A spiral-bound notebook with a light beige, textured cover and a dark brown spine. The spiral binding is on the left side. The text is centered on the page.

The History of Electronics

The men that came up with all those
formulas, theories and laws we have to
know!

History of Electronics

- Ancient Rome had batteries (Did they know what they were doing?)
- Ancient Greece developed a knowledge of 'Steam power' (didn't want to get their hands dirty!)
- Understanding started later
- When should we start?

Electricity

- Dozens of people Responsible
- Research took several hundred years
- Most theories/information developed by 1900

Electronics

- Many individuals contributed
- Electrical experiments and information built the 'base' for Electronics
- Associated with Wireless developments
- Generally regarded as 'starting' about 1900

William Gilbert

- 1544-1603
- Wrote De magnetete
- Researched Magnetics
& Static Electricity
- Distinguished between
Magnetism and static
electricity



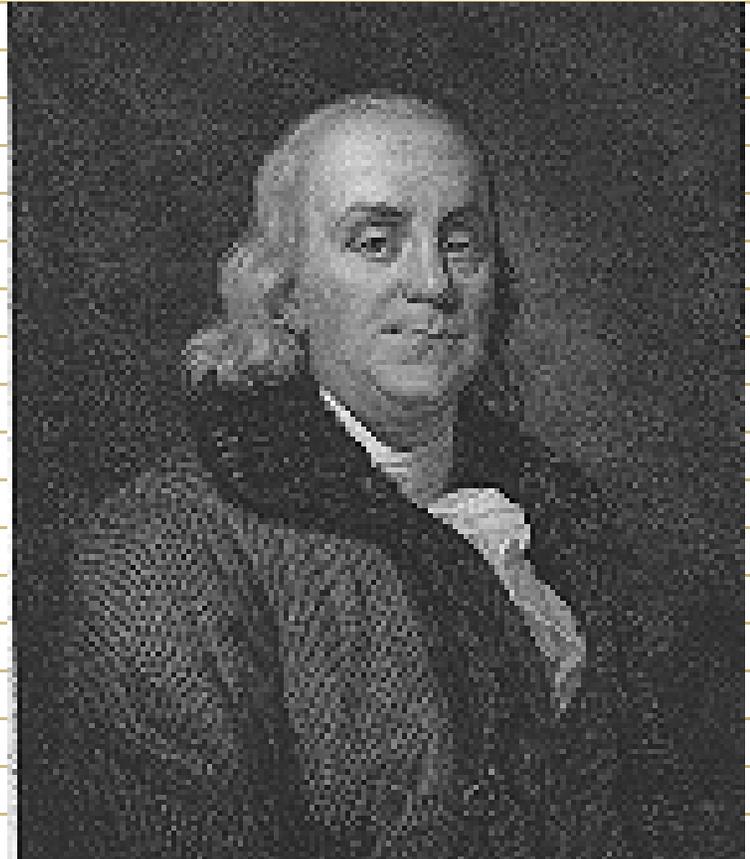
Leyden Jar

- Was the first Capacitor
- Developed by Pieter van Musscnenbroech



Benjamin Franklin

- 1706-1790
- Writer and Scientist
- Researched Electricity
- Researched Weather & Meteorology
- Defined Positive & Negative Charges
- Had many other inventions!



