

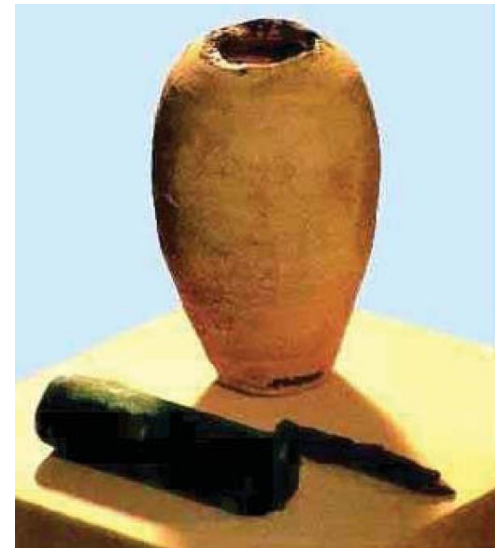
An Introduction to Electrical Engineering

History- Part I

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Ancient Developments

- [Thales of Miletus](#) (600 BCE), an ancient Greek philosopher, described a form of [static electricity](#)
- [Democritus](#) (450 BCE), developed an [atomic theory](#)
- Baghdad Battery



17th century developments

- [William Gilbert](#) extended the study of Cardano on electricity and magnetism, distinguishing the [lodestone](#) effect.
- This association gave rise to the English words "electric" and "electricity".
- [Otto von Guericke](#) showed electrostatic repulsion.
- [Robert Boyle](#) also published work.

17th century developments

- William Gilbert is the first electrical engineer
- Discovered electromagnetic induction
- He designed Versorium, the device which detects the presence of static charge



versorium

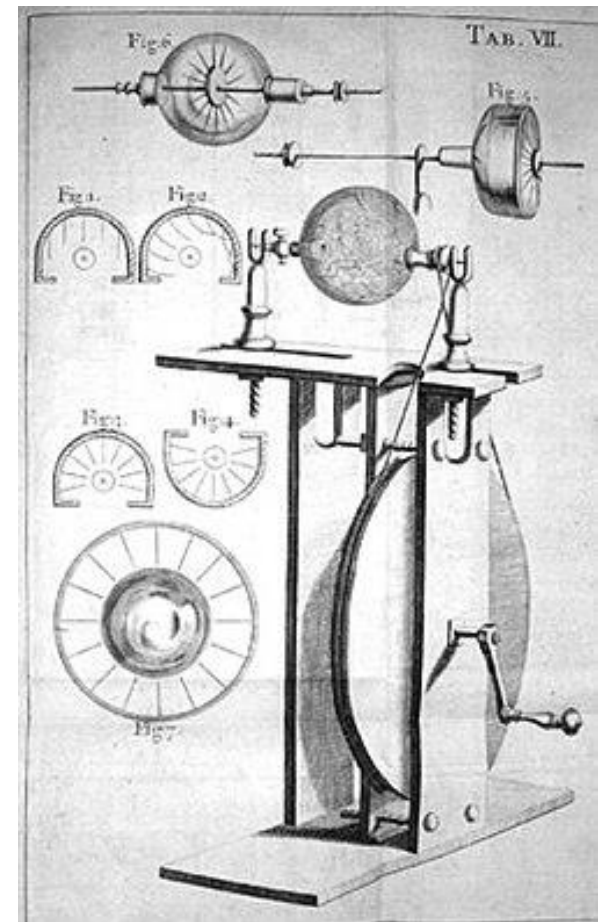


18th century developments

- By 1705, [Francis Hauksbee](#) investigate the luminosity of [mercury](#) which was known to emit a glow under [barometric](#) vacuum conditions.
- This effect later became the basis of the [gas-discharge lamp](#), which led to [neon lighting](#) and [mercury vapor lamps](#).

18th century developments

- In 1706 he produced an 'influence machine' to generate this effect.



18th century developments

- [Stephen Gray](#) discovered the importance of insulators and conductors.
- [C. F. du Fay](#) seeing his work, developed a "two-fluid" theory of electricity.
- He discovered the existence of two types of electricity and named them "[vitreous](#)" and "[resinous](#)" later known as positive and negative [charge](#) respectively.

