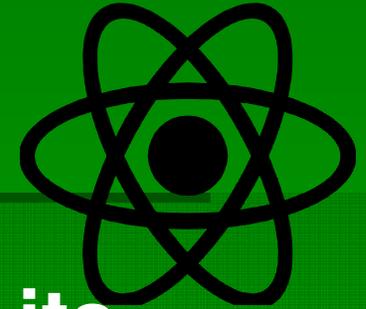


THIS LESSON
IS REALLY
BOHRING.

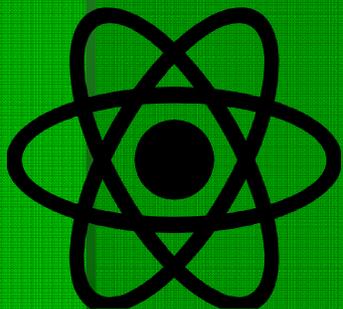


**YOU HAVE BEEN
WARNED!!!**

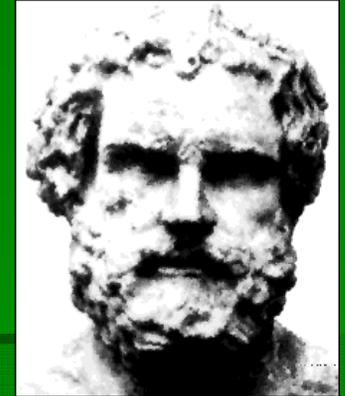
DEVELOPMENT OF THE ATOMIC THEORY!!!



- **Atom**
 - The smallest unit of an element that maintains its properties.
- **Electron**
 - Negatively charged particles
- **Proton**
 - Positively charged particles
- **Neutron**
 - Particles with NO charge
- **Nucleus**
 - Small dense, positively charged central region of an atom that contains protons and neutrons



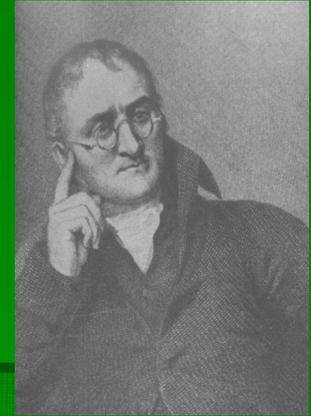
Democritus (440 bc)



- First to study the atom
 - “ATOM” means “not able to be divided”
- Believed that atoms are hard, small particles.
- Many people did not believe Democritus because Aristotle did not agree with him

John Dalton

(late 1700's – early 1800's)

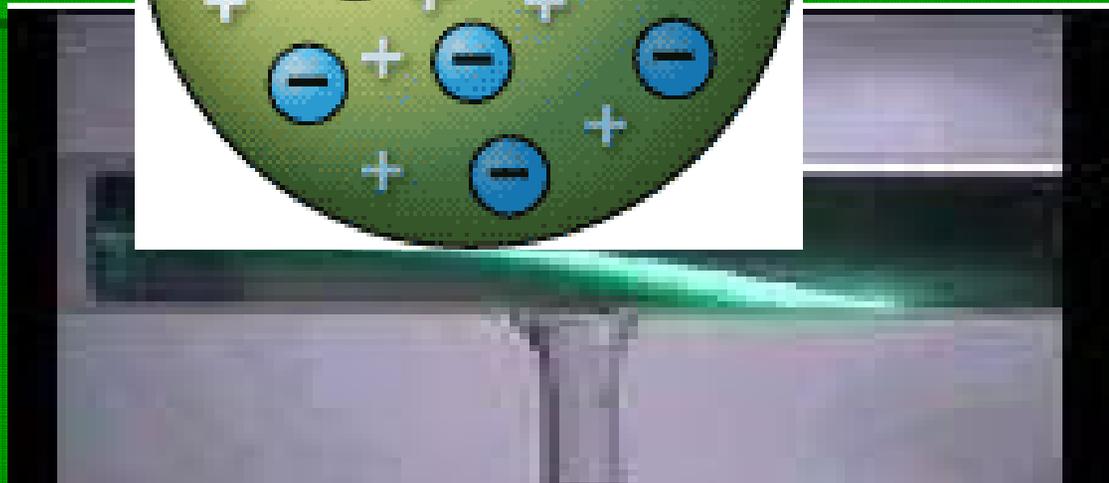
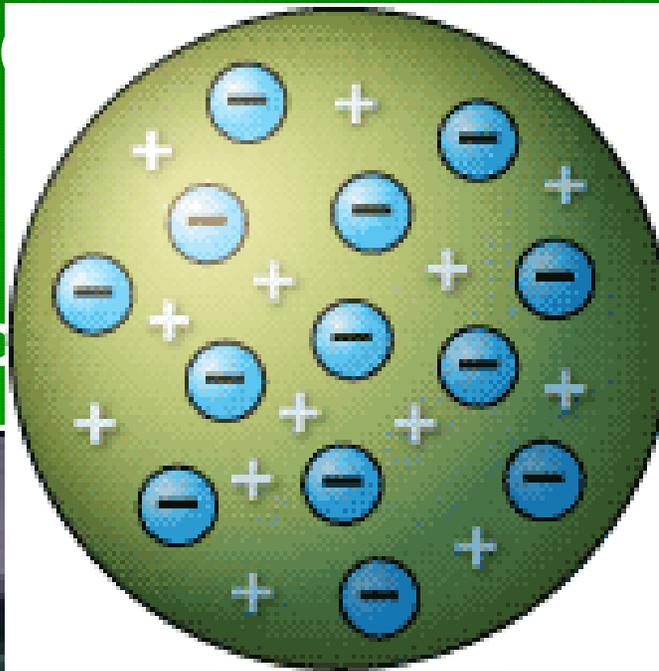


