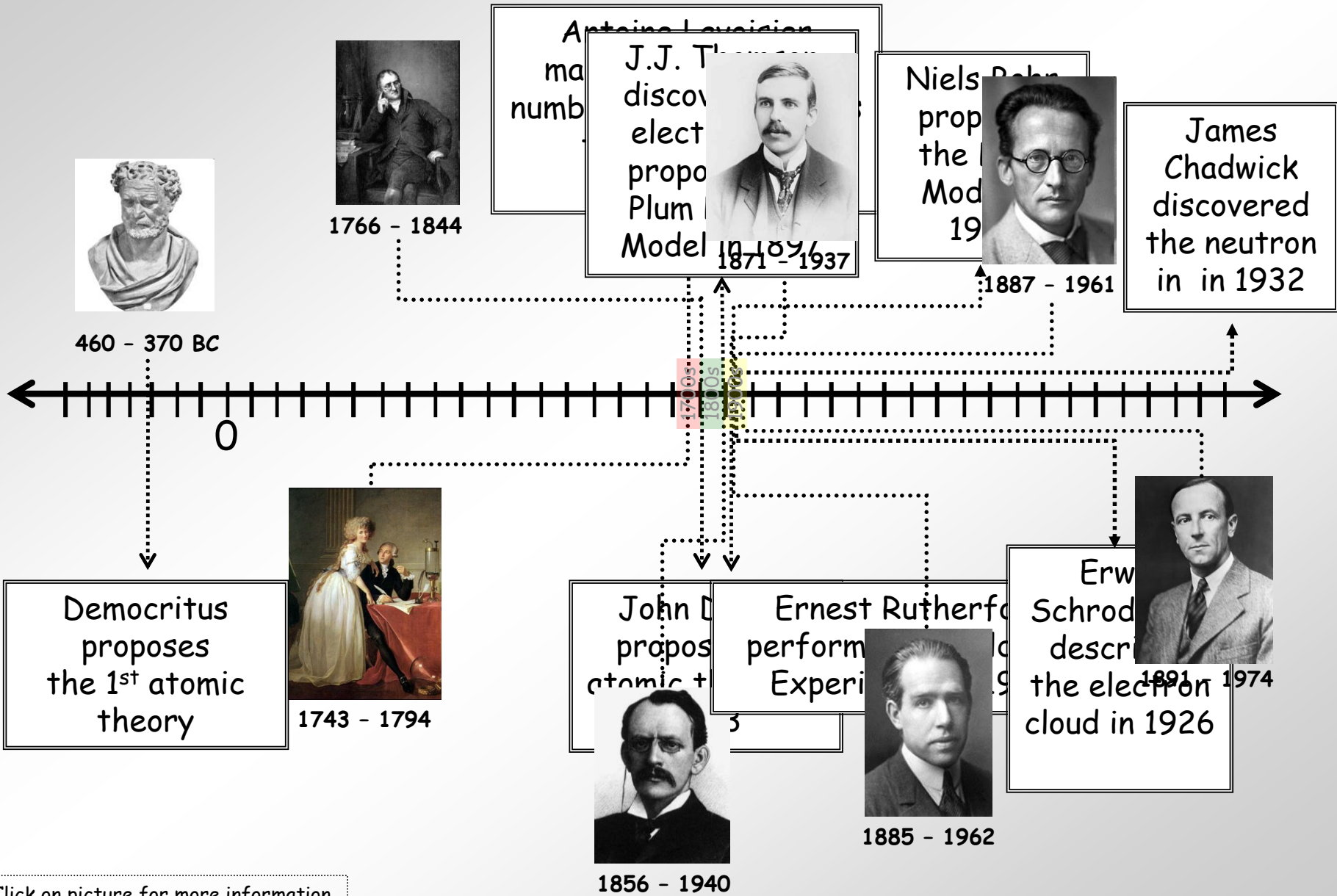


History of the Atom

Scientists and Their Contribution to
the Model of an Atom

History of the Atom - Timeline



Click on picture for more information

Democritus

(460 BC - 370 BC)

- In 440 B.C. proposed an Atomic Theory which states
 - that all atoms are small, hard, particles
 - made of a single material formed into different shapes and sizes.
 - Atoms are "Uncuttable"
- Aristotle did not support his atomic theory



Image taken from: <https://reich-chemistry.wikispaces.com/T.+Glenn+Time+Line+Project>