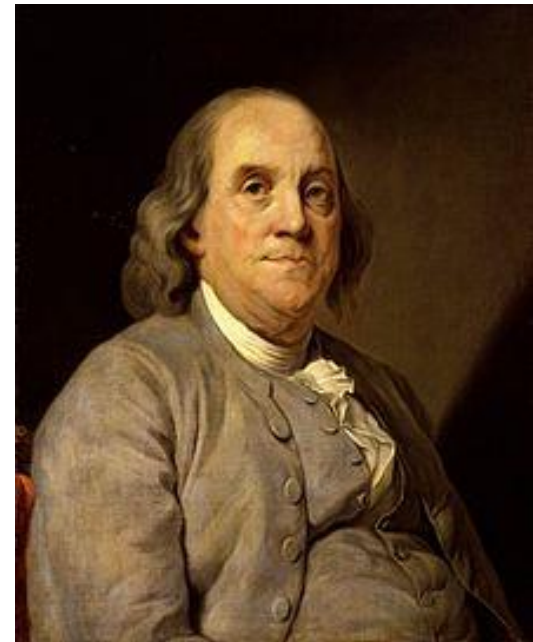
18th century developments

- He noted the difference between conductors and insulators.
- He also discovered that alike-charged objects would repel each other and that unlike-charged objects attract.



18th century developments

- [Benjamin Franklin](#) proposed that "vitreous" and "resinous" electricity were not different types of "[electrical fluid](#)", as electricity was called then, but the same "fluid" under different pressures.

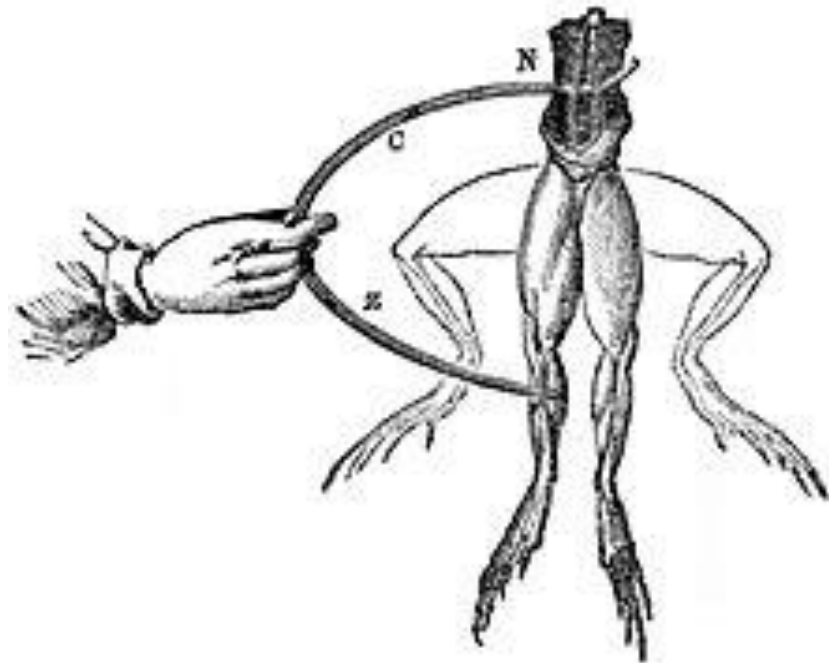


18th century developments

- Franklin was the first to label them as positive and negative respectively, and he was the first to discover the principle of conservation of charge.
- In 1748 he constructed a multiple plate capacitor, that he called an "electrical battery"

