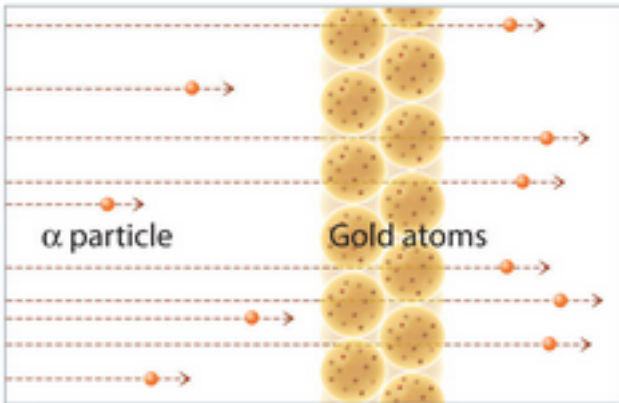
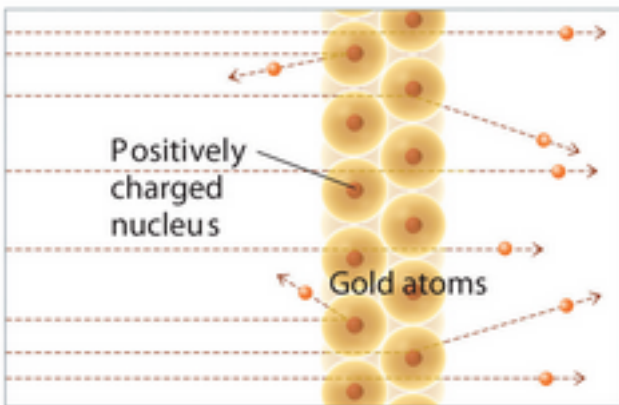


## Part 2: Gold Foil Predictions and Actual Findings



**(b) What Rutherford expected if Thomson's model were correct**



**(c) What Rutherford actually observed**

If Thomson's Plum Pudding Model of the atom (also similar to a chocolate chip cookie model) was correct, we would expect to see the alpha particles shoot directly through the gold foil. Since the alpha particles were much more dense and moving much more quickly, Rutherford assumed that the particles would move through the gold foil with no problem. He thought that this would be the case because in Thomson's model, the positive "matter" of the atom was very light and the electrons were very small.

When Rutherford did perform the experiment, many of the alpha particles behaved just how he expected. However, some of the particles did something a little weird. Some particles seemed to be deflected and came out the gold foil at an angle. Other particles actually bounced directly back from the direction that they came.

Rutherford was incredibly surprised that this happened! He was so surprised that later when he was describing his findings, this is what he said:

"It was quite the most incredible event that has ever happened to me in my life. It was almost as incredible as if you fired a 15-inch shell bullet at a piece of tissue paper and it came back and hit you."