

A Tribute to Archie Campbell



January 11, 2020 (PA46). Archie was a Cambridge ‘lifer’. As we’ve heard, he came up to Cambridge in October 1959 and stayed. After graduating in Natural Sciences in 1962, Archie joined Jan Evetts and Anant Narlikar in David Dew-Hughes’ group in Materials Science and Metallurgy. Archie and Jan were to become life-long friends and colleagues and to make a joint contribution to the field of superconductivity that was to be internationally acclaimed and never surpassed. Both Archie and Jan were towering intellects in their own right, so together they were, quite simply, unstoppable.

On completion of their PhDs, Archie and Jan were on temporary contracts in Materials Science and Metallurgy until Jan was awarded a Lectureship in the Department. Archie was a Royal Society Fellow for a while, during which period the classic Campbell and Evetts monograph on *Critical Currents in Superconductors* was written. This extraordinary work, which was even translated into Russian, is considered to be the bible of applied superconductivity and has guided literally thousands of researchers, both young and old, in the subject now for almost 50 years.

In 1974, at the age of 35, Archie eventually obtained a Lectureship in the Department of Engineering. He then went on to be promoted to a Readership in 1997, and took the Directorship of the IRC in Superconductivity in 1998. He was appointed Professor of Electromagnetism in 2001, a promotion that was well overdue, but hugely deserved. Last year Archie, fittingly, received the prestigious Lifetime Achievement Award from the International Cryogenic Materials Conference which was the ultimate accolade paid to him by his peers. He was a Fellow of Christ’s College of one form or another for more than 50 years, and it was fitting that the conference to celebrate his extraordinary career in 2007 and attended by colleagues from all round the world, was held jointly by Christ’s and Corpus Christi, his two Cambridge colleges.

Personally, I first met Archie in Huntsville, Alabama in 1988 when we were treated to an unforgettable presentation by a senior officer in the U.S. military the U.S. Star Wars initiative and how superconductivity could save the world. He wore full military dress and continually tapped the over-head projector with a baton that spent the rest of the time tucked neatly under his right arm. It was all pretty surreal. Anyhow, I remember Archie likening the concept to Dan Dare in the Eagle comic doing battle with lasers against the Mekon and other interplanetary foes. I was never able to take the Star Wars concept seriously again. Quite an introduction to the man who was subsequently going to shape my career.

A few years on from that initial meeting, in October 1991, I received a call from Neil Alford asking me to ring Archie – Archie wasn't good at using the telephone, as any of you who ever tried to call him will know. I was working in industry at the time and Archie wanted to talk to me about an academic job at the Department of Engineering, effectively as his deputy at the IRC. Well here I am 27 years later and trundling towards the end of a career that I owe almost entirely to Archie.

Archie gave me the same unwavering support throughout my time at Cambridge, that he did to so many friends, colleagues and the many 10's of post-docs and students he supervised. Because that's what Archie did. He simply saw the best in everyone and supported young people, in particular, as they grappled with the complex concepts of superconductivity. He was approachable, engaged and gave his time freely and unconditionally to anyone who wanted to talk to him about science (and the difference between the magnetic fields B and H, in particular – ask me later!). I truly believe that Archie had absolutely no idea of the positive impact he had on the lives of so many people and how many lives he touched. Archie didn't take compliments well.

Anne was interviewed, I think by the Cambridge Evening News, soon after she'd been elected MP in 1992. In the resulting article, Archie was described as Anne's husband, sitting on the sofa, a Cambridge Don and a quiet, smiling Scot. The Archie Campbell I knew was never quiet!

Archie, famously, wasn't well-organised. But no one cared, and least of all him. I once walked past his previously cluttered desk at the IRC, usually piled-high with papers that he'd never read, to see it completely cleared. It turned out that, apparently someone, had pushed all the papers into the gap between the desk and the wall. Archie maintained it wasn't him, but I'm not so sure I believed him.

Archie quite simply liked solving hard problems. The harder the better. His particular passion was understanding and explaining the behaviour of magnetic fields in free space and in materials, which takes us back to B and H. Archie also made extraordinary and fundamental contributions to the understanding of ac loss, flux pinning and the applications of all forms of type II superconductors, as his colleagues are well aware.

On the teaching front Archie had his own unique style. He particularly liked chalk. I remember him explaining demagnetising effects on soft magnets to 330 second year Engineering students as like "*dogs sniffing each other*", an image that I don't imagine they'd ever forget. Well, I certainly haven't.

Over the past few years Archie was employed as a consultant to NISI, a company based in Hong Kong, who clearly appreciated his considerable talents. They paid him well, flew him business class and gave him a broad problem-solving remit. Archie thrived on this, despite muttering occasionally that he felt NISI weren't getting value for money.

One particular project involved measuring the position of a colonoscope by magnetic sensors used in mobile ‘phones. Archie and the rest of the Cambridge team soon cracked the problem, which left the issue of displaying the image professionally on a computer screen. This is Diarmid’s area of expertise, so he, too, was recruited to the project. We subsequently had a progress meeting with NISI in Cambridge that both Archie and Diarmid attended. I will never forget how, together, they talked through the technical solution and the details of the display, with Archie beaming broadly and Diarmid trying desperately not to call him “Dad”. Diarmid, I don’t know if you ever talked to your Dad about that meeting. He was thrilled. I honestly believe it was the proudest moment of his entire career.

As we’ve heard, Archie was a family man through and through and enthused frequently about Anne’s considerable and diverse achievements, Emily’s art, Frances’ shop, Diarmid’s ability to program and how proud he was of his grandchildren. Archie liked watching snooker on TV. He liked his eggs – he said they’d be a delicacy if they weren’t so cheap – he liked ice-cream, his kilt (on the grounds that it expanded easily with his waist), singing (loudly), classical music and eating food in a severely under-cooked state, which meant he loved visiting Japan. He liked fish, and scallops in particular, which he bought from Cambridge market on a Saturday morning and, apparently cooked later to perfection (I suspect this meant he ate them virtually raw). He liked his beer (and I liked drinking beer with him), and he didn’t drink water with his food, because, as he’d frequently point-out, he knew what fish did in it (but he didn’t use exactly those words). He once tried smoking, but couldn’t get on with it, and didn’t mind drinking from the Christ’s Loving Cup or swimming in Christ’s outdoor pool (he told me that’s what your antibodies are for).

I feel privileged to have worked so closely with Archie for so many years. He was my mentor, my inspiration, my confidant and my friend, and his passing will leave a void that, for me, will never be filled. Archie Campbell, the not-so-quiet, smiling Scot who touched so many lives.

David Cardwell