Antoine Lavoisier

(1743 - 1794)



Image taken from:
www.ideo.columbia.edu/.../v1001/geotime2.html

- Known as the "Father of Modern Chemistry"
- Was the first person to generate a list of thirty-three elements in his textbook
- Devised the metric system
- Discovered/proposed the Law of Conservation of Mass (or Matter) which states, in a chemical reaction, matter is neither created nor destroyed



John Dalton

(1766 - 1844)

- In 1803, proposed an Atomic Theory which states:
 - All substances are made of atoms
 - Atoms of the same element are exactly alike
 - Atoms of different elements are different
 - Atoms constantly move
 - Conducted experiments in combining elements
 - Elements combine in specific proportions
- Was a teacher at a very young age
- Calculated the atomic weights of many various elements

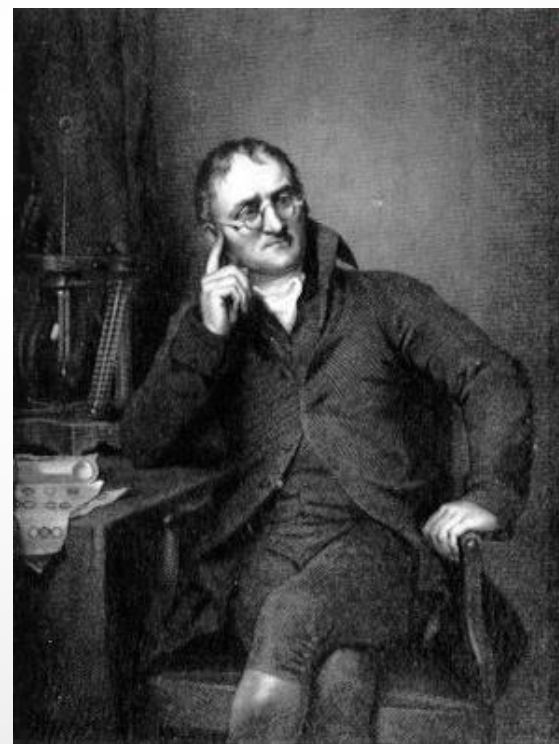
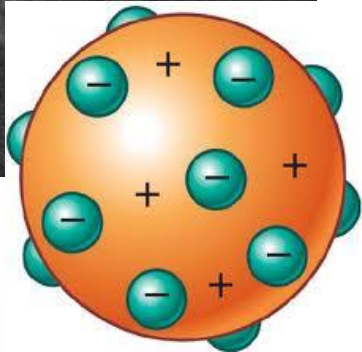
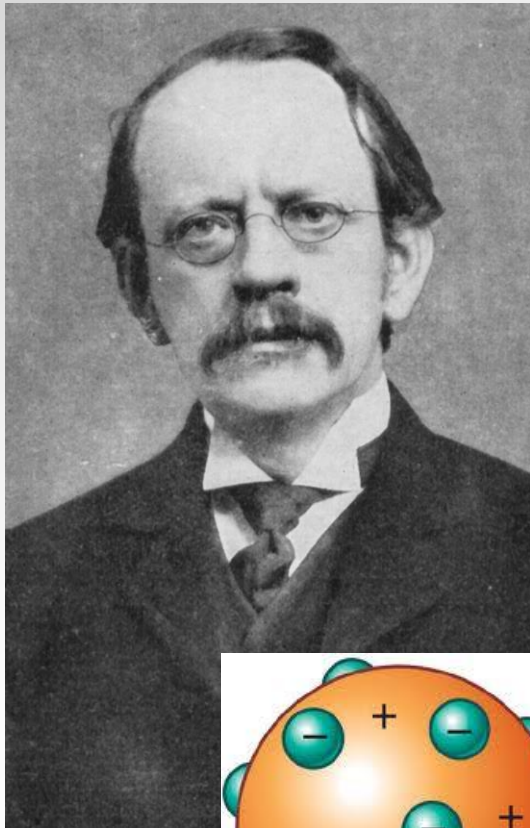


Image taken from:
chemistry.about.com/.../John-Dalton.htm



J.J. Thomson

(1856 - 1940)



- Thomson atomic theory model came into existence in the year 1897.
 - His theory of atomic structure led to the "plum-pudding" model
 - There are small, negatively charged particles inside of an atom
 - He conducted the cathode-ray tube experiment
 - Which showed that electrons exist
- Won a Nobel Prize



