

A 'Few Thoughts' from Christopher Cockcroft for the November 3rd 2009 celebration of the Cockcroft Institute Grant Renewal to 2017.

On this auspicious occasion I would like you to cast your minds back some 80 years to an era when people travelled across the world to study under distinguished professors. At that time 25 year old George Gamow came from Russia to study under Niels Bohr in Copenhagen. There, in 1928, he wrote a paper theorising as to how Alpha particles could escape from the nucleus by tunnelling at low energies, and how the converse might apply to Alpha particles entering a nucleus and causing the disintegrations found by Rutherford and others.

My late father, John Douglas Cockcroft, saw this paper and understood its significance. Between December 1928 and January 1929 he wrote his memorandum on 'The Probability of Artificial Disintegration by Protons' in which he postulated that protons could cause disintegrations at energies as low as 300,000 volts. He took this paper to Rutherford who was at that time wanting to find more effective ways to explore the nucleus. Rutherford gave him the go ahead to create the apparatus to confirm his postulations, assigning Ernest Walton, then working on early linear accelerator tubes, to work with him.

Cockcroft and Walton designed and created their early linear accelerator and went on in April 1932 to be the first people to artificially disintegrate the nucleus, in the process proving Einstein's famous equation $E=mc^2$. Much of the equipment and techniques used were supplied by former colleagues at Metro-Vic in Manchester, the company that had taken on my father as a young electrical engineer from Manchester College of Technology and sent him to study maths at Cambridge. But they also used a proton source designed by Mark Oliphant.

Thus you can see that Accelerator Science was born of international co-operation, supported by industry. Hence, moving forward to the present, I think that my late father would be very pleased to know that the funding of The Cockcroft Institute of Accelerator Science and Technology has been secured for the next 8 years.

I think that he would be particularly pleased that the Institute is here in this area with close university and industrial links; that it has been recognised as being of national significance and that, with the links to CERN and with people from all over the world working here, the spirit of international co-operation goes on.

May I offer my congratulations on behalf of my late father and my family to The Cockcroft Institute on securing the funding renewal, together with our best wishes for the future of National and International Accelerator Science and Technology.