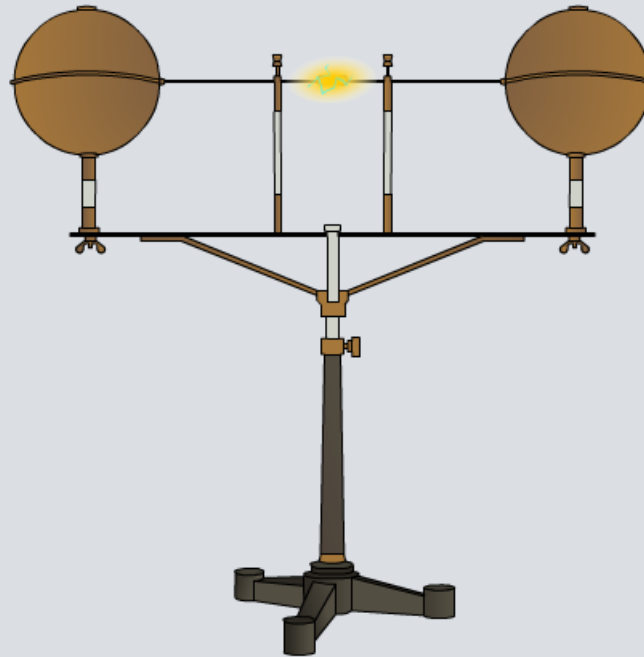


The Photoelectric Effect

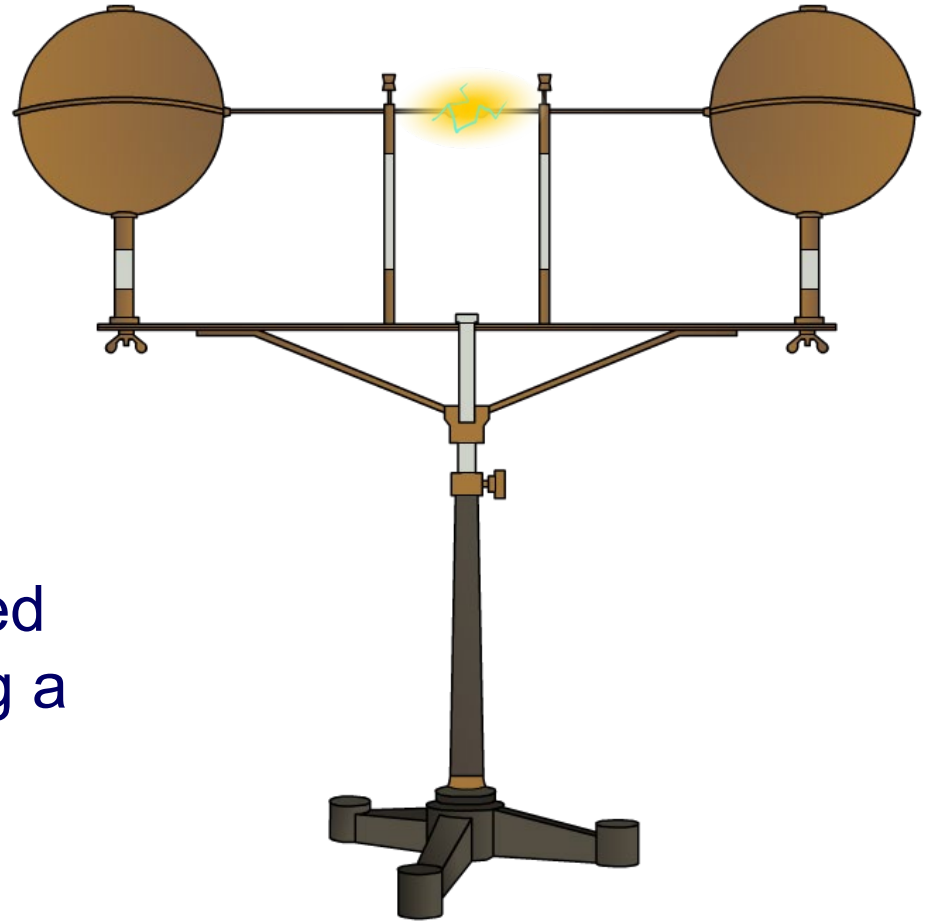


The discovery of photoelectricity

Photoelectricity was first discovered in 1887 by **Heinrich Hertz** during investigations into radio waves using a “spark gap”.

Radio waves are produced when a high voltage is supplied across two electrodes causing a **spark** in the gap.