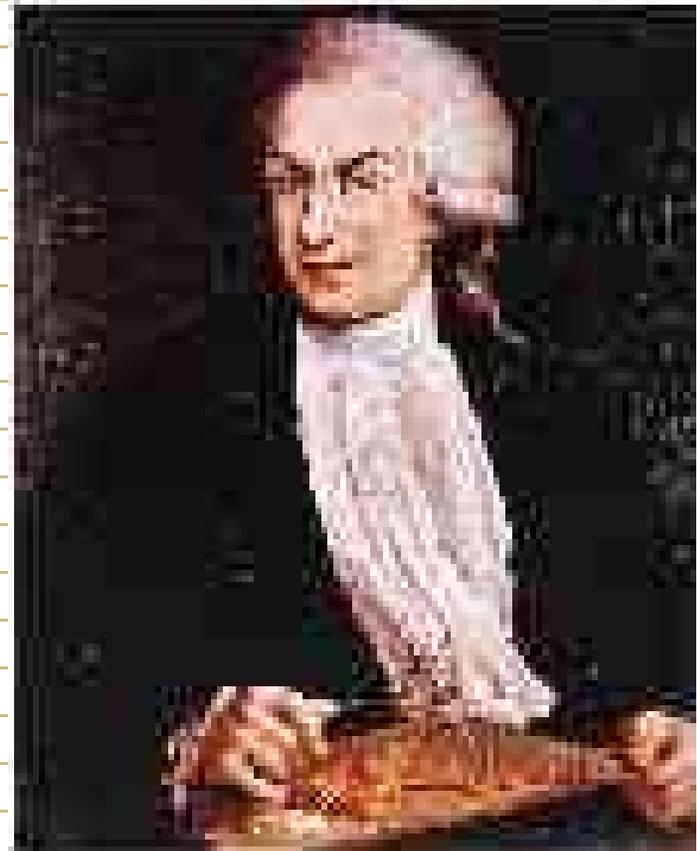
Charles Coulomb

- 1736-1806
- Experimented in mechanical resistance
- Developed Coulomb's Law for electrostatic charges



Luigi Galvani

- 1737-1798
- Studied effects of electricity on Frogs!
- Revealed animals had and were effected by electricity.



Alessandro Volta

- 1745-1827
- Very Interested in Electrical experiments going on in late 1700's
- Invented the battery



Hans Christian Oersted

- 1777-1851
- Demonstrated that electricity effected magnetism
- Initiated the study of Electromagnetism
- Discovered Aluminum



Andre Ampere

- 1775-1836
- French Mathematician & physicist
- Invented the Solenoid
- Studied the effects of electrical currents



Georg Simon Ohm

- 1789-1854
- Experimented with Electrical circuits
- Made his own parts - including the wire!
- Discovered OHMS law - a relationship between current, voltage & resistance.



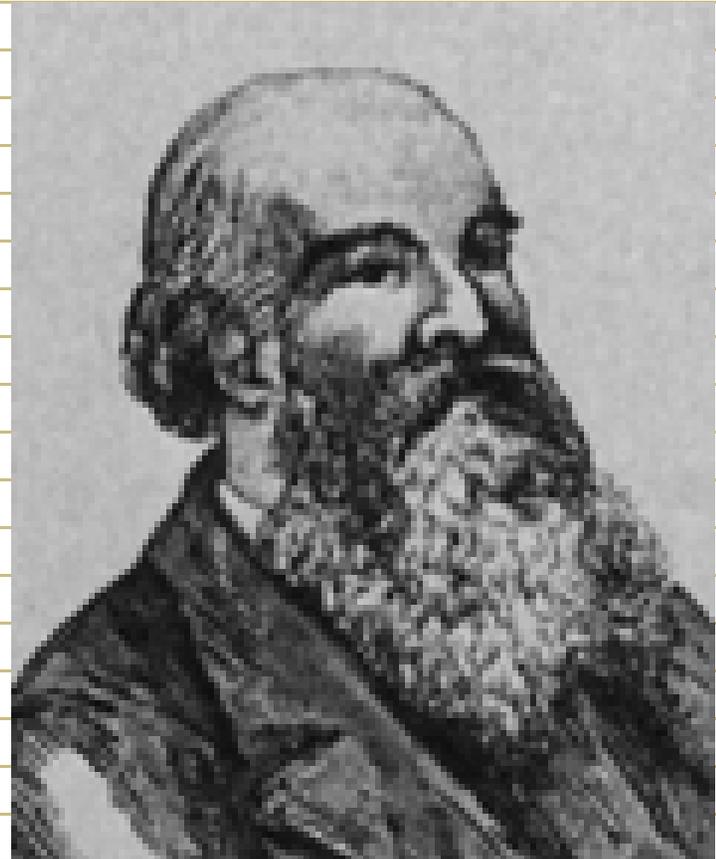
Michael Faraday

- 1791-1867
- Great pioneering experimenter in electricity and magnetism
- demonstrated electromagnetic induction



