxonMobil, he transformed disparate discipline groups from both companies into a well-respected guild of 150 sedimentologists and stratigraphers.

Over the years, Rick Sarg also became well known in academic circles, beginning with field guiding of numerous student field trips to the Guadalupe Mountains but also his participation on several academic panels and advisory boards. He served as national secretary-treasurer and later president of SEPM and has taught numerous short courses and workshops for AAPG, SEPM, and EAGE.

With such a love for research and teaching, it was natural then for Rick to eventually migrate into academia after retirement from ExxonMobil. In his 6 years at Colorado School of Mines (Golden, Colorado), he has graduated eight M.S. students thus far and continues to mentor several Ph.D.

and six new master's candidates as well as serving on numerous graduate committees, teaching classes and leading field trips to his beloved Guadalupe Mountains.

In his present role as a research professor at CSM, Rick has secured funding for research projects over a wide span of interests, including carbonate reservoirs in Abu Dhabi, Oman, the Piceance basin, and the Bakken Formation of the Williston Basin where an enigmatic carbonate unit provides the critical conduit for a hybrid unconventional reservoir. This example, featured in *AAPG Explorer*, illustrates his unique ability to extend carbonate sequence stratigraphic concepts, many of which he developed early in his career, into new applications for the increased exploitation of hydrocarbon resources, thus easily justifying his recognition as a Robert R. Berg award winner.

Rick is also the first person to point out that his scientific contributions and success in the field of petroleum geology would not have attained their breadth and depth without the loving support of his wife, Ann, and sons Bryan and Kevin.

John W. Snedden

Response

It was a surprise and a thrill to receive a phone call from President Ted Beaumont telling me that I have been given the Robert R. Berg Outstanding Research Award. It was quite unexpected and I am humbled by it. Having given 28 of the 33 years of my career to research, I am honored and grateful for this award. It is particularly gratifying to receive this award in Pittsburgh. The city of Pittsburgh and the surrounding countryside was where I began my geologic career as an undergraduate at the University of Pittsburgh in the mid 1960s. My first field trip was to the Appalachian Mountains south of Pittsburgh during a fall semester. Between the beautiful fall colors and the classic geology, I fell in love with the field, and so traded engineering for geology. I have never regretted it. I cut my teeth in the Paleozoic geology of the Appalachians and in the classic Pennsylvanian-aged cyclothems of western Pennsylvania. It is where I grew fascinated with stratigraphy and carbonate sedimentology. I greatly benefited from the tutelage of Drs. Norman Flint and Harry Werner who encouraged me to always be field-based and attracted me to carbonate rocks with tales of the modern sediments in the Caribbean. I stayed on at Pitt for a master's degree and completed a thesis under Dr. Bud Rollins, on the Ames Limestone (Virgilian), a marker bed in the Pittsburgh area, where I added the fields of paleontology and the emerging field of paleoecology to my geologic tool kit. It turned out that I was studying my first transgressive systems tract.

Moving on to the University of Wisconsin, Madison for my Ph.D., I had the great good fortune to study under Dr. Lloyd Pray, where I was introduced to the Guadalupe Mountains and the Permian Reef Complex. As Lloyd put it, the Permian reef succession is the great cathedral for carbonate geologists. The Guadalupe Mountains would serve as my grounding in carbonate stratigraphic architecture and facies for my career. Lloyd was a great mentor and taught me the value of "multiple working hypotheses", the value of always asking "why", and the value of the field to test ideas and document new concepts. I would later return to these Mountains while working for Exxon, to test carbonate sequence stratigraphic ideas and concepts.

Upon graduating with my Ph.D., I joined Exxon Production Research Company, where I got to pursue my love of carbonates and stratigraphy as a member of the seismic stratigraphy group led by Dr. Peter Vail. Being exposed to the stratigraphic patterns evident on seismic sections opened up a whole new world of sedimentary geology to me. Here was a tool that displayed stratigraphic relationships in continuous section for tens to hundreds of square miles, and when married with outcrops, core, and well information allowed the deciphering of earth history. Pete's enthusiasm, dedication to the inclusion of all ideas, and his mentorship greatly influenced my maturation as a scientist. Both he and Lloyd have had the most influence on my approach to scientific research, and I cannot give them enough credit for my success and for this award. I have been extremely lucky in my career for all the help I have received, in Pittsburgh, in Madison, at EPRCo, and at Mobil Exploration Technology Company. My research has been enhanced with generous mentorship.

I have had the benefit throughout my career of working with many fine geoscientists, including Bob Mitchum, Rod Erskine, Pat Lehmann, Steve Greenlee, Kurt Rudolph, Don Harris, Bob Wegner, and John Sumner at Exxon, and John Snedden and Jim Weber at Mobil, and many others, too numerous to mention. Together we worked data from all over the globe building an experience base that I consider

amazing in its breadth and depth. This has served me well in my new career at Colorado School of Mines where I have extended my interests to the lacustrine realm of the Green River Formation and the unconventional shale oil of the Bakken Formation. Both contain carbonate rocks, so I haven't strayed too far. My continued geo-curiosity is driven by a love of the field, bright students, and all those who have touched me during my career.

Most importantly, I want to thank my family for standing with me during this journey, given all my travel absences, and the demands of diverse career experiences – research at Mobil, research, operations, management, and global stratigraphy coordinator at ExxonMobil. Ann, my wife of 34 years, has provided me with unwavering support, a strong family grounding, and taken on the extra burden of managing and raising two active boys during my absences. I am most proud of my sons, Bryan and Kevin, who have often wondered at the oddity of living with a geologist, and have given their unconditional love and support.

Rick Sarg

EUGENE L. AMES III
Distinguished Service Award

Citation—To Eugene L. Ames III, petroleum industry leader, entrepreneur, volunteer and colleague – for his commitment to the advancement of energy exploration and tireless dedication to the next generation of geoscientists.

Gene is a fourth generation petroleum geologist having descended from a long line of petroleum industry pioneers starting with his great grandfather; George Ames from western Oklahoma. A big oil play erupted near the community of Drumright, Oklahoma in the early years of the 20th Century. Although not a petroleum geologist (there were none back then) George recognized potential and opportunity when he saw it. Gene's grandfather, Gene Ames Sr., became an independent oilman and followed the booms and busts from Oklahoma to Arkansas and, eventually settled down at the East Texas Oil Field.

The Ames clan relocated to San Antonio in 1942. This is where his father, Gene Ames Jr, launched a distinguished oil and gas exploration career after graduated from the University of Texas with a Bachelor of Science in geology.

With rocks in his blood, and mentors like Ed C. Roy, Gene Ames III, attended the University of Texas in Austin and Trinity University in San Antonio where he earned Bachelor of Science degrees in both geology and business administration.

After earning the undergraduate degrees, Gene began a successful career as a young geologist and oil finder at Sandia Oil and Gas with distinguished petroleum scientist and consummate mentor; Dr. Lee T. Billingsley. Wanting more education, Gene worked on his master's degree in geology which was eventually cut short by he and Logan's first new baby boy (who eventually became a petroleum engineer). After exiting Sandia, Gene joined Venus Exploration Inc. where he further expanded his insight into the earth sciences by working with fellow geologists and renowned explorationists, Thomas E. Ewing, Ph.D. and Bonnie R. Weise. After leaving Venus, Gene became an independent producer and eventually, created Ames Energy Advisors, LLC and companion operating company, Bissell Operating, LLC.

With his experience as a development geologist, he takes a great interest in redevelopment of old fields and reservoir optimization and producing property operations in various basins throughout Texas and the Mid-Continent. Although most producing regions are very mature, Gene has proven that taking a fresh look combined with the application of relevant new or transferred petroleum extraction technology can lead to significant success.

As an exploration geologist, Gene continues to originate exploration ideas in traditional conventional oil and gas fairways. This conventional business model puts him squarely in the minority of a resource play oriented upstream sector, but he believes that the opportunities are immense.

Gene has served on various boards and in leadership roles in several industry oriented organizations including the Texas Alliance of Energy Producers, Independent Petroleum Association of America, AAPG, the Gulf Coast Association of Geological Societies, the Texas Independent Producer and Royalty Owners Association, the Interstate Oil & Gas Compact Commission and the South Texas Geological Society. In 2008, Gene was the general chair of the AAPG ACE in San Antonio, Texas.

He was the chairman of the national Petroleum Technology Transfer Council, a non-profit organization which has played a significant role in the transfer of applied technology throughout the domestic E&P industry. This organization (under the AAPG umbrella for 3 years) continues to play an important role in disseminating applied technology throughout the upstream industry. Gene was also appointed by the Department of Energy to serve on the Unconventional Resources Technical Advisory Committee, which provided oversight and technical advice to the secretary regarding federal government involvement in research and development spending related to the Energy Act of 2005. These federal funds, allocated during the Bush administration are just now being spent on a variety of project to optimize oil and gas extraction and carry it out in a more environmentally friendly manner.

Gene Ames, 53, is married to Logan Ames and has two sons named Corwin Ames and Asa Ames.

David L. Clay

MARK J. GALLAGHER
Distinguished Service Award

Citation— To Mark J. Gallagher, for exceptional service to AAPG for more than 30 years, including many leadership positions upon which volunteer organizations like AAPG depend.

Mark was introduced to petroleum geology in 1967, when he earned the geology merit badge sponsored by the New Orleans Geological Society (NOGS) through Boy Scouts of America (BSA). Mark has "given back" to BSA since 1979 by volunteering his time and talent as a merit badge counselor, geology explorer post advisor, science fair judge, and facilitator of workshops for educators. There are undoubtedly several young geologists who as scouts were inspired by Mark's enthusiasm for geology.

As an undergraduate geology student at the University of New Orleans (UNO), Mark joined AAPG in 1979 at the inception of the student chapter program. UNO had a wonderful geology faculty "that really pushed petrology and stratigraphy". Professors William Craig and William Ward were instrumental in Mark becoming a petroleum geologist and instilled in him a desire to study carbonate rocks.

Mark received his B.S. in geology from UNO in 1981 and worked the first 16 years of his career with Texaco in New Orleans. Mark was trained by Shelby Smith and Jim Vance, who inspired Mark with their enthusiasm for the industry. It was during this period that Mark "found himself as a geologist" working the Cretaceous and Jurassic plays of Texas and Louisiana.

Mark joined the AAPG Division of Professional Affairs (DPA) in 1989, having achieved the designation of Certified Petroleum Geologist; and has served DPA as Mid-Continent councilor (2007-10), Membership Committee chair (2010-11), and secretary (2012-13). In his work with DPA and the AAPG, Mark honors Ed Picou and Jim Hartman as his key advisors and mentors.

Mark's career path took him to Sonat in Tyler, Texas (1997-99), where he worked with Robert K. Goldhammer and Nick Pollard. Mark stayed with the profession through lean years (1999-2003), learning from fellow geologists Robert Hulse, Joel Albert, and Danny Dickerson. At Samson in Tulsa, OK (2003-07) Mark

worked with Keith St. Gemme, a great mentor and friend.

At every stop on his career journey, Mark contributed to the success of local geological societies, including NOGS (1979 to present), East Texas Geological Society (ETGS) (1997 to present), and Tulsa Geological Society (TGS) (2003 to present). I have worked with Mark since 2007 at EnCana in Dallas, Texas, where he continues to serve the Dallas Geological Society (DGS) in the AAPG HoD.

Mark's prodigious record of service to both local geological societies and AAPG, concurrent with a demanding and productive career as a petroleum geologist, makes one wonder where he found the time to do it all. Remarkably, he has served as society or section president three times, at NOGS (1994-95), Gulf Coast Section (1997-98), and ETGS (2001-02). Mark represented the GCAGS on the AAPG Advisory Council (2001-04). Mark received the NOGS Distinguished Service Award in 1992 and the GCAGS Distinguished Service Award in 2002 in recognition of "his extensive service to the Gulf Coast geological community."

Mark and his wife Deborah have three children: Daniel, Paul, and Erin. Empty nesters, they now reside in Frisco, Texas. Mark appreciates the love and support his family has given him in his career.

I found a quote by Frank Chimero from his book *The Shape of Design* that I think speaks to Mark's record of service much more eloquently than I could have written myself:

"When we build, we take bits of others' work and fuse them to our own choices to see if alchemy occurs. Some of those choices are informed by best practices and accrued wisdom; others are guided by the decisions of the work cited as inspiration; while a large number are shaped by the disposition and instincts of the work's creator. These fresh contributions and transformations are the most crucial, because they continue the give-and-take of influence by adding new, diverse material to the pool to be used by others."

Geologists like Mark "weave the fabric" of our profession, motivating the current generation to get involved while inspiring the next generation to dream big and grow beyond the current horizons. Given his track record and continuing contributions, Mark richly deserves this AAPG Distinguished Service Award.

Jeff Faber

FRANCES J. HEIN
Distinguished Service Award

Citation—To Frances J. Hein, for selfless dedication to our profession through her numerous publications, conference organization, presentations, teaching, and volunteer positions with her professional associations.

This is the latest in a long list of awards garnered by Fran Hein,including a GSA Penrose Award (1973), an NSF post-doc fellowship (1978-80), an Alberta Women in Science award (1994), the ERCB Chairman's Award (2011), and CSPG Volunteer awards (2010 and 2011).

Fran has numerous publications to her credit: 55 professional journal papers, 31 conference proceedings abstracts, 47 government publications, books, etc., and 15 proprietary reports (a total of 158 at the time of writing).

She has chaired or organized a large number of highly successful conferences and technical sessions. Examples include oil sands/heavy oil and EMD technical sessions at AAPG annual meetings over the past decade, the AAPG ICE Calgary (2010), CSPG annual conference sessions, the AAPG GTW tight oil workshop Banff (2011), and an international unconventional oil and gas in China (2011). Fran has given numerous presentations at conferences, and appeared as an expert witness at hearings and court cases.

The love for her chosen field extends to wanting everyone else to appreciate it too. She is a naturally gifted teacher in that respect—the enthusiasm for geology comes through in spades—with both professionals and lay people. In addition to university courses, she has taught teacher in-service classes, university continuing education courses, and in-house training for technical and non-technical staff.

Fran is an inveterate volunteer, serving not just the AAPG

and EMD, but also her other associations—CSPG, CHOA, GAC, SEPM, etc.—in various capacities.

The woman just never stops!

Fran obtained a B.Sc. from the University of Illinois, Chicago Illinois (1972), M.Sc. and Ph.D. from McMaster University, Hamilton Ontario (1974 and 1979 respectively), and was a post-doctoral fellow at the University of Southern California (1978-80).

Her working life has run the gamut of geological occupations.

Fran has been a successful teacher and researcher at several higher education institutions: assistant professor, Department of Earth Sciences at the University of Alberta; lecturer and research associate at Dalhousie University Department of Earth Sciences and Center for Marine Geology; adjunct professor in the Department of Geology and Geophysics and the faculty of Continuing Education at the University of Calgary; and instructor for the City of Calgary and Rocky View District School Boards.

Fran was a consulting geologist—principal of F. J. Hein & Associates—for 10 years She was a government scientist at the Alberta Geological Survey for several years, and then served in various roles with the Energy Resources Conservation Board—Alberta's oil and gas and coal regulatory agency—over the past decade. Fran is currently the ERCB's chief geologist.

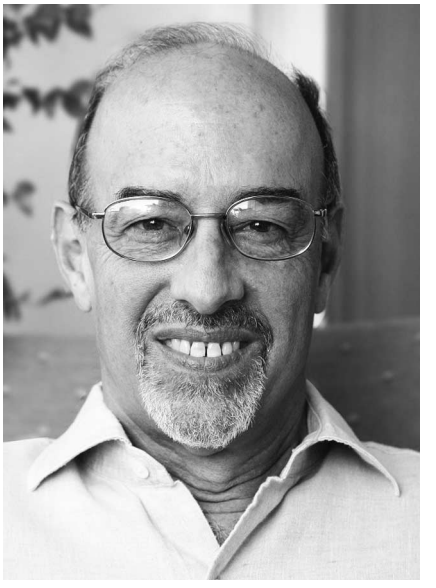
You might think that with all her professional work Fran doesn't have time for a personal life. Far from it! Fran has been married to fellow geologist Doug Cant for 37 years; they have four daughters. The Hein-Cant gene pool has performed well: Alanna has a Ph.D. in cultural anthropology from London School of Economics; Rita is at the Brooklyn Law School; Lisa is studying history at Columbia University in New York; and Marina is an undergraduate at Simon Fraser University.

Fran also finds time for other Interests—needlework/embroidery, painting in acrylics (mostly rocks and landscapes, of course), and occasionally playing her violin (mostly fiddle music these days).

Fran's volunteering ethic began at an early age in Joliet Illinois (as a candy-striper in Grade 7), persisted through all her daughters' activities, and really came to the fore in her distinguished professional career as a geologist. It was our great fortune that she got started as a young girl and never stopped her volunteer activities.

Frances J. Hein is an exemplary Distinguished Service Award recipient.

George Eynon



JOSEPH H. LAMBIASE
Distinguished Service Award

Citation—To Joseph J. Lambiase in appreciation of outstanding service to AAPG and especially for his dedication in promoting excellence in petroleum geology in the Asia Pacific Region.

Equally at home with a hamburger and fries, a plate of parmigiana di Melanzane, or a durian dessert, Joe Lambiase is a citizen of the world who has thrived in a career that has taken him far from his native Rhode Island. Joe's enthusiasm for geology is infectious. He has endless energy and a great sense of humor. He approaches each project as a new adventure looking for what the rocks tell him rather than seeing how they fit the conventional wisdom. His sense of adventure has led him to explore the geology of a wide range of interesting places around the world where he has always had a high respect for the local community and customs.

Joe graduated with a bachelor's degree in geology from Brown University and a master's in geology

from the University of Rhode Island. His interest in modern sediments led him to McMaster University in Canada, which in the 1970s was one of the top centers of sedimentology, led by the dynamic duo of Gerry Middleton and Roger Walker. His doctoral thesis on sediment dynamics in the Avon River estuary of the Bay of Fundy set a high standard of research and his unusual ability (at least for a graduate student) to strongly focus on a problem and get the work done in a timely fashion set a model for his future endeavors.

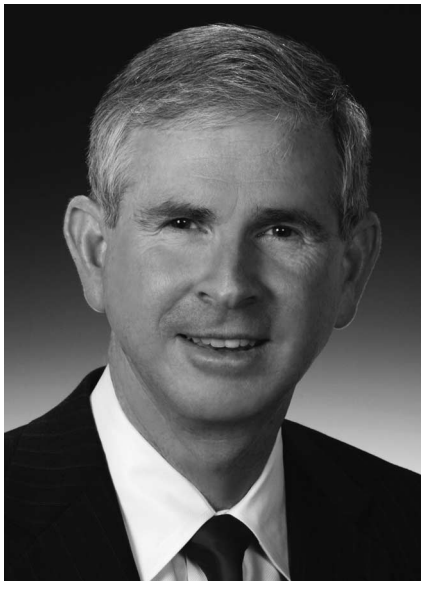
After a short time at Virginia Polytechnic Institute, where he studied sediments of the Atlantic Coastal Plain as part of an exploration for low-temperature geothermal resources, Joe moved to a career in the petroleum industry, first with Marathon Oil Company in Denver and Houston, and then Amerada Hess in London. Here he quickly learned how to apply lessons learned from modern sedimentary environments to understanding the subsurface and developed a strong interest on the interaction between basin tectonics and sedimentation. His assignments allowed him to do fieldwork in a variety of places including Kenya, Egypt, Madagascar, and Korea.

