Atom ideas so far…

Greeks & Dalton

Atoms!

Compound!

Rutherford!

Gold foil expmt!

(nuclear model)
(There’s a tiny, dense, positive nucleus)
(lots of empty space)

There are electrons!

Thomson (CRT expmt.)
1877: Thomson’s “plum pudding” model

1911: Rutherford’s nuclear model
1911: Rutherford’s nuclear model

1913: Bohr’s “planetary” model

orbit
Discovering Neutrons: Chadwick (1932):

a. Subatomic particle with no charge.
b. The nucleus is now considered to be composed of protons and neutrons.
c. This realization led to the “nuclear age” in the 1940s. (More on this in Unit 13!)

There are neutrons & protons!

(Don’t draw this!)
Atomic Model #6

All of the previous models were building up to:

Modern Model: (Think of a fan!)

a. aka - Quantum Mechanical Model, Wave Model, Wave Mechanical Model, Cloud Model, Electron Cloud Model

b. There is a probability for finding the electron in regions of space chemists today call “orbitals.”

Who? Schrödinger

e- cloud model

“probability” of e- locations!
Bohr vs. Electron Cloud
This model is the only one that scientists consider accurate. However, we would never have this model if all the others were not there for us to improve upon!

**KEY IDEA:** What is the main difference between Bohr's model and the Quantum Mechanical Model?

- **Bohr**
  - orbits = rings
  - exact path & location of e-
  - STILL USEFUL

- **Q.M.**
  - e- cloud
  - tells you most likely location of e-
  - MOST ACCURATE
  - "probability" of e- loc
  - orbitals = “e-clouds”
Bohr vs. Electron Cloud

STILL USEFUL

MORE ACCURATE
D. T. R. B. M.

“Do The Report By Monday” can help you remember the ORDER by date of the historical models of the atom.

D  Dalton
T  Thomson
R  Rutherford
B  Bohr
M  Modern  (Schrodingeer)