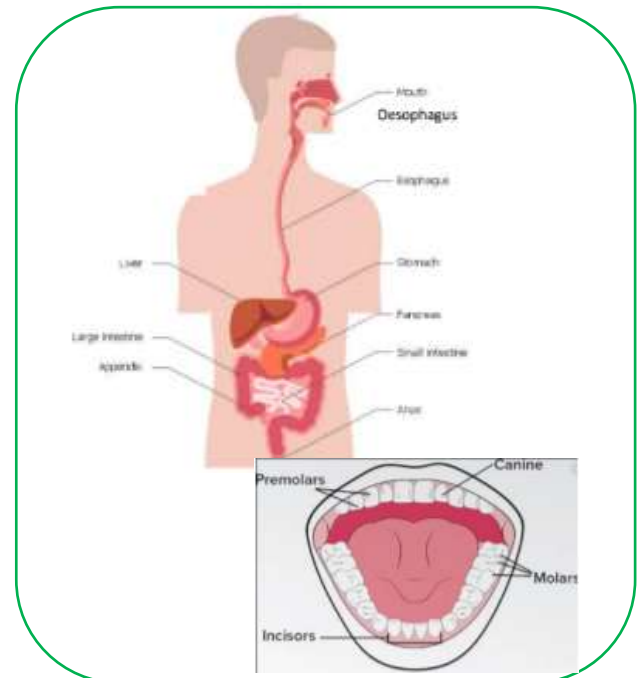


# The Digestive System: Biology



What? (key knowledge)		Food Chains		
<b>The Digestive System</b>		<b>What are producers?</b>	Producers are living things that make their own food - usually using energy from the sun	
<b>What are the main parts of the digestive system?</b>	The mouth, oesophagus, stomach, small intestine, large intestine, and anus		<b>What are prey?</b>	Organisms (or living things) that predators kill for food
<b>What is the role of the digestive system?</b>	The digestive system breaks down food into nutrients so the body can use them for energy, growth and repair			<b>What are predators?</b>
<b>What are the different types of teeth called?</b>	Canines, incisors, premolars and molars		<b>What do food chains show?</b>	
<b>What role do teeth play in digestion?</b>	They start the digestive process by cutting and chewing food			

<b>canine</b>	pointed teeth near the front of the mouth of humans
<b>carnivore</b>	an animal that eats meat
<b>decay</b>	gradually destroyed by a natural process
<b>digestion</b>	breaking down ingested food material
<b>excretion</b>	the process of eliminating faeces from the body
<b>faeces</b>	solid waste substance that people pass through the anus
<b>herbivore</b>	an animal that only eats plants
<b>incisor</b>	the teeth at the front of the mouth used for biting
<b>intestines</b>	the tubes that food passes through when it has left your stomach
<b>molar</b>	large, flat teeth towards the back of your mouth used for chewing
<b>omnivore</b>	an animal that eats both plants and meat
<b>oesophagus</b>	the part of your body that carries the food from the mouth to the stomach



## Influential Scientist: William Beaumont



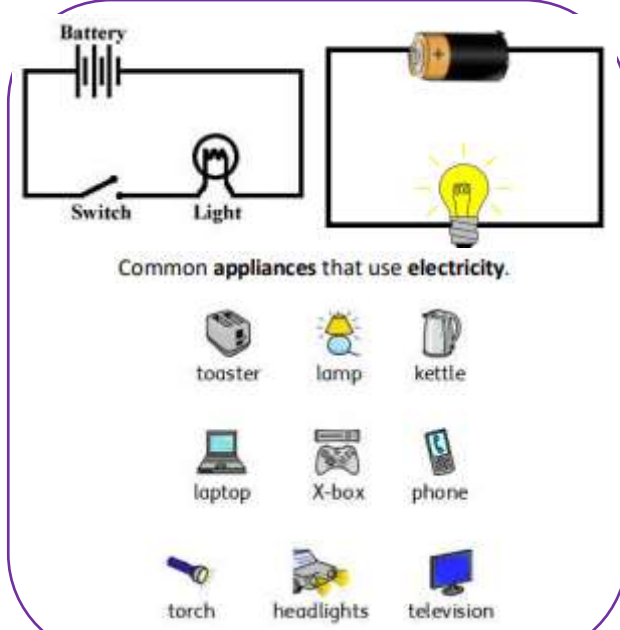
He was a surgeon in the U.S. Army who became known as the "Father of Gastric Physiology" following his research on human digestion.