Ernest Rutherford

(1871 - 1937)

- In 1911, performed the Gold Foil Experiment and suggested the following characteristics of the atom:
 - Most of the atoms mass is in the nucleus
 - There is a small, dense, positively charged nucleus
 - Electrons move in empty space in the atom
 - Atoms contain mostly empty space
- Did extensive work on radioactivity Won a Nobel Prize
- Was a student of J.J. Thomson

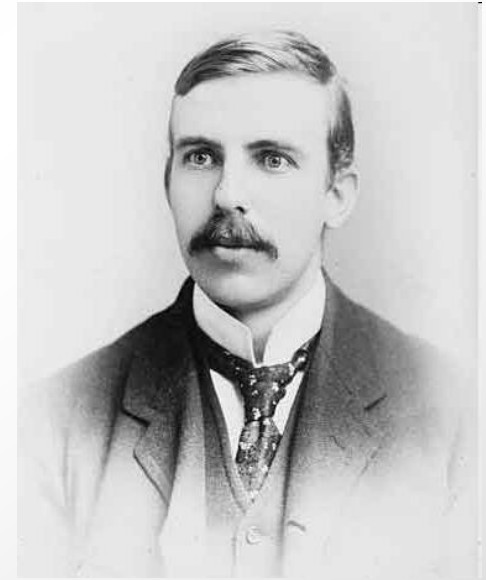


Image taken from:
<http://www.scientific-web.com/en/Physics/Biographies/ErnestRutherford.html>



Niels Bohr

(1885 - 1962)



Image taken from:
commons.wikimedia.org/wiki/File:Niels_Bohr.jpg

- In 1913, proposed the Bohr Model, which suggests
 - Electrons travel in definite paths
 - Electrons jump between levels from path to path
- Won a Nobel Prize
- Worked with Ernest Rutherford
- Electrons orbit around the nucleus the way planets orbit around a star



Schrodinger & Heisenberg

(1887-1961)

- In 1926, they further explained the nature of electrons in an atom
 - Electrons are found in electron clouds not paths
 - Electron paths cannot be predicted
- Did extensive work on the Wave formula → Schrodinger equation
- Won a Nobel Prize



rodinger



James Chadwick

(1891 - 1974)

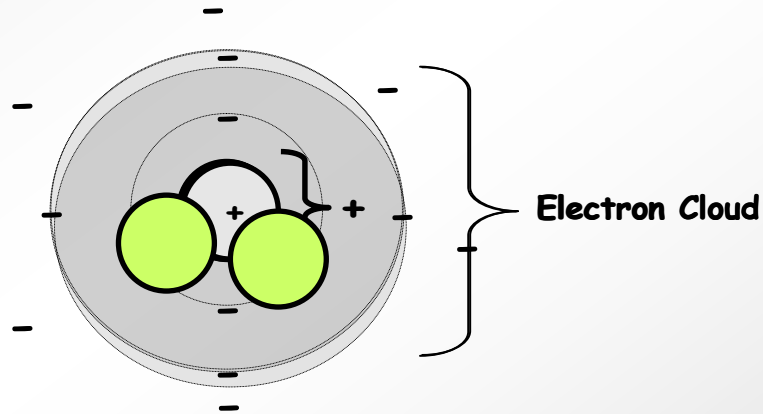
- Realized that the atomic mass of most elements was double the number of protons
 - Discovery of the Neutron in 1932
- Worked on the Manhattan Project (1st atomic bomb)
- Worked with Ernest Rutherford
- Won a Nobel Prize



Image taken from:
[nobelprize.org/.../1933/schrodinger-bio.html](https://www.nobelprize.org/.../1933/schrodinger-bio.html)



Progression of the Atomic Model



The structure of an atom, according to: ~~Democritus, Empedocle, Aristotle~~
John Dalton

Create your own timeline

- Using the reinforcement worksheet
- Match the six people at the top with the correct fact at the bottom
- Write the scientists name under the correct fact
- Then using the legal paper (8.5 x 14) draw a horizontal line through the center
- DO NOT label the dates until you have laid out the scientists in the correct places
- Cut out the facts after you have labeled the scientists and lay them out in the correct order
- Glue them down in the correct places and then label your dates
- Use your notes to get the right dates and the order of the scientists
- Above the line you will need to draw a neat and colorful illustration of what the atom looked like for that particular theory.
- Use the handout of the illustrations to help with your drawing