



Historical Instruments Project Genesis

Raymond E. March
Trent University



Ray Flaxman in the Cavendish Lab shop.

impossible, he had decided to make good use of this found time by visiting the Science Museum. There, much to his delight, he saw as an exhibit an original mass spectrograph of Aston. With the historic 50th meeting of ASMS only nine months away, he had the idea that a display of this mass spectrograph at the Orlando meeting of ASMS would be of great general interest to ASMS members. If I remember correctly, his initial approaches to the Science Museum staff did not elicit so much as a response!

I thought that Joe's idea was splendid and I offered to contact once more the Science Museum concerning a possible loan to ASMS of the Aston instrument.

An approach to such a prestigious institution as the Science Museum must necessarily be multi-pronged and supported by both established persons in science and at least one established commercial institution that would provide the necessary financial backing for the venture. Thus, I researched the Museum staff by internet, selected carefully

the recipients of my request so that no single person would be in a position to refuse our request, secured the encouragement and support of J.H. Beynon, FRS, (who, regrettably, claimed no personal acquaintance with the Museum staff), wrote eloquently of the desire of no less a person than Professor Richard Caprioli, President of the American Society for Mass Spectrometry and its legions of members to bring about the loan of this historic instrument, and secured (through the good offices of Mark McDowall) the willingness of Micromass to consider underwriting the necessary costs of the desired loan. The response that I received from a member of the Museum staff informed me that the loan of an instrument such as the one requested was not consistent with either the immediate or the longer range plans of the Curator of Historical Instruments. That was that.

In April, 2002, I attended a Conference at Warwick University, UK. Upon recounting to Professor Keith Jennings this sad tale about the lack of success in dealing with the Science Museum, he said that he had a friend in the Cavendish Laboratory that had another of Aston's mass spectrographs and he suggested that I pursue that avenue. A telephone call was made quickly to Keith's friend and I was soon routed to the Curator of the Cavendish Laboratory, Dr. Gordon Squires. Of course, a loan in such a case as this cannot be agreed to in a telephone call; it would be much preferred if I could visit the Cavendish Laboratory and discuss the matter in person with Dr. Squires. Four days later, I arrived in Cambridge. Gordon was a splendid host and I spent a most enjoyable day visiting the Museum of the Cavendish Laboratory. Gordon had carried out some exploratory discussions with his colleagues concerning our request of a loan; the idea of a loan had little appeal but it might just be possible for the Cavendish Workshop personnel to create a replica. Of course, it was not known if the resources of the workshop could be diverted to such a project and, if they could be diverted, what the cost would be. As neither of us was a stranger to uncertainty, we decided on a plan as follows: I would seek permission of ASMS to request an estimate of the cost of making a replica of the Aston mass spectrograph and of the discharge tube of Thomson and the neutron chamber of Chadwick (the latter two instruments are small and would add little to the cost if, indeed, the project was approved), and copies of ten historic photographs of both instruments and research fellows of the Cavendish Laboratory covering the period from the 1890's to 1922. In the meantime, Gordon was to ascertain the availability of the Workshop resources and to calculate an estimated cost.

A request was made to Richard Caprioli, then President of ASMS, for the permission of the ASMS Board to pursue this project. Both Richard and Joe Loo gave strong support to the project and the Board agreed to the request for an estimated cost. It turned out that the Workshop did, indeed, have resources available and the personnel were very keen to reproduce instruments that had been fabricated in the same workshop almost a hundred years earlier. Just before the ASMS Board meeting at Orlando in

June 2002, a report on the entire project concerning the fabrication of three replicas and reproduction of ten photographs was submitted to the Board along with the total cost and a schedule for completion of the project. The Board approved the Historical Instruments Project and a purchase order was sent to Gordon Squires. Richard Caprioli and Joe Loo were towers of strength in persuading ASMS to fund this project.

The project was now well underway but more work remained to be done. The 51st Annual Conference of the ASMS was to be held at Montreal and so it appeared to make sense to arrange for the replicas to be delivered to Montreal and that a display case or cases could be made there once the replicas were received. Parenthetically, at least one of the historic photographs shows Ernest Rutherford sitting near J.J. Thomson; Rutherford, a New Zealander, had spent a year (1906-07) at McGill University¹ in Montreal. I appealed to my dear friend, Professor Orval Mamer, who is both a faculty member at McGill University and the President of the Canadian Society for Mass Spectrometry, to assist with this project. The splendid display case for the replicas, the descriptions of the three replicas, and the account of this project have all been arranged by Orval Mamer and Mike Grayson. I am most grateful to them for all of their thoughtful work on this project.

Now that the Historical Instruments Project has been realized thanks are due to Joe Loo for his original idea, and to Richard Caprioli, Keith Jennings, John Beynon, Micromass UK, Orval Mamer, Michael Grayson (ASMS Archivist), Gordon Squires and the Cavendish Laboratory Workshop staff for their encouragement and/or participation in this project, and to the Board of the American Society for Mass Spectrometry for making this project possible.

¹ Gordon Squires pointed out one small historical error in this account to the effect "that Rutherford was not at McGill for only one year. He was the Professor of Physics there from 1898 to 1907. Moreover, he did what is arguably the best work of his career, the sorting out of radioactivity, while he was there. He was awarded the Nobel prize in chemistry in 1908 for the work." Orval Mamer supplied the following addendum to this correction. "It is said that Rutherford got fed up with the winter and summer temperature extremes in Montreal and left because of them. His laboratory still exists at McGill University where it is sealed off as it is radioactive to the point where it cannot be used for anything requiring human occupation."