In 1993 he got a unique opportunity: to set up a new Department of Petroleum Geoscience at the Universiti Brunei Darussalam in Brunei. He built a surprisingly strong department in that somewhat remote location and developed a M.Sc. program in petroleum geology that attracted students from throughout Southeast Asia. An external examiner once described the program as "possibly the best petroleum-focused M.Sc. program in the world." Joe himself supervised 40 M.Sc. and 2 Ph.D. research projects. Many of his former students in Brunei are now leaders in petroleum geology in the ASEAN region. After 13 successful years in Brunei, Joe made a move to take up a new position as petroleum geoscience director at Chulalongkorn University in Thailand, one of the best universities in Asia. In his new position in Bangkok, Joe continues to train master's students in petroleum geology. In addition he consults and runs short courses for industry throughout Southeast Asia and as far away as Kenya and New Zealand.

Throughout his career, Joe has published prolifically. His research has made major contributions in our understanding of tidal sediments, sedimentation in rifts, deltaic sedimentation and the geology of Southeast Asia.

Joe has served AAPG in many ways for over three decades including being an associate editor of the *Bulletin*, a member of the House of Delegates and serving on both the Research and Education Committees. He has been a longtime member of AAPG's Asia Pacific Region and has supported that region in many capacities, including being president from 2008 to 2011. He was technical program vice cochair for the 2012 AAPG International Conference and Exhibition in Singapore and was on the organizing committee of the 2009 Hedberg Conference on "Variations in Fluvial, Deltaic and Coastal Reservoirs Deposited in Tropical Environments" in Jakarta. In both cases, Joe's hard work ensured a superb technical program and a great meeting. A large percentage of petroleum geologists in Southeast Asia have been trained by Joe, either in university courses or in short courses run for industry, and his support for AAPG is undoubtedly a significant factor in the strong support the society has in that area.

Peter McCabe



STEPHEN D. LEVINE
Distinguished Service Award

Citation—To Stephen D. Levine for outstanding leadership, inspiring creativity, and dedicated service to AAPG.

Stephen has been a member of AAPG since 1978. His most recent and significant contribution to AAPG was to serve in the role of general chair of the AAPG 2011Annual Convention in Houston. Stephen oversaw more than 40 volunteer leaders and infused the program with creative and successful events. AAPG members benefitted greatly. This conference had approximately 8300 attendees and stands as one of the highest attended AAPG conventions ever.

Stephen's gift to assemble, attract, and inspire a dedicated team of leaders served AAPG well in his role as general chair. He refers to his leadership team as "stellar" bespeaking his great pride in colleagues Linda Sternbach (technical chair), Marsha Bourque (general vice chair), Carl Steffensen (technical vice chair), Andrea Reynolds (oral chair), Tom Bulling (poster chair), James Cearley (sponsorship chair) and many more outstanding and dedicated committee leaders and volunteers. His team overcame the distraction of the Macondo oil spill, the debut of major changes in the technical program, and a federal government shut-down scare to provide some anxious moments leading up to the opening day.

Stephen had a great vision to make the theme for the meeting "One Giant Leap for Geosciences" come alive. AAPG was honored to have three true heroes of space flight attend the All Convention Luncheon: Harrison Schmitt (Apollo 17 Moonwalker), Scott Carpenter (Mercury Aurora 7), and Jim Reilly (Endeavour and Atlantis shuttles) plus a video salute by Andrew Feustel (who could not attend in person because he was in space). Those who attended this luncheon will never forget as these great heroes kept the audience spellbound discussing "the right stuff, great stuff, and stuff." I was greatly honored that Stephen asked me to help organize and host the event.

Stephen began his service to the AAPG in 1987 as a volunteer for the 1988 Annual Convention led by Dick Bishop. Beginning in the 1990s his attention shifted to the Houston Geological Society. It was here that he forged many great friendships through his participation in numerous committees and leadership roles. A favorite was the North American Exploration Committee where I was privileged to serve with Stephen as cochair, and which Steve went on to chair. The sky was the limit on creative meeting ideas, examples including Bill Barrett and his sons discussing critical insights enabling their Cave Gulch, Wyoming discovery; legendary carbonate experts James Lee Wilson and Wayne Ahr surmising the origin of the Mississippian Lodgepole find at Dickinson, North Dakota; and many more. Stephen even arranged for a logging truck to show up in the parking lot at one of the dinner meetings.

Stephen took on additional leadership roles within the HGS including membership chair, *Bulletin* editor, and president in 2004-05. As HGS Bulletin editor, he added articles on intriguing society members including John Pickering (vocalist on Buddy Holly and the Chirping Crickets album) and Dr. Carl Norman of the University of Houston (witness to the Bimini Island nuclear bomb test). As president he introduced a community service activity to clean up a deteriorated historic African-American cemetery, a Hurricane Katrina food bank activity, and college scholarship benefit party.

He served as a delegate to the AAPG House of Delegates for three terms beginning in 2002 and was elected foreman of the Houston Geological Society delegates section of the AAPG House of Delegates in 2009-10. He has also served on the AAPG Global Events Oversight and Geophysical Integration committees.

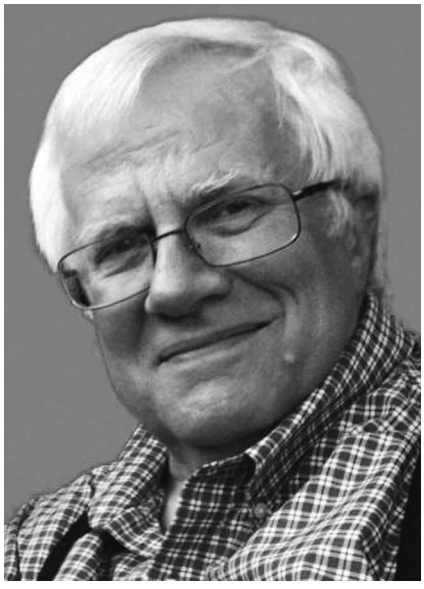
Stephen received his B.S. and M.S. in geology from Texas A&M University. He was privileged to have studied under the tutelage of two magnificent geology professors Dr. Tom Tieh and Dr. Robert Berg.

In 1982 Stephen began his professional career at Tenneco Oil Co. in Houston. He joined Conoco in 1988 and was able to work conventional and unconventional plays throughout North and South America, Europe, and Africa during his 23 years.

In 2011 Stephen joined SK E&P, a division of SK Innovation headquartered in Seoul, South Korea where he is a global exploration geoscientist.

He is married to his lovely wife Stephanie, and they are blessed with a son Cole, a student at the University of Miami.

Charles A. Sternbach



BRIAN E. LOCK
Distinguished Service Award

Citation—To Dr. Brian Lock for his outstanding service to the Association and the Geological community here and in South Africa through his research, consulting, and superb teaching over more than forty years.

Brian Edward Lock grew up in a small town along the English south coast on the Devon/Dorset border. His introduction to geology came from the fossiliferous Lower Jurassic of Lyme Regis and Charmouth made famous by Mary Anning in the early 1800s. This area is now part of the Jurassic Coast World Heritage Site. Brian was accepted by Emmanuel College Cambridge to read chemistry and matriculated in 1963. He never followed up the chemistry, instead taking the natural sciences tripos in geology, with most of his senior level courses in paleontology. He became captivated by John Dewey's teaching, however, and worked on western Newfoundland stratigraphy and sedimentology under John's direction.

Brian's first experience in Newfoundland was on New World Island, where he followed instructions to knock on doors and find someone prepared to offer lodgings – by chance he found himself sharing with Professor Marshall Kay of Columbia for a few weeks until Dewey arrived. His ideas for his dissertation, eventually conducted on the Lower Paleozoic of White Bay, were heavily influenced by Dewey, Kay, and Stuart McKerrow of Oxford.

After completion of the Ph.D. in 1969, Brian worked briefly with Brian Harland on his Spitsbergen project. As a first year undergraduate, Brian had been a member of the 1964 expedition, serving as a field assistant to doctoral student John Parker (later prominent in North Sea exploration with Shell), and he returned to the Arctic for the 1969 season in a group financed by Norske Fina. After the expedition returned, he was employed for the rest of the year organizing data and eventually authoring the group's NorskPolarinstitutt publication on the eastern Svalbard islands of Barentsoya and Edgeoya.

In early January of 1970, Brian, his wife Patricia, and their first daughter, Michele, left by sea for South Africa, to take up a junior faculty position at Rhodes University, Grahamstown, in the Eastern Cape. The department was small – initially only three faculty members – and isolated from other geologists except for a one-man office of the South African Geological Survey. The department's main emphasis was on mineral deposits and mining, and under the vigorous leadership of the new head, Hugh Eales, it grew rapidly with development of a popular M.Sc. program in exploration geology (minerals exploration). As the sole sedimentologist on the faculty at that time, Brian was able to become involved in a variety of fieldwork projects, with the most extensive being investigation of pyroclastic sediments associated with the early phase of Karoo (Jurassic) volcanicity in the Drakensberg Mountains. Brian admits to being attracted to the scenery and climate as much as by the geology, although there was no small satisfaction in following in the footsteps of the great Alex du Toit! Two more daughters, Elizabeth and Jacky, were born in Grahamstown.

Brian spent a year's sabbatical leave visiting young volcanic areas in Europe, with a visiting position at Exeter University, to supplement his interests in the South African volcanics, which had extended to include Proterozoic strata. Apart from having his car stolen and being introduced to the Mafia in Italy, he was fortunate to spend time in Yugoslavia, Greece, and France, where he was a guest of The University of Paris in their field station in the Auvergne (a castle at Aurillac) for a month.

After his return to South Africa, Brian spent one more year at Rhodes before accepting an associate professorship (full professor, 1980) at the University of Southwestern Louisiana in Lafayette. He soon realized that his research interests in pyroclastic rocks added little to the mission of the department. At that time Bill Paine had established a fine reputation for educating young people for the petroleum industry. Unfortunately, Bill suffered an incapacitating stroke in 1978. Brian's research interests at this time started to focus on the sedimentology of carbonate and evaporite sediments and on the

applied aspects of clastics to the petroleum industry. In 1985–86, Brian took unpaid sabbatical from the university and worked with Geconsultants International, Ram Saxena's company in Metairie, Louisiana. On his return to Lafayette, Brian took over responsibility for the main petroleum courses, including the successful Subsurface Project in which students work individually with industry mentors to map and report on the geology of productive fields. During this time, Brian's research focused on modern evaporites in the Gulf of California borderlands, Permian sabkhas in Utah, subsurface geology of the Cockfield/Yegua and on salt dome geology. He taught industry courses on basic petroleum geology, carbonate sediments and clastic sediments for U.S. and overseas companies and government agencies in Mexico, Nigeria, Myanmar, Indonesia, and India, in addition to consulting for salt mining companies in the United States. To date, 80 students have been awarded the degree of M.S. under his thesis direction.

When the AAPG started the Imperial Barrel Award competition, Brian entered a team from the university (now University of Louisiana, Lafayette) and has continued to do so each year. Over the five years of the competition to date, the UL team has won the Gulf Coast Section competition three times out of five and the international level competition in 2012.

Brian's youngest daughter, Rachel, was born in Lafayette. His four daughters include two nurses, a schoolteacher in Lafayette, and an executive with Wrigley's in Chicago. To date, he has seven grandchildren.

Brian has served as general chairman for the 1990 Annual Convention of the Gulf Coast Association of Geological Societies (GCAGS), President of the Lafayette Geological Society (1994-5), President of the GCAGS (1098-9), Vice President of the Gulf Coast Section of GCAGS (1999-2000), and continues to serve the GCAGS as Publicity Chairman and member of the Conventions Committee.

Honors and Awards include Distinguished Professor Award at the University of Southwestern Louisiana (1987), Outstanding Educator Award, GCAGS (1991), AAPG's Grover E. Murray Memorial Distinguished Educator (2006), and now the AAPG Distinguished Service Award (2013).

Frank S. Vincent

RICHARD A. LORENTZ, JR.
Distinguished Service Award

Citation— To Richard Lorentz, for outstanding service and integral commitment to the E&P industry, where his respectful charisma and dynamic leadership inspires peers and drives continuing development.

Serving two terms as vice president of the South East Asia Petroleum Exploration Society (SEAPEX) before taking the president's position for three terms (2004-06), Richard's reputation throughout Southeast Asia is as much for his boundless energy and joie de vie as his tireless promotion of the upstream industry and support for up-and-coming young geoscientists.

Born in Florida, Richard developed wandering feet early, moving to North Carolina and Alabama before graduating from Muskogee High School in Oklahoma. It was here that his career in the oil and gas industry took root and his ties with AAPG began with his graduation from Oklahoma State University with a Bachelor of Science in geology.

Richard was drawn to Southeast Asia early on, taking his master's in geology at the University of the Philippines in which his thesis focused on field mapping of north-central Luzon. But it would be five years of learning the ropes before he would return to Asia and begin to do what he enjoys most: building oil companies.

First there was five years in the Oklahoma Panhandle with Funk Exploration drilling over 200 wells targeting tight Mississippian age carbonates. Then in 1986, he took up his an expatriate role with Anglo-Suisse in Pakistan, where he was responsible for both well site geology and seismic acquisition in the Sind Desert.

Richard's foray into Southeast Asia began in 1988 with a moved to Jakarta as senior operations geologist for Asamera Oil. Here he brought life to the Bentanyan field in South Sumatra among others, before switching to Lead New Ventures in 1991. His ability to make and close deals now came to the fore. Asamera was in a fast growth phase, adding new acreage in Indonesia and building up for a final exit plan. By 1997, it had been renamed Gulf Indonesia Resources and Richard was an integral member of the team that successfully took the company public on the New York Stock Exchange.

A move to Singapore with Elf Aquitaine in 1998 took Richard towards cofounding Pearl Energy with Keith Cameron and Chris Gibson-Robinson. With a vision to build an independent E&P company focused in a region where small hydrocarbon discoveries were largely overlooked by the bigger players, Pearl was established on a shoe string in 2000. The early years were a struggle with plenty of opportunity but investors deterred by high regional political risk.

Scraping by but sticking with it, the trio eventually struck their first deal in Jambi Province, Sumatra in Indonesia. Soon Pearl's portfolio extended to Thailand, Vietnam, and the Philippines and it gained a reputation as a successful operator with the greenfield developments of the offshore Jasmine oilfield and the onshore Mengoepeh field. In 2005, Pearl Energy was to become the first pure E&P company to list on the Singapore Exchange and was eventually acquired by Abu Dhabi's Mubadala Development Company.

Adhering to the vision of unlocking value in Southeast Asian basins, Richard and his partners founded KrisEnergy in 2009. Singapore based and initially financed by private equity, KrisEnergy had accumulated 14 contract areas in Cambodia, Indonesia, Thailand and Vietnam by early 2012.

Richard's energy has extended beyond company making. In the 1990s, he led the Professional Division of the Indonesian Petroleum Association, where he was a driving force behind the publication of Indonesia's first *Oil and Gas Atlas* – a six volume set – and the ensuing *Seismic Atlas*. From 1993 to 2002, he was an active member of the AAPG Grants and Aid Committee assisting the establishment AAPG Student Chapters throughout Indonesia to cement the future and growth of new generations of geologists across the region and expanding the AAPG network.

He has also served as a member of the AAPG House of Delegates Honors and Awards Committee (1999-2000) and the AAPG House of Delegates Nominations and Elections Committee (2000-01). He was the Singapore representative for the AAPG House of Delegates until 2008 and was a member of the organizing committee for the Bali hosted AAPG ICE in 2000. In 2012, he served as General Chairat AAPG ICE Singapore.

When in Singapore Richard lives on a sailboat. Otherwise he divides his time between homes in Hawaii and North Carolina with Mell, his wife of 34 years.

Tanya Pang

WILLIAM C. STEPHENS
Distinguished Service Award

Citation—To William C. "Bill" Stephens for his passion and dedication to the profession of petroleum geology and his guidance, encouragement and mentoring to all student geologists.

Bill Stephens exudes confidence; his prowess and determination to defend a hypothesis is unparalleled. This quality is the underlying current to and driver of his personal and professional success.

Bill was born into a military family in Gainesville, Florida. As a child and young adult, he moved around the world from post to post with his family. Family camping trips in the Alps and Pyrenees influenced Bill's understanding of the origins of the Earth's massive features. His fifth grade science teacher also influenced his understanding of the Earth's processes and served to inspire his love of science. Grade school science experiments, such as a multi-week observation of stalactite growth, further piqued his scientific interest. While living in Bangkok, Thailand, Bill experienced learning and exploratory opportunities that would later prove to have the most significant impact on his geologic interest. There, he joined the Thai-Am Caving Grotto and was trained in caving techniques. This experience led to his decision to attend Virginia Polytechnic Institute and State University (Virginia Tech), which boasted one of the top caving programs in the United States.

His experience during college in cave exploration allowed him to contribute in the extension of nearly five miles of passageways in the then newly discovered Spring Hollow Cave. Those caving efforts have continued throughout his career where he has made more than 40 exploratory trips in the Mammoth Cave System. Furthermore, Bill has been a contributing member to over a dozen expeditions in the Lechuguilla Cave (expeditions which include the discoveries of the Chocolate Factory and Widow Maker Hall). He also traveled to Mexico as part of the ProjectoEspeleologico Purification in two of the largest cave systems, Systema Purification and Cuevo Del Tecolote.

Bill's personal confidence was instilled by his father, who provided him with an example of exceptional character that would guide him through his life and career. One of Bill's early mentor's, Morris Miceli, also helped to instill confidence in him by encouraging him to become active in professional organizations. Ultimately, the opportunity to mentor under Robert D. "Bob" Gunn became a defining template for three decades of exploration and discovery. His persistence in combining all relevant data into a comprehensive regional interpretation, integrating artistic expression with geological analysis, creative thought processes, continuous development of individual skill sets and a dogged tenacity in pursuit of exploration success, all crucial tools from the Gunn school of exploration geology. At once a leading example of unwavering integrity, emphasis on the role of professional development, and the value of service to one's professional organizations were trademarks of a long tenure under the legendary explorationist.

Over the last 30 years, Bill's primary focus has been the application of sequence stratigraphy, petroleum systems concepts, and structural framework interpretations, to the exploration of the Pennsylvanian System of the Eastern Shelf and Red River/Matador Arch of Texas. His specific focus has been the Bend Conglomerate, Strawn and Cisco/Canyon systems. These efforts were directly responsible for numerous new field discoveries in the Pennsylvanian and Mississippian of north central Texas including RRR, Wild Hog, BBBB, Willow Tank and VCG fields. The 2011 new fault block extension to the VCG field complex adds some 70 additional gas and gas condensate development locations (at depths from 13-15,000') to Gunn's expanding inventory. Bill has coauthored numerous papers on the geology of the Matador Arch in North Texas and was awarded Honorary Membership into the North Texas Geological Society in 2012.

His leadership in the Southwest Section is extensive. It includes his service as president in 2004, the annual convention chair in 2007, and chairing numerous committees over the course of his involvement with the SWS. In 2012, Bill was the recipient of the SWS's John Emery Adams Distinguished Service award, the section's highest honor.

These leadership experiences have more than prepared him for success at the national level in AAPG. An outspoken advocate for professional certification for the DPA, Bill has served as a DPA counselor, an associate editor for the Bulletin and on an Advisory Committee for the SWS. In addition, he successfully chaired the AC Nominating Committee in 2010 and has also represented three affiliated societies in the HOD. He currently serves on the AAPG Membership Recruitment Committee and is an AAPG Foundation Trustee Associate.