# Electricity: Physics



What? (key knowledge)		Circuits			
<b>Electricity</b>					
Where does electricity come from?	Electricity is generated using energy from natural sources such as the Sun, oil, water and wind.			How does a circuit work?	The battery pushes the electricity along the wires from the positive terminal, through the bulb and back to the negative terminal. This creates a circuit.
Which appliances run on electricity?	Some appliances use batteries and some use mains electricity.			What is an electrical conductor?	Objects that are made from materials that allow electricity to pass through
What is a complete circuit?	A complete circuit is a loop that allows electrical current to flow through wires			What is an electrical insulator?	Objects that are made from materials that do not allow electricity to pass through A switch controls the flow of the electrical current around the circuit.
What is a series circuit?	A simple circuit with several components one after the other.			What can be used to break the flow in a circuit?	When the switch is off, the current cannot flow.

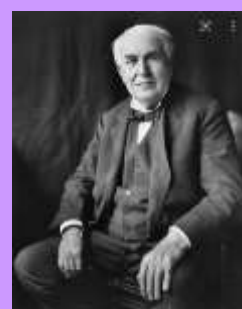
appliances	a device or machine in your home that you use to do a job
battery	small devices that provide the power for electrical; made up of multiple cells
bulb	the glass part of an electric lamp, which gives out light when electricity passes through it
buzzer	an electrical device that is used to make a buzzing sound
cell	A cell is a single unit device which converts chemical energy into electric energy
component	the parts that something is made of
current	a flow of electricity through a wire or circuit
mains	where the supply of water, electricity, or gas enters a building
switch	a small control for an electrical device which you use to turn the device on or of
wires	a long thin piece of metal that is used to fasten things or to carry electric current



The diagram shows two circuit loops. The left loop is open, with a battery at the top, a switch on the left, and a light bulb on the right. The right loop is closed, with a battery at the top and a glowing light bulb on the right. Below the diagrams is a list of common appliances that use electricity:

- toaster
- lamp
- kettle
- laptop
- X-box
- phone
- torch
- headlights
- television

## Influential Scientist: Thomas Edison



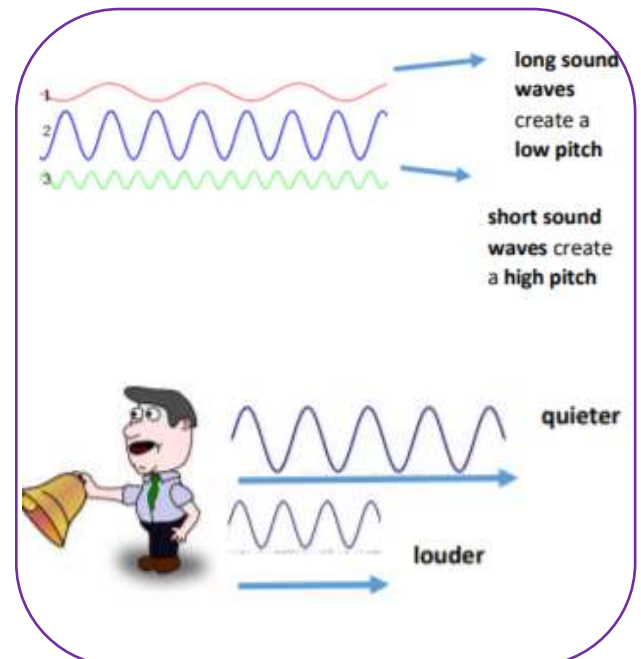
He is best known for inventing 'domestic' lightbulbs to go in houses, and the electric power system that allows them to work.