James Prescott Joule

- 1818-1889
- Discovered the Law of Conservation of Energy
- The unit of energy, Joule, is named in his honor



Gustav Robert Kirchhoff

- 1824-1887
- Known for his work on the Spectroscope
- Developed Kirchhoff's Laws



Sir Charles Wheatstone

- 1806-1876
- Early work on the telegraph, photography, & electricity
- Developed the Concertina (accordion)
- Found uses for the Wheatstone Bridge



Early Wheatstone Musical Instruments



(a)

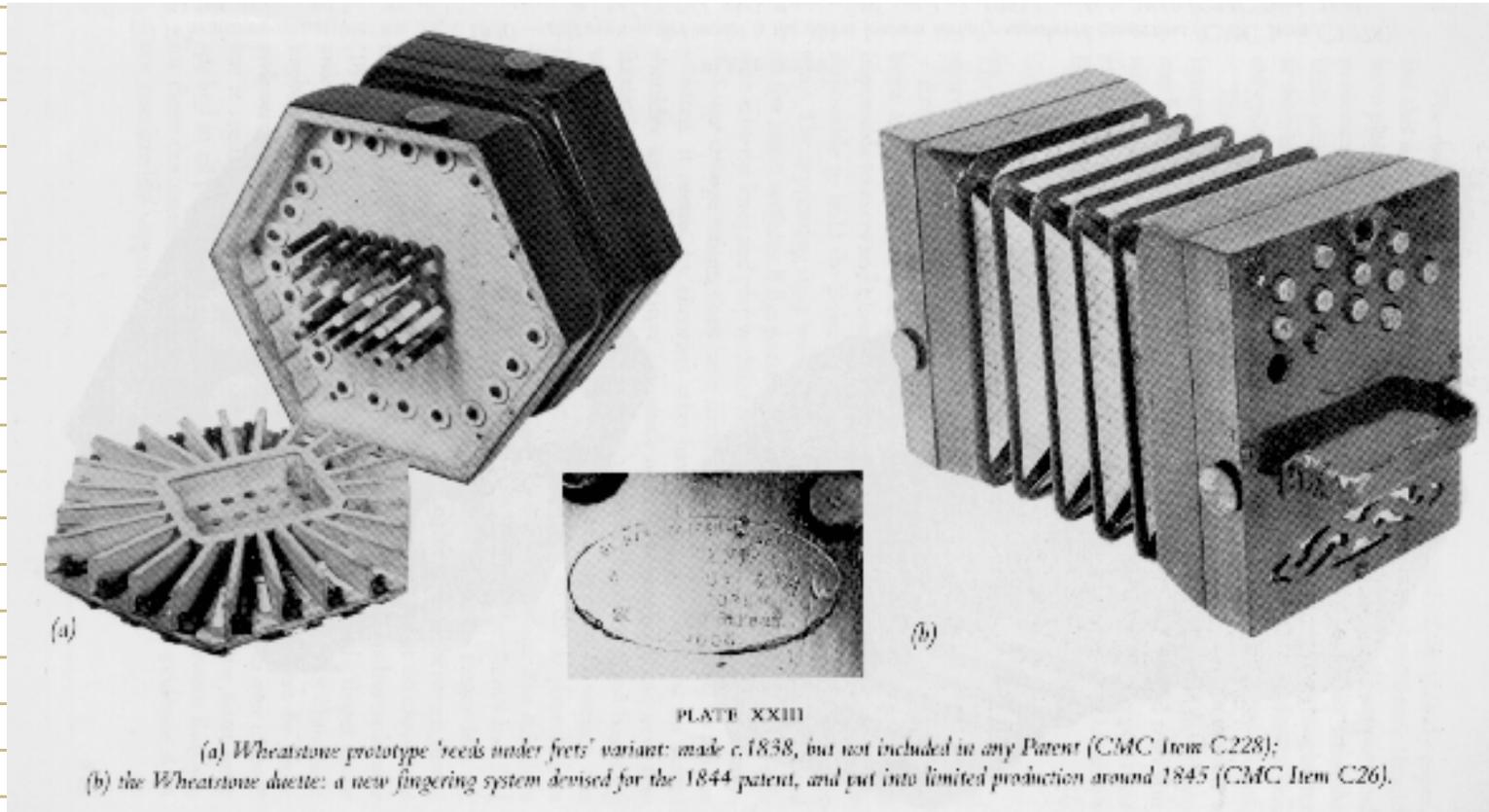


(b)

PLATE XXII

(a) The Wheatstone symphonium: c.1829, 24 keys, serial no. 188, gold reeds (CMC Item C500); (b) Wheatstone tripod concertina: a prototype used in Wheatstone's submission for his 1844 patent — a