- Developed the first atomic theory
 - All substances are made of atoms, which cannot be created, divided or destroyed.
 - Atoms of the same element are exactly alike
 - Atoms join together with other atoms to make new substances.
- This theory was proven wrong and/or improved by future scientists.

J.J Thomson: (late 1800's)

- Discovered that atoms are made up of smaller particles – one particle is the electron.
- “Plum Pudding Model” – atom has positive and negative charges evenly dispersed
- Experiment:

- shot negative particles through a tube and observed deflection towards the positive plate (attract)

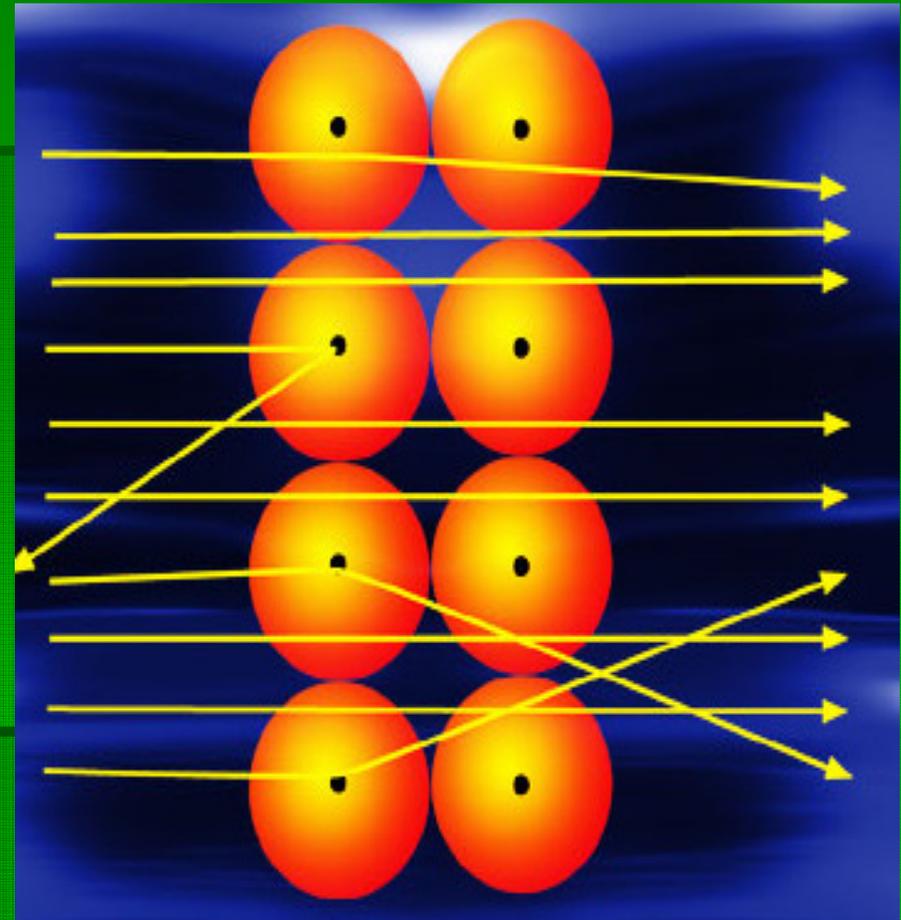
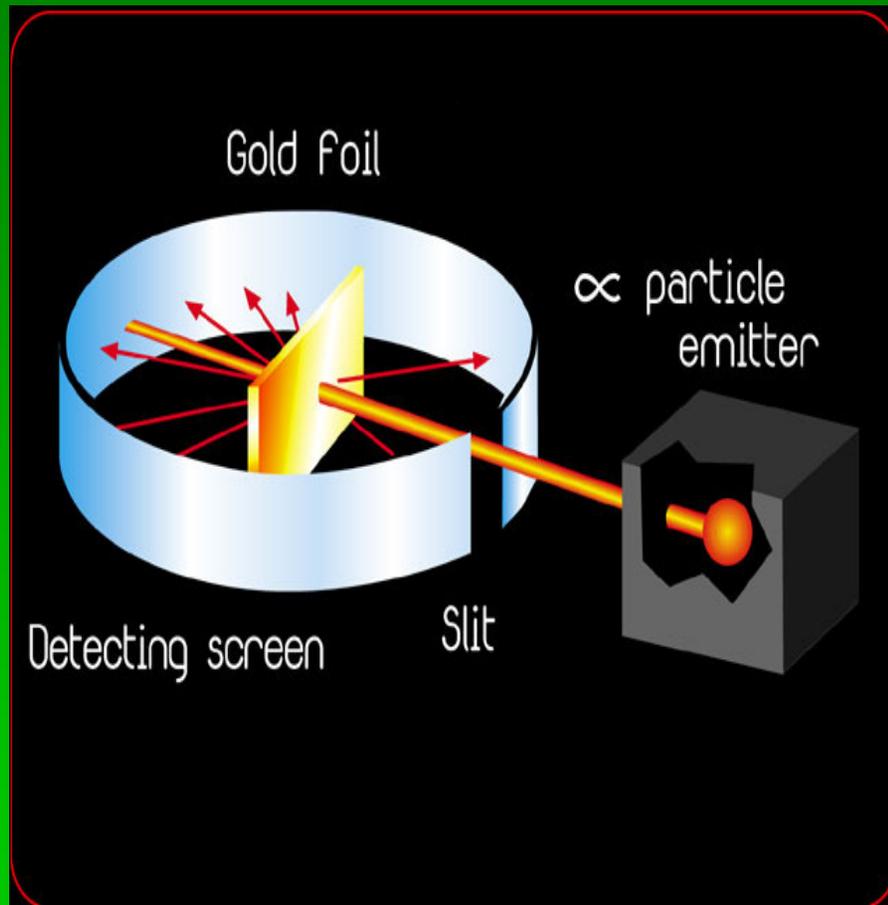


Rutherford: (Early 1900's)

- Discovered Nucleus (positively charged)
- He expected all particles would pass right through because atoms are made of mostly empty space.
- Experiment: Gold-foil Experiment
 - Shot positively charged particles into a piece of gold foil. Some particles passed right through, some were deflected and some bounced right back.
 - “Like Charges Repel” so therefore nucleus must be positive.

