January 2011 Issue 8

NEWSLETTER
of the
Medlock & Tame Valley
Conservation Association

(Registered Charity Number: 504558)

Welcome to our first newsletter of 2011

A VERY HAPPY NEW YEAR TO YOU ALL!

By the time you receive this newsletter you will probably have made your New Year resolutions - and may even have broken them - already! I had wondered, in the context of wildlife, nature and conservation, what new resolutions could be adopted and thought I would share some of them in the newsletter. How are these?

- Keep a wildlife diary of what you see throughout the year.

- Make every endeavour to attend MTVCA's events this year.

- Contribute to MTVCA's website or newsletter at least once this year.

- Help with a survey for a particular wildlife group, details of which will be on their websites.

- Endeavour to take up wildlife photography or art this year!

Let us know how you get on and whatever you do, stick with it and enjoy it!

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MTVCA 2011 programme

Our programme for 2011 is well underway and confirmation on some dates is still awaited. So far we have programmes planned on the subjects of Butterflies and Moths; Small British Mammals; Photographing and Observing Wildlife; Amphibians; and Wine Making. There will be more! Watch your emails, the website and listen on your phones for firm dates!

NATURE'S CANVAS

We are all curious when it comes to animal tracks, big or small, and enjoy taking on the role of 'detective' to identify them. Tracks in the snow are some of the easiest to read and in our own grounds at 5 Oaken Clough Terrace there have been many tracks made by small and bigger animals throughout December. Here is some practical advice on identifying animal tracks in the snow.

EQUIPMENT you'll need: Notebook, pencil, camera, guide.

1. Be aware of what types of animals reside in the region.
2. Count the number of toes in one of the footprints and note if the tracks have toes. Double-check by counting the toes in several different prints to make sure another animal hasn't come by on top of the tracks.
3. Take note of the shape of one of the footprints. If the shape is more oval, it may be a hoof print and could easily belong to a deer.
4. Determine the approximate size of the footprints. Remember that the snow may have melted a bit, making the print appear larger. Or more snow may have fallen, partly covering up parts of the tracks.
5. Combine your findings to narrow down the animal you think may have left the tracks.
6. Try to build the context of the tracks e.g. where they came from and where they were going to.
7. Make a list of all the animals in that particular region in the animal family you narrowed the tracks to and then cross reference with your findings. The elimination process should reveal the mystery animal.

The more you decipher animal tracks, the better you get and the more you know about a particular area the better. It is a useful exercise to record your findings and build up a picture of which animals frequent a particular site each year. (Don't forget your New Year's resolution and record your findings/drawings in your diary!)

See below for track identifications and I hope you become a great detective!

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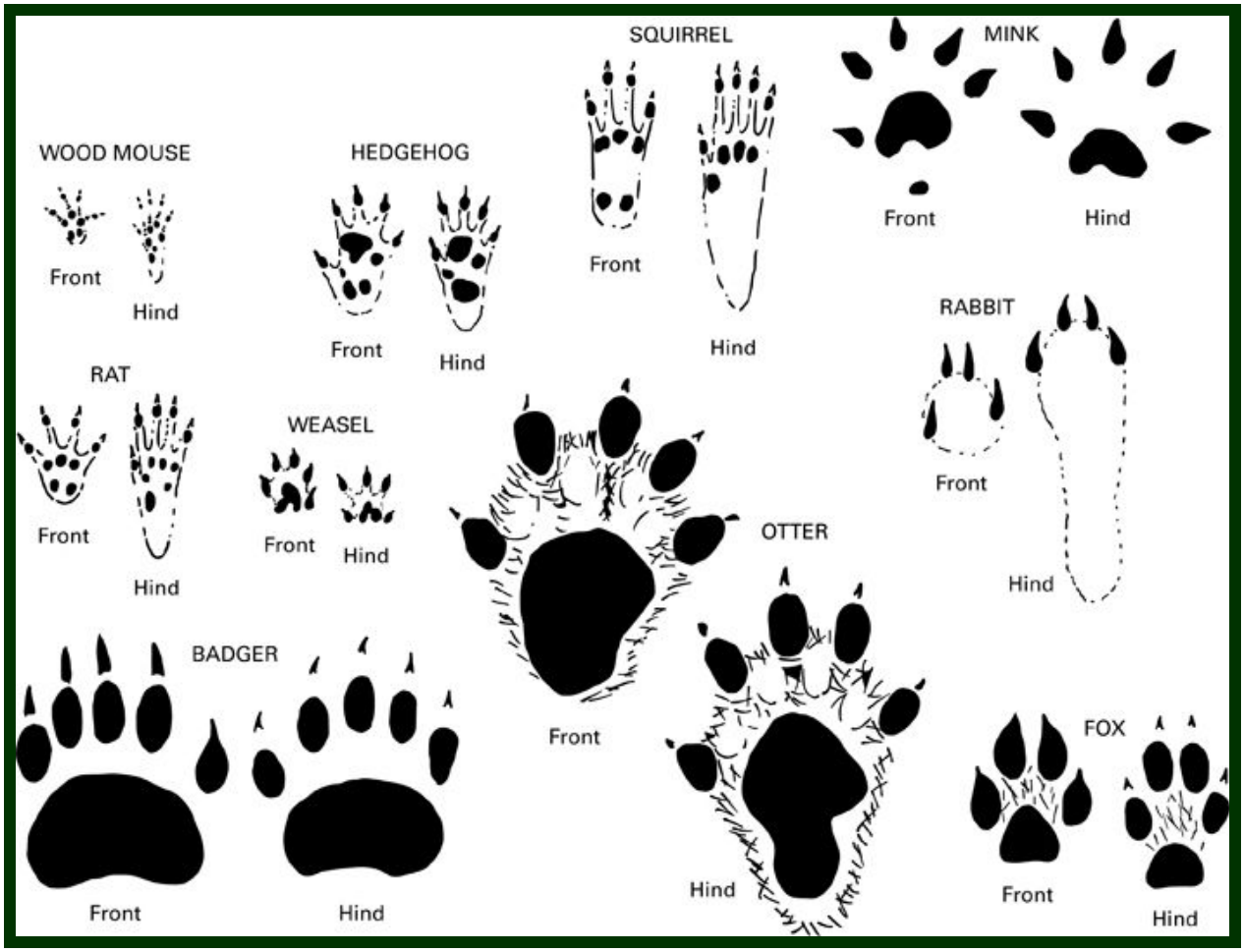
TRACK IDENTIFICATION CHART