An avid cyclist, Bill also holds multiple black belts in Taekwondo and Kempo Karate. Music is a passion for Bill and he owns an outstanding vinyl record collection of virtuosic rock and jazz guitarists. He has been married for 31 years to Dr. Pamela Stephens, former Geosciences Department Chair at Midwestern State University and has two sons, Nicholai, 30, a fourth year resident at Nassau University Medical Center and Ian, 28, a fifth

year Ph.D. candidate at the University of Illinois, Dept. of Astrophysics.

Craig Reynolds

LINDA R. STERNBACH
Distinguished Service Award

Citation—To Linda R. Sternbach, an outstanding leader, exceptional geologist, and a scientist blessed with an absolutely tireless dedication to the AAPG and the geosciences profession.

"Twenty years from now you will be more disappointed by the things that you didn't do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore. Dream. Discover." - Mark Twain. No better words can describe Linda's boundless energy and determination. Her wide-ranging record of AAPG and local society contributions including many of most demanding jobs, is simply incredible. What's more is that so many of her volunteer efforts are behind- the-scenes and virtually go unnoticed.

Linda has undertaken a vast list of duties in her 28 years of AAPG service. Highlights include the valuable role as technical chair for the 2011 AAPG Annual Convention, three terms of service in the AAPG House of Delegates, chair of the Geophysical Integration committee, and numerous leadership roles within the Houston Geological Society including the highest position, president.

Linda did an extraordinary job executing the technical program for the 2011 AAPG Annual Convention in Houston as technical chair. This role is undoubtedly the supreme position in the convention as the technical program is the determining factor as to whether an attendee wishes to attend a convention or not. She and her technical committee members simply "knocked it out of the park" as indicated by attendance of 8300, the largest in 20 years. Quietly unnoticed was thatthe 2011 convention was particularly challenging as it was the very first to implement the "theme chair" format, a completely new method to categorize, screen, and select oral talks and posters. She relied on her organizational skills and determination to meet critical deadlines to identify world "theme" experts, screen submitted articles and posters, and to complete the selection process. In addition, the technical program added a series of firsts with afternoon forums on domestic business, shale gas, and international business. Electronic posters were also introduced in Houston. Complexities related to the 2010 Macondo oil spill in the Gulf of Mexico were overcome and the quantity of papers and posters in the call for abstracts resulted in a full technical program. Teamed with a talented group of committee leaders including vice chair Carl Steffensen, oral chair Andrea Reynolds, poster chair Tom Bulling, and joined by many committee volunteers, they simply exceeded all expectations.

Linda began her professional career in 1984 at ARCO Oil and Gas, first in the Plano, Texas office and later in the ARCO west Houston location. It was at ARCO in Houston that she formed life-long friendships with fellow HGS members John Jordan, Dawne Jordan, and Steve Earle.

Prior to ARCO Linda earned a B.S. in geology at Syracuse University (1981) and was a top student in the geology department. She accepted a full scholarship grant to the geology department at Rensselear Polytechnic Institute in Troy, New York, studying under the great carbonate scientist Dr. Gerald Friedman. It was here that she met and later married fellow Friedman graduate student Charles A. Sternbach in 1984 and jointly completed their degrees at the same time in order to move to Houston. Dr. Friedman remained an important mentor to Linda, and guided her in her lifelong interest in ancient rocks of the Cambrian, Ordovician, and Precambrian.

Despite the energy downturn in 1993, Linda worked 10 years as a successful consultant at Pennzoil, Globex Energy, and several independent oil companies. Linda specializes in workstation geophysical interpretation and geologic integration with seismic. She worked for four years as a geophysical specialist at Kerr McGee in Houston (2002–06) focusing on ultra-deepwater, subsalt, and international plays.

Linda and Charles Sternbach are the partners in an exploration company called Star Creek Energy, with Linda joining as vice president in 2008.

A more dedicated AAPG volunteer you will not find, Linda is a most deserving recipient of the AAPG Distinguished Service Award.

Stephen Levine

LAURA ZAHM
Distinguished Service Award

Citation—To Laura Zahm for diligent service to the Association and profession as a committee member, chair, and manager with special emphasis on the Youth Educational Activities committee and as a House of Delegates committee chair and officer.

An old saying goes, "ask a busy person if you want to get something done." That well describes Laura Cutright Zahm who has been extremely active in AAPG in addition to working and raising a family. It is truly amazing how much Laura has accomplished in the last decade or so.

Born to a geologist father in Florida, Laura moved around quite a bit growing up including living in the Belgian Congo as a youngster during its civil war from 1975 to 1978. She received her Bachelor of Science degree in geology and geophysics from the University of Wisconsin in 1993, followed by a Master of Science degree from the University of Texas in Austin in 1997. While at UT 1994–97 and working there as a research assistant with Charlie Kerans at the Bureau of Economic Geology, she became involved with carbonate rocks, leading to her M.S. thesis on the Cretaceous carbonate ramp of the western Comanche shelf in Texas. During this period she had summer jobs working with carbonates for Texaco and Burlington Resources.

In 1997 the Marathon Oil Technology Center had the good sense to hire the new graduate and put her to work in Littleton, Colorado, utilizing her carbonate experience in the building of 3-D models and reservoir characterization of carbonates of the Permian Basin with Scott Tinker as her mentor. In 2000, the project she was working on was transferred to iReservoir.com in Colorado in 2000 where she stayed until moving back to the Bureau of Economic Geology at the Houston Core Research Center in 2003. There she participated in BEG's drive to build an endowment to ensure preservation of the BEG core collection. After a 2005–08 stint as a carbonate stratigrapher with Conoco Phillips in Houston, she returned to BEG in Austin in 2008 where she presently is a research scientist associate. Her BEG work has resulted in coauthoring a dozen papers and some 20 abstracts plus various lectures, schools, and a website module.

While in Houston she became significantly involved in community outreach at all education levels from public libraries to large workshops for teachers. This coincided with her becoming very active in AAPG's Youth Education Activities committee where she accomplished a great deal, notably the publication with the American Geological Institute of an excellent online manual to assist geologists in making presentations to K-12 classes. She was vice-chair of the YEA committee 2005–08 and took over as chair in 2008 for three years. As another major YEA activity, she cochaired the Association's Teacher of the Year program in 2006 and took the reins of the TOTY effort in 2008 and continues running this popular program.

Laura has been a member of AAPG's Grants-in-Aid, Preservation of Geoscience Data, Tactical Operations, and Public Outreach committees, currently serving as chair of the latter. Recognized by the AAPG Executive Committee as a doer, she was appointed the manager of seven committees in 2011 with term to 2013. She has accomplished all this with unfailing optimism, good cheer, intelligence, and great ability to work with others.

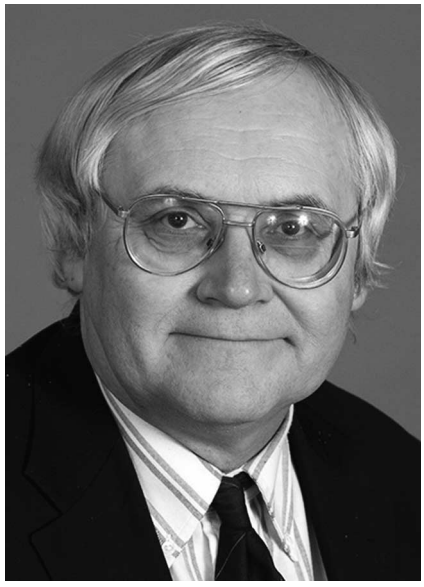
Laura has represented both the Houston Geological Society and the Austin Geological Society in the House of Delegates, demonstrating both how active she has been in both societies and the respect in which her colleagues hold her. Not sitting still in the House, she was House secretary/editor in 2009–2010 and has served on

several House committees, including being vice-chair and the chair of the Honors and Awards committee.

Laura has done all this while raising three children with her husband Chris. This surely is a person who knows how to manage her time!

Laura thinks that she became a geologist because she has always been drawn to puzzles, especially the 3-D variety. She says that when she took introductory geology and discovered how many of the concepts she had grown up discussing with her father as the family drove across the country camping in national parks along the way, she was hooked. Laura is thankful for the mentoring and friendships developed through AAPG activities throughout her career. We can all be glad that she chose our profession and that she has done, and assuredly will continue to do, so much for our Association.

Don Lewis



CARLTON E. BRETT
Grover E. Murray Memorial Distinguished Educator Award

Citation—To Carlton E. Brett, an inspiration to geology students at all levels for over 34 years, whose insatiable curiosity about Earth history and the interplay of organic evolution as recorded in the fossil record fuels exceptional dedication to field-based observation that greatly enriches our understanding of evolutionary paleoecology, taphonomy, and the architecture of the stratigraphic record.

The writer John McPhee, in his book *Rising from the Plains*, commented, "Geologists tend to have been strongly influenced by the rocks among which they grew up." While he provided several examples, McPhee might well have included Carlton E. Brett, who grew up on Grand Island, New York, in the Niagara River not far from the spectacular Niagara Gorge in which fossil-rich strata of the Ordovician and Silurian Periods are exposed. Indeed, western New York and much of the Upstate region are underlain by some of the world's most fossiliferous and well-exposed sedimentary strata of Ordovician, Silurian, and Devonian age. Carl was born in New Hampshire in 1951, but moved with his family to western New York at age 10 where he became fascinated with the abundant local fossils and the rocks in which they were found. Participation in the New York State Science Congress guided Carl's interest beyond mere fossil collecting with research projects that won top prizes statewide in 1968 and 1969 before he graduated from high school. Carl earned his bachelor's (1973) and master's (1975) degrees from the State University of New York at Buffalo. Carl completed his Ph.D. dissertation in 1978 at the University of Michigan focused on the paleoecology, systematics, and stratigraphy of echinoderm faunas from the Middle Silurian of New York, under the supervision of Brad Macurda. During his Michigan years, Carl began longstanding collaborations with fellow students David Liddell, George McIntosh, and Ed Landing.

Directly from Michigan Carl joined the faculty at the University of Rochester in 1978 as an instructor. Rochester already had a strong program in paleontology and stratigraphy that Carl was able to maintain and build in new dimensions. A hallmark of the program at Rochester in those years was a unique interdepartmental major called bio-geology, in which students took courses from both Geology and Biology Departments and also spent a semester at the West Indies Lab in St. Croix. Carl was a major contributor to this highly innovative undergraduate program. During his 20 years on the faculty at Rochester, Carl developed a highly productive and

comprehensive research program on the paleontology, paleoecology, and stratigraphy of the Silurian and Devonian of New York which harkening back to his boyhood, always had a strong field component. Graduate student mentoring, both master's and doctoral, was interwoven with his research program so that graduate students were always involved in field research as part of their theses. Carl has always taken on students as coleaders of professional field excursions and coauthors of both field guidebooks and peer-reviewed papers. Most of these students have become significant contributors in their own right to the geosciences in academia, industry, and geological surveys. Carl's longstanding collaboration with Gordon Baird, dating from his Rochester years, is an integral part of this collaborative research effort, and has resulted in major innovations in comparative taphonomy, paleoecology, and the concept of coordinated stasis.

In 1998, Carl made a major move to join the faculty of the Department of Geology at the University of Cincinnati. The move to Cincinnati opened up new opportunities for Carl in both teaching and research at both the undergraduate and graduate levels. At the undergraduate level, Carl was hired when the Cincinnati Geology Department was undertaking a restructuring of its undergraduate curriculum, amidst declining enrollment of majors. The goal was to provide more flexibility for students while at the same time insuring that majors would graduate with a solid foundation in geology by completing a core curriculum. Students were given the opportunity to take more advanced courses along three "tracks": general geology, environmental geology, and geobiology. Carl Brett enthusiastically became the leader of our efforts to revitalize our program and took on the position of Undergraduate Program Director. With the help of several other faculty, Carl introduced a largely field-based introductory geology course for first-year students. Through this course, many students with little or no prior exposure to geology (uncommon as it is in most high school programs) became infected with the enthusiasm for geology that Carl infuses into all of his teaching. A second major contribution Carl made to the core undergraduate program is a two-semester geobiology course in which he skillfully integrates several fundamental components of geology—stratigraphy, sedimentology, paleontology, plate tectonics, and earth history—into what has become known as "earth systems history". Carl emphasizes these "traditional" components of geology, using outcrops stretching from Utah to New York as essential examples, and preaching the profound significance of geology's deep time. At the same time, students are introduced to the importance of data from geochemistry, isotopic analyses, geophysics, and biology. The geobiology sequence has immeasurably helped us to meet our goal for graduating well-rounded undergraduates grounded in geology's fundamentals. These new courses, with fieldtrips a major component of both, a mentoring program that connects interested undergraduates with graduate students and their research, and the institution of a B.A. degree in geology — both led and coordinated by Carl — led to a tripling of declared geology majors. As undergraduate program director, Carl continues to provide advice and guidance to each and every geology major. In addition, during the past three years, the University of Cincinnati embarked on changing from a three quarter to a two semester academic calendar, requiring restructuring of all department curricula. The first fall semester began this past August. Carl led the department's efforts to make this significant transition and also contributed to restructuring at the college level.

At the graduate level, Carl's research and graduate student mentoring have continued at a very high level. The "classic" stratigraphic sections of the Ordovician, Silurian, and Devonian of the Midcontinent region provided Carl with a vast new field laboratory in which to apply and test major concepts that he developed in New York in taphonomy, paleoecology, and sequence and event stratigraphy. The classic midcontinent section was ripe for fresh ideas that are now overturning many well-worn concepts and pitfalls like "stateline" formational and facies boundaries. As a member of three IGCP subcommissions, Carl continues to organized field conferences that bring international groups of researchers to the region. Over his entire career to date, Carl has supervised 21 Ph.D. and 26 master's students. His most recent graduates from Cincinnati have found solid positions in academia and geological surveys where they are becoming productive contributors in research and education. To say that among Carl's closest research colleagues are his graduate students is testimony to his unique ability to engage students in research and to dedicate himself to their growth as

professional geoscientists. Having Carl Brett join our faculty gave our paleontology graduate program the "critical mass" needed to provide a well-balanced coverage of paleobiology, paleoecology, and stratigraphic paleontology, resulting in a program that has attained a high level of national recognition.

In support of his nomination for the Grover E. Murray Memorial Distinguished Educator Award, several former students of Carl's submitted enthusiastic letters. Most of these writers credit Carl with inspiring them to dedicate their lives to the geological profession and instilling in them the same passion for knowledge about earth history and its history of life that he so abundantly demonstrates. This all too brief account can be best summarized in the words of one of Carl's former students: "The key to Brett's success as an educator is that he sets an example of one who feasts on learning himself. He is tireless in his own quest to learn more, and to understand better, the history of the earth and life. His own appetite for learning translates to an expectation that his students also have this same desire to learn and this leads to high expectations for his undergraduate and graduate students alike."

David L. Meyer

Response

I am greatly honored to receive the Grover Murray Award for doing what I most love. Teaching and research are sometimes seen as antithetic activities and, indeed, because time is limited this could be the case. But I view the two activities as completely complementary. My research, whether in the field in Kentucky, the Moroccan desert, or on shipboard in the Gulf of Mexico, always involves one or more students—both graduates and undergraduates. The direct involvement of students in new field research keeps even routine activities vibrant. Research enables me to bring novel findings directly into the classroom, a spontaneity that could not exist without direct experience. Conversely, mentoring students inspires me to keep exploring new directions. Some of my most productive lines of research have come from questions raised by students on field trips. The realization that we do not really have answers to these basic questions led me to new networks of inquiry.

Both of my parents were teachers. My mother, Helen,was an English and math teacher who became a private "mentor" for her seven children. My father, Wesley Brett, was a professor of art and design who worked diligently with his students—in a woodworking studio—trying to teach them not only principles of design, but also how to create objects—without getting cut; hands-on learning, indeed! His students revered him and many of them became outstanding teachers. With this inspiration, I had always anticipated being in academics in some way.

My early interests in paleontology were driven by the pure excitement of finding fossils, starting at age 10, but I wasalso influenced by important mentors. Eleanor Milliken, an award winning earth science teacher in Durham, New Hampshire, even facilitated a meeting with Harry Whittington when our class visited the Museum of Comparative Zoology at Harvard University. Science teachers Hubert Sharpe, James Mazza, and James Patmos, among others, at Grand Island High School encouraged my burgeoning interests in fossils and allowed me flexibility to pursue science projects that led in important directions. Several teachers even let me teach their classes on fossils or geology.

One of my early mentors, a sometimes crusty U.S. Geological Survey field mapper named Bob Schnabel, I worked for one summer, once asked me, "Why do you want to be a professor?" I quickly replied, "Because I love paleontology and I want to continue studying it." "That's a terrible reason!" he retorted. "How well can you teach?" I was taken aback and determined to find out. The next fall, as a college junior, I began teaching Saturday classes on geology for middle school kids at the Buffalo Museum of Science. The kids were rambunctious and, as I taught in a crafts classroom, they had plenty of ammunition for their pea-shooters! I felt quite discouraged. Nonetheless, when I took them out on a field trip to nearby Cazenovia Creek, the same kids were suddenly engaged, asked questions, and showed genuine enthusiasm. (The biggest rabble-rouser of the classroom got very excited about fossils when he discovered a nice trilobite and eventually went on to become a distinguished professor of paleontology.) That little bit of success encouraged me to continue pursuing a career in teaching and I was determined to make it hands on, involving the same types of field experiences that had excited me as a child.

As an undergraduate at the University of Buffalo in the turbulent early 1970s, I pursued geology and paleontology with a vengeance and with encouragement of several mentors, among them

Ed Buehler, Kenton Stewart, and Parker Calkin. Above all, they allowed me to follow my own interests.

At the University of Michigan, my advisors Brad Macurda and Jack Dorr, and mentors Jim Doyle, Gerry Smith, Bob Keslingled by example; Henry Pollock and Rob Van der Voo's course "Plate Tectonics and Earth History" expanded my horizons. Ultimately, it is the holistic aspects of earth system history that most captures my interest and makes teaching challenging and rewarding. I also taught at University of Michigan's field camp in Wyoming and a few labs. Bruce Wilkinson, who always tried to keep me on my toes, once called me a "natural born teacher"; Jack Dorr sent letters to the head of department praising my lab teaching efforts in his evolution class. This was deeply satisfying.

Yet, when I first arrived at the University of Rochester, as an instructor two days before classes started in fall of 1998 I had never really planned and taught a full course, my Ph.D. was not completed, and I nearly despaired. But I dug in, working all week on the classes and weekends on the last of my dissertation writing and by the end of the semester things were off and rolling: five of those students became paleontologists!

After 20 great years at Rochester I was delighted to become a part of the wonderful Geology Department at University of Cincinnati in 1998. I truly appreciate the support of many esteemed colleagues, especially David Meyer and Arnie Miller, great teachers and mentors themselves, who have long nurtured my interests. Dave was a role model to me even years before I met him. In high school, I read about Dave's project on fossil crinoids when he was a student at Brockport High School; he had won first place in the New York State Science Congress. That encouraged me to pursue my own projects. Arnie, who graduated from Rochester's excellent Biology-Geology program the very month I was hired to become advisor for that program, has strongly encouraged me in many ways.

I have been inspired by other incredibly dedicated educators: among them, Curt Teichert, Paul Potter, and Dolf Seilacher. How could one help but revere these legendary scientists, each still teaching well into his 80s? Finally, my wife of nearly 40 years, Betty Lou, a biology professor herself, has patiently encouraged me to pursue my love of teaching and field study in geology, even though it meant my being away many weekends.

Above all, I owe a great debt of gratitude to the dozens of excellent students past and present. I frequently receive notes from former students, including some who are not employed in earth sciences, saying that they were inspired by my classes and a number have noted to me that they still frequently reflect upon "big picture" ideas that I introduced to them. There is nothing so gratifying as seeing students develop sparks of interest and then going on to pursue their own adventures. That makes my life grand.

