

2009 MEDALS & AWARDS

LAURENCE L. SLOSS AWARD

Presented to **Raymond V. Ingersoll**



Raymond V. Ingersoll
University of California at Los Angeles

Citation by Kathleen Marsaglia

The Laurence L. Sloss Award for Sedimentary Geology acknowledges those who emulate its namesake through achievement in the field of sedimentary geology and service to the Geological Society of America. This year's deserving recipient is Raymond V. Ingersoll.

Born in Mountain View, CA, Larry Sloss started his geological career as an undergraduate student at nearby Stanford, and then planned to attend Harvard but, according to Sloss, he fortuitously ended up at the University of Chicago for his doctoral work. Ray Ingersoll, a New York native, had an almost mirror-image educational career, starting as an undergraduate at Harvard, then moving west to attend Stanford for his MS and PhD. Both scientists focused on sedimentation and tectonics, Sloss from a cratonic perspective, Ingersoll with a focus on the active western margin of the North American plate. Their research interests overlapped in the Rocky Mountains. Here, the Paleozoic rocks that Sloss loved and honed his stratigraphic concepts on provided the backdrop for the Indiana University field camp in southwestern Montana, where Ray was both student and instructor for several seasons, including the summer when Ray co-organized with Steve Graham, Lee Suttner and last-year's Sloss awardee Pete DeCelles a study of the Laramide thrust-generated Sphinx Conglomerate.

At Stanford, Ray was profoundly influenced by his advisor and mentor, Bill Dickinson. Ray's graduate research on the Cretaceous Great Valley Group combined stratigraphic, sedimentologic, and petrofacies analyses to provide a now classic picture of the Mesozoic margin of western North America. According to Ray, the thick, upturned forearc-basin strata of the Great Valley were most easily measured by driving through them in his favorite field vehicle, a tangerine Porsche. His later work in the region focused on the Paleozoic to Mesozoic tectonic evolution of the forearc basement terranes. Ray also was part of a successful collaborative team with his fellow graduate students at Stanford, particularly Steve Graham and Chris Suczek. Together, they helped define the sedimentary signatures, particularly lithic proportions, of collisional orogens, creating several co-authored publications.

Ray started his academic career at the University of New Mexico, where the magnificently exposed geology of the Rio Grande rift focused his interest. With students and colleagues from New Mexico, he examined the Holocene to Paleozoic history of the region. This experience expanded his expertise to include rift sedimentation, which ultimately led him to the Baikal rift in Russia. When family interests dictated that he migrate back west, he joined the faculty at UCLA and plunged into the complex history of extensional basins associated with the Basin and Range and Transverse Ranges, conscripting, I mean inspiring, numerous willing MS and PhD students to tackle significant stratigraphic and tectonic problems from Nevada to the Los Angeles basin.

Ray is a prolific scientist, with over 120 publications, many with student co-authors. Through these publications he has established himself as an authority in the study of the tectonics of sedimentary basins, writing a key review paper for the GSA centennial bulletin in 1988, and later co-editing with Cathy Busby and coauthoring chapters in a leading text on the subject in 1995. His research at Stanford established one of his research themes: the sedimentological, compositional, and geochemical fingerprints of magmatic arc evolution, in California and across the circum-Pacific. His 1982 paper in *Geology* on the instability of triple junctions and ramifications for the Cenozoic evolution of the western North American margin is one of my favorites.

Ray is a passionate debater. He has always been a stickler for "the rules" and

following protocol, championing the petrofacies approach and rigorously defining guidelines for its application in modern and ancient settings, as well as in diverse tectonic provinces. His later publications have more closely examined the statistical evaluation and significance of large petrologic data sets and aspects of scale in provenance studies.

A Fellow of the Geological Society of America (GSA), Ray has been an ardent supporter of the GSA Sedimentary Geology Division from its inception; he first served on the division's nominating committee (1986), and later on the executive committee (1998-2002), starting as Second Vice Chair and finishing as Past Chair. He was the citationist for 1999 Sloss Award winner, Bill Dickinson. As an Associate Editor of the *GSA Bulletin* (1984-1992), he promoted the quality of sedimentary science published in the journal. He has been a member of the committees for research grants (1992-1994; member and chair) and the Donath Medal (2005-2008) of the GSA and served as a member of the Technical Program Committee (1998, 2000, 2001) and Nominating Committee (1993) of the Cordilleran Section. Examples of his significant contributions to other affiliated societies include service as Associate Editor for the *Journal of Sedimentary Petrology* (1984-1988) and *International Geology Review* (1997-present) and two terms as President of the Pacific Section of SEPM.

Ray loves pomp and circumstance, proudly wearing his Stanford Cardinal robes at every student graduation. He is a loyal supporter of his mentors, peer colleagues, and his student mentees. At UCLA he created a family of 30 students including me that have in turn begat students or "grandchildren" as he calls them. As with all good fathers, Ray gives his students the lessons that they need for success, then the freedom to develop into independent scientists. He has proudly watched them go on to influential careers in industry, academia and government.

However, Ray's real family (mother, father, sister, wife and daughter) has been the inspiration and center of his life. Ray's proudest creation and his deepest joy is his daughter, Jenny, who is the image of his dear, departed wife, Mary. Mary, along with his also-departed father and sister, would have been very proud of his receiving this award.

