



IN MEMORIAM

John McDougall Christie
Professor of Earth & Space Sciences, Emeritus
Los Angeles
1931 — 2004

John McDougall Christie, famous for his work in structural geology and microtectonics, and especially for his insights into the mechanical behavior of quartz in the geological range of temperatures and pressures, died at home in Pacific Palisades, California, on the seventh of May, 2004.

John was born in Calcutta, India, on December 4, 1931, where his father ran a jute mill. His stay in India was short, but he still fondly remembered the Indian woman who took care of him as his aya. The family moved back to their Scottish homeland, and Christie grew up in Invergowrie near Dundee. After primary school in Invergowrie and a secondary education in Dundee, Christie began studying at Edinburgh University in 1949. From 1950 on, he attended the Grant Institute of Geology of that university and obtained his bachelor of science degree in 1953, and his doctorate of philosophy under the supervision of Professor Arthur Holmes in 1956. Christie's thesis, "The Post-Cambrian Thrusts of the Assynt Region," is based on field work on a portion of the Moine and related thrusts in the Scottish North-West Highlands.

From 1956 to 1958 Christie assisted Professor Donald B. McIntyre of the Department of Geology at Pomona College in Claremont, California, with a National Science Foundation research project on the structural geology and structural petrology of the Orocopia Mountains, Southern California; he also was a part-time instructor in that department. In 1957 he came to the attention of Professor John C. Crowell, then chairman of the Department of Geology at UCLA. He made a favorable impression on the faculty of the department and, after all bureaucratic hurdles had been overcome, was hired. The concluding paragraph in Arthur Holmes' letter of recommendation may have been helpful: "It is with whole-hearted confidence that I recommend Dr. Christie to your most favorable consideration, and I look forward to hearing of his having a most successful career."

In the fall of 1958, John began to teach and research at UCLA's Department of Geology as assistant professor, advanced to associate professor in 1964, and to full professor in 1971. Soon after his arrival, he began a close partnership with Professor David T. Griggs that lasted until Griggs' death in 1974. Griggs deformed specimens of quartz and quartz rocks in his deformation apparatus, at specified rates and under determined conditions of temperature and pressure, dry or in the presence of water; Christie investigated the resulting samples under the microscope, measuring the crystallographic orientation of quartz grains. From their measurements they were able to state flow laws for quartz rocks as a function of physical conditions and the presence of water.

Transmission electron microscopy became available, and John Christie began to look into the internal evidence of strain within individual quartz crystals in collaboration with Professor Alan Ardell at UCLA's School of Engineering. At the magnification obtainable in this instrument, the regular three-dimensional pattern of silicon and oxygen atoms could be seen to be disrupted by dislocations, and the more a quartz crystal had been deformed, the denser were the dislocations. And the dislocation patterns were similar whether a specimen had been deformed experimentally or been taken from a metamorphic rock in the field.

Mastery of electron microscopy led to a collaboration with Professor Arthur Heuer of Case Western Reserve University on specimens from the Moon, one of the few instances when Christie became interested in rocks devoid of quartz.

Laboratory work did not diminish John's fascination with observing and mapping structural phenomena in the field; he collaborated with colleagues and supervised students' thesis projects. The White and Inyo Mountains of eastern California was his favorite region, with a special preference for the rocks surrounding the Papoose Flat Pluton.

Diligent and conscientious research did not prevent John Christie from serving with equal diligence and conscientiousness as an administrator. For many years he was the Graduate Advisor for the Department of Geology, later of Earth and Space Sciences, to the great benefit of generations of students. With equal dedication he served on major Senate committees, turning the affairs of the Library Committee and later of the Graduate Council into his personal concerns.

John officially retired in 1994, but continued to have an office and to work in the Department of Earth and Space Sciences. During his later retirement years, his main scientific interest was the effect of plate tectonics on the spreading and distribution of the orchidaceae family of plants.

John is survived by his wife Spring, three children and four grandchildren.

Gerhard Oertel