Carlton E. Brett

JOHN R. UNDERHILL
Grover E. Murray Memorial Distinguished Educator Award

Citation—To John Richard Underhill, a genuinely global educator, for his outstanding contribution to the education and inspiration of geoscientists in both academia and industry.

It gives me great pleasure to attempt the daunting task of describing the diverse achievements of John Underhill and his contribution to global geoscience education. John is without question a most appropriate recipient of this award, which acknowledges his excellence in teaching and commitment to mentoring in both academia and industry. There is, however, much more to John than just his outstanding geoscience career and I hope to do justice to his myriad achievements in this brief biography. In this age of specialization and focus, John bears the mark of a modern day Renaissance man with a wide bandwidth, having achieved international recognition in two

demanding and sharply contrasting careers. His reputation in both careers is underpinned by his engaging manner, humility, honesty and integrity.

In 1982 John graduated with a degree in geology from Bristol University. He was awarded a Ph.D. from the University of Wales in Cardiff three years later. The title of his thesis was "The Neogene and Quaternary Tectonics and Sedimentation of Western Greece", a subject we shall return to later. John then joined Shell to work as an exploration geoscientist before resigning in 1989 to take up a post as a lecturer at Edinburgh University, where he established the first 3-D seismic lab to be housed in a UK University with support from Shell, Esso, and the Petroleum Science & Technology Institute.

John was promoted to become professor of stratigraphy at Edinburghin 1998, a position once held by James Hutton and one that John holds to this day. While at Edinburgh, John has led their Earth and Planetary Sciences Research Group in the School of Geosciences and been an associate professor in the Institute of Petroleum Engineering at Heriot-Watt University.

His commitment to excellence in teaching in these roles is clear and longstanding. John has put Edinburgh University, on the "petroleum map,"creating a vibrant seismic lab and acting as a supervisor and mentor for countless undergraduates and over 50 postgraduates (M.Sc. and Ph.D.) during his 23-year academic tenure in Scotland. He has been a Director of Undergraduate Studies in the department and organized the final year geology degree course for a decade. He has served as the convener for the Undergraduate and Masters Boards of Examiners at Edinburgh and acted as an external examiner for both B.Sc. and M.Sc. courses at the University of Oxford, the University of London's Royal Holloway College, University College Dublin, and Aberdeen.

These roles, allied to the numerous courses and field workshops that John has delivered to the petroleum industry all over the world, that include his role running and contributing to the Petroleum Geology of the North Sea industry flagship course, has led to hundreds of students and petroleum geologists benefitting from his extensive knowledge and inspirational teaching style.

John has maintained very strong links with the petroleum industry during his time in academia and has spent two periods embedded within companies. In 1992–93, he worked with BP as they developed their sequence stratigraphic schemes for the North Sea, a collaboration that led to several high-profile publications. Between 1997–99, he spent a sabbatical with NorskHydro, which included a period based in their Research Centre in Bergen. These close industry-academic collaborations served the interests of students and company staff well with numerous datasets being released and subsequent publications.

John's research interests are diverse and lie in the structural and sedimentary evolution of basins in both extensional and compressional settings and the controls on petroleum systems developed within them. John has championed the integration of industry seismic and well information with outcrop studies to unravel the complex evolution of basins such as the North Sea, Wessex Basin, western Greece, Gulf of Suez, Central and East African Rifts and the south Atlantic. In doing so John has become a recognized expert in basin analysis. These interests have led to a number of industry sponsored research projects in which academia and industry have collaborated to their mutual benefit.

In recent years John has returned to the Ionian Islands of western Greece, the site of his original Ph.D. research. Here he has led a multidisciplinary international team of workers integrating a variety of geoscience techniques to unravel the true site of Ancient Ithaca, the Odysseus' homeland. The group's findings have been presented as both a book and a television documentary, and the results have opened up a fascinating debate that embraces geoscientists, archeologists and scholars of Ancient Greece.

This is not the first time that the AAPG has found it appropriate to recognize the excellence of John's work during the course of his 28-year membership of the Association. In 1992, John received the Matson Award for Excellence in Presentation at the ACE in Calgary and during 1998 and 1999 he served as an AAPG Distinguished Lecturer. John also served on AAPG's Grants-in-Aid committee for three years. John has also been recognized twice as a Distinguished Lecturer by the European Association of Geoscientists and Engineers (EAGE), an organization for which he recently served as president. During his tenure he helped broker a new memorandum of understanding with AAPG that will lead to joint technical meetings in the future. He has also been the recipient of the President's Award, Wollaston Fund, and last year was

awarded the Petroleum Group's prestigious Silver Medal by the Geological Society of London.

His contributions to the scientific community in general and geosciences in particular are widely recognized and are reflected in his being an elected Fellow of the Royal Society of Edinburgh and a member of the Council of the Geological Society of London. John has also served as a member of the All-Party Parliamentary Group for Earth Sciences tasked with briefing Members of Parliament and the House of Lords on current topics relating to Earth Science.

John and myself share a common interest in sport, particularly football (or soccer) and we both suffer from supporting English clubs with a penchant for grasping defeat from the jaws of victory. When John's playing career was cut short by injury during his student days, however, he chose to pursue his interest by way of the much more challenging route of refereeing. John has made a number of lifestyle decisions to enable him to follow this dual career path and his life choices serve as both a model and inspiration to many of his students as they start to plan out their own career paths.

Pursuing an activity that can lead to both your eyesight and parentage being called into question by complete strangers every weekend is not everyone's choice of a second career. It will come as no surprise to those who have met John to discover that he is robust and achieved international recognition in his refereeing career. John officiated in the professional Scottish leagues for 14 years and was the first Englishman to represent Scotland on the FIFA List of International Referees. This led to him officiating in over 40 international matches until his age-enforced retirement in 2008. He was also elected by his fellow referees to lead the Scottish Football Referees Association, a role he held for the first three years of the association's existence until his retirement from the whistle.

When asked what he does John often describes himself, with typical humility, as a "forensic geoscientist." This is a totally inadequate description of John and his achievements. The red thread running through John's broad spectrum of activities and achievements is a desire to give something back—to the science that has fascinated him, through teaching and mentoring the next generation of geoscientists; and to the sport that has absorbed him, through refereeing when his playing days came to an end. There are hundreds of geoscientists around the world, many of whom are fellow AAPG members, who have benefitted from John's depth of knowledge and teaching excellence. They will be delighted to see John Underhill receive this richly deserved award from the Association and geoscientific community that he loves and is committed to.

Keith Gerdes

Response

As I researched the life and career of Grover E Murray (1916–2003), whose name adorns this prestigious AAPG Award, I became increasingly aware of his outstanding contribution to petroleum geoscience and his commitment to the education of students and professional geologists. For those unaware of Grover Murray's many achievements let me encourage you to look at the memorial that appeared in the Geological Society of America's archive to commemorate and celebrate his life (Poag et al., 2004). It is well worth reading to reflect upon a great man with clear vision, geo-integrity, leadership, and awesome drive. That the AAPG has considered me worthy of the award in Grover Murray's name is a truly great honor and one that has caused me to reflect on how I find myself being in privileged position to receive it in Pittsburgh.

It all started with a map. Not any old map, but a special geological map of the Isle of Wight. Situated off southern England, it lies in a key position to understand the structural development and evolution of the prospective Wessex Basin and its Hampshire Basin successor. How did it come about that I was given the map at all? Well, as a young teenager—and like many other geologists I suspect— I became inspired by a physical geography teacher and found myself fascinated by Ordnance Survey topographic maps and Meteorological Office weather maps. One thing led to another and I found myself listening to the shipping forecast at odd hours and then plotting isobar maps of highs and low pressures, worrying about closing contours and working out the consequences thereof. This subsequently proved to be very good training for the age-old, tried-and-tested practice of hand-contouring structural closures for drilling!

Probably figuring that I needed to get out more, my parents clearly executed a cunning plan by giving me the aforementioned map and one fateful Easter day I set off on what seemed at the time a great adventure by train and ferry to the

island. What I saw on that coastal walk from Sandown to Bembridge, a distance of just 10 miles but a geological heritage spanning over 100 m.y. from the Lower Cretaceous to the Late Paleogene and with bedding planes going from horizontal to vertical and back again in the process, inspired me.With my imagination fired, I was hooked, not just to geology but to the tectonic process of structural inversion, something that continues to fascinate me to this day.

I went on to study geology at school before heading to Bristol for my undergraduate B.Sc. degree. There I was fortunate enough to be taught by a set of enthusiastic and charismatic lecturers like Brian Williams, Paul Hancock, David Dineley, Doug Robinson and Reg Bradshaw, all of whom were totally committed to imparting geological knowledge selflessly and with flair. This was long before metrics like research grant income, citation and impact factors had been dreamt up, and a university education was, frankly, all the better as a result, and their duty of care is something I remain extremely grateful for.

After a BP-sponsored Ph.D. that took me to the Ionian Islands of western Greece under the expert eye of Phil Allen (now of Imperial College), I joined Shell in The Hague and then had my first posting in London. My time with Shell coincided with the likes of Ken Glennie, Peter Ziegler, Berent Van Hoorn, and John Parker, all of whom provided me with great mentorship and were true geological role models. The experience gained in Joint Venture partnership with Esso was invaluable and exposed me not only to the vagaries of 2-D paper-based seismic interpretation, bit also to see the development of 3-D seismic as it first hit the interpreters screensand application of sequence stratigraphic methods as Exxon's in-house capability was developing.

During that period, my second career as a soccer referee started to take off and I took what many probably thought a bizarre life-choice, namely to pursue a dual career in sport and academia in Scotland, where I have remained to this day. I did, however, spend 18-months commuting across to BP's Glasgow office to work with Mark Partington during the early 1990s, courtesy of Al Fraser, helping to develop aspects of and applications for their Jurassic (J-) sequence stratigraphic scheme. That work included the testing of and confirming Peter Ziegler's notion that the North Sea had domed. Although I subsequently spent a couple of years on Secondment with NorskHydro in Bergen, I have remained at Edinburgh University ever since.

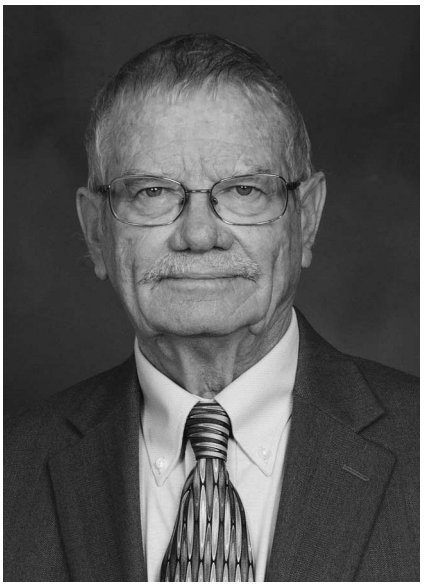
During my 23-years at Edinburgh, it has been my pleasure and privilege to supervise over 60 postgraduates and 500 undergraduates and to introduce them to the wonders of sedimentation, tectonics, and stratigraphy through both field and subsurface geoscience. It has also been my privilege to be part of a community of influential scholars that included John Dixon, Alastair Robertson, Simon Harley, Euan Clarkson, Barry Dawson, Brian Upton, Mike Johnson, Colin Graham, and Godfrey Fitton, all of whom were dedicated to undergraduate learning of the highest caliber.

So in summary, why am I able to this address? I think it's been a mixture of having a lifelong fascination for maps, reading the landscape, forensic geoscience, and a passion for applied research. That I have been able to pursue this wonderful hobby as a career and traveled the world while doing so has only been possible through the support and generosity of numerous colleagues, students, friends, and family. I owe all of them big time, especially for understanding and supporting my motivation towards educating, informing, and inspiring the next generation of geoscientists. I also pay tribute to those that who gave so generously whenever I wheeled my shopping trolley down company aisles throwing in 3-D data as I passed. You know who you are, and I am very grateful to each and every one of you and am here because of you. Last but by no means least, I am very grateful to each and every one of my research students for their commitment, caliber, dedication to their subject, and above all, to the loyalty and respect that they have shown me over the years. They have been a fantastic bunch and effectively formed an extended family. I hope and trust that they understand that it is their efforts that have provided the platform for me to receive this award from AAPG.

I am humbled that the AAPG consider me worthy to receive the Grover E. Murray Memorial Distinguished Educator Award and conclude by thanking Keith Gerdes, the president of AAPG's European Region, for his kind words that accompany the award, and pay tribute to all those who have made this possible.

Reference: Poag, C.W., Morales, G. and Mixon, R.B. 2004. Geological Society of America Memorials, v. 33, p. 37–40.

John R. Underhill



GEORGE B. ASQUITH
Harrison Schmitt Award

Citation— To George Asquith: for his significant contributions to geology through his petrophysical research, writing, and gifted teaching, and through his dedication and commitment to the AAPG.

The impact George has had on geologists is substantial. His passion for all aspects of geology and especially petrophysics has allowed him to share his enthusiasm and knowledge with untold numbers of geologists in the U.S and internationally for over thirty years. The AAPG education program in petrophysics owes much to George's efforts. His ever-popular courses have been a staple of AAPG since 1982. His book, *Basic Well Log Analysis*, is one of the best selling books in AAPG history.

George was born in 1936 in Chicago, Illinois and his family moved frequently around the Midwest during his youth. After a stint in the U.S. Marine Corps, George completed his B.S. degree at Texas Tech University and then went on to complete his master's degree and Ph.D. at the University of Wisconsin. Upon completing his Ph.D. in 1966 George joined the Atlantic Richfield research laboratory in Dallas. Arco was just expanding its research facilities and developing its interests in the North Slope. Activities at Arco involved sedimentological research on the Gulf Coast Miocene sandstones, Permian carbonates in West Texas, and Cretaceous sandstones in the Rocky Mountains and Northwest Territories of Canada. Tony Messineo, at Arco, introduced George to the mysteries of formation evaluation, which has led to a career long interest.

George's career path took a new twist when he heard about a teaching job at West Texas State University, a school on the cusp of the Panhandle Field and just up the road from the Permian Basin. George left Arco Research Labs and moved to Canyon, Texas where he combined teaching with consulting for small oil companies, most notably Alpar Resources and later Search Drilling. George got plenty of hands-on experience, which he loved to share with his students. The oil business was booming in the panhandle in the late 1970s and early 1980s as George went on to become the exploration and development coordinator for Pioneer Production Corporation and team project manager with Mesa Limited Partnership. Even though, by this time, George had given up teaching he was finding ways to add to and share his hands-on experience. Recognizing that few geology departments taught courses in petrophysics, something absolutely essential for petroleum geologists, but most often being defaulted to engineers with logging companies, George began to put his knowledge to work using a case study approach and drawing upon his advancing programming skills to create a flow chart of decision choices. The result was the first edition of AAPG's *Basic Well Log Analysis*. Its reception was immediate and overwhelming.

In 1988 George was the recipient of the Texas Tech Pevehouse Chair in Petroleum Geology; he continues to teach part time in the department. In 2010 Eddie David (past president of AAPG), through the AAPG Foundation Named Grant Program, established the George B. Asquith Scholarship for Excellence in Petroleum Geology.

Over the years George's research interests have been many and varied but have primarily focused on developing and refining petropohysical techniques that enhance our understanding of the lithology, textural characteristics and saturations in carbonates, sandstones, shaly sandstones and shale reservoirs for building geologic and reservoir models. He has applied his research to projects in Australia, Colombia, Brazil, Venezuela, and in the United States most notably in the Anadarko, Arkoma, San Juan, Williston, Gulf Coast (onshore/offshore), and Illinois basins.

People invariably describe George as an inspiring teacher with extremely high energy, a quick wit, and boundless curiosity. He has mentored numerous doctoral and master's students in geology and petroleum engineering, and many of them have made significant impacts as scientists and industry leaders. Student AAPG chapters have benefited from George's sponsorship and he has served in various capacities for local societies (president and convention director

of AAPG and SPWLA president). He especially enjoyed participating in the AAPG Visiting Geologist Program where he could encourage geology majors and promote the addition of petrophysics courses into the department curriculum. With courtesy and humor, (he winks and says he's a default choice), George enthusiastically accepts university and society speaking engagements.

George's impressive contributions have been recognized through the years: The Leverson Award Southwest Section, AAPG; Best Technical Paper Award, Gulf Coast Association of Geological Societies; Best Paper Award, Society of Professional Well Log Analysis; Best Paper Award, West Texas Geological Society; President's Award (best book), AAPG; Grover Murray Distinguished Educator Award, AAPG; Educator of the Year Award, Southwest Section AAPG; Distinguished Service Award, Society Professional Well Log Analysis; Distinguished Service Award, West Texas Geological Society; Monroe Cheney Science Award, Southwest Section AAPG; Honorary Life Member, Permian Basin Section-SEPM; Pioneer Award, West Texas Geological Society.

It goes without saying that George is both a creative thinker and researcher. More than 150 papers and abstracts give evidence of his energy. Subjects include carbonate and sandstone sedimentology, carbonate sandstone petrophysics, and the petrophysics of unconventional shale reservoirs. Some of the continuing education courses George has taught include basic well log analysis, subsurface carbonate depositional models, carbonate petrophysics, shaly sandstone analysis and old e-log analysis, and most recently, the petrophysics of hydrocarbon-bearing shales.

I have been privileged to know George as a former student, colleague, and friend. He prepared me, and many others, for success in the oil and gas industry. He has had a very significant impact on numerous careers. We often find ourselves thinking, "How would George solve this problem?" or "What petrophysical technique would George use?" His influence has been far reaching and effective and without him, I would not be where I am today. This is an opinion echoed by countless others. On behalf of all of us who have benefited from George's teaching and mentorship—thank you, George! I am pleased to say that George is a most deserving recipient of AAPG's prestigious Harrison Schmitt Award.

W. Allen Donaldson

Response

I am deeply honored to receive the Harrison Schmitt award. The recognition by AAPG is especially meaningful, because of my deep regard for the association and all it does for geology and geologists.

I've been inspired by the many, many AAPG members I've met through my 28 years of teaching in AAPG's education programs. I've been challenged by participants' questions and comments. They've guided me not only toward attempting greater clarity and refinement of course notes, but also in my own petrophysical investigations. Over years in the oil business and working across different basins while applying petrophysical parameters in all kinds of unique situations, I've gained invaluable experience that I can widely share.

My career as a petroleum geologist began as a graduate student at the University of Wisconsin when I was hired one summer by Humble Oil to do a field study through southwest Wyoming, measuring sections in the Frontier Sandstone and trying to figure out depositional environments. After completing my doctorate at UW, I was offered a position at Atlantic Richfield Research Laboratory in Plano, Texas. During my time there, I taught in the carbonate and sandstone training program, worked on field studies in the Rock Springs Uplift in Wyoming and the Ferron Sandstone in Utah, and conducted various well studies in the Gulf Coast. An additional task at ARCO was measuring section in the Northwest Territories of Canada in the Cretaceous (not an easy task swatting mosquitoes and relying on small helicopters). Shifting my focus, I left Arco and moved out to Canyon, Texas where I began teaching at West Texas State University, and in the summers working for Alpar Resources, a small oil company in Perryton, Texas. The vice president, Dick Parker had just acquired acreage in the Williston Basin and needed carbonate advice. That led to a major discovery, the Cherry Creek Field in North Dakota. While working for Dick I also developed prospects in the Pennsylvanian sandstones (Morrow, Cleveland, and Tonkawa) of the Texas and Oklahoma panhandles.

