

History of Atomic Structure

DIRECTIONS: Cut out the 21 cards on the following 6 pages. Stack the cards to create 7 mini flap-booklets. Have the scientist on top, their contribution to the atomic theory in the middle and the corresponding picture on the bottom.



Democritus



John Dalton



JJ Thomson

History of Atomic Structure (page 2)



Ernest Rutherford



Niels Bohr



Erwin Schrodinger



James Chadwick

History of Atomic Structure (page 3)

440 B.C.

Greek philosopher who proposed the existence of **atoms**. He believed that you could cut objects in half, over and over, and eventually you would end up with a particle that could not be cut. He called this particle "atomos" (Greek word meaning "indivisible" or "not able to be divided").

1803

British chemist who came up with a theory based on observations from experiments. He proposed that **elements** are composed of very small particles called atoms, which cannot be created, destroyed, or divided into smaller particles. Also, atoms of the same elements are identical in size, properties, and mass.

1897

British scientist who proposed that atoms themselves were made up of smaller particles. By performing the cathode ray tube experiment, he discovered that atoms contain negatively charged particles, which he called corpuscles. But, he did not know the exact location of these particles, so he proposed that they were spread evenly throughout the positively charged material. His model is often called the plum pudding model. We now call these negatively charged particles, **electrons**.

1912

A New Zealand physicist and former student of Thompson's, who proposed that atoms had a dense, positively charged nucleus (made up of **protons**) surrounded by **electrons**. He is known for his gold foil experiment that led to this discovery. He noted that most of the area of an atom is empty space and the electrons are orbiting the nucleus like planets orbit the Sun.

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1913

A Danish physicist who modified Rutherford's theory even further by saying that electrons revolved around the nucleus in circular paths, called **orbits**. He also said that electrons could only exist in certain orbits and at certain **energy levels**.