# Sound: Physics



What? (key knowledge)		Sound	
<b>Sound</b>		<b>What is volume?</b>	The volume of a sound is how loud or quiet it is.
<b>What is a sound?</b>	A thing that can be heard.	<b>How do we measure sound?</b>	<b>Amplitude</b> measures how strong a sound wave is. <b>Decibels</b> measure how loud a sound is
<b>How is a sound made?</b>	When objects vibrate, a sound is made. The vibration makes the air around the object vibrate and the vibrations enter your ear.	<b>How do we hear sounds?</b>	The sound waves travel to the ear and make the eardrums vibrate.
<b>How do sounds travel?</b>	Sound waves travel through a medium (such as air, water, glass, stone, and brick).	<b>What happens as the distance from a sound increases?</b>	The sound will become fainter
<b>What is pitch?</b>	The pitch of a sound is how high or low it is.		

<b>vibration</b>	Sound is caused by the vibration of a medium (usually air) and it travels in waves.
<b>pitch</b>	A high sound has a high pitch and a low sound has a low pitch. A tight drum skin gives a higher pitched sound than a loose drum skin.
<b>volume</b>	Volume is the perception of loudness from the intensity of a sound wave. The higher the intensity of a sound, the louder it is perceived in our ears, and the higher volume it has.
<b>insulation</b>	Protecting something by surrounding it with material that reduces or prevents the transmission of sound.
<b>cochlea</b>	The cochlea looks like a spiral-shaped snail shell deep in your ear. It plays an important part in helping you hear.
<b>auditory</b>	Auditory is close in meaning to acoustic, but auditory usually refers more to hearing than to sound.
<b>frequency</b>	Frequency is measured as the number of wave cycles that occur in one second.
<b>hammer</b>	The ear has little bones called ossicles that help you hear. They are called the hammer (malleus), anvil (incus), and stirrup (stapes). They amplify the sound or make it louder.



## Influential Scientist: Galileo Galilei



Galileo was the first scientist to record the relationship between the frequency of the wave to the pitch it produces.

# Living Things and their Habitats: Biology



What? (key knowledge)		Habitats	
<b>Classification</b>		<b>How do habitats change over time?</b>	Habitats can change naturally due to events like earthquakes or storms but can also be changed by humans through pollution, deforestation and urbanisation.
<b>How can living things be grouped?</b>	According to different criteria (where they live, what type of organism they are, what features they have).	<b>How can environments change positively?</b>	The production of nature reserves and ecological parks to protect animals.
<b>What are vertebrates?</b>	Vertebrate animals are animals with a backbone (spine).	<b>How can environments change negatively?</b>	Litter and urban development can remove or damage habitats.
<b>What are invertebrates?</b>	Invertebrate animals are animals with no backbone (spine).	<b>What happens as a result of habitat changes?</b>	Animals become endangered and can become extinct if their habitat changes.
<b>What is a classification key?</b>	A classification key is a tool that is used to group living things to help us identify them.		

<b>carnivore</b>	an animal that eats meat
<b>classification key</b>	a system which divides things into groups or types
<b>deciduous</b>	trees that lose leaves in the autumn every year
<b>environment</b>	all the circumstances that influence peoples' lives
<b>excretion</b>	the process of eliminating waste from the body
<b>food chain</b>	how living things are linked because one thing feeds on the next
<b>habitat</b>	the natural environment where an animal or plant lives or grows
<b>herbivore</b>	an animal that only eats plants
<b>invertebrate</b>	a creature that does not have a spine
<b>omnivore</b>	person or animal who eats both meat and plants
<b>respiration</b>	process of breathing; inhaling and exhaling air
<b>vertebrate</b>	a creature which has a spine