foot treadle sends wind up the column to a wind chest; each keyboard rises on a separate piston, and the keys are played by the fingers (CMC Item C1278).

Early Wheatstone Concertinas



James Clerk Maxwell

- 1831-1879
- Wrote *Treatise on Electricity and Magnetism* in 1873
- The equations in it explained Faraday's Work and predicted Hertz's work



Heinrich Rudolph Hertz

- 1857-1894
- Demonstrated the electromagnetic radiation predicted by Maxwell
- First to demonstrate the photoelectric effect



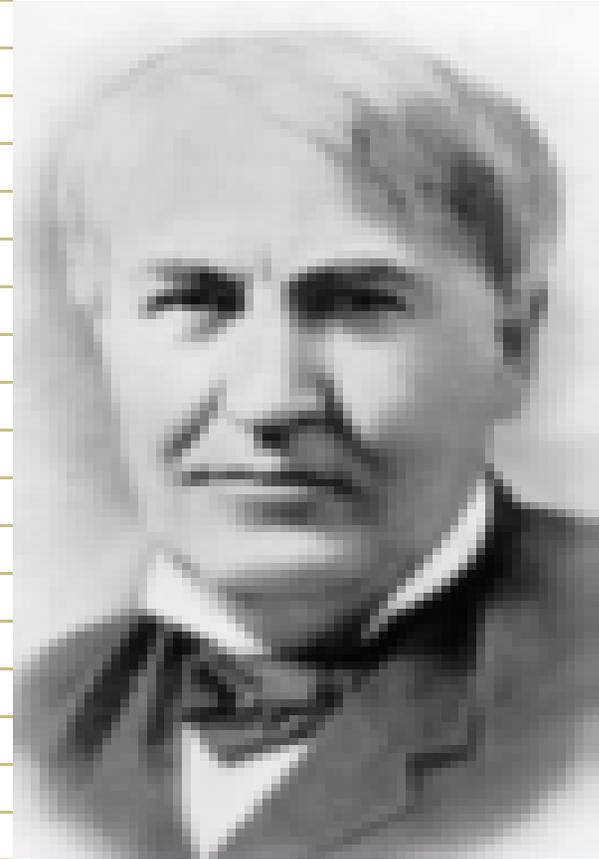
Wilhelm Rontgen

- 1845-1923
- Discovered X-Rays in 1895
- X-rays were used by doctors within months
- Max von Laue proved they were electromagnetic in nature later (1940's)