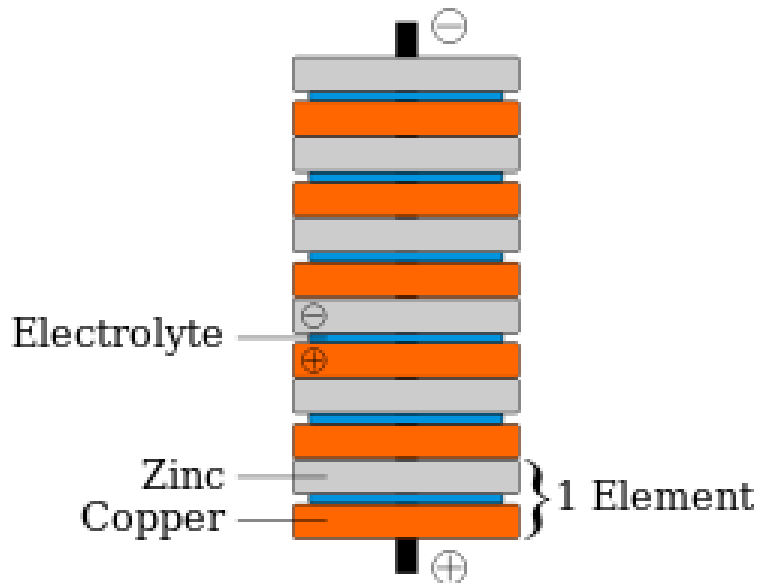
18th century developments

- In 1791, Italian Luigi Galvani published his discovery of bioelectricity, demonstrating that electricity was the medium by which nerve cells passed signals to the muscles.



18th century developments

- [Alessandro Volta](#)'s battery, or [voltaic pile](#), of 1800, provided scientists with a more reliable source of electrical energy than the [electrostatic machines](#) previously used.

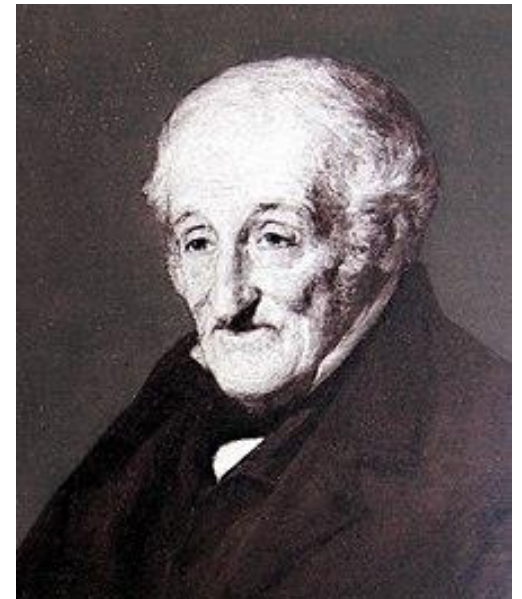
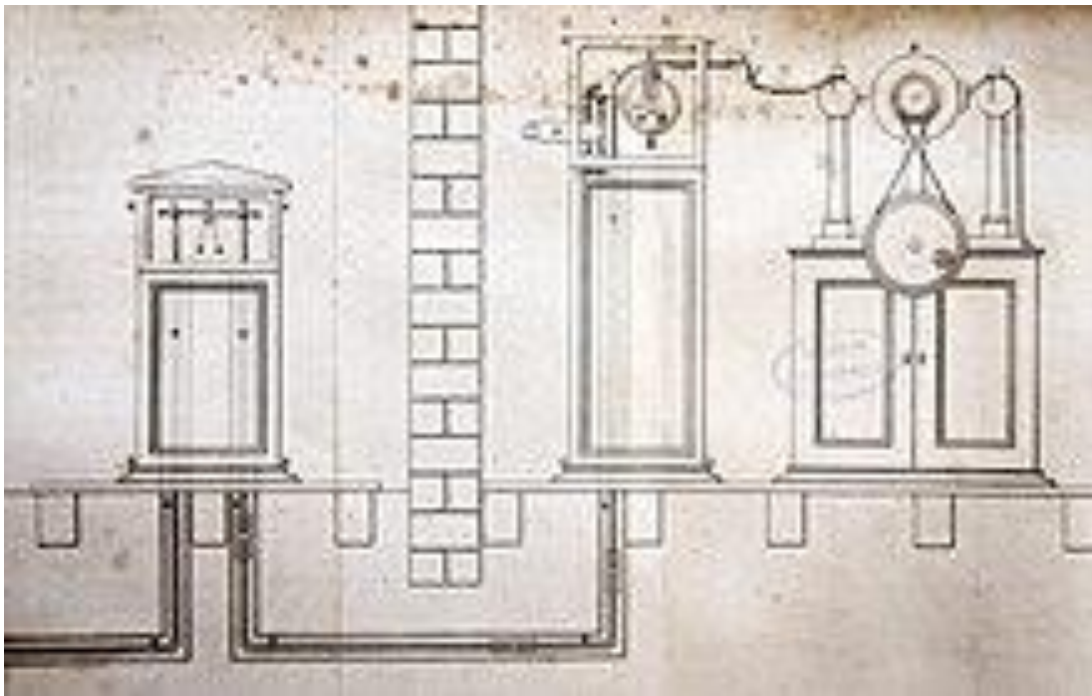


