Obituary

Steve Horseman, 1950–2004

It's close to a year since Steve Horseman died and there is still a hole in the British Geological Survey that cannot be filled. He was a respected colleague, a keen and effective debater of scientific issues, a source of knowledge, a mentor for junior staff and a friend.

As a scientist Steve had rare qualities. He was a combination of a theoretician and experimentalist with an impressive knowledge of chemistry, physics and mathematics. What he didn't know he could acquire, either as a voracious reader of journals and books or through discussion with a wide range of international colleagues. He could work across disciplines understanding the language and nomenclature of each and with the capability to unify disparate theories into solutions to solve the particular problems he was working on at the time. He developed models that coupled theories of fluid chemistry, fluid–rock interactions and rock mechanics. He could then explain everything in terms that others could understand.

With the models in place he had the knowledge and skills to design, specify and build innovative experimental kit to make measurements either in the laboratory or at a large scale in the field. He worked in the world of the small where platelets of clay or crystals of salt react physically and chemically with surrounding fluids. It is an environment in which any act of measurement can change the processes in play, disturb the system and make results difficult to understand. Normal physical understanding does not always apply. Yet the system dynamics have to be understood so that solutions can be found to real-world problems in radioactive waste management, disposal of carbon dioxide and fuel storage underground. Steve was very good at tackling such problems head-on and was able to change scale, viewing a problem from multiple perspectives.

Steve was an expert in salt rheology and fluid movement in bedded evaporites. He was key, at an international level, to many topics related to the safe management of radioactive wastes including the movement of fluids through clays. He was a UK representative for the NEA working group on clays, Secretary of the Applied

https://doi.org/10.1180/S0026461X00038007 Published online by Cambridge University Press

Mineralogy Group of the Mineralogical Society and a chair and convenor for numerous workshops and conferences. He had insights into particular problems that many of his colleagues had not previously considered or had thought unimportant. One notable example was the movement of repository gases through the buffer or rock mass in pressure-induced pathways, allowing gas to escape. Recently his knowledge of such processes had been sought on natural gas and hydrogen storage underground. He was also researching how to store carbon dioxide, over very long time periods, underground to aid in man-induced climate change mitigation.

Steve was always ready to debate any issue – scientific, musical (especially certain styles of jazz) or artistic, although few knew he was an artist. He was free with his discoveries. He was persistent in solving problems. He was ceaseless in encouraging and developing younger staff and spreading his boundless enthusiasm for science. He was a powerhouse of new concepts and theories.

Steve was born in June 1950 and educated in Bristol. His native accent had a tendency to become stronger when his excitement gained strength and he got closer to some new discovery. He gained his Radio Amateur's certificate in 1969 – which explained why he knew much about the propagation of radio waves through rock.

At Cardiff University he gained a First Class Honours degree in mineral exploitation in 1973 and went on to research rock mechanics at Newcastle University gaining an MSc and PhD with a thesis in 'An evaluation of rheological properties of rock salt for deep storage cavity design'. He joined the Engineering Geology Unit of the Institute of Geological Sciences in May 1979 as a Senior Scientific Officer. Steve was always prepared to travel to advance and share his knowledge. In April 1986 he went to Texas A&M and then to Salt Lake City in September 1988 for six months to work on salt properties. He returned to the BGS in June 1989 with a slight American accent and a Jeep. He remained with the Survey (except for a short stint as a consultant) until his untimely death. He became one of Survey's most senior and respected scientists. The support of Steve's family was fundamental to the development of his very successful science and career.

Steve died on 2 September 2004 and leaves behind a wife, Sheila, and a daughter, Jen, as well as a younger brother, Rev Chris Horseman. He is, and will continue to be, missed by colleagues and friends around the world.

DAVID HOLMES

https://doi.org/10.1180/S0026461X00038007 Published online by Cambridge University Press