Electrodynamics and Optics

1. Static electricity

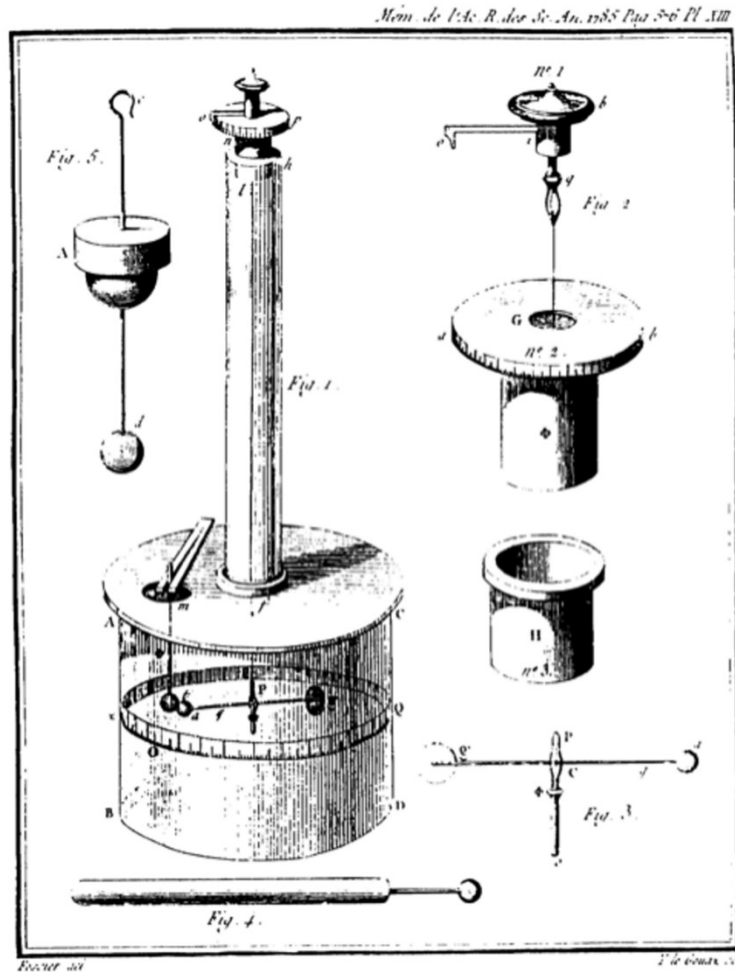Pal Koppa, koppa.pal@ttk.bme.hu

Amber or ήλεκτρον

Electron: „beaming or shining sun"

600 B.C. Thales recorded:
Amber rubbed with rabbits fur attract bits of paper and other light objects.

Triboelectric Effects

Coulomb's experiment

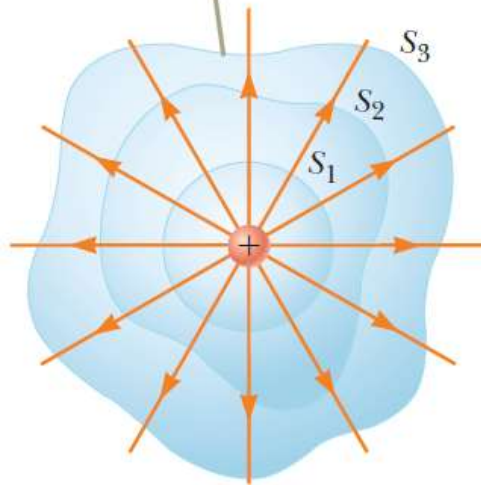**Charles (Augustin de) Coulomb**
French physicist (1736–1806)
Coulomb's major contributions to science were in the areas of electrostatics and magnetism.

Gauss's law

$$\Phi_E = \oint \vec{\mathbf{E}} \cdot d\vec{\mathbf{A}} = \frac{q_{in}}{\epsilon_0}$$

The net electric flux is the same through all surfaces.

S_3
S_2
S_1

Karl Friedrich Gauss
German mathematician and astronomer (1777–1855)

In addition to his work in electromagnetism, he made contributions to mathematics and science in number theory, statistics, non-Euclidean geometry, and cometary orbital mechanics. He was a founder of the German Magnetic Union, which studies the Earth's magnetic field on a continual basis.