The oil business was "hot" in the mid 1970s. Search Drilling in Amarillo offered me a full time position. My career took another direction when I left teaching and

began full time with Search. Their exploration program involved not only the Oklahoma and Texas Panhandle (Morrow sandstones and Chester limestones) but also the Cotton Valley Lime in East Texas. About that time, I had an opportunity to travel to Brazil for Petrobras where I taught subsurface carbonate depositional models and looked at offshore wells. In 1982 Pioneer Production Company in Amarillo offered me the job of exploration coordinator. Liking the new exploration horizons the job offered in the deep Anadarko Basin Granite Wash, Red Fork, and Morrow, I accepted their offer. Pioneer had a substantial presence in the Anadarko Basin and from their wells and thousands of others, I directed one of the most comprehensive studies of the Upper Morrow sandstones in the Anadarko Basin that had been done up to that time.

From the experiences I'd had, I wrote my first book *Carbonate Depositional Models*; and then followed it with a book, *Log Analysis by Microcomputer*, which was one of the first books using a small computer derived platform for a geologist doing log evaluations. In 1982, AAPG approached me and asked me to participate in their education program. I've been involved with their program ever since. Over the years I've developed courses in carbonate depositional models; basic well log analysis; shaly sandstone log evaluation; carbonate well log analysis; and old e-log analysis.

Pioneer became a part of Mesa Petroleum in 1986, and with the merger, there were new challenges. Mesa wanted a major evaluation of the Old Field in the Anadarko basin, which they had acquired from Pioneer. It was another opportunity to use my petrophysical skills and tie them into a three-dimensional depositional model.

In 1988 Texas Tech University offered me their newly acquired Pevehouse Chair of Petroleum Geology. I accepted and moved to Lubbock. Besides teaching and supervising graduate students, I also served as director of the Center for Petrophysical Studies at Tech. Major research investigations included petrophysical studies in the Cooper Basin, Australia on Permian sandstones; Tertiary sandstones in Colombia; the Ramsey Sandstone in the West Texas Geraldine Ford Field; Cretaceous sandstones of South Texas and the Cretaceous sandstones in the San Juan Basin.

For the past several years, I've cooperated with the Illinois Survey on the reservoir characterization of the Cambrian Mount Simon sandstone for carbonate sequestration. Although I'm retired from the Pevehouse Chair at Texas Tech, I still teach in the department and have active research interests, especially using the Maxwell-Garnett equation as a means to model resistivity response in vuggy carbonate reservoirs and organic-rich "shale" reservoirs.

This response gives me an opportunity to extend my deep thanks to AAPG staff, officers, colleagues and friends. AAPG is uniquely blessed with an outstanding headquarters staff. They provide not only an institutional memory but a unique cohesiveness to the AAPG organization. Members may not always be aware of just how much they benefit from the staff's long-tenure and their tireless efforts on behalf of the organization. I'd like to take this opportunity to thank them.

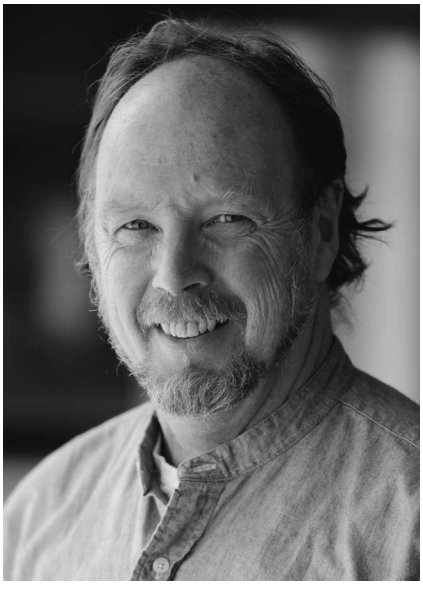
In 1981 Ted Beaumont (AAPG science director) and Ron Hart (AAPG manager of AAPG Projects Department) encouraged the genesis of *Basic Well Log Analysis for Geologists* and lent many valuable ideas to the project. Then, in 2004 Dan Krygowski (Discovery Group and a coteacher in AAPGs basic well log school) agreed to contribute to and edit a 2nd edition of the *Basic Well Log book*. His editorship and chapters along with those by Steve Henderson (Halliburton) and Neil Hurley (Colorado School of Mines) are invaluable additions. Debbie Boonstra as AAPG's education manager has eased the way for Dan and myself in our schools. She handles her work with poise and efficiency.

I've been fortunate in having outstanding colleagues in the oil business and at Tech. The scholarship funds set up by Eddie David (past AAPG president) in my name will help educate future petroleum geologists. I'd like to extend thanks to my family who has been unfailingly supportive. My wife Ann and children (William and Margaret) missed many vacations when field work or consulting interfered.

I feel so privileged to have found a career that is a passion and avocation. Every day is a new adventure. Over a long career, I've been reminded again and again of just how indirect logging measurements can be. I've come by the hard-won knowledge that logging tools may never give the direct answer (don't we wish), but only let us infer what is in the rock. Geologists are uniquely qualified as petrophysicists because they can marry their petrographic knowledge and depositional understanding with tool derived well data. By

putting together a whole bucket of information and applying it to established log-centric parameters, geologists can develop the most accurate reservoir models.

George B. Asquith



MARTIN G. LOCKLEY
Harrison Schmitt Award

Citation— To Richard Lorentz - for outstanding service and integral commitment to the E&P industry, where his respectful charisma and dynamic leadership inspires peers and drives continuing development.

If you have visited a fossil footprint site anywhere around the world, there is a good chance that Martin Lockley has contributed in some way to an understanding of those footprints and their geologic context. During his 32-year tenure at University of Colorado Denver, Martin has studied fossil footprint sites in 26 different countries. He has authored over 700 publications mostly on this subject, taught thousands of students, and compiled one of the world's largest and most diverse collections of fossil footprints. He has contributed to the development of exhibits on three different continents; these have been seen by literally millions of people. Through Martin's work, people from all walks of life have come to realize that fossil footprints are much more common than was previously thought, and that they provide important information about animal behavior, habitat preferences, geographic distributions, stratigraphic distributions, and ancient environments.

After being brought up on nature reserves in Wales, where his Welsh father (Ronald Lockley) was a well-known ornithologist and author, Martin moved to England. His main interests were geography and athletics. He played rugby for Welsh clubs and twice became all England schoolboy champion in the shot put (1966 and 1968). At Queens University, Belfast, Martin was soon enchanted by geology and paleontology due to a charismatic Welsh mentor, Alwyn Williams, FRS. After completing his B.Sc. in geology in 1974, he followed his mentor to graduate school at Birmingham University, where he completed his Ph.D. thesis on the paleoecology of Ordovician brachiopods, in 1977. He then moved on to a post-doc at Glasgow University.

A turning point in Martin's career came in 1980 when he was offered a job at the University of Colorado Denver. In the 1980s he taught courses in paleontology, sedimentary geology, and geologic maps, but turned his research interests to dinosaur tracks when a student told him about Cretaceous dinosaur tracks in a coal mine near Gunnison, Colorado. This was the subject of Martin's first paper on fossil footprints, published in 1983. Next, he and his team tackled the huge Morrison Formation (Jurassic) tracksite on the Purgatoire River in southeastern Colorado, where he showed that the sauropod dinosaurs that walked there were traveling as a group. He also began to document the Jurassic and Cretaceous tracks of the Colorado Front Range, especially at Dinosaur Ridge near Denver, where he helped to establish the Friends of Dinosaur Ridge as a nonprofit organization. The purpose of the Friends is to preserve fossils in and around Dinosaur Ridge, and to educate the public about them. In the 1980s, Martin also began developing a collection of fossil footprints.

In the 1990s, he developed courses and directed student research projects about dinosaurs and dinosaur tracks. He also designed and exported dinosaur tracks exhibits to Japan, Switzerland, and the United Kingdom. He authored five major academic press books on dinosaur tracks and appeared on television documentaries. To accommodate the growing specimen collection, he founded the CU Denver Dinosaur Tracks Museum in 1996. In recognition of these achievements, he was selected to be an AAPG Distinguished Lecturer in 1991–1992. He received the Rocky Mountain Association of Geologists Distinguished Service to Earth Science Award in 1992, and the CU Denver Researcher of the Year Award in 1994.

In the 2000s, Martin continued to publish widely on fossil footprints, especially those of Asia. He earned a degree in Spanish with a minor in philosophy/religious studies, and his interests broadened into the history and philosophy of

science. He has reviewed more than 70 books on the subject. He also developed a course on the evolution of consciousness and culture, which he taught for 12 years, and published a book on the subject. The footprint collection grew to approximately 2500 specimens from 22 different countries. In addition to a great variety of dinosaur tracks, it includes the world's largest collections of pterosaur and hominid tracks, and a large and diverse collection of bird tracks.

During this decade of his career, Martin volunteered much time to help develop exhibits for tracksites in the United States and Asia. Joe Tempel, executive director for the Friends of Dinosaur Ridge, noted that the success of Dinosaur Ridge, which hosts about 100,000 visitors per year, can largely be credited to Martin. He wrote or reviewed the 14 publications that form the basis of its educational program and contributed immensely to the displays at the visitor center. He did the scientific research for the Triceratops Trail, a Cretaceous tracksite located approximately four miles north of Dinosaur Ridge, and prepared the successful application for it to become a National Natural Landmark. In addition, Martin served on the advisory committee for the St. George Dinosaur Discovery Center in Utah and helped to develop exhibits for three tracksites in Korea and one in China. For his contributions to the popularization of paleontology and the conservation of tracksites, he received the CU Bank One Community Service Award in 2001, and the Rocky Mountain Association of Geologists Journalism Award in 2002.

After 32 years at CU Denver, Martin is currently a professor emeritus there, an associate curator at the University of Colorado Museum of Natural History, and a director of the forthcoming Moab Giants Museum in Utah. Recently he worked with colleagues to transfer the footprint collection to the CU Museum of Natural History in Boulder. This involved the inventory, photography, and physical transfer of over 2800 specimens, as well as preparation of the accompanying documentation.

Though officially retired, Martin is still deeply involved in fossil footprints. In addition to documenting and researching new tracksites internationally, he reviews several dozen scientific papers on tracksites per year. He also serves as an evaluator for UNESCO World Heritage Site applications involving fossil footprints, and continues to serve on the Board of Directors at Dinosaur Ridge. Through these activities, he continues to make important contributions to our scientific understanding of the regional and global distribution of fossil footprints, and to the preservation and public understanding of scientifically significant tracksites.

Karen Houck

Response

As a youngster growing up in 1950s Wales I was amazed by the magnificent brand of Monument Valley and Canyon lands scenery seen in cowboy movies. I never dreamed that one day I would live in the wildwest and study these same rocks. In receiving this award, I have many people and organizations to thank and acknowledge, including AAPG. It was a genuine surprise when my friends at Dinosaur Ridge said they had received notification of the award in their mailbox. On reflection, it is appropriate the message was delivered there, to one of my all-time favorite places.

I believe I inherited my love of natural history and the outdoors from my parents, and from my father in particular. He was a well-known ornithologist-naturalist who, over the years, had a habit of turning his homes into nature reserves, including the 250-acre property in Wales where I grew up. He also wrote copiously about his beloved birds (now referred to as living dinosaurs), and there were always expeditions of biologists and documentary filmmakers in and out of the place, and the opportunity for countless field trips.

This upbringing gave me a love of travel and wild places, but it was not until I went to university that my desire to study geography was transformed into a love of geology and paleontology. As an undergraduate at Queens University, Belfast, our department head, Alwyn Williams, senior author of the invertebrate treatise on brachiopods, was a huge inspiration and mentor. I loved his teaching style, and the twinkle in his eye as he slipped in jokes and wise cracks. I followed this fiery Welshman, who lived his whole life on the Celtic fringe (Wales, Ireland, and Scotland), to Wales and later to Scotland to study Ordovician brachiopods and paleoecology for my senior thesis, Ph.D., and post-doc.

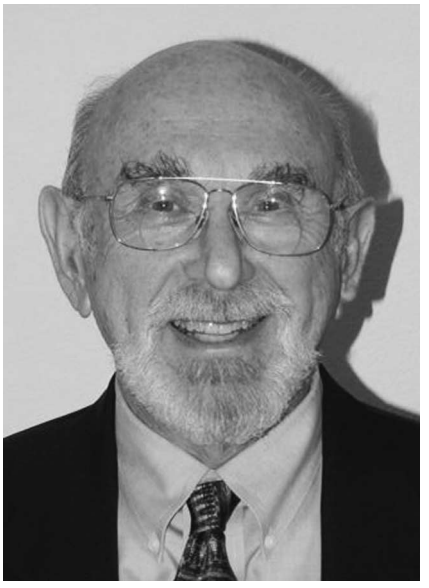
When I took the job at the University of Colorado Denver in 1980, one of the first places I was taken to by my colleague Bill Bilodeau was the Front Range, Dakota Hogback just west of Denver, and just east of Red Rocks Amphitheatre. I can honestly say I

had never previously seen a dinosaur track in the field, nor did I know that this was the type section of the famous Morrison Formation. However, I soon learned that people like Bob Weimer (Colorado School of Mines (CSM)) had used the area as a favored research and field trip destination. After a year or so trying to find fossiliferous Ordovician rocks worth studying, one of our students took me to see dinosaur tracks in a Cretaceous coalmine near Gunnison. After that it was on to the huge tracksite in the Morrison Formation near La Junta, and back to the Dakota hogback and the Laramie Formation outcrops around the CSM campus in Golden. The early 1980s were heady days in Denver. As the oil business boomed and geology enrollments in our small department grew rapidly, we chronicled our progress in a couple of AAPG Explorer articles and forged an industry advisory committee that helped generate dollars for improved lab facilities. Dozens of geologists from the community attended our weekly seminars, and we hired new faculty and instructors, including my colleague Karen Houck, who I thank for her many valuable contributions to our research projects and for preparing the biography that accompanies this citation.

By the late 1980s and 1990s, enrollments were down and we turned our attention to raising research funds, making traveling exhibits and promoting preservation and public education on the Dakota Hogback, which was soon to be formally designated as Dinosaur Ridge by the USGS. It was at that time that we forged a collaborative relationship with the Museum of Western Colorado to curate our growing collection. Also, at that time, I met Joe Tempel, who has since devoted two decades of tireless dedication to help make Dinosaur Ridge the successful institution it is today. I was able to hire Adrian Hunt, a British paleontologist, from New Mexico, who helped diversify our program, boost our production of exhibits and scientific articles, including our series of Dinosaur Ridge publications. This activity led to the creation of the CU Denver Dinosaur Tracks Museum, which we operated from 1996 to 2012, before the collections were subsumed by the University of Colorado Museum of Natural History (UCM) in Boulder, in 2012. With the help of people like Adrian and Karen we distributed exhibits and scientific information at home and abroad. Tracks, for example, now make up a major part of the exhibits and collections at Mesalands Museum in Tucumcari and the New Mexico Museum of Natural History and Science (NMMNH), in Albuquerque, where Adrian later became director. There, with his colleague Spencer Lucas, and help from our Tracks Museum, the *NMMNH Bulletin* has become a major outlet for literally hundreds of scientific papers on fossil footprints, with contributors from all around the world. Since 2000, work at Dinosaur Ridge has continued, and we have expanded the Dinosaur Ridge role to the management of the footprints sites at Triceratops Trail, around the CSM campus, and appropriately named "Fossil Trace" golf course, which we had designated as National Natural Landmarks. We also created partnerships with paleontologists in Utah to create the St George Dinosaur Discovery Site, another institution built around fossil footprints. Our partnerships extended to institutions in Japan, Korea, and China, which hosted our exhibits, funded our research and public educations projects, at home and abroad, and collaborated on the documentation and nomination of sites for Global Geopark and World Heritage Status.

The study of fossil footprints is much more than a specialist discipline in paleontology. It involves the dynamic study of once living animals, and not, as I jokingly tell grave-robbing bone diggers, the study of death and destruction. In the 21st century we work to protect and preserve ancient landscapes as part of the modern scientific, educational and cultural heritage landscape, at the local, regional, national and international levels. In the 1990s, a tracksite in Portugal was saved from destruction by a freeway. The president was there to declare "Long live the tracks." I agree and thank all my friends and colleagues in the geological community who share the sentiment.

Martin G. Lockley



ALEX S. BROUN
Public Service Award

Citation—To Alex S. Broun in recognition of his volunteer service to citizens of Texas for his dedicated research and informative publications on Trinity Aquifer geology.

The AAPG Public Service Award honors members who make exceptional contributions to the education of the public and of decision makers on the application of geology to the general welfare. Alex S. Broun's outstanding work as a volunteer on the geology and groundwater resources of the Trinity Aquifer in Central Texas, certainly qualifies him for this award. He was the driving force leading to publishing the Hydrogeologic Atlas of the *Hill Country Trinity Aquifer, Blanco, Hays, and Travis Counties, Central Texas* in July 2010. Al's research, data collection, and publications will be a lasting benefit to Texas citizens.

As part of this Public Service Award, Al wants to recognize the other two editors of the atlas, Douglas A. Wierman and Brian B. Hunt, and the dedicated professionals and volunteers whose efforts brought it to fruition. The atlas was a cooperative effort of the Hays Trinity Groundwater Conservation District, Barton Springs/Edwards Aquifer Conservation District, and Blanco-Pedernales Groundwater Conservation District. It is a community service document to be used by geoscientists to educate students, citizens, government entities, and other geoscientists about the occurrence, movement, and availability of groundwater in the Texas Hill Country Trinity Aquifer. The atlas also serves as the basis for educational fieldtrips of the Austin Geological Society such as Guidebook 33, November 2011.

A need existed for basic and systematic geologic information about the Cretaceous Trinity age rocks in this part of the Texas Hill Country in order to better understand groundwater issues. Al organized and led volunteers through the Hays Trinity Groundwater Conservation District. Al was elected to the HTGCD Board in May 2002 and served as its first elected president until May 2004 when he became the HTGCD district geologist (volunteer). He continues to serve in this position averaging 30–40 hours per month in voluntary geological analysis of technical data. This includes lithofacies description of surface outcrops and water well cuttings, geophysical log correlation, construction of cross sections, structure and isopach maps and technical reviews. These efforts are compiled in the seventeen plates plus DVD of the *Hydrogeologic Atlas*.

Al was raised in Chicago and entered the University of Illinois in 1951. He graduated as a geology major in 1955. Some of his professors who had petroleum industry experience spiked an interest leading to his future career. He particularly recalls discussions with Jim Fisher and Frank Rhodes. Al worked at the Illinois Geological Survey under George Wilson who fostered an interest in working with the public. After graduation, Al entered Florida State University to take graduate courses in geology. In the middle of his first year at FSU, he drove to Chicago through a raging blizzard to attend the AAPG convention. Knowing that most oil exploration would be in warmer climates, he interviewed with several oil companies. He interviewed with Moses Knebel of Standard of New Jersey and Al has frequently noted that he was fortunate to have been offered a position by one of Exxon's "giants of geology."

His career of 38 years with Exxon began in June 1956 starting in Vernal, Utah. In January 1957, Al was sent to Greece where he began an exciting career in overseas exploration as one of Exxon's "Rover Boys" under Dave Kingston. He subsequently served in Spain, Switzerland, Singapore, UK, Canada, New Orleans, Houston, and Trinidad with management titles of exploration coordinator, manager, and chief geologist. He served his last four years in Trinidad as president and general manager of Exxon Trinidad, retiring in 1994.

