

AfterImage

*Generation of light, phenomenon of fluorescence
And our relationship with colour*

Designed and curated by

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Timeline by Jack Wells and Mark Lythgoe

despite knowing about electricity for 1000s of years, we
remained in near darkness until Humphrey
Davy invented the electric light

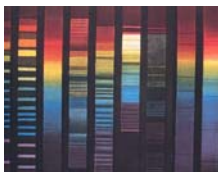
ever since the first bright spark
discovered fire, the recipe for light
has been one of culture's
most alluring quests



The scientific study of colour vision starts with
Newton's great work, the Opticks:

using a large prism, Newton split sunlight into
the colour spectrum

he realised it was in fact our interpretation of
this light that defined colour

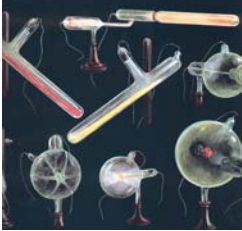


Fluorescence

is the non-persistent, instantaneous emission of light stimulated by absorption of energy such as UV, visible light or microwaves

Francis Hauksby noticed a fluorescent glow from the residue of mercury whilst handling a broken thermometer

quite by chance
he had stumbled upon
the principle of
fluorescent tubes



the charismatic electro-chemist, Humphry Davy,
turned electricity from a curiosity to part of everyday
life.....

...he invented the carbon arc, the first electrical
device many had ever seen



the first electric light emitted a harsh glow
described by Robert Louis Stevenson
as 'nightmare light'

'such a light as this should shine forth only on murders
and public crime or along the corridors of lunatic
asylums, a horror to heighten horror'



Phosphorescence

is the persistent emission of light after exposure to energy such as UV, visible light or microwaves



Swan and Edison brought light to every household with the light bulb

newspapers likened the quality of the new light to:
'the mellow sunset of an Italian autumn'



Edison promotes the presidential campaign using a horse-drawn dynamo in the 'Electric Torchlight Procession', 1884 New York



Edison advocated the use of direct current (DC) for the national power grid

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electrocuting a (rogue) elephant, Thomas A. Edison, 1903

the understanding of static electricity
underpins the workings of the fluorescent light

the Wimshurst machine is regarded as the most efficient
man-powered static generator and is used throughout the world

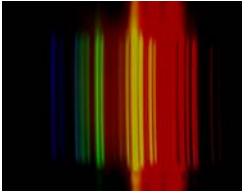
millions of electrons jump across the balls, creating a
huge amount of heat which causes the brilliant spark



neon,
a colourless inert gas, except.....

at the flick of a switch, light is emitted as
electrons collide with neon particles

when it emits a characteristic red light, other
gases emit different colours



electricity, magnetic fields or microwaves can excite mercury vapour
in the fluorescent tube, emitting UV, which causes the characteristic
light to be produced from the coating inside the tube

fluorescent tubes lit by electric fields from a Tesla coil

bioluminescence

light produced by a chemical reaction within an organism

green fluorescent protein (GFP) has existed for more than
one hundred and sixty million years in jellyfish

now GFP is found in laboratories all over the world where
it is used in every conceivable plant and animal



bioluminescence

regarded as the microscope of
the twenty-first century, 'lighting-up'
cell biology too small to be normally seen

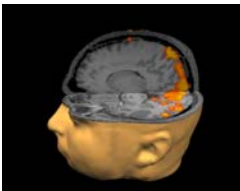
used to investigate many diseases such as
cancer, Parkinson's, Alzheimer's as well as
congenital and developmental abnormalities



our understanding of how the brain works was revolutionized
by the development of Magnetic Resonance Imaging (MRI)

Functional MRI allows us to see the brain at work

here the visual cortex 'lights up' (orange)
when looking at coloured pictures



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Wimshurst machine was built by Machinehouse
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for more information visit www.machinehouse.co.uk