Thomas Alva Edison

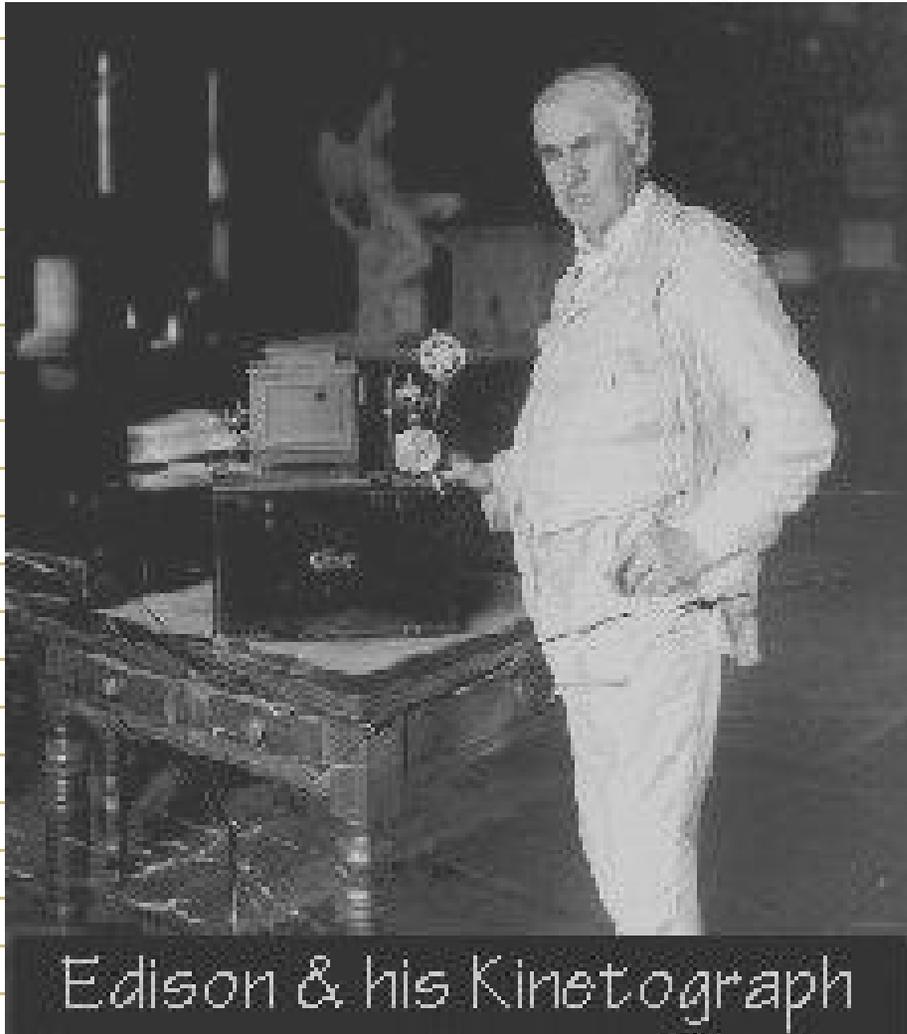
- 1847-1931
- 1093 patents including phonograph, incandescent lamp, much more
- Observed the “Edison effect” while inventing the electric lamp



Edison 1882 Patent Lamp (carbon filament)