During his early tour in Spain, he met and married the lovely senorita, Paloma, in Gibraltar in 1959. Christmas Day 1967 found Paloma and Al bundling five kids to Singapore. Here he was part of the team that drilled the first of Exxon's discoveries in the South China Sea. He worked with Hub

Hall, Ed Purdy, Dick Murphy, and Jim Hedberg. This year Al and Paloma celebrate 54 years of marriage with five children and 12 grandchildren, all residing in Texas.

Following his 1994 retirement, they moved to Dripping Springs, Texas. Al continued to serve as an advisor in Exxon's New Ventures exploration operations in Angola, Bolivia, Mexico, and Trinidad until 1998. Here he also began his volunteer work on the geology and groundwater resources of the Texas Hill Country.

Norbert E. Cygan and David H. Glenn

JEROME J. CUZELLA
Public Service Award

Citation—To Jerome (Jerry) J. Cuzella - for his tireless and genuine service to earth-science education, for his exemplary leadership capabilities, and for his keen insights as an earth scientist.

Jerry Cuzella joined the AAPG in 1978. As a leader, his contributions have been diverse and significant to both the Rocky Mountain Association of Geologists (RMAG) and the AAPG. Jerry's qualifications include his heightened level of dedication; his thorough attention to detail; his selfless leadership abilities; and his sharp and practical insights.

Jerry possesses the uncanny ability to "roll with the punches" as he embraces opportunities with contagious enthusiasm and faces difficulties with calm resolve. Born and raised in Chicago's Southeast Side – steel mill country, Jerry grew up understanding the value of hard work. From 1967–72, Jerry worked his way through college with jobs at Interlake Steel (later known as Acme Steel). After high school graduation, and during all summer and Christmas breaks, Jerry worked as a laborer on the coke ovens and blast furnaces, and as a laboratory technician. In 1970, Jerry took off one month from his summer employment so that he could attend geology field camp.

Jerry received a B.S. degree in geology from St. Joseph's College in 1971; an M.S. degree in geology from Bowling Green State University in 1973; and a professional degree in hydrogeology from the Colorado School of Mines in 1993. Since 1973, Jerry has enjoyed a long and highly productive employment career, which involved moving to Denver in 1980. There he worked in the petroleum industry for small and large independent oil and gas companies. He is currently employed as a petroleum geologist for BOPCO, LP, a Bass Enterprises Company.

Jerry is an honorary member of the RMAG and has served the RMAG Board of Directors in the following leadership roles: 1st vice president in 2007; Publications Committee chair in 2008; president-elect in 2009; and president in 2010.

For twelve years, Jerry has overseen the solicitation and selection of earth science teachers for the RMAG's Excellence in Teaching of Earth Science Award. To date, three of the RMAG awardees have gone on to win the AAPG Teacher of the Year Award.

Jerry was highly instrumental in helping the City of Denver design its geological display and to produce an educational CD-ROM for the new visitor center at Red Rocks Park.The park includes Red Rocks Amphitheater, an outdoor natural amphitheater formed by massive sandstone outcrops of the Pennsylvanian Fountain Formation. With a seating capacity of approximately 10,000 people, Red Rocks Amphitheater attracts nationally and internationally renowned performing artists. Hundreds of thousands of concert attendees, sightseers, and hikers frequent this natural attraction each year.

The geologic display at Red Rocks Park includes physical and virtual aspects with interactive video kiosks alongside fossils and signage that portrays the natural history of the area. The CD-ROM used in the kiosks was produced in collaboration with the Friends of Dinosaur Ridge, a non-profit group that oversees Dinosaur Ridge National Natural Landmark just east of Reds Rocks Park. The CD-ROM used in the new Red Rocks Visitor Center is also being used at the Dinosaur Ridge Visitor Center. Once the CD-ROM was completed, Jerry encouraged and guided the RMAG to supply and mail copies of the CD-ROM to all schools in the Denver metropolitan

area. Now, thanks to Jerry's foresight and follow-through, countless thousands of teachers and students are benefitting from this instructional CD-ROM pertaining to their Rocky Mountain backyard.

Jerry chaired the AAPG Youth Education Activities Committee (YEA) for the 2009 AAPG annual convention. In that role, Jerry organized events and helped design the schoolteachers' field course conducted at Dinosaur Ridge. Jerry is coeditor of the Studies in Geology 65 joint AAPG – RMAG 2013 publication entitled *Application of Structural Methods to Rocky Mountain Hydrocarbon Exploration and Development*.

Jerry is a member of GSA, SEPM, AIPG, and the Association of Environmental and Engineering Geologists (AEG) for which he served as North Central Section treasurer in 1975–1976. Jerry has served the AAPG as a member of the House of Delegates for 5 years, and is a charter member of the DEG.

In short, Jerry is an exemplary public servant. For 9 years Jerry served the Boy Scouts of America in various leadership roles. In 2001 he served as the adult troop leader to Philmont Scout Ranch in Cimarron, New Mexico. There, he led the troop on a 105-mile back-county backpacking excursion and worked with the scouts to earn their Geology merit badges. Jerry currently serves as a geologic guide for the Boy Scouts at Dinosaur Ridge National Natural Landmark.

Jerry has participated in the political process having served as a state convention delegate. When Jerry learned that one of his congressional leaders was holding a public meeting, he made a serious effort to not only attend the meeting, but to educate on oil and gas issues. Jerry has regularly served his church in various roles for the past 20+ years.

Connie (Dodge) Knight

DONALD S. VAN NIEUWENHUISE
Public Service Award

Citation— To Don Van Nieuwenhuise for service to the public and petroleum industry communicating facts from the BP Macondoblow-out to the sealing cap.

History shows that individuals rise to the occasion; the Macondo Well blow-out provided the occasion, Don was the individual who came forward to impact the media dialog that filled the airwaves on that fateful day of April 20th 2010. In a sea of wild speculation and information overload, Don stood forth as a pillar of calm and collected reason. His clear, measured responses in well over 100 television interviews with the following channels give an indication of his success in describing the blow-out and all its possible implications, both positive and negative. He was questioned on CNN International, CTV-Canada, BBC London and America, Sky News, ABC World News, CBS Early Show, Good Morning America, NBC Nightly News, PBS, the Weather Channel, CNN, CNBC, MSNBC, Bloomberg, Houston's local network affiliate stations for ABC, CBS, CW, Fox, NBC, and PBS, and a number of national radio stations. Additionally, he had in-depth discussions with an equal number of newsprint and web outlets, most notably the *New York Times, The Times (London),the Washington Post, the Miami Herald,Times Picayune, Houston Chronicle* and syndicated services including AP, Reuters, and Bloomberg. During those hectic days, with data and situations changing hourly, he could often be found working at 3:30 a.m. to prepare for early morning shows for the East Coast.

Macondo took its toll in lives and the everyday life of those that live and work along much of the western Gulf Coast. Rumors and false data were almost hourly occurrences. Don, however, focused on two things: first, inform the public honestly and second, always avoid speculation. He argued that the use of dispersants was a prudent response, a nuclear device was an unthinkably incorrect response, and he had very strong doubts that oil would reach the coast of England. In an early interview, he was asked point blank if the oil industry had the mental muscle to handle the problem without government intervention. His response was that industry is the only group that could respond correctly, and that BP employs some of the brightest

minds in the industry. He assured everyone that Macondo was the dominant problem to be solved. Don always reassured them that relief wells would work and that led in a great part to this becoming a "non-issue"

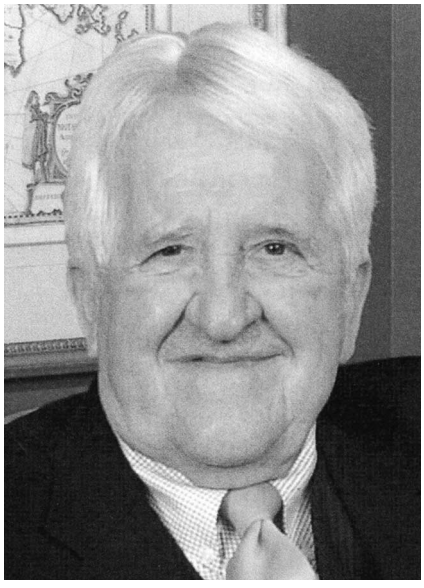
One CNN anchor called Don "the calm professor that we trust." Ali Velshi exclaimed, "He just explained the top kill like he was tying his shoes!" Anderson Cooper who is famed for impeccable pronunciation stumbled over his name, but concluded that Don's forthright discussions, including possible negative effects, made sense and should be trusted until proven otherwise.

Don's introduction to the public arena began with occasional interviews and "webinars" to local Houston television and PBS to explain diverse topics of local interest, from the formation of the Daisetta sinkhole near Houston, to the effects of a Gulf Coast Hurricane, to an explosion at a nearby petroleum reserve facility.

Don's first interviewer on the Macondo tragedy asked what would happen if a hurricane hit the spill. After the interview he explained to the reporter that in 1978 and 1979 he helped direct a relief well to stop the East Cameron 81 #3 blowout. Like the Macondo, it required hitting a seven-inch casing at considerable depth. The following day he had three interviews on CNN and he was launched as one of the credible, Gulf Coast, Macondo spokesmen.

Don was born in Charleston, South Carolina, March 28, 1950. He received his B.S. from the University of South Carolina and his M.S. from the University of Houston. In 1975, Don returned to Columbia to earn his doctorate in the Geology Department at USC. While working on his Ph.D. he also worked on sources of shoaling in Charleston Harbor using Fourier grain-shape analysis with Bob Ehrlich, Jeff Yarus and Bob Przygocki. His dissertation was on South Carolina stratigraphy, which eventually led to the renaming of the Black Mingo Group and moving the sub-crop of the K/T boundary 20 miles to the north. I was Don's dissertation advisor, and he also worked very closely with the late Dr. Joseph Hazel of the USGS. Stratigraphy Group and the late Dr. Don Colquhoun. He spent summers at the Smithsonian working with Joe Hazel and the USGS staff to sort out stratigraphic problems along the Eastern Coastal Plain. He finished his Ph.D. in 1978. He was at Mobil and AMOCO for a total of 21 years and has taught at Tulane University and the University of Houston for 12 years.

William H. Kanes



ROBERT A. FOX
Pioneer Award

Citation—To Robert Fox, geologist, petroleum engineer, for his role as a pioneer exploration geologist who served as project manager of exploration, development and production involving Pakistan, Libya, French West Africa, South Africa and the North Sea.

Robert E. Fox was educated in one-room grade schools near the West Virginia hamlet of Dall is on and was a precocious student who graduated from Parkersburg High School at the age of 15 and made his first solo flight at age 16.

Following his graduation from Marshall University with a B.S. in geology, and the University of Illinois with M.S. in geology (1953), he was employed by Standard of California. He joined the AAPG in 1954.

In late 1954, Dr. Harold Scott of the University of Illinois agreed to take a one-year sabbatical to evaluate and recommend possible international areas to Nelson Bunker Hunt,

Herbert Hunt, and for other Hunt entities provided they could engage the services of Mr. Fox, his top graduate student. Robert went to Libya in late 1954, one of a dozen industry geologists scrambling to gather published data and surface geology information, anticipating petroleum legislation to be passed later in 1955.

By 1958, Bunker Hunt had mobilized and shipped to Pakistan an integrated exploration unit including gravity and seismic teams, a deep drilling rig, a fleet of Kenworth trucks, excavating equipment, aircraft and 50 expatriate personnel, including Foxas exploration manager. Two gas fields discovered were uncommercial at that time due to lack of market, but were developed much later by Russian/Pakistani interests.

Fox was a member of the U. S. delegation at the UN Economic Conference on Asia and Far East, New Delhi, India, in 1968. W. D. Johnston, chief, Foreign Geology Branch, USGS Head of Delegation, wrote Mr. N. B. Hunt…" sincere appreciation for the in valuable services given us by your Pakistan manager, Mr. Robert E. Fox. His demonstrated abilities far exceeded our greatest expectations. Bob's technical competence and negotiating skills, the confidence with which he speaks were greatly respected by the entire U. S. delegation, all substantially senior to him in age."

He returned to Lexington, KY in 1959. He was elected as the AAPG delegate, Eastern Kentucky.

In 1960, he was posted to Libya as general manager. Earlier while in Dallas, he had recommended a 10,000 square kilometer area, which was awarded to the Hunt brothers, who later brought in BP as a partner. The C-1-65 Sarir Field discovery well was drilled in November 1961. This field, followed by the discovery of nearby Messla Field, has produced over 16 billion barrels of oil.

The Netherlands' government was drafting offshore legislation in 1964–65. Robert was appointed vice president of Placid International, a Hunt Company, European business, in 1964, and opened an office in the Hague. The Placid exploration group was granted offshore licenses, including block L/10 on which a discovery well L/10-3 led to the development of the first Netherlands offshore production area. Robert's diplomatic and negotiating skills led to marketing 50% of the gas produced to be exported to German buyers at a fair market price and GASUNIE gaining half the gas at the negotiated German price. The sales contract was among the first to link natural gas prices to crude oil prices.

Financial interests in Edinburgh, Scotland recruited Fox in 1974 to start a minor United Kingdom North Sea exploration company, Oil Exploration Holdings, LTD., which after a few years' growth, was merged with London and Scottish Marine Oil LASMO. He was appointed managing director of Exploration-Production.

In 1986, he received an Honorary D. Sc. Degree from Heriot Watt University, Edinburgh, for his services on the Board of the Institute of Offshore Engineering.

In 2004, he received an Honorary Doctor of Humane Letters from Marshall University.

He has endowed an 8–10 week Geology Summer Field Scholarship at Marshall University and a Science/Mathematics Annual Award at Harrisville, WV High School.

He became a Trustee Associates Member of AAPG in 1987. Recently he retired from the Geologists Registration Board, Commonwealth of Kentucky.

He is now president of Term Energy Corporation, and a director of RAAM Global Energy Company. On the personal side, he has four children and five grandchildren and among his many hobbies included is historic map collecting.

It is indeed, a real privilege and honor to recommend and recognize Robert E. Fox for the AAPG Pioneer Award—a man responsible for discovery and development of giant hydrocarbon deposits.

W. Herbert Hunt

PAUL R. LAMERSON
Pioneer Award

Citation— To Paul R. Lamerson for your contributions in understanding the geometry of hydrocarbon traps in the complex structural geology of the Wyoming Thrust Belt and the Papuan Fold

and Thrust Belt and for your ability to convey these ideas to your colleagues.

Paul was born in St. Joseph, Missouri in 1932 and was raised in Wathena, Kansas. He was able to attend the University of Kansas because he was the recipient of the Men's Residence Hall Scholarship. Paul graduated with a B.S. in geology in 1954 and an M.S. in1956. While working on his master's, Paul married Joann Mattson in 1955. They have three children, eight grandchildren, and five great grandchildren.

Paul started his geologic career in 1956 by reporting to the California Company office in Casper, Wyoming, the first of five offices that he served in with the California Company and its successor, Chevron. Paul worked as an exploration geologist, development geologist, and geophysicist, but his interest in complex structural geology started with his photogeology assignments in the Rocky Mountains. The beautifully exposed structural geology provided an excellent area in which to study the structural geometry of folded and thrusted rocks.

In 1975, Paul was assigned to be the project coordinator for the Wyoming, Utah, and Idaho salient of the Thrust Belt District. In this position he was part of the team of Chevron geologists and geophysicists that found Ryckman Creek (1976), Painter Reservoir (1977), East Painter Reservoir (1978), Whitney Canyon-Carter Creek (1977), and Glasscock Hollow (1980) fields on the hanging wall of the Absaroka Thrust. In 1986 Paul was transferred to Port Moresby, PNG and spent his final three years with Chevron working in the Papuan Fold and Thrust Belt helping to develop enough reserves to establish a producing project in the New Guinea highlands.

After his retirement from Chevron, Paul continued to pursue his love of working in complex structural areas. As a consultant, he has completed studies of thrust belts in South America and in Asia and his continued work in the Fossil Basin of Wyoming helped Anschutz develop deeper pool and field extension reserves.

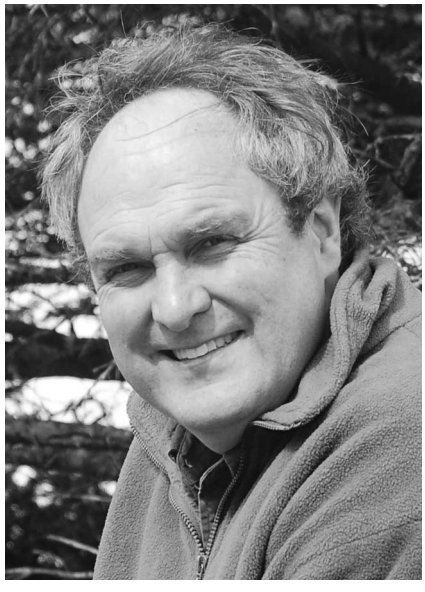
In 1990, Paul published a summary of his work in New Guinea titled "Evolution of Structural Interpretations in Iagifu and Hedenia Fields, Papua New Guinea". His 1982 paper in the RMAG guidebook on the Cordilleran Thrust Belt titled "The Fossil Basin Area and its Relationship to the Absaroka Thrust Fault System" remains the best description of the structural geology of this part of the Wyoming Thrust Belt.

The authors of this biography have had the privilege of working with Paul throughout their careers. One of Paul's greatest contributions is his ability and willingness to convey what he has discovered to his fellow geologists. He has been the leader of numerous field trips for Chevron and various geologic societies, including AAPG. Paul is in his element with a cross section tacked to the side of a bus with spectacular geology outcropping behind him, explaining the geology to group of his fellow geologists.

AAPG now acknowledges these contributions by awarding Paul Lamerson the 2013 Pioneer Award. As geologists who have benefited from your knowledge, we thank you Paul.

Monty Hoffman
Raina Powell

ANDREW C. APLIN
Wallace E. Pratt Memorial Award



JOE H. S. MACQUAKER
Wallace E. Pratt Memorial Award

The Wallace E. Pratt Memorial Award for the best paper published in the *AAPG Bulletin* is presented to Andrew C. Aplin and Joe H. S. Macquaker for "Mudstone diversity: origin and implications for source, seal and reservoir properties

in petroleum systems" (v. 95, p. 2031–2059).

Aplin and Macquaker started working together on shales as young researchers in the late 1980s; Andy was at BP working on sulfur and Joe was a BP-funded RA at Sheffield University, working in parallel on iron. Joe would regularly come to London, stay at Andy's house, fix his car and they would discuss pyrite, diagenesis, and all things muddy. They've been doing the same ever since and this paper, originally commissioned by Andy Hurst for the Getting Started series, gave us the opportunity to summarize their thoughts.

Although the majority of sediments and sedimentary rocks are fine-grained, the practical difficulties of observing small-scale textures and heterogeneities both in the field and in hand specimen have meant that muds and shales have long been the "Cinderella" subject of sedimentology. Most studies have focused on the information that muds contain in terms of organic matter preservation, records of paleoenvironmental change, sites of fossil preservation, raw materials for the ceramic industry and foundations for civil engineering projects. Until recently, driven in part by interest in shales as reservoirs, they have rarely been researched for their distinctive attributes as sediments deposited as integral parts of basin fill.