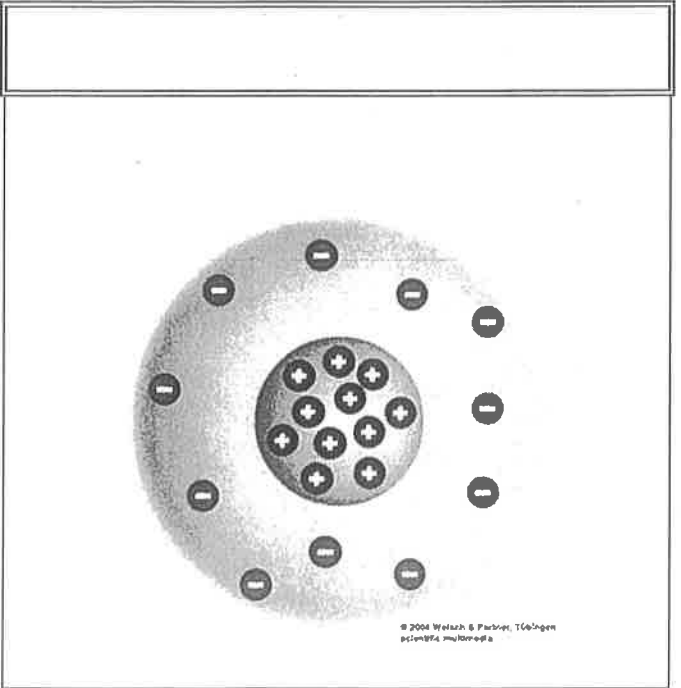
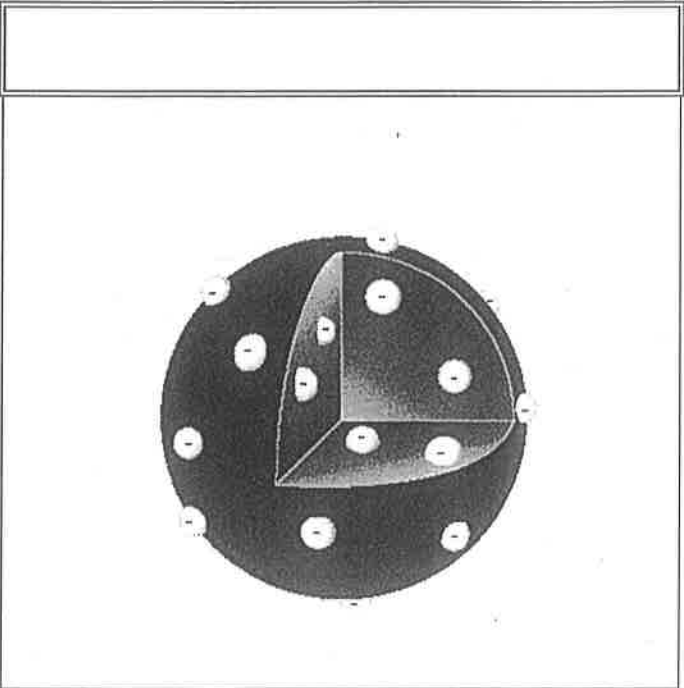
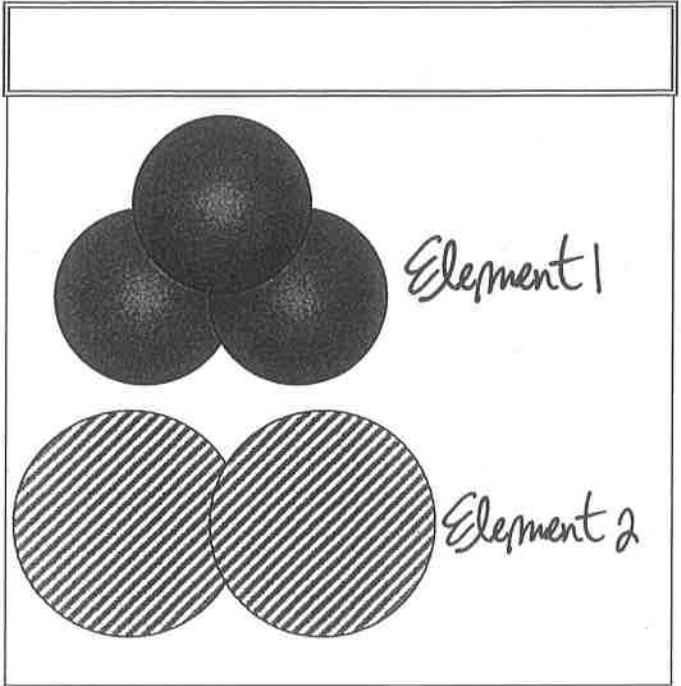
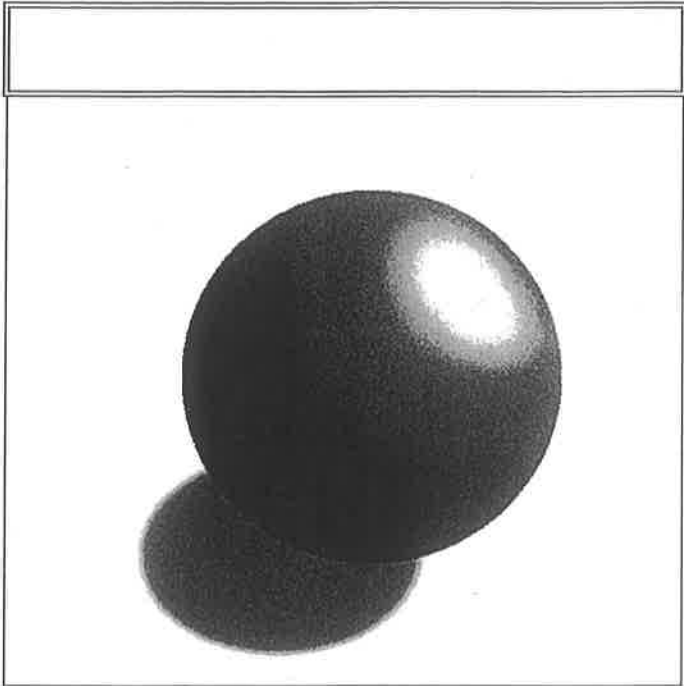
1924-present day

An Austrian physicist who developed a model of the atom explaining the probable location of an electron with a mathematical equation (because the exact location of an electron is undeterminable). His research led to the idea of the **electron cloud**, which shows areas of highest probability to find an electron.