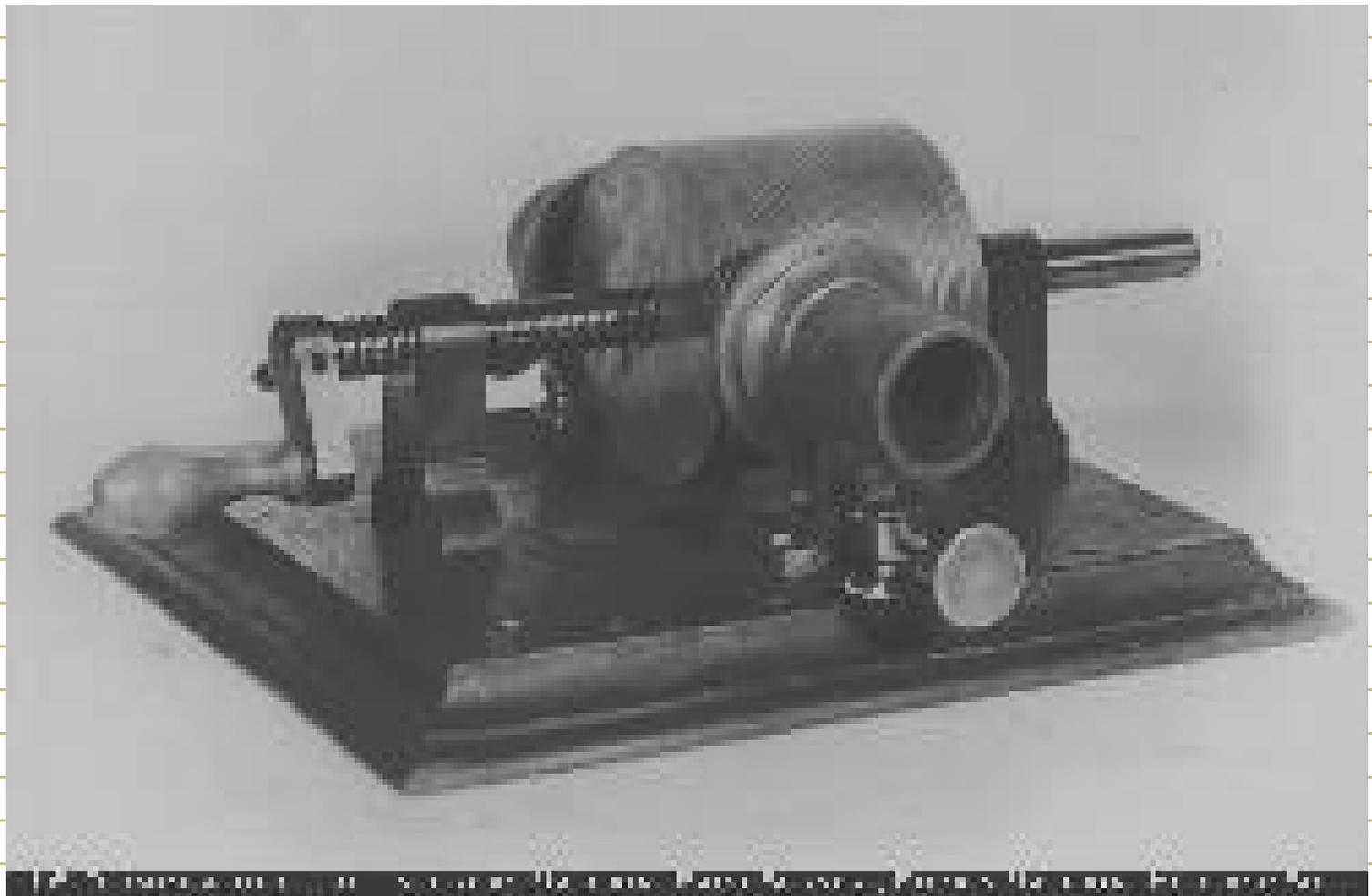


Edison's Kinetograph - the Motion picture machine!



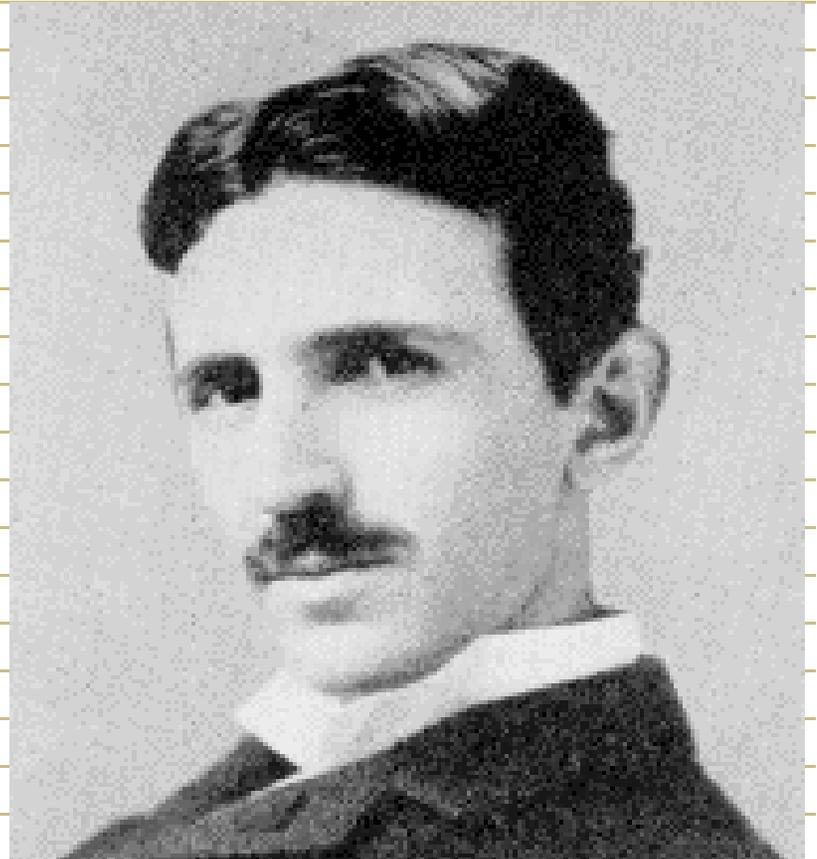
The Sneeze -
an image from
the first film!