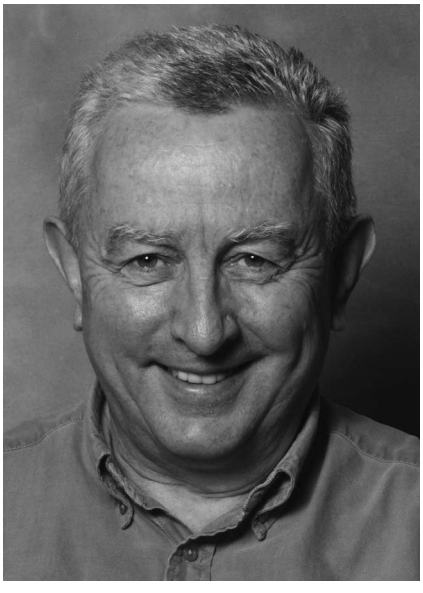
Research on fine-grained sediments is widely distributed in the geological, oceanographical, and engineering literature. They wanted to bring together some of the diverse strands of this literature and in particular to summarize recent advances in our understanding of the fundamental processes responsible for the production, dispersal, sedimentation and post-burial modification of muds. They pointed out that the existing paradigm commonly used by geologists (although not oceanographers) to interpret how muds were formed needed to be overhauled. Mud is of course deposited through suspension settling, but particles are not generally delivered to the seafloor as a fine-grained continuous rain of detritus but are rather deposited episodically as organo-mineral aggregates. Distinctive millimeter-scale microfabrics show that muds are commonly deposited in settings where the seafloor is frequently being reworked by currents that transport particles both as bed load and in suspension.This is also true in organic-rich sediments, which are historically and sometimes erroneously interpreted as being deposited under low energy depositional conditions where bottom water anoxia prevails.

The way in which mud is transported and deposited means that muds are texturally heterogeneous. They tried to demonstrate that the key textures, which characterize muds, vary quite systematically on a number of different time and length scales and can thus be interpreted using sequence stratigraphic principles. Subsequently, this inherited heterogeneity exerts a huge but again largely predictable influence on the petrophysical properties of muds and the way in which they are modified by burial diagenesis. A key practical challenge is to identify how best to scale up these data from observations obtained on the millimeter to centimeter scale to the tens of meter scales required to understand fully seal, source and reservoir quality.

Fine-grained sediments have provided the focus of most of Andy Aplin's research. First introduced to the deposition of mud by Nick McCaveas an undergraduate at the University of East Anglia, he completed his Ph.D. on Pacific manganese nodules and red clays at Imperial College with Dave Cronan. He was a Royal Society European Research Fellow at CRPG in Nancy, before spending six years with BP, working mainly on reservoir quality and reservoir souring issues. During this time, Charles Curtis and Max Coleman introduced Andy to the concepts of burial diagenesis and strongly promoted a multifaceted approach to research in which an appreciation of chemical and physical processes is used to understand changes in measured rock properties. Since 1990, he has worked at Newcastle University, where he is currently professor of petroleum geoscience. During that time, his ideas on seals, leakage, pore pressure and migration have been hugely influenced by collaborations with many academic and industrial partners. To name just one, he was a co-recipient with Joe Cartwright and Mads Huuse of the Wallace E. Pratt Award for 2007 for a paper on seal bypass systems.

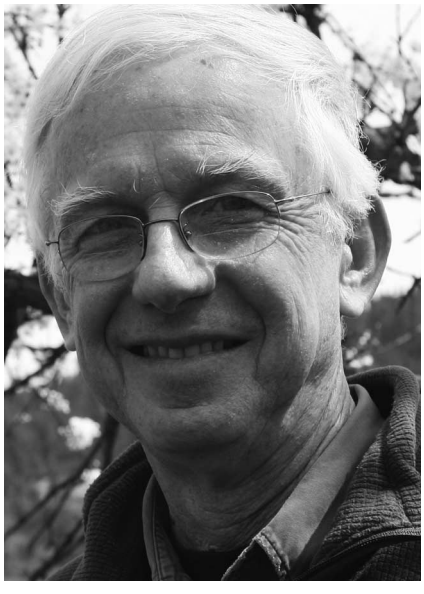
Joe Macquaker's main research interest is to better understand the sedimentological controls that are responsible for variability present in fine-grained sedimentary materials. He was first introduced to mud when he encountered it on field courses and fossil hunting trips as an undergraduate and later a postgraduate at the University of Bristol. He was particularly intrigued by the notion that fine-grained materials were commonly deposited in environments, such as estuaries, subject to high-energy sediment transport processes. Doug Hamilton,

who took him on research cruises aboard *RMS Challenger* to the Severn Estuary and Celtic Sea, particularly piqued this interest. After leaving Bristol he took a post-doctoral research post at Sheffield University where he was enthused by Chas Curtis about the geochemical variability present in these rocks. He continued his post-doctoral research at the University of Manchester where he continued to investigate the controls on mud stone heterogeneity. This post was followed by faculty positions at Manchester in sedimentology (1994) and at Memorial University in petroleum geology (2008). In 2011–12 he was an AAPG Distinguished Lecturer. In the summer of 2012 he moved again to take up a position in the ExxonMobil Upstream Research Company.



KENNETH R. MCCLAY
Robert H. Dott, Sr. Memorial Award

JOHN H. SHAW
Robert H. Dott, Sr. Memorial Award



JOHN SUPPE
Robert H. Dott, Sr. Memorial Award

The Robert H. Dott, Sr. Memorial Award is presented to honor and reward the author/editor of the best special publication dealing with geology published by the Association. This year's award is presented to Kenneth R. McClay, John H. Shaw, and John Suppe for *AAPG Memoir 94: Thrust Fault-Related Folding*.

Thrust fault-related folds form numerous important hydrocarbon traps in sub-aerial and deepwater fold and thrust belts as well as in inversion fold and thrust belts. This memoir presents 16 papers on new advances in the analysis and understanding of thrust-related fold systems including detachment folds, thrust-fault propagation folds, wedge thrust-related fold systems, and basement-involved fold systems.

Case histories and examples included in this book range from the sub-aerial fold belts of the Tianshan of western China, the Zagros fold belt in Iran, the sub-Andean fold belt of Argentina, and the fold belts of the Spanish Pyrenees, Taiwan, Wyoming, and southern California to the deepwater fold belts of offshore Brazil and the Niger delta.

Theoretical, geometric, numerical, and analog model studies of thrust-related fold systems combined with new seismic and field case studies highlight the challenges and new strategies needed to understand and to explore for hydrocarbons in fold and thrust belt systems.

Ken McClay is professor of structural geology, Royal Holloway University of London, director of the Fault Dynamics Research Group and director M.Sc. in tectonics. He graduated with a B.Sc. Honours degree in economic geology (geophysics major) from Adelaide University Australia. He has an M.Sc. in structural geology and rock mechanics and a Ph.D. in structural geology from Imperial College, University of London. In 2000 he was awarded a D.Sc. degree in structural geology and tectonics by the University of Adelaide.

Since 1991 he has been professor of structural geology and director of the Fault Dynamics Research Group at RHUL. This is a large multidisciplinary research group that investigates the geometries, kinematics and dynamics of crustal fault systems and is funded by the international petroleum and mining industries. The current major research project is the STAR consortium—Structural Analogues for Reservoirs—funded by the international petroleum industry.

Ken McClay has carried out wide-ranging research on all aspects of structural geology applied to both the mining and petroleum industries. This has included field-based research on areas such as the Moine Thrust Zone, NW Scotland, the Spanish Pyrenees, Indonesia, Yemen, Australia, Canada, United States, Chile, Argentina, Greenland, Turkey, Ethiopia and Gulf of Suez – Red Sea Egypt. He has directed and carried out regional and detailed mapping programs in the Canadian Cordillera, Newfoundland, SW United States, Alaska, NW Scotland, Argentina, Chile, UK, Spain, Norway, Brazil, Egypt, and Yemen. His research interests include extensional, strike-slip, thrust and inversion terranes. He runs a large experimental analogue modeling laboratory for the simulation of fault structures and sedimentary architectures at Royal Holloway University of London. Ken McClay has written a book for mapping structures in the field, edited four major volumes on Thrust Tectonics, and has published widely on structural geology and tectonics (over 150 papers in international journals). He is a consultant for both the international mining and petroleum industries. He has given many short courses to industry in Indonesia, India, Brazil, Chile, Argentina, Peru, Ecuador, Norway, UK, USA, Australia, Egypt, Canada, Iran, Alaska, the Philippines and PNG. He is a Fellow of the Institution of Mining and Metallurgy, Chartered Engineer, Fellow of the Geological Society of London, Member of the American Association of Petroleum Geologists. He was the 1994–95 Bennison (U.S.) and 1999 Roy M. Huffington (International) Distinguished Lecturer of AAPG.

John H. Shaw is the Harry C. Dudley Professor of Structural and Economic Geology and chair of the Department of Earth & Planetary Sciences, Harvard University. Prior to joining the faculty at Harvard, Shaw worked for Texaco's Exploration & Production Technology Department in Houston, Texas. Shaw directs an active research program investigating the nature of oil and natural gas deposits in basins throughout the world. His research group works to develop more efficient methods of finding and exploiting these resources, as well as mitigating the environmental impacts of these operations. Professor Shaw's additional research and teaching interests include alternative energies and material resources, and the environmental impacts of resource exploitation.

John Suppe is a structural geologist with wide experience in deformed petroleum basins, including Gulf of Mexico, Niger delta, California, Philippines, Venezuela, Taiwan, and Tarim, Junggar and Sichuan basins China. He and his collaborators are the originators of many of the concepts of fault-related folding applied in compressive and extensional environments, as well as key concepts of interpreting growth strata for folding histories. The application of these structural concepts to practical seismic interpretation is introduced in an AAPG seismic atlas (Studies in Geology 53), edited by John Shaw, Chris Connors and Suppe. He has also contributed key advances in the understanding mechanics of thrust belts and state of the stress in the crust. Currently his research includes the application of petroleum-based 3D interpretation and restoration technologies to subducted lithosphere in the mantle, which is leading to new plate-tectonic and paleogeographic reconstructions of Southeast Asia and the Tethys. Two of his contributions have been awarded the Best Publication Award in Structural Geology and Tectonics of the Geological Society of America. Suppe was named "Highly Cited Researcher" by Science Citation Index.

Suppe was born and raised in Los Angeles, attended University of California Riverside studying under K. J. Hsü, received a Ph.D. from Yale University in 1969 studying under John Rodgers and was a postdoc at UCLA with Gary Ernst. He was professor of geology at Princeton University from 1971–2007, was named Blair Professor of Geology in 1988 and served as department chair. He now is Distinguished Chair Research Professor at National Taiwan University where he has an international research group. He has been visiting professor at Caltech twice, University of Barcelona, Ludwigs Maximillian University in Munich, National Taiwan University twice and is an honorary professor of Nanjing University. He was a guest investigator of the NASA Magellan Mission to Venus. He was elected member of the U.S.

National Academy of Sciences in 1995. He has received the Career Contribution Award in Structural Geology and Tectonics from the Geological Society of America, the Research Prize of the Alexander von Humboldt Foundation, the Wilber Cross Medal from Yale University, and is a Guggenheim Fellow.

PETER E. K. DEVEUGLE
J. C. "Cam" Sproule Memorial Award

The J. C. "Cam" Sproule Memorial Award, presented to the AAPG member 35 years old or younger at the time of submittal who authors the best paper published during the year by the association or any affiliated society, division, or section, is award to Peter E. K. Deveugle for "Characterization of stratigraphic architecture and its impact on fluid flowin a fluvial-dominated deltaic reservoir analog: Upper Cretaceous Ferron Sandstone Member, Utah" (*AAPG Bulletin*, v. 95, p. 693–727). Coauthors on the paper were Matthew D. Jackson, Gary J. Hampson, Anthony R. Sprague, Jonathan Stewart, Craig S. Calvert, and Michael E. Farrell.

In this paper, fluvial dominated deltaic stratigraphic architecture and its impact on fluid flow have been characterized using a high-resolution, three-dimensional, reservoir-scale model of an outcrop analog from the late Cretaceous Ferron Sandstone Member of central Utah, USA. Dynamic flow simulations were used to characterize the impact of the stratigraphic heterogeneity, which itself is also quantified, on production in terms of the sweep efficiency. The latter is shown to be controlled by (1) the continuity, orientation and permeability of channel-fill sandbodies, (2) the vertical permeability of distal-delta-front heteroliths, (3) the direction of sweep relative to the orientation of channel-fill and delta-lobe sandbodies, and (4) well spacing.

Peter Deveugle, a Belgian native, started with Chevron's reservoir modeling team in Perth, Western Australia in October 2009. Since then he has built a variety of both static models and more widely scoped reservoir characterizations for multiple fields in the Asia-Pacific region, with a focus on integrating geophysical, petrophysical, stratigraphic, reservoir and production engineering data. Prior to joining Chevron, he gained an MSc in Petroleum Geology from IFP in Paris (French Petroleum Institute) in 2003, following an M.Eng. in mining engineering from KU Leuven, Belgium in 2002. He was finally awarded his Ph.D. in earth sciences by Imperial College London for comparative research into integrated static and dynamic modeling techniques, based on outcrop work in 2009. His university time was interspersed with several E&P research oriented industry roles with Shell in Rijswijk, The Netherlands (2004), ExxonMobil in Houston, Texas (2006) and Woodside in Perth, Western Australia (2008), all dealing with basin and reservoir modeling techniques.

KLAAS VERWER
J. C. "Cam" Sproule Memorial Award

The J. C. "Cam" Sproule Memorial Award was also presented to Klaas Verwer for "Effect of pore structure on electrical resistivity in carbonates" (*AAPG Bulletin*, v. 95, p. 175–190). The coauthors were Gregor P. Eberli and Ralf J. Weger.

The research is significant for improving reservoir prediction in carbonate reservoirs. In addition it makes calculating hydrocarbon volumes more accurate. The research investigated how electrical flow is conducted through carbonate reservoir rocks. It proofed that the type of porosity controls

the electrical flow. By better understanding the electrical flow one can predict the porosity type in the rock from down hole logs and from this how efficient oil and gas can be produced.

Verwer said, "It is a distinct pleasure and honor to receive the Sproule award. I was truly surprised and am looking forward to the award ceremonies. Reservoir properties in carbonate rocks are notoriously difficult to predict. These findings help in better understanding the reservoir and ultimately producing the reservoir more effectively."

Klaas Verwer is a principal geologist in Exploration Research at Statoil in Bergen, Norway. He received his M.Sc. and Ph.D. from the Vrije Universiteit in Amsterdam, The Netherlands. He also was a post-doctoral researcher at the Comparative Sedimentology Laboratory, University of Miami, Florida.His research integrates subsurface and outcrop analogue data, including sedimentology, stratigraphy and digital outcrop models. Using laboratory experiments for carbonate petrophysics and rock physics his focus is on better understanding the physical expression of carbonates on log and in seismic data.

ANNE GRAU
John W. Shelton Search and Discovery Award

ROBERT H. STERLING
John W. Shelton Search and Discovery Award

Anne Grau and Robert Sterling are recognized for their submission to Search and Discovery titled "Characterization of the Bakken System of the Williston Basin form Pores to Production: The Power of a Source Rock/Unconventional Reservoir Couplet". The series of slides were presented by Grau and Sterling at several technical seminars and conventions, including the 2011 AAPG International Convention and Exhibition in Milan, Italy.

While it is commonly held that the Bakken is a shale play, in actuality the play may be classified as a source rock/reservoir couplet system. The petroleum system consists of two world-class source rocks, the Upper and Lower Bakken shales, that sandwich and source the Middle Bakken Reservoir Unit. In addition, the Upper and Lower Bakken Shales are also in immediate contact and often source potential reservoir units below (the Devonian Three Forks Formation), and above (the Mississippian Lodge pole Formation). Rarely, the shales themselves are encountered as producing reservoir units in certain areas of the Williston Basin. It is the close juxt a position of these rich, world-class source rocks with low-porosity, low-permeability reservoirs on a regional-scale that creates the huge unconventional resource that is the Greater Bakken System.

Within the greater Bakken play, there are many local variations in reservoir facies, stratigraphy, fracturing, and lithology that control reservoir quality, oil saturation, and ultimately well producibility around the basin. One striking example of this variability in play type is presented by the enhanced reservoir quality and prolific production found at Parshall Field. This paper focuses on the area east of the Nesson Anticline in North Dakota that includes the Parshall Field discovery area, and will focus on the history

of Parshall Field and the characterization of the Middle Bakken Reservoir Unit in this region.

In the Parshall Field Area and east of the Nesson Anticline, the Middle Bakken Formation consists of unique depositional assemblages and sedimentary mechanisms that ultimately control the characteristics of the various producing Bakken fields in the area. Three main lithofacies exist at Parshall Field, only two of which are reservoir facies. It is largely due to distribution of these facies and local diagenesis that creates the unique reservoir quality found at the field. The Middle Bakken reservoir at Parshall Field is drastically different from the Middle Bakken at Sanish Field, along the Nesson Anticline, and west of the anticline. Enhanced reservoir quality and the position of the field with respect to the updip thermal maturity barrier are the main drivers in making the Parshall area the most prolific Bakken play type seen to date in the Williston Basin.

Reservoir characterization of the Middle Bakken at the Parshall Field was done after a core was acquired in the second well drilled in the field. Understanding of the true nature of the reservoir was invaluable for the drilling and completion teams to develop better practices to optimize production. The work presented in this series of slides includes the work the authors have done in recent years to define and better understand the critical aspects of the Middle Bakken Formation. This also includes some of the understandings that Anne, Rob and the rest of the Bakken team at EOG Resources were able to develop during the early post-discovery days as well as work they both did independently over the next few years as the play developed. Early understanding led to the wonderful history of the Parshall Field in North Dakota.

Anne Grau unknowingly became a geologist at the family dinner table while her father, the late mathematician, Dr. Albert A Grau, quizzed her on rock and mineral identification. At Baylor University, she was lured away from a degree in French as she took her final science class, Geology 101. Anne received her B.S. and M.S. in geology from Baylor University and considers herself lucky to have crossed paths with the late Dr. O.T. Hayward who fostered her love for carbonates and the thrill of problem solving. After a two-year stint as a geologist for Conoco, Inc., Anne decided to pursue her Ph.D. at Colorado School of Mines under Dr. Neil Hurley, expanding her experience with reservoir characterization and sandstone diagenesis in her doctoral dissertation on quantitative North Sea quartz cementation under an internship that led to full time employment with Marathon Technology Center in Littleton, Colorado under the mentorship of Dr. Sharon Stonecipher. After the lab's closure in 2000, Anne worked for EOG Resources in Denver for seven years where collaborations began with Rob Sterling. Anne now focuses on unconventional resource plays from prospect generation to micro-pore, and is an independent consultant in Denver. Anne is a member of enhancement committee for the Department of Geology at Colorado School of Mines, and the mother of one college-bound senior.

Robert Sterling has a B.S. degree in geology from the California State Polytechnic University, Pomona and an M.S. degree in geology from the California State University, Los Angeles. He has over 30 years of experience as an exploration geologist. Presently a senior geologist with Cirque Resources LP in Denver (2007-present), he focuses primarily on liquid rich unconventional resource plays in the Rocky Mountain region. He was with EOG Resources Inc. as a division geologic advisor (2004–2007) in the Denver Division. He was involved with the team that developed the first horizontal drilling done in the Monterey Shale in California at the North Shafter Field and that work led to the discovery of the Rose Field in the Monterey Shale as well. The reservoir characterization work that Grau and Sterling did was submitted to Search and Discovery in 2003, "Success! Using Seismic Attributes and Horizontal Drilling to Delineate and Exploit a Diagenetic Trap, Monterey Shale, San Joaquin Valley, California", and its companion article by Robert Kidney, et al., "Delineation of a Diagenetic Trap Using P-Wave and Converted-Wave Seismic Date in the Miocene McLure Shale, San Joaquin Basin California." Sterling worked exploratory projects and new ventures for EOG in both conventional and unconventional targets. Prior to EOG, he was vice president of exploration for Nahama & Weagant Energy Company in Bakersfield, California (1986–1994). He led an active exploration team in efforts in California and Oregon that resulted in many new field discoveries. He was district geologist for Challenger Minerals in Bakersfield, California (1983–1986) focusing primarily on oil exploration in the Miocene Stevens Sands in Kern County. His first job was with Argo Petroleum in Los Angeles (1980–1983)

exploring in areas that included the mid continent, California and northern Alberta. Sterling is the on the Board of Directors and chairman of the Pacific Area Committee for the Potential Gas Committee (1996-present) and has served on the National Petroleum Council (2010–2012) working on onshore gas supply reports. He has authored or coauthored several peer review papers.

