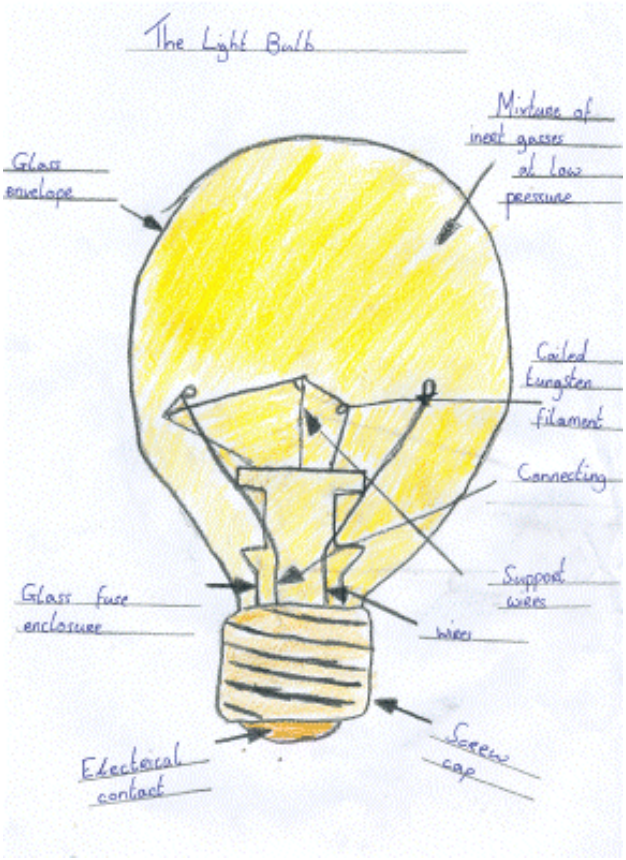
Inventors & Inventions

The Light Bulb



The inventor Thomas Alva Edison experimented with thousands of filaments to find just the right materials to glow well and be long-lasting .In 1879 , Thomas Edison discovered that a carbon filament in an oxygen free bulb, it glowed and did not burn up for 40 hours .Edison finally produced a bulb that could glow for over 1500 hours.

A light source made by people is called an artificial source. At first people burnt wax or oil and, later, gas, to produce light.

Today, electric light bulbs and fluorescent lights are mostly commonly used .Artificial light is essential to our way of life. There are two main types of artificial light sources. In one, solid or liquid material is heated. An electric light filament, heated by electricity, glows very brightly, producing a whitish light. The filament is a coil of thin metal, usually tungsten. The metal magnesium can burn in air, producing an almost blinding light. The colour of the light emitted by the material depends on its temperature. The hottest materials glow bluish-white. As their temperature drops, the glow becomes more yellow, then red and finally disappears. It is still very hot, however.

Invention of Film

The first movie camera was invented by a French scientist called Etienne-Jules Marey. He was interested in animal movement, especially flying birds. In 1882, he discovered a camera that could record 12 images in a single second on a moving glass photographic plate. This is the first camera able to record moving pictures.

Two French brothers named Louis Jean Lumiére and Auguste Lumiére set up the world's first cinema where People paid to see short films. This was all set up in Paris. They projected films with their own cinématograph, it worked like a projector and a portable camera. They used this after several years, the brothers made and showed short films all over the world.

Silent films were used for the first 30 years. There were no sound effects and nobody spoke. Then words started to appear on the screen and the actors would make emotional expressions like surprised or angry. A pianist would play music to fit the scenes that were being showed.

Spectacles

Why we may need glasses!

Nearly everyone develops presbyobia some time during their 40s. This condition means in their loss of ability to focus on near objects. People with presbyobia need convex lenses for reading and for close work.

Some children develop strabismus, commonly called squint. In strabismus, the eyes look in opposite directions. To help correct this condition, glasses are needed to help the eyes look in the same direction. Without glasses, one eye may grow weaker and weaker!

