Plum Pudding Model

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The Plum Pudding Model was invented by Joseph John Thomson in 1904. J. J. Thomson was born in Manchester, England on December 18th, 1856. When he was fourteen years old he enrolled in Owens College. From here he proceeded to Trinity College when he was 20. Thomson developed an interest in atomic structure, which lead to many published books such as Properties of Matter and Elements of the Mathematical Theory of Electricity and Magnetism. When he was 34 he married Rose Elisabeth, and had one son and one daughter. In 1897, when Thomson was 41 years old, he discovered the electron. Thomson was 52 when he was knighted, and soon after he received many medals for his achievements. In addition, he held honorary doctorate degrees from 21 different universities. Thomson died on August 30th, 1940 at the age of 84.

The Plum Pudding Model was the redesigned model after Thomson’s find of the electron in 1897. This model is also known as the chocolate chip cookie or blueberry muffin model, due to the fact that it represents the scattered electrons inside the atom. Thomson achieved this discovery by placing electrical currents through cathode ray tubes filled with a low density gas. While doing this, Thomson realized that with different gases the mass of the cathode ray was always the same when compared with the charge. This discovery lead to the realization that the cathode ray consisted of tiny negative particles. The significance of this model was to explain the idea that most atoms are neutral. The “pudding” was negatively charged while the “plums” were positively charged, and the atom as a whole had a “cloud” of positive charge. Thomson believed these electrons had the ability to rotate in rings.

Questions:

1. How old was J.J Thomson when he was knighted?
2. What is the significance of this model?
3. How did he discover the electron?
4. What charge does the “pudding” have and what charge do the “plums`` have?
5. How did he figure out the electron was negative?