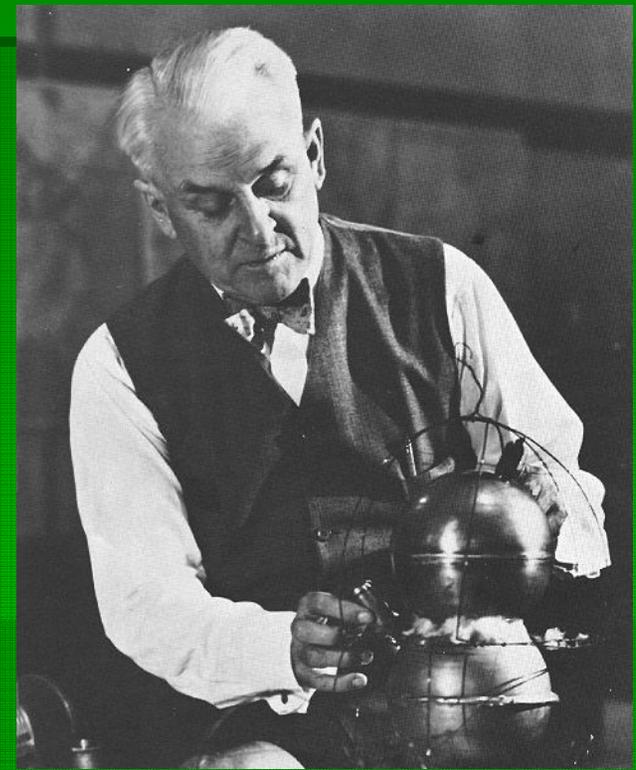
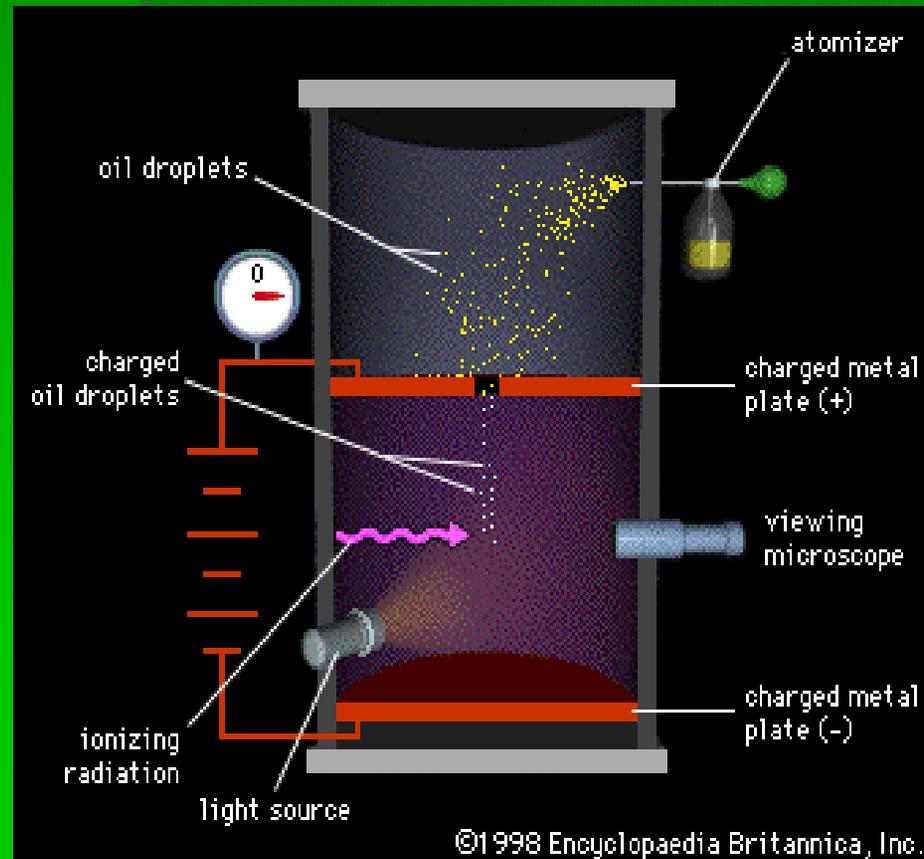


Rutherford's Gold Foil Experiment:



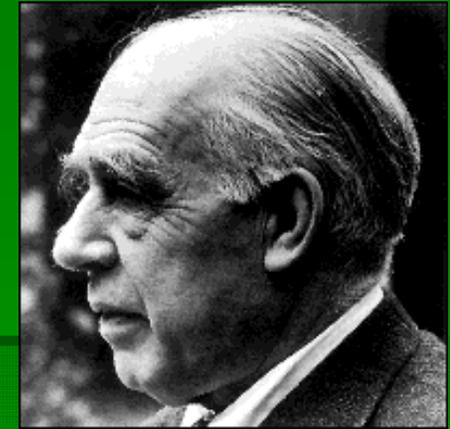
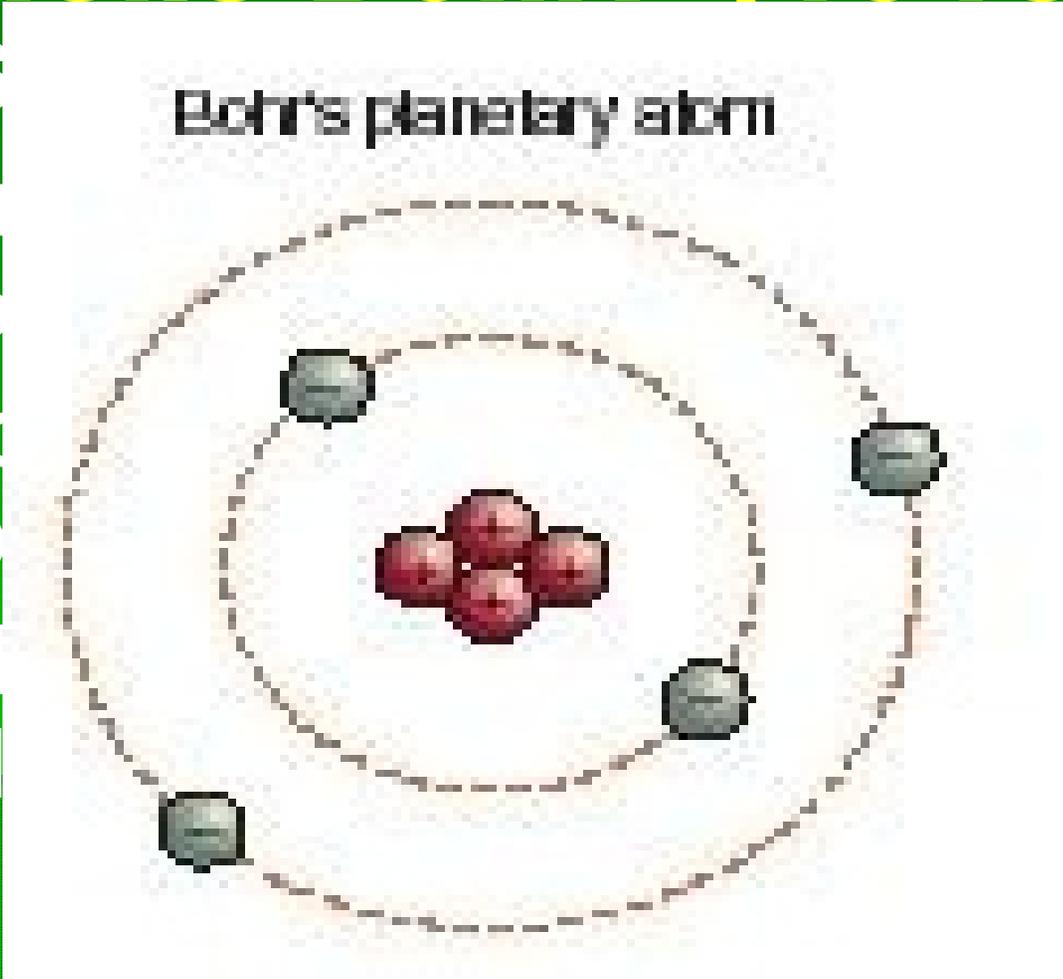
Robert Millikan (1909)

- Discovered Charge of electron
- Oil Drop Experiment



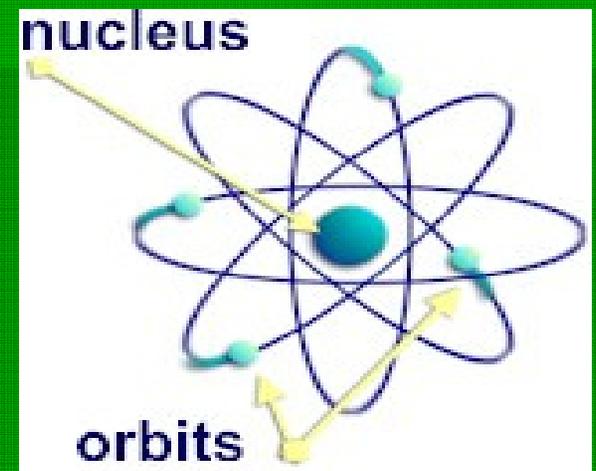
Neils Bohr: (1913)