A stigmatism results when light rays meet in two places in the eye, producing blurred images. Most often, this results when the cornea has an uneven shape. Spectacles can correct this condition.

Who prescribes glasses?

Glasses are prescribed after an eye examination made by an ophthalmologist or an optometrist. An ophthalmologist is a doctor who specialises in treating eye problems. An optometrist examines the eye, diagnoses problems and prescribes glasses.

How glasses work

As light rays enter the eye, they are refracted or bent. During part of the examination, called the refraction, the opthalmologist measures how much more or less each eye needs to refract light rays to focus them on the retina. The patient looks through different lenses, and an examiner then writes a prescription for those that provide the best vision.

So who invented spectacles?

Around 1000 A.D.the reading stone, what we call the magnifying glass, was developed. It was a segment of a glass sphere that could be laid against reading material to magnify the letters. It enabled monks to read and was probably the first reading aid.

Sometimes, it is said that the Chinese developed the first glasses, but they apparently only used them to protect their eyes from an evil force!

One of the most significant developments in spectacle making was in the 16th Century, when concave lenses were introduced for the near sighted. Pope Leo X, who was very shortsighted, wore concave lenses when hunting and claimed that they helped him see better than his companions.

In the 1780s, Benjamen Franklin developed the bifocal and later wrote, "I therefore had formerly two pairs of spectacles, which I shifted occasionally, as in travelling I sometimes read, and often wanted to regard the prospects. Finding this change troublesome, and not always sufficiently ready, I had to wear my own spectacles constantly, I only have to move my eyes up or down, as I want to see distinctly far or near, the proper glasses being always ready".

Spectacles continued to develop through to the twentieth century, and instead of avoiding wearing them in public – as was the case – people started to wear them as a fashion accessary! Sunglasses became very popular in the late '30's. The first contact lens was worn by a man who had his eyelid destroyed by cancer. The patient wore the lens until he died, without losing his vision.

Facts

- The grave of Salvana d'Atamento degli Amati a nobleman of Florence has statement that he invented spectacles, but kept the process a secret!
- There was a big gap between the invention of the lens and the invention and use of spectacles. Why? The answer is the Church. Church teaching did not allow for man to alter what God had created!

Microscopes and Telescopes

The Microscope

History:

- They were first used during the early seventeenth century
- We don't know who invented it because several different types were used during the time
- Many discoveries were made by Robert Hooke and Leeuwenhoek with primitive microscopes
- In the olden days they only used one eyepiece
- They also drew what they saw.
- These microscopes had an oil light which was concentrated into a bright spot with a ball filled with water.
- A little later on they reflected light from the sun or a light bulb with a mirror to shine up into the microscope.

People in ancient times knew that a drop of water that fell onto a grain of sand or small insect made the object it fell on look larger than it actually was. Seneca (4 B.C.- 65 A.D.), a Roman philosopher, observed that 'letters, though small and indistinct, are seen enlarged and more distinctly through a glass globe filled with water'. The first person to explain why this happens was Ptolemy, a Greek astronomer who lived in the second century A.D. He said that light was bent (or refracted) because it changed speed as it moved from one substance to another.

Galileo invented one of the very first microscopes. It was a lot different to the one that we use today. It didn't use any type of energy, for example. Microscopes that we use today are run on electricity. When Galileo invented the microscope, scientists were able to learn more about germs and diseases. But for microscopes, doctors would not know the causes of illnesses..