19th century developments

- Electrical engineering became a profession in the late 19th century.
- The first electrical engineering institutions (IEE) to support the new discipline were founded in the UK and USA.

19th century developments

- [Francis Ronalds](#) stands ahead of the field, who created the first working electric telegraph system in 1816.



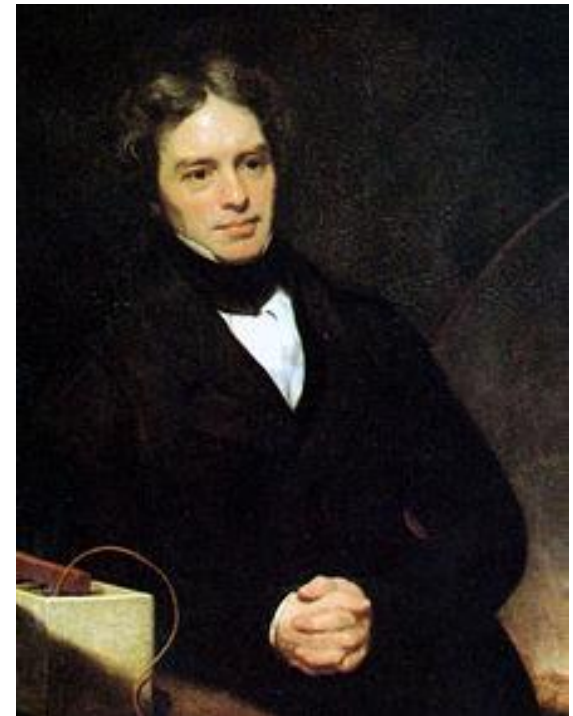
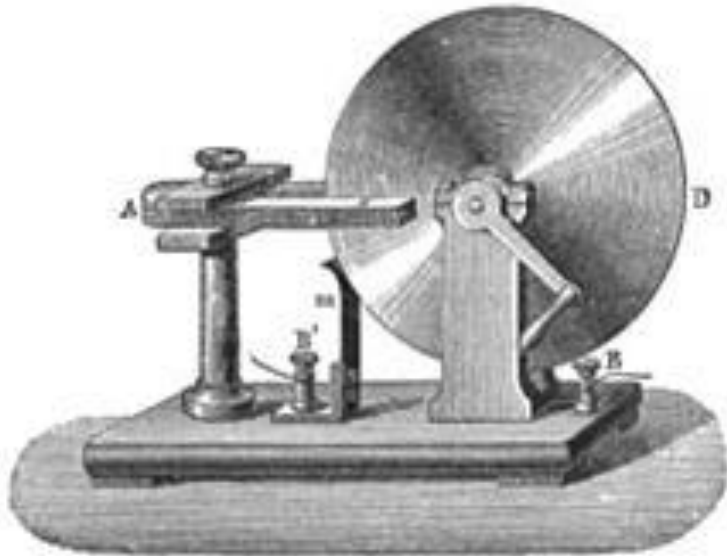
19th century developments

- [Georg Ohm](#), who in 1827 quantified the relationship between the [electric current](#) and [potential difference](#) in a conductor.
- Ohm's Law: $V=RI$
- In the 1830s, Georg Ohm also constructed an early electrostatic machine.



19th century developments

- [Michael Faraday](#), the discoverer of [electromagnetic induction](#) in 1831.
- The [homopolar generator](#) was developed first by [Michael Faraday](#)



19th century developments

- The invention of the industrial [generator](#), which didn't need external magnetic power in 1866 by [Werner von Siemens](#).
- He was the founder of the electrical and telecommunications company [Siemens](#).
- His name has been adopted as the unit of electrical conductance.



Any Question?

THANKS FOR YOUR ATTENTION