Gordon Squires as Research Supervisor

It's a great honour to be chosen among Gordon's many research students to say a few words about his mentoring and supervising.

The process by which I myself came to do a Ph. D. with Gordon is probably not untypical – starting with attendance at his Part-II Physics lectures on Quantum Mechanics and Atomic Physics, which – like everything Gordon did – were a model of logical thinking and clear exposition. I was equally fortunate to have Gordon as a tutorial supervisor where, as a relief from working through physics problems of the kind to be expected at the dreaded Tripos exam, Gordon took time to tell me about his own research on the dynamics of crystal lattices using inelastic neutron scattering. When it came to a decision to do a Ph. D. at Cambridge and a choice of area, I was finding it hard to choose between two areas then fashionable – nuclear and solid-state physics: Gordon's investigations of solid-state phenomena at nuclear facilities seemed to combine the best of both worlds. I wasn't aware at the tine of Neville Mott's referring to this work as "a funny mix", although I had taken to heart Mott's advice to all graduating physics students to choose experiment over theory, on the grounds that "if you knew a trade you could always count on getting a job." The only snag was that Gordon has arranged to spend the coming year at New York University, so I decided to head out to the New World as well and undertook several jobs, including one as "elevator operator" at a smart San Francisco hotel: an honest enough trade, if not the kind that Neville Mott had in mind.

Returning to Cambridge to start my Ph. D. research, Gordon gave me – and I'm sure all his other students – a copy of his hand-written notes on lattice dynamics and inelastic scattering – beautifully developed with an easy-to-follow logical flow and – what impressed me most – no corrections or anything crossed out. These notes, of course, became part of his textbook, Introduction to the Theory of Thermal Neutron Scattering, which, after two editions and several reprintings, remains the best introduction to the field ever written.

Nowadays the idea of shipping off Ph. D. students to central facilities like neutron sources and synchrotrons is widely accepted, but Gordon was ahead of his time – at least in the area of solid-state physics – in establishing a connection with Peter Egelstaff's group at the DIDO reactor in Harwell. We looked forward to Gordon's monthly visits, frequent enough to help sort out scientific and political problems that inevitably arose but infrequent enough to let us develop some independence and initiative of our own. The Harwell scientists and technicians were somewhat bemused with this group of students in their midst, referring to us with some mixture of affection and disdain as "the Cambridge boys" (not many "girls" in those days!). Nevertheless, many of these "boys" went on to make their mark in neutron facilities around the world – Canada, the US, Australia, and of course the UK.

Digressing for a moment into technicality, I should mention that most of the early research with neutron scattering was carried out at reactors. Very deservedly, Bert Brockhouse and Cliff Shull received the 1994 Nobel Prize in physics for their pioneering work at the reactors at Chalk River, Canada and Oak Ridge, Tennessee. Most of their experiments were carried out with steady-state techniques based on crystal analysers. Perhaps due to Gordon's earlier experience with cyclotrons and also to the development of choppers and cold sources by the Egelstaff group, Gordon's students were brought up on time-of-flight techniques, more complicated to use at reactors but ideally matched to the accelerator-based pulsed sources that began to take over the field in the 1980's. Thus, many of these students played key roles in

the development of these sources at the Los Alamos and Argonne laboratories in the US and in the pioneering instrumentation at the ISIS spallation source in the UK. Moving on to the second generation of students I should mention Thom Mason, a student of Gordon's first Ph. D. student Malcolm Collins in Canada, who went on to head the most recent and most powerful source of this kind, the Spallation Neutron Source at Oak Ridge. (Thom is now the Laboratory Director there, which gives us, for what it's worth, the distinction of being scientific uncles of the Director of Oak Ridge National Laboratory!).

Many of Gordon's students participated in the symposium held in Trinity in 1996 on the (belated) occasion of his retirement from the University with support from the then Master, Sir Michael Atiyah, and the Fellows. The talks reflected a broad range of interests but mostly involving neutron scattering in one way or another. I think that Gordon enjoyed it, and for me it was an opportunity to meet Shoshana and their children Adam and Dan, who were most hospitable to Marie-Louise and our children during the meeting. Rather informally organized, we assembled for a photograph and looked for an unsuspecting passer-by to take it, at which moment a familiar figure entered the courtyard – Sir Brian Pippard! – who also passed away not long ago.

Coming to more recent times, I personally enjoyed two summers spent in Cambridge as a Visiting Fellow Commoner at Trinity, an appointment arranged with Gordon's help. I found him as alert as ever and interested in everything under the sun. He introduced me to his contact at the University Press, which led, after a couple of false starts, to a monograph on Levitation that Gordon kindly agreed to be dedicated to him.

This talk would be incomplete without a reference to Gordon's personal qualities – always ready to see the best in every person, even when telling anecdotes about them, with a twinkle in his eye, ever amusing but never unkind. We shall all miss him.

David L. Price, at Trinity College Chapel, 20 November 2010.