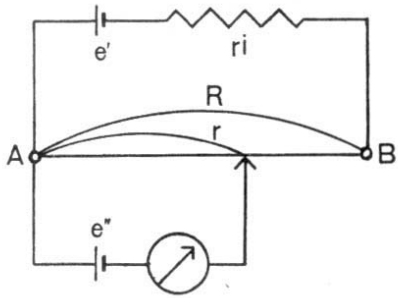


Electrical measurement

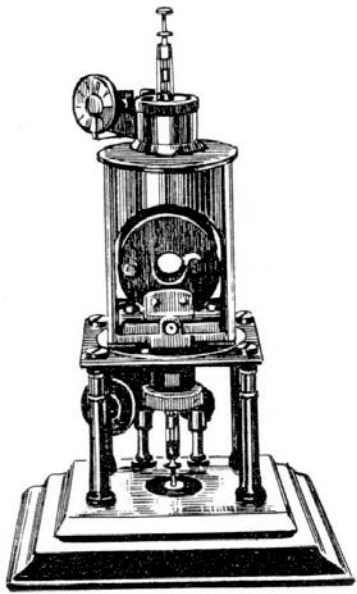


$R, r_i \dots \text{constant} \quad e'' = \frac{r e'}{R + r_i}$



Prof. William Thomson (1824-1907, Sir Kelvin) Glasgow University

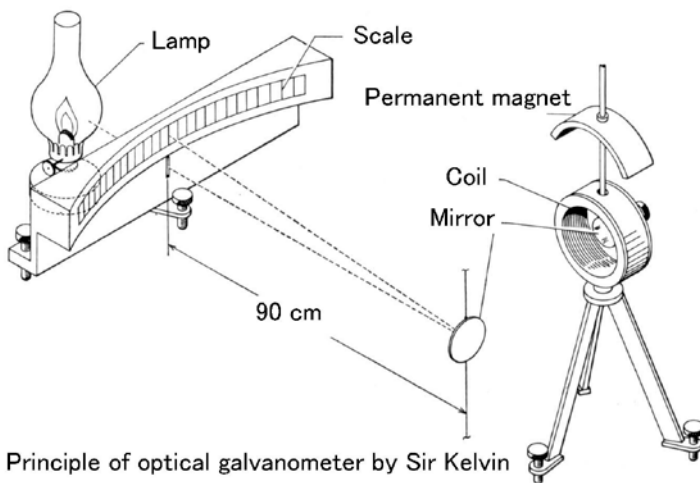
Potentiometer (measurement of electromotive force with zero current)



First galvanometer by Sir Kelvin



Optical galvanometer (1)



Principle of optical galvanometer by Sir Kelvin



Optical galvanometer (2) (sensitivity $0.02 \mu A$)