**Rhino Population Trends:**

Species	Population Trend	Conservation Status
White Rhino	-18,000	NEAR THREATENED
Greater One-Horned Rhino	>3,600	VULNERABLE
Black Rhino	-5,630	CRITICALLY ENDANGERED
Javan Rhino	74	CRITICALLY ENDANGERED
Sumatran Rhino	<80	CRITICALLY ENDANGERED

**Classification Key:**

```

graph TD
    Vertebrate --> Q1{Does it have fur?}
    Q1 -- Yes --> Mammal
    Q1 -- No --> Q2{Does it have feathers?}
    Q2 -- Yes --> Bird
    Q2 -- No --> Q3{Dry skin?}
    Q3 -- Yes --> Reptile
    Q3 -- No --> Q4{Moist skin?}
    Q4 -- Scales --> Fish
    Q4 -- No scales --> Amphibian
    
```

## Influential Scientist: Jane Goodall

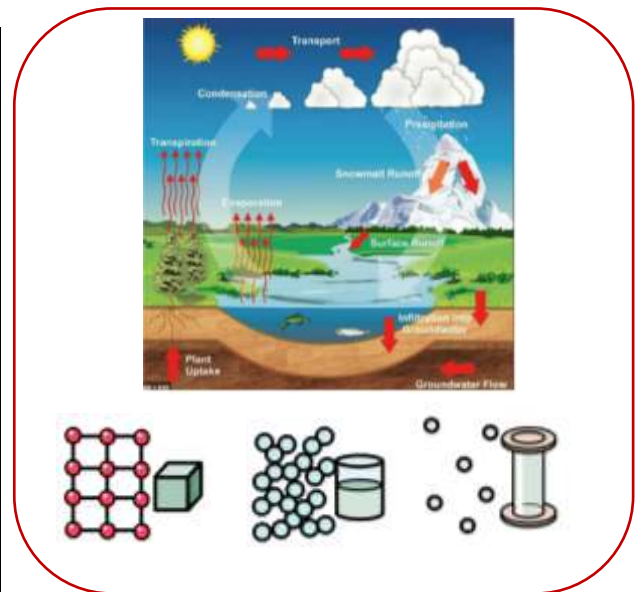
Best known for her work studying chimpanzees. She worked tirelessly to protect chimpanzees from becoming extinct.

# States of Matter: Chemistry




What? (key knowledge)		The Water Cycle	
<b>States of Matter</b>		<b>What is a gas?</b>	Gases have particles which are spread out and move in all directions. Particles can escape from open containers.
<b>What is a particle?</b>	Particles are what a material is made from.	<b>What happens when water is heated?</b>	The particles start to move faster and faster until they have enough energy to move about more freely.
<b>What is a solid?</b>	Solids have vibrating particles which are tightly packed to form a regular pattern; keeps a fixed shape	<b>What happens when water is cooled?</b>	When water is cooled, the particles start to slow down until a solid structure (ice) is formed. The water has <b>frozen</b> .
<b>What is a liquid?</b>	Particles are close together but random which means they can change shape and can be poured.	<b>What is the water cycle?</b>	The water cycle is the journey of water from oceans and lakes, to clouds, to rain, to rivers and back into the ocean again.

<b>condensation</b>	to turn from gas to liquid through cooling
<b>cooling</b>	lowering the temperature of something
<b>evaporation</b>	to turn from liquid to gas
<b>freezing</b>	becoming solid because of low temperatures
<b>gas</b>	materials in a gaseous state can spread out to completely fill the container or room they are in.
<b>heating</b>	increasing the temperature of something
<b>liquid</b>	in a form that flows easily and is neither a solid nor a gas
<b>melting</b>	becoming liquid due to heat or pressure
<b>particles</b>	a tiny amount or small piece
<b>properties</b>	the ways in which an object behaves
<b>solid</b>	having a firm shape or form
<b>vibrations</b>	when something shakes with repeated quick movements



**Influential Scientist:**  
**Anders Celcius**



He is best remembered as the inventor of the Celsius temperature scale in which 0°C is the freezing point of water and 100°C is the boiling point.