The Phonograph



Nikola Tesla

- 1856-1943
- Serbian-American
- Inventor and Engineer
- Invented: AC
generators, distribution
system and AC
induction motors
- Hated by Edison



Guglielmo Marconi

- 1874-1937
- Patented Radio Telegraphy in 1896
- 1901 transmitted signals across the Atlantic Ocean
- Nobel Prize in Physics in 1909



Marconi Receiving Station, Canada



Receiving Room, Marconi Station (Marconi seated to the left), Glace Bay, C.B.

Marconi & an Early Radio Set



Menlo Park Laboratory World's First Industrial Lab!

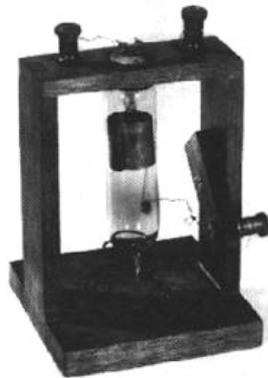
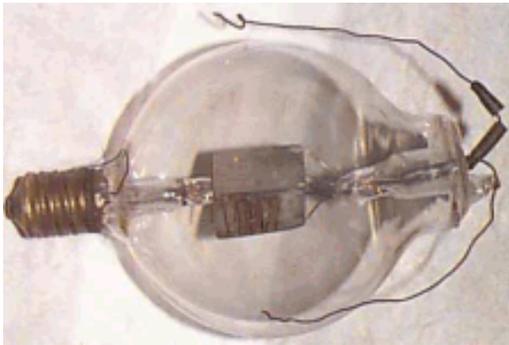


John Ambrose Fleming

- 1849-1945
- Student of Maxwell's
- Worked for Edison then Marconi
- Invented the Fleming Valve - the first electronic rectifier or diode (1904)



The Fleming Valve



Early Fleming
Valves

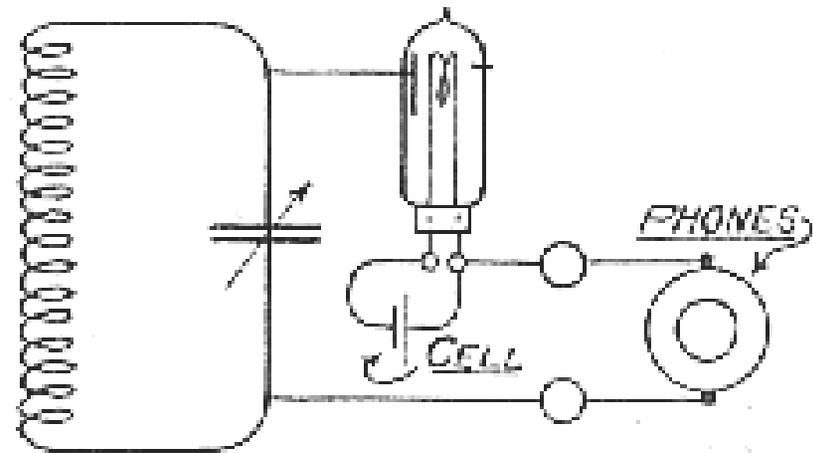


FIG. 47
Fleming valve

The valve used in a circuit

Lee De Forest

- 1873-1961
- Held 300+ patents
- 1906 - invented the Audion tube, the first Triode vacuum tube
- 1912 cascade his tubes to increase amplification



