

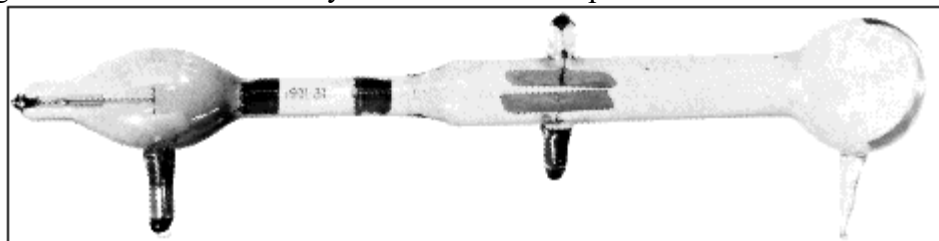
J.J. Thomson's Cathode Ray Tube

J.J. Thomson used results from cathode ray tube (commonly abbreviated CRT) experiments to discover the electron.

The image below is of J.J. Thomson and a cathode ray tube from around 1897, the year he announced the discovery of the electron. Only the end of the CRT can be seen to the right-hand side of the picture.



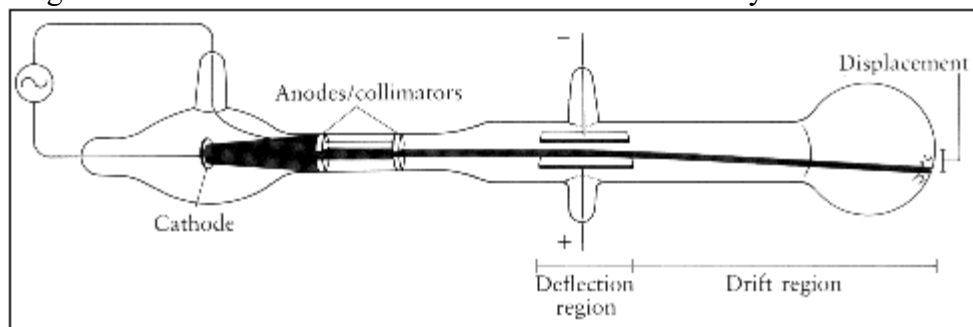
The image below of a CRT used by Thomson in his experiments. It is about one meter in length and was made entirely



by hand.

The diagram below appeared in an article by J.J. Thomson in 1897 announcing the discovery of the electron. You may wish to compare it to the photo. The long glass finger (in the photo) projecting downward from the right-hand globe is where the entire tube was evacuated down to as good as a vacuum as could be produced, then sealed.

The two plates about midway in the CRT were connected to a powerful electric battery thereby creating a strong electrical field through which the cathode rays passed. Thomson also could use magnets, which were placed on either side of the straight portion of the tube just to the right of the electrical plates. This allowed him to use either electrical or magnetic or a combination of both to cause the cathode ray to bend.



The amount the cathode ray bent from the straight line using either the electric field or the magnetic field allowed Thomson to calculate the [e/m ratio](#).

Incidentally, Thomson was a very unhandy person. He was very fumble fingered and had a tendency to break things.

About 1894 he acquired an excellent glassblower named E. Everett who helped to greatly increase Thomson's experimental range.

- [A Chronology of Cathode Ray Research from 1855 to 1896](#)
- [A Brief Survey of Thomson's Announcement in 1897](#)
- [A Brief Summary of Cathode Ray Tube Results and Thomson's Calculations](#)
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