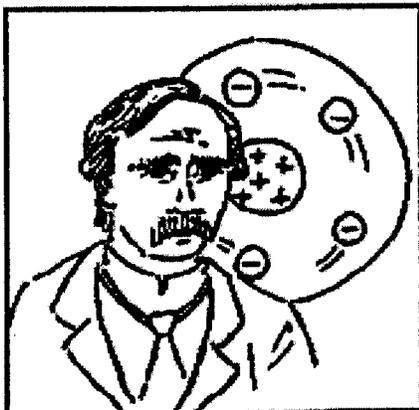


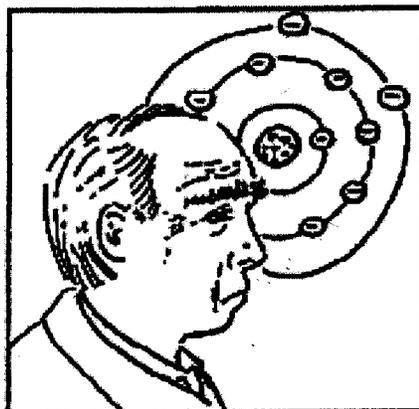
Rutherford's Model of the Atom (1911):

The model that resulted from Rutherford's theory is referred to as the "nuclear" model.

Rutherford attempted to test Thomson's model with radioactivity in an experiment using gold foil and a type of radiation called alpha particles. He discovered the existence of a dense, positively charged core in the atom called the nucleus.

Rutherford proposed the following:

- The nucleus is a very tiny, dense, and positively charged core of an atom.
 - All of the atom's positively charged particles, called protons, are contained in the nucleus.
- The nucleus is surrounded by mostly empty space.
 - Rapidly moving, negatively charged electrons are scattered outside the nucleus around the atom's edge in what is referred to as an electron cloud.

Bohr's Model of the Atom (1913):

The model that resulted from Bohr's theory is referred to as the "planetary" model.

Bohr proposed an improvement on Rutherford's model by placing electrons in specific orbits about the nucleus.

Bohr proposed the following:

- Electrons move around the nucleus in nearly circular paths called orbits, much like how the planets circle the Sun.
 - Each electron in an orbit has a definite amount of energy. Electrons can move within these energy levels without loss of energy.
- The further the electron is from the nucleus, the greater its energy.
 - Electrons cannot exist between these orbits, but can move up or down from one orbit to another if excited by heat, light, or electrical energy.
 - Each orbit or energy level is located at a certain distance from the nucleus.
 - Electrons are more stable when they are at lower energy levels, closer to the nucleus.
 - The order of filling the first three orbits with electrons is 2, 8, and 8.