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James Chadwick (1930)

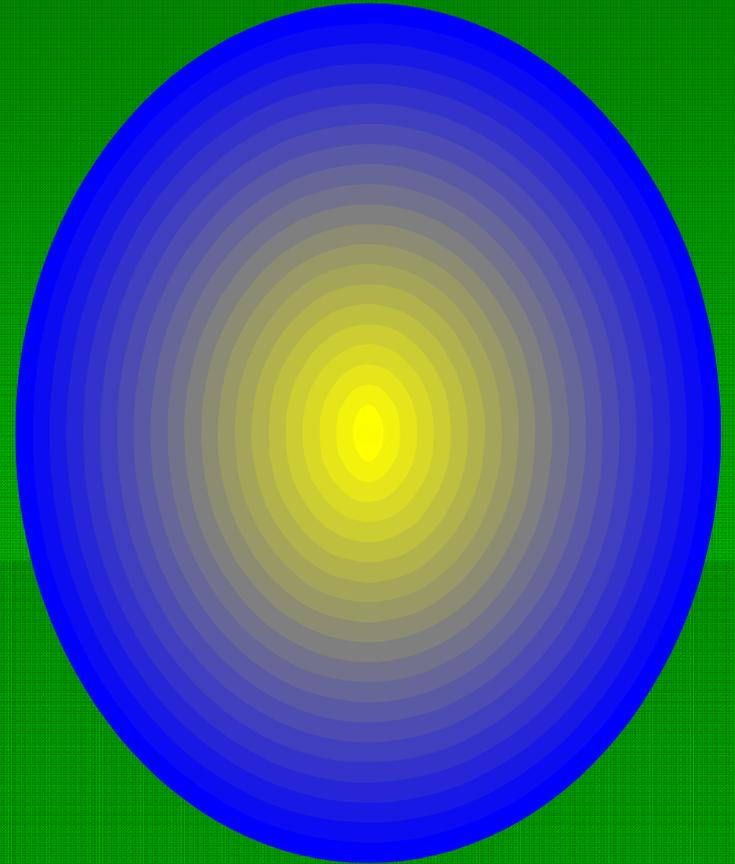
- Discovered NEUTRON – neutral charged particle

Schrodinger, Heisenberg & Others

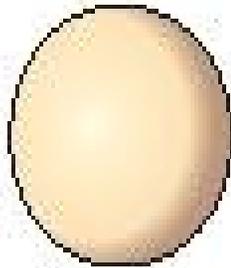
Modern Atomic Theory:

Electron Cloud Model

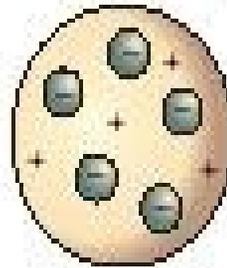
- Atoms are mostly empty space
- Electrons do not travel in definite paths.
- Electrons are in regions called Electron Clouds, which are regions where electrons are most likely to be found.



Dalton's atom



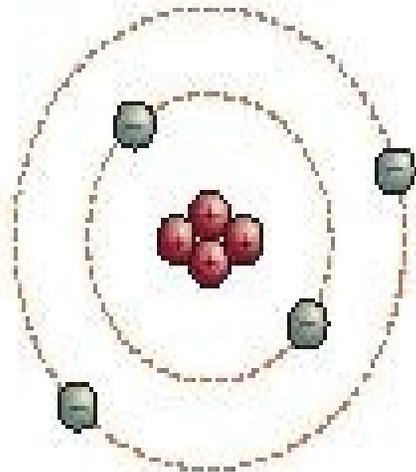
Thomson's plum-pudding atom



Rutherford's atom



Bohr's planetary atom



Current orbital atom