Present:

- They now use electric lights instead of a flame or mirrors
- They have two eye pieces so your eyes don't get tired
- Instead of drawing they use cameras
- They sometimes use digital cameras which can be sent to different places with computers

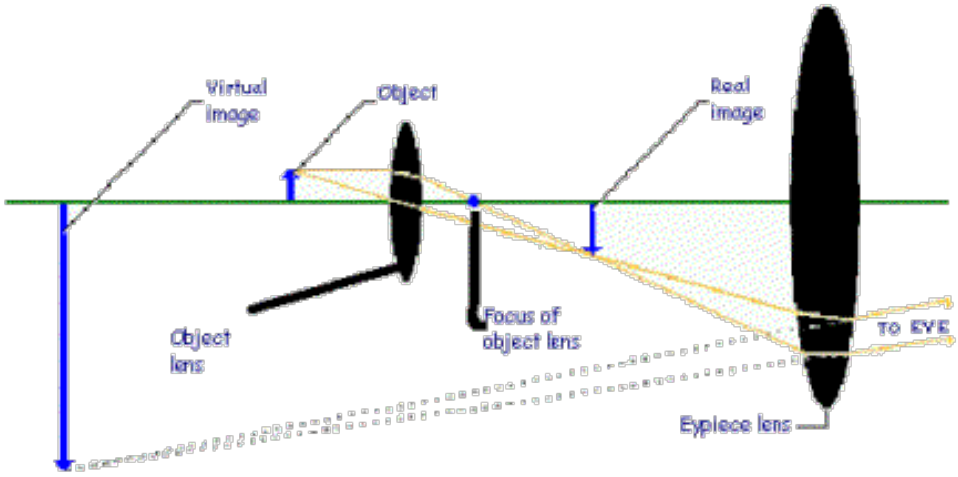
What microscopes are used for:

- Microscopes are used for looking at blood cells, bacteria and viruses – and tiny creatures.

- They are used for looking at crystals but you can't see them with ordinary microscopes because they are clear so you have to get cellophane sheets so they become coloured.
- Sometimes they use a special microscope for doing operations. This is called microsurgery.
- Microscopes are also used to examine microchip to make sure the don't have any faults.

How microscopes work:

- The main parts of a microscope are the eyepiece, optic lens and a light source
- The microscope has a stage for holding the glass slide or object
- The stage is move up and down to move the object into focus
- Underneath the stage is the a lens called the condenser which controls and focuses the light coming up
- The eyepieces usually have a magnification of ten
- A microscope may have up to six objective lenses but most microscopes only have four.
- These vary from ten too one hundred magnification
- For some microscopes oil is needed for some of the objectives to get the best image



The Telescope

Nobody is quite sure who invented the telescope. In 1608, a Jacob Adriaanzoon applied for the rights to sell an instrument to sell that made distant objects appear larger. He used both concave and convex lenses at the ends of a tube to magnify objects. In 1609, Galileo designed his own telescope and made many discoveries in space – getting himself into a lot of trouble with the Church of the time.

In 1610, Galileo discovered Saturn's rings. They looked quite strange when he saw them! He kept notes of everything he saw and wrote of Saturn "Saturn is not a single star, it is a composite of three". Every night, Galileo studied Saturn, until one day he realized that Saturn orbits around the sun – just like the Earth. He later went on to discover that Saturn had foour moons. He named the moons after the Grand Duke of Tuscany's family (Medici). He called them thye Medicean moons.

Many people didn't believe Galileo's discoveries at first, until they were finally proven.

Lasers & Holograms

Lasers

If you were asked what is brightest most powerful Light of all. You might say sunlight. You would be wrong. A laser's light is the brightest light ever known. A laser produces a thin beam of coloured light which can burn though steel or so straight and narrow that it can be aimed at a tiny mirror on the moon that is 384401km (238855miles) away.

A scientist called Theodore Maiman built the first laser in 1960. Lasers today use gases, which gives a low power beam – good for delicate surgary. Powerful lasers produce beams with solid rods of crystal!

Holograms

A hologram is a photograph made with laser light. When you look at a hologram, you see a three-dimensional view of the object, just as the real thing.
Splitting a laser beam in two makes holograms. One beam goes straight to the photographic film, the other hits the object of the hologram first breaking up its pattern of light waves.