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IN MEMORIAM: J. Calvin Giddings

On October 24, 1996, at the age of 66, my father, J. Calvin Giddings, lost a prolonged and courageous battle with cancer. He leaves behind a broad legacy in science, in exploration, in environmental preservation, and most of all in his positive influence on many lives.

Throughout his life my Dad maintained a great passion for and curiosity about the natural world. In chemistry he contributed a great deal to the field of separation science, including the invention of Field-Flow Fractionation and other related techniques. His remarkable publication record included authorship on more than 400 publications, editing of 32 books, and authorship of two others. The quality and depth of his research was recognized by numerous awards, and its utility led to the founding of a company, FFFractionation, to make his techniques widely available. There is much more that could be listed here, but what was perhaps most important to him was not the numerous honors his work received but rather just the joy of seeing his separation methods applied to the many problems for which they could be useful, in a wide range of areas extending beyond industry to medicine and environmental studies.

His passion and curiosity extended far beyond science, and combined with a zest for adventure and a love of the outdoors, led him to a long career of outdoor exploration. His outdoor enthusiasm was kindled through trips with his own father to the mountains near their American Fork home. Later in life he began to further explore these and other mountains on his own. His climbing career included numerous first and early ascents, including the first ascent of the west face of Lone Peak, prominently visible from the Salt Lake Valley floor. Other notable ascents include Zion Canyon's Great White Throne, Devil's Tower in Wyoming, and climbs in the Tetons. He was also one of the pioneers in discovering numerous backcountry ski-touring routes in Utah's unique Wasatch Mountains.

Still later, he turned to a long career of river exploration. Beginning with homemade kayaks, the first in Utah, and techniques learned from a book, his enthusiasm led him to explore many western rivers. The list of his pioneering descents is too long to give here, but river runners will

recognize among them a number of respectable runs such as Cross Mountain Canyon on the Yampa, the Black Boxes of the San Rafael, Idaho's Big Creek, and the South Fork of the Salmon. Even today these runs are considered quite challenging.

Earlier generations of explorers such as John Wesley Powell had already navigated the west's major rivers such as the Colorado, so in looking for even greater challenges my Dad had to look elsewhere. His focus shifted to the longest and largest river in the world: the Amazon. The longest tributary (hence the recognized source) of the Amazon is the Apurimac River in Peru. In 1974 he and a partner mounted an expedition to kayak some of the upper canyons of this river, but were soon turned back by the recognition that their resources did not allow them to continue with a sufficient safety margin. He returned with a larger expedition in 1975, and despite enormous hazard and toil managed to descend a large fraction of the canyons of the Apurimac. This adventure is chronicled in his book, *Demon River Apurimac*, which he was fortunate enough to see published just before his death.

Beyond these remarkable achievements, my Dad's love of exploration and adventure, and joy in sharing it with friends and family, pervaded his life. In later years his focus shifted to mountain biking, which he began at age 56 with a ride on Moab's demanding Slickrock Trail. He found that mountain biking opened up a whole new way of seeing new sights, discovering new surprises, and simply having fun. Even on hikes near his canyon home he found happiness exploring, always looking for a new path to tread—and frequently leading family and friends through thick brush and enduring the consequent joke that he loved bushwhacking.

Out of my father's love for the natural world came a strong vision that it needed protection. He early realized the fragility of the environment, and the many disasters both real and potential that unbridled development and population growth were visiting on it. He became one of the pioneers of the Utah environmental movement. Soon after the passage of the Wilderness Act, he proposed Utah's first wilderness, the Lone Peak Wilderness Area, which won protection several years later. He was a leader in several local environmental organizations, and also participated in the founding of the American Rivers Conservation Council (now American Rivers). Realizing the crucial importance of arresting unlimited population growth, he also served as a member of the board of directors of Negative Population Growth.

He also recognized the importance of education and of bringing a scientific perspective to the environmental debate, and authored the text *Chemistry, Man, and Environmental Change*, another of his pioneering works which has been widely used as a textbook to educate students about the

relation between chemistry and the health of the planet. This book received an award for Outstanding Environmental Achievement in Education from the Rocky Mountain Council on the Environment in 1973.

But beyond this list of accomplishments, and many more not listed, there is another equally important legacy left in the influence that he had on others. He had a remarkable ability to inspire others to achieve beyond themselves. In all that I observed, this was almost universally done through gentle encouragement rather than through intimidation or other means. He was truly a leader, with a talent for not making you feel like you were being led. He was able to inspire colleagues, students, friends, and family solely through his understated enthusiasm.

As a father, he has been an inspiration both in outdoor adventure and in science. He would almost always include the family in outdoor trips. He introduced my brother Mike and me to hiking and skiing in the Wasatch at an early age, and slightly later to kayaking on Utah and Idaho rivers. He took great pride and delight in seeing our development, and was always there to rescue us when we took the inevitable fall while skiing or swim through the rapids while kayaking. We were able to share in some exploratory descents of rivers, although others were beyond us. Later when I took up climbing myself, my Dad gave guidance, sometimes too firm for the rebelliousness of a teenager but possibly keeping me alive. Despite the fact that he had given up climbing himself, he joined me on several occasions so that he could share in his son's growth in the mountains. He planned family trips to kayak other exotic rivers such as the Nahanni in the Northwest Territories, the Tatshenshini in Alaska, and the Grand Canyon of the Colorado. He always watched over us, yet let us develop independence.

Beginning at an early age he taught me to always apply logic and reason to the mysteries of nature. I learned that most things could be explained by science, and that those that could not were just interesting puzzles waiting to be solved. He recognized the great importance of mathematical learning, and introduced me to calculus long before it would ordinarily be taught. This mathematical background served as the foundation for my career as a theoretical physicist. My inspiration in physics came later, when he explained to me some of the truly weird properties of quantum mechanics, and I decided that if the world of physics was that different from ordinary experience, I had to learn about it. He helped arrange for me to enter college early, and constantly gave me encouragement in my studies. In particular he urged me to take as much math as possible—an extremely valuable suggestion. As my knowledge in my area of physics gradually surpassed his, he always asked me to explain the latest ideas, who the players were, and what I was working on in my research.

Although he allowed himself to take pride in his sons, he was nearly the definition of humility, generosity, and tolerance. I don't recall him ever speaking in self-aggrandizing terms. In fact, even as his son it was difficult to learn about his many accomplishments—only rarely and reluctantly did he speak of them. He was generous almost beyond reason, and always wanted to lend a helping hand to those who needed it. He was tolerant of other's views, even if they were widely divergent from his own, and he respected people for who they were and accepted them despite their flaws. This did not mean, however, that he accepted untruths or flawed reasoning: he was always patiently insistent on ferreting out the truth, guided by logic and reason.

Gone in body, he leaves behind his wife, partner, and best friend Leslie, his two sons Steven and Michael, two brothers, and two sisters. However, my Dad will long live on in the imprint that he has made in so many lives. His impact extends over a wide range of human endeavor. His scientific work continues to grow. His vision has helped preserve a small part of the natural world, and continues to influence others to fight to save us from the destruction of our environment. His adventures and explorations will be widely remembered both by those who were lucky enough to share them and by many others inspired by them. Finally, his ability to lead family, friends, and colleagues to achieve beyond their own expectations will live on, although perhaps his leadership will be even better hidden than it was in life.

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