Lee Dee Forest's Triode 'Valve'



Walter Schottky

- 1886-1976
- Had multiple Doctorates
- Defined 'shot noise' - random electron noise in thermionic tubes
- 1919 invented the multiple grid vacuum tube



Edwin Howard Armstrong

- 1890-1954
- Invented regenerative feedback and electronic oscillators
- 1917 invented the superheterodyne radio
- 1933 patented FM radio (wideband)



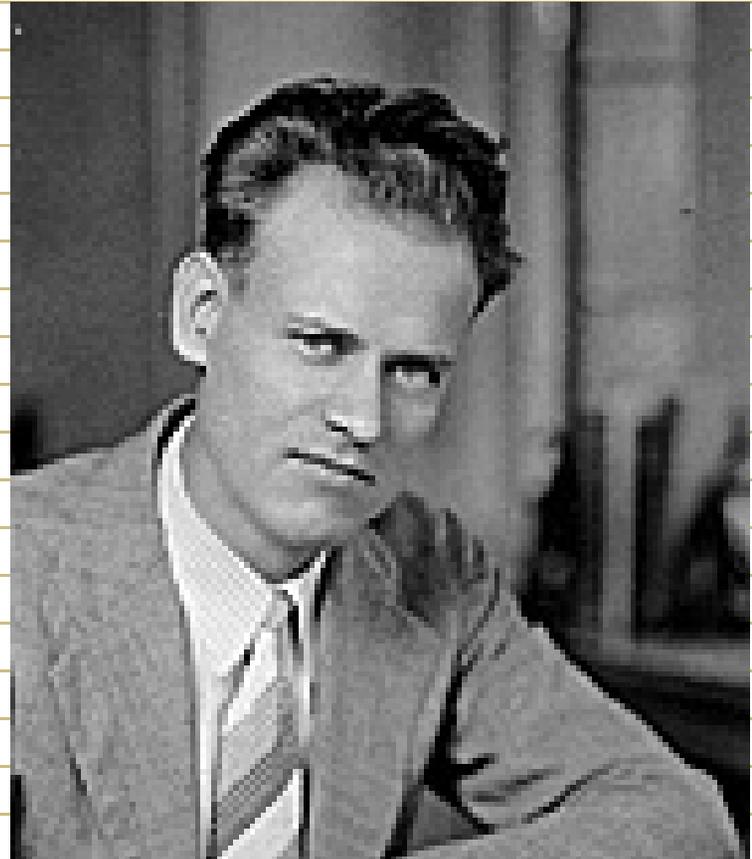
Harold Stephen Black

- 1898-1983
- 1927 invented the idea of negative feedback to improve distortion characteristics in amplifiers

No picture available (was probably feeling pretty negative about it anyway?!)

Philo Taylor Farnsworth

- 1906-1971
- 1922 (age 14!) invented an electronic TV system
- 1927 patented his TV system
- Litigation with RCA ended in 1939-RCA agreed he won!



William Bradford Shockley

- 1910-1989
- Worked with Brattain and Bardeen on a team that invented the junction transistor
- Shared the 1956 Nobel prize with Brattain and Bardeen



Walter H. Brattain

- 1902-1987
- Worked on Radar silicon detectors
- Worked on the team that invented the junction transistor
- Shared the 1956 Nobel Prize with Bardeen and Shockley



John Bardeen

- 1908-1991
- Developed a theory of quantum surface states of electrons which led to the invention of the junction transistor
- Shared in the 1956 Nobel Prize with Shockley and Brattain



Where do we end?

This is really only the beginning - changes in electronics seem to be happening almost daily!