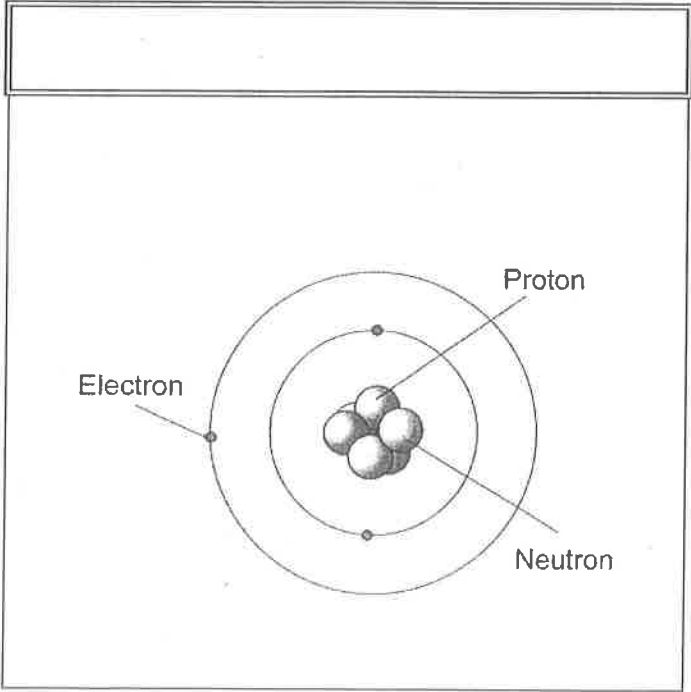
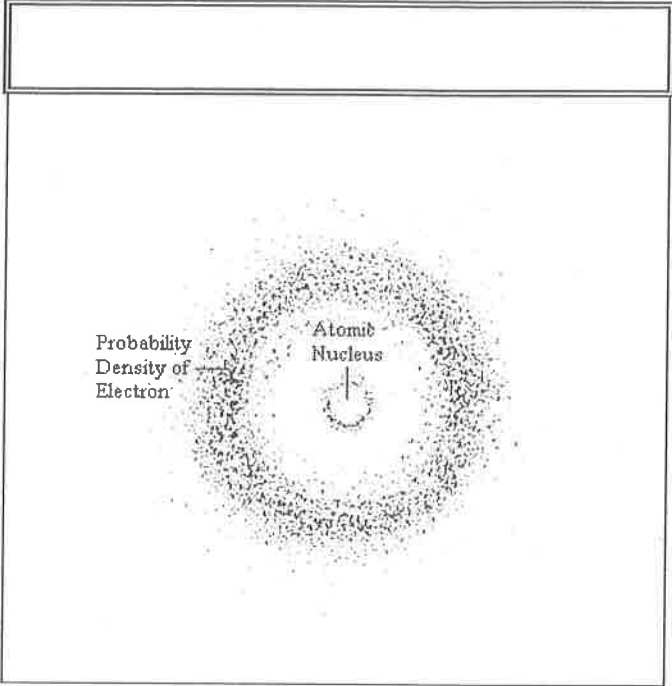
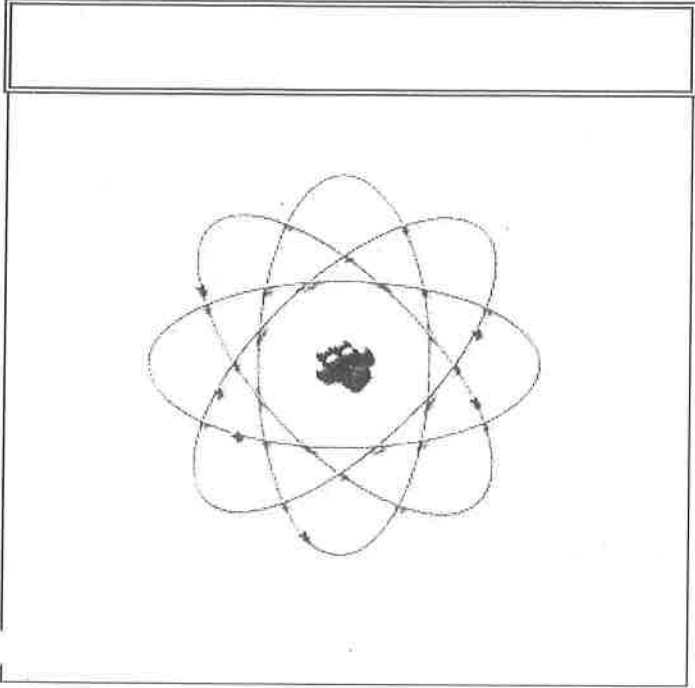
1932

An English physicist and student of Rutherford's who found new particles in the nucleus that weren't affected by an electric field at all. He called these uncharged particles **neutrons**. He discovered that these neutral particles had a mass nearly equal to the mass of a proton.

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History of Atomic Structure (page 6)



The Parts of an Atom

DIRECTIONS: Cut along the solid and dashed lines. Fold along the dotted line. At the top, write "Proton" on the left section, "Neutron" on middle section, and "Electron" on the right section. Unfold each section. At the top, write the location of each subatomic particle. In the bottom sections, write the charge and mass for each subatomic particle. Glue the completed foldable into your interactive notebook.

parts of an atom