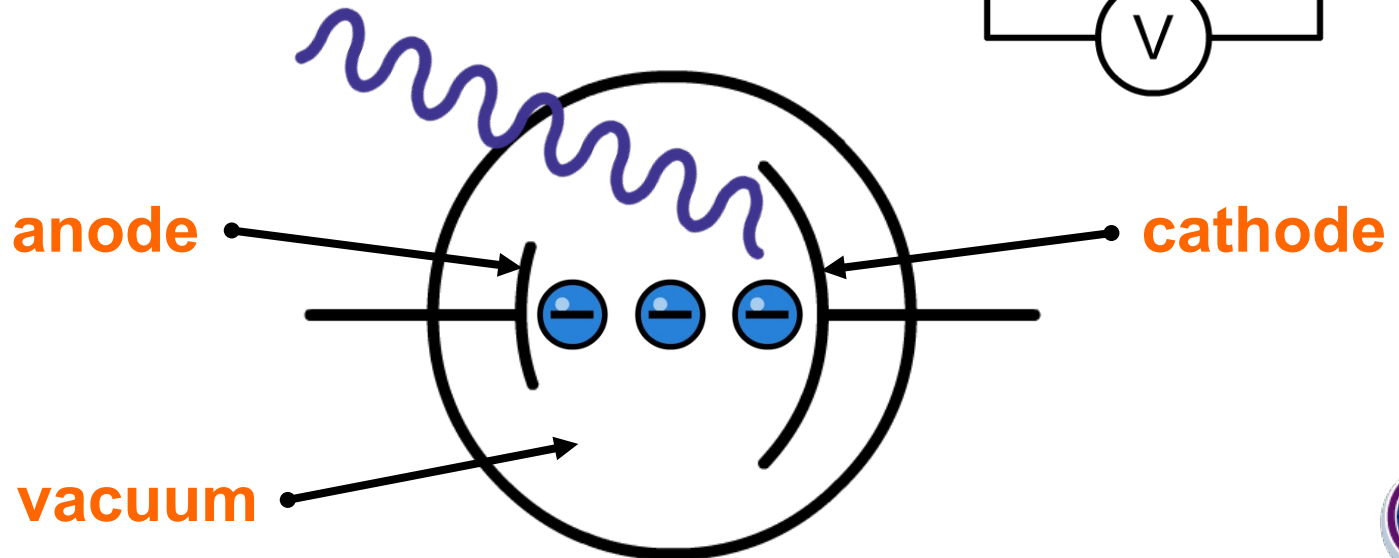
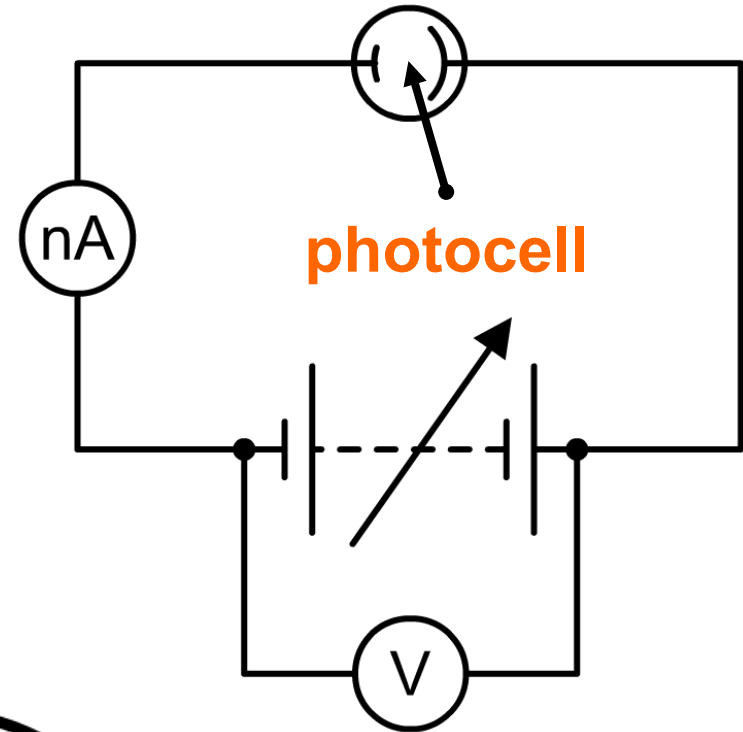
Hertz found that if **ultraviolet** light was shone on the electrodes, the sparks were much stronger and thicker.



Measuring photoelectricity

In the late 19th century, scientists used apparatuses like this photocell to analyze and measure photoelectricity.

When light is shone on the cathode of the photocell, electrons are released. They are attracted to the anode, causing a current to flow.



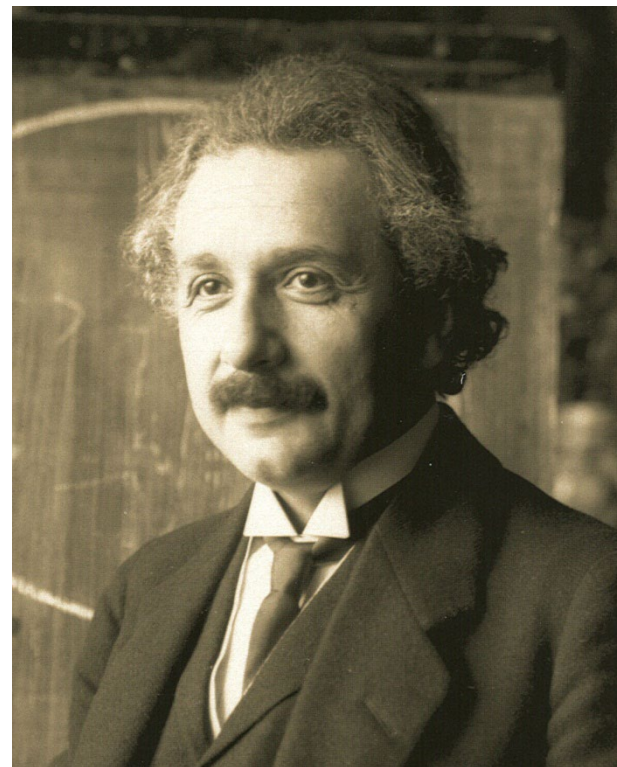
The gold leaf electroscope



In 1905, Albert Einstein published a paper that described his **photon theory of light**. This explained experimental evidence, such as the photoelectric effect, that did not fit with the classical wave model of light.

Einstein proposed that, although light exhibited wave-like properties, it traveled in particles called **photons**.

He explained that photons contain discrete “energy packets” called **quanta**, and that the energy of an individual quantum depends on the frequency of the light.



Einstein's photoelectric equation



The photoelectric effect equation