JONATHAN ALLEN
George C. Matson Award

The George C. Matson Memorial Award for the best paper presented during an AAPG oral technical session is presented to Jonathan Allen for "Improved Reservoir Characterization at Kern River Field, California, U.S.A.: New Insights into an Old Field Using 4-D Saturation Modeling." The coauthors are Dave Laru and Dale Beeson.

The Kern River Field is one of the largest fields in the state of California and the US. While the field was discovered in 1899 and over two billion of the estimated >3 billion barrels of OOIP have been produced, significant reserves and resources remain. Prior to this study, there had been no clear understanding of the rock properties and production behavior for the lower resistivity portion of the reservoir even though estimates of OIP contain considerable volumes. Additionally, while steam injection, the primary recovery mechanism, has typically resulted in good production from the higher resistivity reservoir, zones of bypassed and unproduced oil exist in intervals that have been steamed for many years.

A portion of the reservoir was described lithologically from core and by the nature of drainage interpreted from 4-D saturation modeling. The integration of these two approaches resulted in the characterization of drainage within a heterogeneous, complex fluvial reservoir. The workflow established the evolution of the oil leg and production character and allowed these features to be described both qualitatively and quantitatively. This approach has allowed for the identification of portions of the reservoir that are actively draining versus portions where drainage is not occurring, despite the fact that the oil has been characterized as recoverable. These non-draining areas are being targeted for improved reservoir management in an effort to maximize future potential.

Jon Allen holds degrees in geology from Colby College (B.A.) and geosciences from the University of Nebraska (M.S., Ph.D.). His research focus was in the areas of fluvial sedimentology and stratigraphy, paleoclimate analysis, and floral paleoecology. Jon joined Chevron in 2003, working out of Bakersfield, California and has worked a number of reservoir characterization projects integrating outcrop, core, log, and earth modeling data. Currently, he is working on development projects in the Midway-Sunset Field, California. Jon is actively involved in AAPG and has served as a committee member on the Young Professionals and Research Committees as well as a member of the 2012 Annual Meeting Technical Session Organizing Committee and Session Chair.

SIMON CAMPBELL
Jules Braunstein Memorial Award

STANISLAW MAZUR
Jules Braunstein Memorial Award

AHMED SALEM
Jules Braunstein Memorial Award

JANE SAWEKA
Jules Braunstein Memorial Award

NICOLA HENSHAW
Jules Braunstein Memorial Award

ADRIANO SEBASTIAO
Jules Braunstein Memorial Award

ARTUR OLIVEIRA
Jules Braunstein Memorial Award

The Jules Braunstein Memorial Award for the best AAPG poster presentation is presented to Simon Campbell, Stanislaw Mazur, Nicola Henshaw, Ahmed Salem, Adriano Sebastiao, Jane Saweka, and Artur Oliveira for their poster

"Kwanza Basin: Sub-salt Basin Structure and Sediment Thickness from Integrated Analysis of High Resolution Aeromagnetic Data."

The poster developed out of a joint GETECH-Sonangol study to map the basement structure and morphology of the Kwanza basin. The sub-salt imaging of the Kwanza basin is significantly hampered by the attenuation of seismic signal by the widespread Aptian salt units. However, the existence of good high resolution aeromagnetic data over the study area meant that we could apply a number of data enhancement techniques and depth to source methods we have developed to map the basement structure. By integrating and constraining these results with supporting seismic, well and geological information, fresh insights into the basement depth and character, and hence sub-salt sediment thickness, have been established. These in turn have helped constrain geochemical modelling to further our understanding of hydrocarbon potential in the basin.

Simon Campbell is the manager of the Geophysics Division at GETECH Group plc, a geoscience consultancy based in Leeds, England. His particular focus is the analysis of gravity and magnetic data within integrated geoscience studies to address exploration problems. After graduating in geophysics from University College Cardiff, he received an M.Sc. in exploration geophysics from the University of Leeds in 1991. After joining GETECH in 1992, he worked primarily on the development of their integrated gravity and magnetic data sets before specializing in the interpretation of potential fields data within the hydrocarbons exploration industry. His primary focus has been the integrated analysis of potential field data with supporting geological and geophysical data to reduce interpretation uncertainities. More recently his interests have included the application of gravity and magnetic modeling in defining crustal architecture and the implications for plate tectonics on regional scales.

Stanislaw Mazur received an M.Sc. and a Ph.D. in structural geology from University of Wroclaw in Poland. He spent 20 years in academia working for several research institutions: University of Wroclaw, GeoForschungsZentrum Potsdam or Polish Academy of Sciences. During this time, I participated in a number of polar research expeditions to West Greenland, Svalbard and British Columbia. Since 2007, after joining GETECH, he has been focused on plate modeling and structural geology as applied to oil and gas exploration problems. Until recently he was a senior structural geologist at GETECH, based in Leeds, and a Visiting Research Fellow at the University of Leeds, United Kingdom. Since May 2012 I moved to ARKeX Ltd., based in Cambridge, UK, working there as a New Ventures Geologist. He is author or coauthor of more than 200 research papers and conference abstracts.

Nicola Henshaw joined GETECH in 1997 to work on new satellite-derived gravity processing methods, she has subsequently worked on data compilations in Southeast Asia (aeromagnetic data) and the United States (land gravity data). Geophysical interpretation studies integrating gravity, magnetic, seismic and well databases have been undertaken in regions of Africa, Asia and North and South America. These have included structural interpretation and analysis of 2D modelling and depth to magnetic source estimation techniques. She received a B.Sc. (Hons) degree in geophysics (geology) from the University of Liverpool, UK in 1996 and an M.Sc. degree in exploration geophysics from the University of Leeds, UK in 1997.

Ahmed Salem earned a B.Sc. degree (geophysics) in 1987 and an M.Sc. degree (applied geophysics) in 1996 from Cairo University. He received a Ph.D. in engineering (exploration geophysics) from Kyushu University, Japan in 2002. He joined GETECH in 2006 and has been a growing part of the research and development team, initially focusing on developing methods to map the Curie Isotherm on a global scale. Prior to 2006, Salem's research focused primarily on the development and application of 2D (profile) methods of estimating depth to magnetic sources. Now his interests are in developing new methods of imaging subsalt structures from integrated analysis of potential field and seismic data.

Adriano Sebastiao joined Sonangol in 1997. He worked two years as seismic processor on the Onshore Kwanza Reprocessing project until 1999, when was assigned to Western Geophysical DPC as Sonangol Team Leader. In 2003 he joined BP Exploration Angola, based in Sunbury, UK, where he developed several projects for BP Angola and BP Advanced Imaging Team. In 2006, he returned to Sonangol with role of special projects senior geophysicist. He has been head of Sonangol's Geophysical Department since

2009. He received a B.Sc. in physics, Agostinho Neto University in1997.

Jane Saweka joined Sonangol E.P. after finished her degree in geology in Tshwane University of Technology and continues with the company today as an exploration geophysicist. She has worked on the following activities: rotation on seismic vessel, offshore Angola; seismic reservoir characterization; depth imaging (PSDM), offshore Angola; geophysicist responsible for 1D feasibility studies to perform a CSEM, offshore Angola; field geophysicists on offshore Kwana aeromagnetic survey; work in processing and interpretation of Kwanza Basin aeromagnetic data; and coordinating aeromagnetic survey over offshore Kwanza, Benguela, and Namibe Basin.

Artur Oliveira works for Sonangol EP in seismic Interpretation and magnetic data in the Kwanza Basin. He graduated with a degree in geographic engineering from Agostinho Neto University. He has post graduate work in petroleum geology.

JOHN TINNEN
Gabriel Dengo Memorial Award

The Gabriel Dengo Memorial Award is given each year in recognition of the best AAPG paper presented at the previous year's international conference. This year, the award is presented to John Tinnen for "Case Study Demonstrating the Ability of 3D-3C Seismic Data to Predict Natural Fractures and Petrophysical Properties of Shale." The coauthors were Ron Harris and Santi C. Randazzo.

This case study discusses the ability to predict rock properties and characterize fractures in shale reservoirs using 3D-3C multi-component seismic data. Seismic has long been used to keep the lateral well bore in zone, which is very important in shale plays. Many engineers feel that 80% of production comes from 20% of the frac stages. One reason for this may be the lateral variation of reservoir properties and fracture intensity in shale plays, and we are actually seeing more evidence of this in many shale plays.

High quality VSP and 3D3C seismic data surveys were acquired along with extensive data including cores, logs, engineering data and micro-seismic to learn as much about the reservoir properties and to validate new technological tools. This case study summarizes the results of that effort.

Multi-component seismic has been around for more than two decades, but improvements in processing of this complex data over the last few years have been responsible for a step change in the quality of shear wave data. By having measured shear data along with p-wave data, i.e. Vp and Vs, you have one less unknown in the equation for density, a significant component for prediction of reservoir quality in shales. With these three parameters, calculation of parameters for brittleness versus ductile rock, porosities, and gas in place becomes more feasible.

Another important factor responsible for better-producing wells in shale plays is fracture characterization. Results show that fracture orientation and fracture density predictions from the 3D-3C shear-wave splitting results were validated from core data, FMI image logs, and micro-seismic data. In addition, results of the final well completion data confirmed the reservoir rock property prediction was very accurate.

John Tinnin graduated from the University of Texas, Dallas in geosciences. He spent the next 20 years working for Santa Fe Minerals and Phillips Petroleum, focusing on use of 2D and 3D seismic to reduce risk in exploration and production. John spent the next 11 years on the seismic contractor side of the industry. He worked with Geotrace Technologies Reservoir Services Group in the utilization of seismic

inversions and attributes to optimize production and as Director of Reservoir Solutions for ION Geophysical on the application of multi-component data to predict rock properties and fractures in unconventional reservoirs. John is currently the director of geosciences - shale reservoirs for Halcon Resources. He currently is acquiring a large 3D-3C seismic survey in Ohio and Pennsylvania portion of the Utica Shale Play.

BODO KATZ
Ziad Beydoun Memorial Award

DAVID SIBLEY
Ziad Beydoun Memorial Award

ADAM J. VONK
Ziad Beydoun Memorial Award

The Ziad Beydoun Memorial Award is given each year in recognition of the best AAPG poster presented at the previous year's international conference. This year, the award is presented to Bodo Katz, David Sibley, and Adam J. Vonk for "Balancing Depositional Concepts and Seismic Attributes in Reservoir Models of Fluvial deposits at Wheatstone, NW-Shelf Australia."

The poster focused on how to effectively integrate various data sources in the creation of subsurface models. It also shows how to bracket reservoir uncertainty ranges through integration of information from analogues, depositional model ranges, seismic channel shapes, and in-field and near-field wells through probabilistic modeling of the above parameters in a regional model. The poster intended to demonstrate the value gained from thorough, integrated stratigraphic work through reservoir modeling for a multi-billion dollar, multi-Tcf gas field development.

Bodo Katz has been working as a reservoir modeling advisor for Southeast Asia in Chevron's Global Technology Centre in Perth since 2007. In addition to his services to the Wheatstone project as modeler and coordinator of reservoir characterization activities, he has in the recent past taught a variety of internal classes, assisted in project reviews in the Southeast Asia Region, and served as mentor and trainer.

Roles held prior to 2007 included the position of principal geologist for Woodside Petroleum and a number of assignments with Chevron such as development lead for a major Angolan Asset, reservoir characterization specialist, asset development geologist in Angola, and stratigraphic scientist. Katz holds and an M.S. in geology and geophysics from the Universitaet Bremen, Germany and a Ph.D. from the University of Oklahoma.

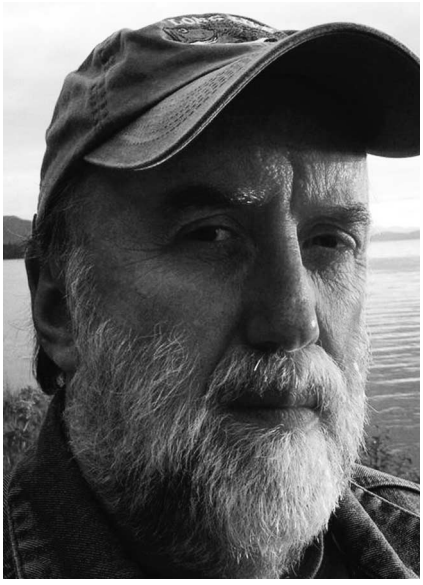
David Sibley graduated with a B.Sc. (1980) and an M.Sc. (1983) in

geology from Auburn University. After joining Chevron, USA, in 1983 he has filled various exploration and development earth science roles around the world including the United States Gulf of Mexico, Australia, Kuwait and China. Currently he is the Chevron Earth Science Team Lead for the Wheatstone team in Perth, Australia.

Adam Vonk has a B.Sc. and an M.Sc. (Tech) (Hons) degrees in earth sciences from the University of Waikato, New Zealand. He joined Chevron Australia in 2008 and is currently a geologist working in New Ventures Exploration. His prior roles within Chevron include exploration and development geologist roles in the Regional Exploration Team and the Wheatstone Subsurface Team, working on fluvial reservoirs of the Northern Carnarvon Basin.Vonk's main interests include stratigraphy, sedimentology, sequence stratigraphy, basin analysis and palaeogeographic reconstructions, having worked on Neogene strata in western North Island (New Zealand) sedimentary basins and Triassic and Jurassic reservoirs in Northern Carnarvon Basin, Australia.

KIRK JOHNSON
Geosciences in the Media Award

Kirk Johnson is the Sant Director of the National Museum of Natural History. Before joining the Smithsonian Institution in October 2012, he was the chief curator and vice president for research and collections at the Denver Museum of Nature and Science where he had worked since 1991. Johnson graduated magna cum laude with an A.B. in geology and fine art from Amherst College in Amherst, Massachusetts. He received an M.S. degree in geology and paleobotany in 1985 from University of Pennsylvania in Philadelphia and earned a Ph.D. in geology and paleobotany at Yale University in 1989. His research has taken him to all continents and focuses on fossil plants, the extinction of the dinosaurs, and methods for dating rocks and fossils. He was the leader of the Snowmastodon Project, an effort to understand the amazing ice age discovery that was made by construction workers in Snowmass Village in October 2010.



RAY TROLL
Geosciences in the Media Award

From his tree lined studio, high on a hill above the Tongass Narrows in rain-swept Ketchikan Alaska, Ray Troll draws and paints fishy images that migrate into museums, books and magazines and onto t-shirts sold around the planet. Basing his quirky, aquatic images on the latest scientific discoveries, Ray brings a street-smart sensibility to the worlds of ichthyology & paleontology.

Ray moved to Alaska in 1983 to spend a summer helping his big sister Kate start a seafood retail store. The fish store is long gone but Ray is not. There's something about Alaska that has led four of the Troll siblings to call the state "home."

Ray earned a Bachelor of Arts degree from Bethany College in Lindsborg, Kansas in 1977 and an MFA in studio arts from Washington State University in 1981. In 2008 he was awarded an honorary doctorate in fine arts from the University of Alaska Southeast. In 2007 he was given a gold medal for "distinction in the natural

history arts" by the Academy of Natural Sciences in Philadelphia and in 2006 was given the Alaska Governor's award for the arts.

Troll's unique blend of art and science culminated in his traveling exhibit, "Dancing to the Fossil Record," a major show that opened at the California Academy of Sciences in San Francisco in 1995. The huge exhibit included Ray's original drawings, gigantic fossils, fish tanks, murals, an original soundtrack, a dance floor an interactive computer installation and the infamous "Evolvo" art car. In 1997 the exhibit traveled to the Oregon Coast Aquarium in Newport and in 1998 it hit the streets of Philadelphia at the Academy of Natural Sciences. The tour ended in 1999 at the Denver Museum of Nature and Science. By that time it had grown to 14,000 square feet.

Ray followed that tour a few years later with "Sharkabet, a Sea of Sharks from A to Z". Venues included the Science Museum of Minnesota, the Anchorage Museum of History and Art, the Alaska State Museum, and the Museum of the Rockies in Bozeman, Montana.

Ray went on to act as the art director for the Miami Museum of Science's Amazon Voyage traveling exhibit and now has yet another touring show based on his book Cruisin' the Fossil Freeway with Dr. Kirk Johnson.

He and his wife Michelle run the Soho Coho gallery in Ketchikan appropriately situated in an old historic house of ill repute located on a salmon spawning stream. Ray believes that everyone should be in a band regardless of talent or ambition. Holding true to that ethic he helps lead a band of musical renegades called the Ratfish Wranglers.

He has appeared on the Discovery Channel, lectured at Cornell, Harvard and Yale, shown work at the Smithsonian and has even had a ratfish named after him (a New Zealand species called Hydrolagus trolli). Not too bad for a t-shirt wearing kinda' guy.

AAPG FOUNDATION

ROBERT GUNN
L. Austin Weeks Memorial Medal

Robert (Bob) Gunn joined the AAPG Foundation Trustee Associates in 1976. He and his wife, Carol, live in Graford, Texas. In 2012, he donated $1 million to the Foundation's General Fund. He served as AAPG President in 1978. He is one of AAPG's most honored members whose awards include the Sidney Powers Memorial Award, Public Service Award, and the DPA Heritage Award.

RICHARD BAILE
Chairman's Award

Richard Baile has been identified as the AAPG Foundation's 2013 Chairman's Award recipient. But this isn't Dick's first rodeo, as they might say in Houston. The Texan is a long-time Foundation supporter…to the tune of over three decades long.

An accomplished businessman with a degree from the University of Central Missouri, Dick is knowledgeable in numerous areas of geology, gas and oil. A Trustee Associate since 1980, he is considered a legacy for his commitment to the Foundation which is manifest in consistent contributions to the General Fund. These donations allow Trustees to facilitate projects at their discretion. In addition, Dick has supported numerous grants and academic scholarships. Some of the friends and colleagues honored by his monetary gifts include L. Austin Weeks, Hugh Looney, Merrill Haas, and "Pops" Harkins.

But these aren't the only gifts Mr. Baile brings to the Foundation; his consistent attendance at meetings, even now at age 92, has been an invaluable support. It's obvious this WWII veteran is passionate about the Foundation's continued effect on and success in the international geological community. He has initiated many interesting conversations, presenting unique and even controversial ideas. Of this, he proudly quipped, "I've been known as 'Don Quixote'!"

Concerning this award and the many acknowledgements he's received over the years, Dick humbly said, "All these are very gratifying."

CHRIS BOLHUIS
Teacher of the Year Award

Chris Bolhuis, ninth grade earth science teacher at Hudsonville Freshman Campus in Hudsonville, Mich., has been named 2013 AAPG Earth Science Teacher of the Year.

Bolhuis, a 16-year teaching veteran at Hudsonville – who also teaches an elective geology course for juniors and seniors at the school – prefers inquiry-based learning for inspiring his students.

"In the classroom, I believe inquiry based learning is the key," Bolhuis said during the TOTY nomination process. "It helps students generate their own questions that are testable and important to them in the context of our studies."

Bolhuis, a graduate of Grand Valley State University, was nominated by AAPG's Eastern Section, one of six AAPG Sections participating in the national award program.