WHAT IS SOIL?

Soil is one of the three major natural resources, alongside air and water. It is one of the marvellous products of nature and without which there would be no life. Soil is made up of three main components – **minerals** that come from rocks below or nearby, **organic matter** which is the remains of plants and animals that use the soil, and the **living organisms** that reside in the soil. The proportion of each of these is important in determining the type of soil that is present. But other factors such as climate, vegetation, time, the surrounding terrain, and even human activities (eg.

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farming, grazing, gardening etc.), are also important in influencing how soil is formed and the types of soil that occur in a particular landscape.

Soil can form from the rocks below, or from rocks a very long distance away - perhaps being carried by wind or water. The glaciers of the last ice age acted as giant bulldozers pushing huge amounts of soil along as they grew and dropping the soil as they melted.

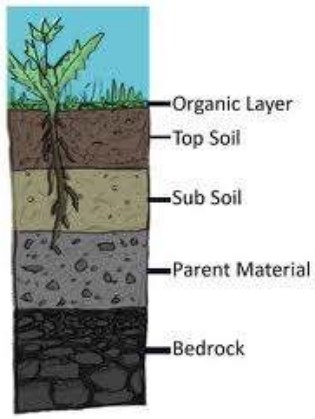
Textures come mainly from the size and amount of mineral particles present in the soil. For example, if you try picking up a handful of a sandy soil, you will notice that it feels 'gritty'. This is because it is made up of large mineral particles. Compare this to a handful of clay soil, which feels sticky to touch when wet because it has finer particles which can hold more water. Silty soils lie in composition between sandy and clay ones and have a smooth somewhat velvety feel to them.

Organic matter, believed by many to be the most important constituent of soils, is partially-decomposed organic material, rich in nutrients, which is essential to the fertility of soil (or how fruitful and productive it is). You can often tell how much organic matter there is in soil by looking at how dark it is – the darker the soil, the greater the concentration of organic matter.

The nature of soils varies according to geographical location (see our newsletter next month) climate, etc. However, the topsoil will often be dark brown or black in colour and is made up of rock material that has been chemically and physically broken down and changed, and mixed with organic materials such as dead plants, particularly the roots of them. Furthermore, it will generally be full of plant and animal life.

The subsoil also consists of altered rock material, but contains much less plant life and living creatures. However, minerals can be broken down, and nutrients released from this layer for use by roots of plants.

Finally, the parent material is located at the very bottom, usually below half a metre and consists mostly of unaltered rock or glacial deposits, the matter from which the soil is developed.



SUMMARY

- Soil makes up the outermost layer of our planet.
- Topsoil is the most productive soil layer.
- Soil has varying amounts of organic matter (living and dead organisms), minerals, and

nutrients.

