

# Monitors

---

Vladimir Frolov

22303

# About monitors

Monitor - a device, designed for the visual display of information.



# History

Monitor history starts from 1855.

The first step is creation of a vacuum glass vessel.

The second step is addition of electrodes.



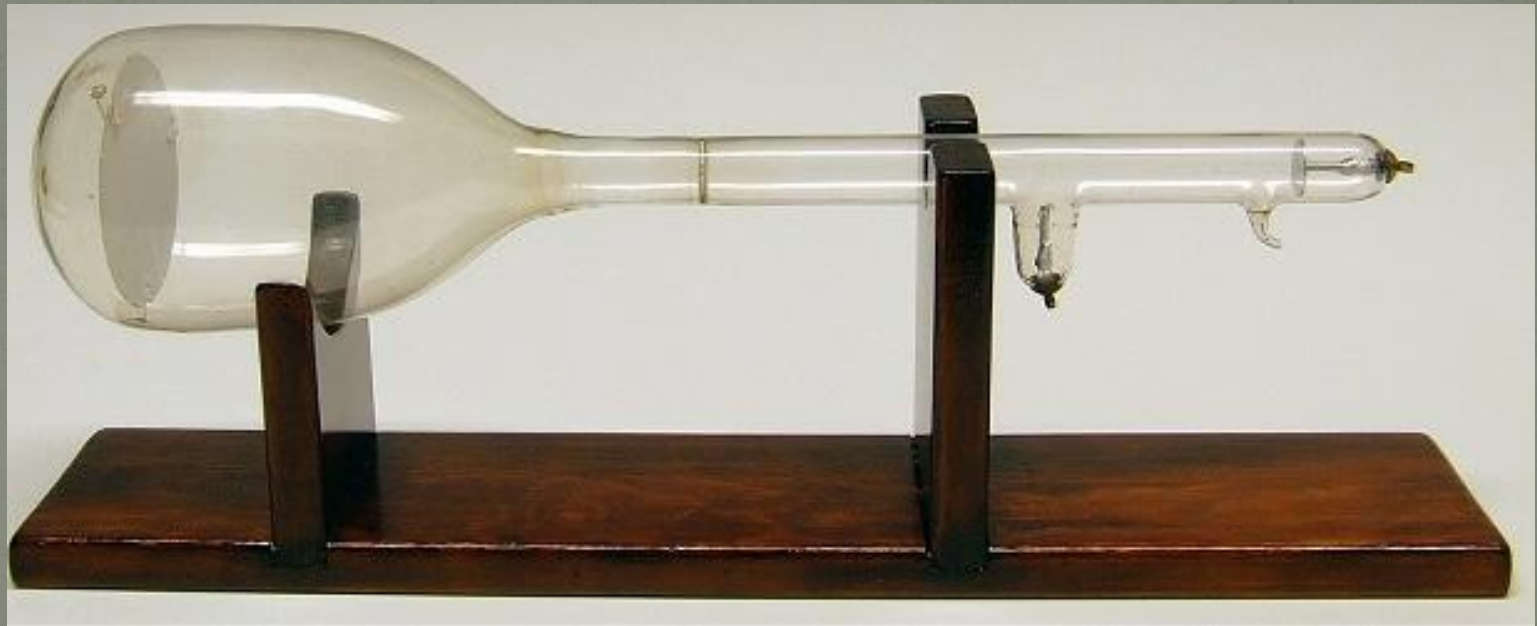
Crookes tube



Vacuum vessel of Geissler and Plucker

# Braun tube

The first image, using a cathode ray tube (CRT), was made by *Karl Ferdinand Braun*. Many scientists improved CRT afterwards.



# Vector kinescope

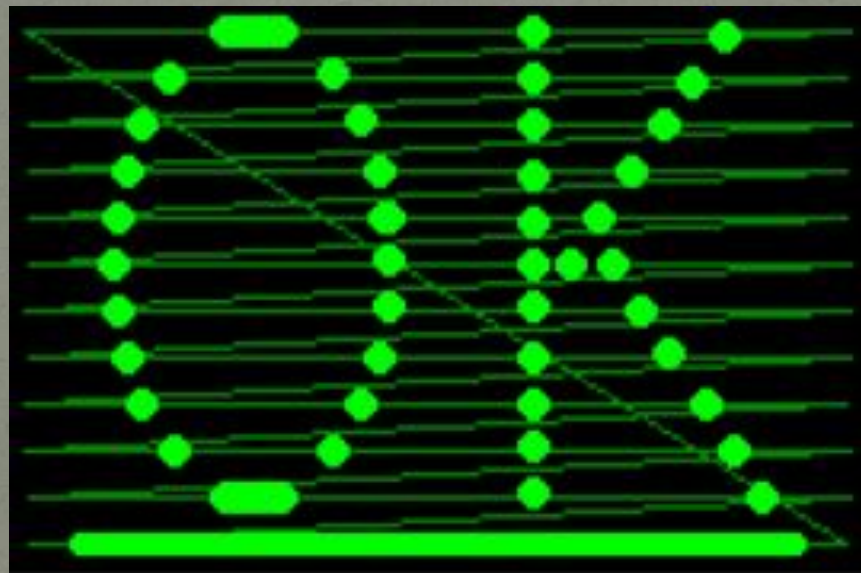
In 1907 Russian physicist Boris Rosing developed a device, based on Braun tube, capable to reproduce a moving image.



Output of vector kinescope

# Raster kinescope

Raster kinescope allows to display complex images. The first electronic television kinescopes were raster, but first computer monitors used vector kinescopes.



Output of raster kinescope

# Color kinescope

Color kinescope has been developed in the USA in 1950. The first color TV was released in the USA in 1954.



# CRT and computer

For the first time CRT was used to display graphics on the "EDSAC" computer in 1950.





# Liquid-crystal display

- + small size and weight
- + no visible flicker, interference from magnetic fields
- + no problems with image geometry and clarity
- + low power consumption
- can display a clear image only with one ("normal") resolution
- low contrast and depth of black color
- dependence of the contrast on the viewing angle
- problem of defective pixels

# Plasma display

- + high contrast
- + color depth
- + stable uniformity of black and white colors
- + long life (30 years)
- high energy consumption
- large pixels

# Organic light-emitting display

- + small size and weight
- + low power consumption
- + ability to create flexible screens
- + no need for backlighting
- + wide viewing angles
- + high contrast
- short life
- dearness

# Laser video display

- + high refresh rate (120 - 240 Hz)
- + almost unlimited life time
- + pixels are not susceptible to degradation
- + very low power consumption
- greater thickness (in comparison with LCD)

# Near future

- Three-dimensional images without special glasses
- Projector, which can create an image of high definition and contrast just a few centimeters from the surface
- Bendable tablets
- Transparent monitors

Thanks for watching!