Response by Raymond V. Ingersoll

It is a wonderful honor and pleasure to receive the Sloss Award. I thank GSA, the Sedimentary Geology Division, its officers

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and the Sloss Award Committee. I especially thank Kathie for her flattering words, and Tim Lawton for nominating me.

I met Larry Sloss briefly on two occasions; never did I imagine that I would receive an award in his honor. My being here results from a combination of hard work, inspirational mentors and colleagues, talented students and good fortune; I have been in the right place at the right time.

I am privileged to have attended outstanding institutions. At the Putney School, first as student, then as faculty, I learned fundamental physics, how to think as a scientist and how to teach, all under the mentorship of Ed Shore, probably the best science teacher I have known. At Harvard, I learned now-outmoded concepts of geosynclines and how revolution of the downtrodden stratigraphic masses led to a paroxysm of orogeny! I also absorbed abundant mineralogy, petrology and geochemistry. Interestingly, I never had a course in stratigraphy, sedimentology or paleontology! I spent 3 summers as a student and Associate Instructor at the Indiana University Geologic Field Station; this kept my geologic juices flowing while I taught physics and math at Putney. I then headed west to Stanford, where the Revolution in the Earth Sciences had occurred. No more geosynclines! Subduction leads to orogeny! An actualistic Earth model was being developed; at the forefront was Bill Dickinson.

I would not be here today if Steve Graham had not been a fellow first-year graduate student in an adjoining office at Stanford. He had come specifically to work with Cowboy Bill, whereas I had environmental leanings, and knew nothing about sedimentary geology or plate tectonics. Within a couple of months, I was a Dickinson advisee. I was planning to take Bill's undergraduate sedimentary-geology course when the TAship for the course opened up, and Bill said "You be the TA!" I know there is no better way to learn a subject than to teach it; I learned a lot fast! I still have never taken a course for credit in sedimentary geology or paleontology. I did take stratigraphy,

paleoecology and marine geology from Jim Ingle, who became my other mentor.

My years at Stanford (1972-1976) were seminal years for sedimentary tectonics. The definitive publications on interpreting graywacke and arkose (Dickinson, 1970) and sandstone petrofacies (Dickinson and Rich, 1972) had just appeared, as had the definitive paper on submarine-fan facies (Mutti and Ricci-Lucchi, 1972). Dickinson's papers on plate tectonics and sedimentation, and sedimentation related to arc-trench systems both appeared in 1974. Bill suggested I investigate the Great Valley forearc basin, and away I went. Petrofacies, submarine-fan facies, petrostratigraphy, paleobathymetry, arc-trench dynamics: it all came together in a magical way. I couldn't have been dealt a better hand, and I played it for all it was worth.

But to backtrack a bit, a magical moment occurred before I knew anything about forearc basins during the winter of 1973. I was the TA for Dickinson's sedimentary-geology class, which Graham was auditing. He knew most of this stuff from Indiana University, so he was sometimes bored as we sat in the back of the classroom. One day, Bill distributed Curry and Moore's rendering of the Bengal Fan and its relation to the Himalayas and Indonesia. Steve was idly rotating the figure, when his eyes lit up and he exclaimed "The Ouachitas!" Thus, the concept of remnant ocean basins was born. After class, Steve excitedly explained the modern and ancient analogy, and I watched in ignorant amusement. Again, what total luck for me to be there at that Great Moment in Science as Bill and Steve patiently brought me up to speed. The three of us have revised and updated the concept since.

My next great fortune was being hired at the University of New Mexico, where I found myself in the Rio Grande rift, the Laramide orogenic belt and the Ancestral Rocky Mountains, entirely new environments for me. It also was my great fortune to arrive in Albuquerque the same summer as Steve Wells (another IU product, a recurring theme in my life). Steve and I grew up together as Assistant Professors, with all the uncertainties and excitement that entails. Even though I left

UNM after 6 years, Steve and I remain very close friends.

Because my wife Mary had moved to Los Angeles, I resigned my UNM position and accepted an adjunct position at UCLA. I thank Gary Ernst for championing my cause at UCLA and helping convince the faculty and administration to regularize my position, which happened in 1985. As Kathie describes, this led to a wonderful time of joint investigations with many great students, too numerous to name. UCLA has been a wonderful home for me, especially as I now pursue my final major project: a detailed palinspastic reconstruction of southern California back to the Cretaceous.

I am thankful for the recognition this award conveys on my research. As with all of us, however, I feel that some important concepts I have proposed or championed have been "underutilized." Therefore, in the hope of encouraging rereading of old publications, here is my list of Underutilized Important Concepts in Sedimentary Tectonics:

1. Pseudomatrix
2. Sampling scale in actualistic sand(stone) petrofacies
3. Continental embankment
4. Remnant ocean basin
5. Dormant ocean basin
6. Transpressional basin
7. Preservation potential

Finally, in addition to the wonderful folks I have mentioned, I thank Peter Bird, Cathy Busby, William Cavazza, Salvatore Critelli, Pete DeCelles, Clarence Hall, Rich Schweickert, Chris Suczek, Lee Suttner, An Yin and all my former students for years of fruitful interactions. Science progresses through social interactions, and I am grateful for wonderful collegial relations over the years. I am one of the lucky ones. And of course, my grandparents, parents, sister, late wife Mary and wonderful daughter Jenny have been central to my success and life itself.

Thank you for this great honor of the Sloss Award.