- Natural processes can take more than 500 years to form one inch of topsoil.
- Soil scientists have identified over 70,000 kinds of soil.
- Soil is formed from rocks and decaying plants and animals.
- An average soil sample is 45 percent minerals, 25 percent water, 25 percent air, and five percent organic matter.
- Different-sized mineral particles, such as sand, silt, and clay, give soil its texture.
- Fungi and bacteria help break down organic matter in the soil.
- Plant roots and lichens break up rocks which become part of new soil.
- Roots loosen the soil, allowing oxygen to penetrate. This benefits animals living in the soil.
- Roots hold soil together and help prevent erosion.
- Five to 10 tons of animal life can live in an acre of soil.
- Earthworms digest organic matter, recycle nutrients, and make the surface soil richer.
- Mice take seeds and other plant materials into underground burrows, where this material eventually decays and becomes part of the soil.
- Mice, moles, worms and shrews dig burrows which help aerate the soil.

(Next newsletter – SOIL Part II – "Soils of the world"). (ack. www.soil-net.com)

UNDER THE SPOTLIGHT - THE EARTHWORM (Soldiers of the Soil)

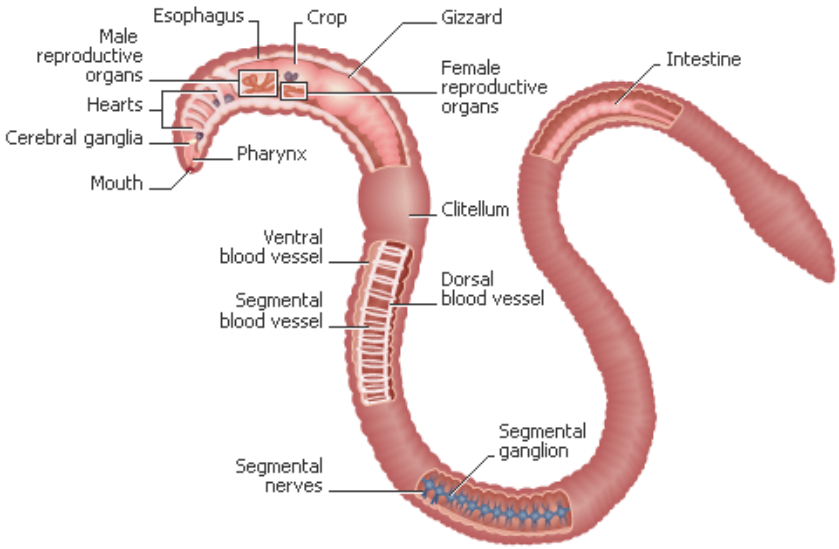
Classification: Kingdom: Animalia, Phylum Annelida: the "segmented worms" (in Latin, "annellus" means small ring), Class: Clitellata (worms having a clitellum), Subclass: Oligochaeta (meaning "few bristles").

Earthworms are very important animals that aerate the soil with their burrowing action and enrich the soil with their waste products (called castings). Good soil can have as many as 1,000,000 (a million) worms per acre.

There are over 3,000 species of earthworms around the world. These invertebrates (animals without a backbone) range in colour from brown to red, and most have a soft body. Earthworms range in size from a few inches long to over 22 feet long. The largest earthworms live in South Africa and Australia.

Diet: Earthworms eat soil and the organic material in it - including plants, insect parts and bacteria.

Anatomy: The earthworm is a tube-shaped worm that is covered by a moist, protective cuticle. The body earthworm's body is divided into about 150 segments. Tiny bristles (plural setae, singular seta) appear in pairs on most segments of the earthworm's body. On one end is the mouth (which is covered by a flap, called the prostomium, that helps the earthworm sense light and vibrations). On the other end is the anus (through which waste is excreted). The brain, hearts, and breathing organs are located in the first few segments of the worm.



Respiratory System

Earthworms do not have lungs. They breathe through their skin. If their skin dries out, they cannot breathe and they will die. Oxygen and carbon dioxide pass through the earthworm's skin by diffusion. For diffusion to occur, the earthworm's skin must be kept moist. Body fluid and mucous is released to keep its skin moist. Earthworms therefore, need to be in damp or moist soil. This is one reason why they usually surface at night when it is possibly cooler and the "evaporating potential of the air is low." Earthworms have developed the ability to detect light even though they cannot see. They have tissues located at the head which are sensitive to light. These tissues enable an earthworm to detect light and not surface during the daytime where they could be affected by the sun.

Circulatory System

The earthworm has a closed circulatory system. An earthworm circulates blood exclusively through vessels. There are three main vessels that supply the blood to organs within the earthworm. These vessels are the aortic arches, dorsal blood vessels, and ventral blood vessels. The aortic arches function like a human heart. There are five pairs of aortic arches, which have the responsibility of pumping blood into the dorsal and ventral blood vessels. The dorsal blood vessels are responsible for carrying blood to the front of the earthworm's body. The ventral blood vessels are responsible for carrying blood to the back of the earthworm's body.

The earthworm has five pairs of hearts. The rest of the inside of an earthworm is filled with the intestines, which digest its food.

Digestive System

The digestive system is partitioned into many regions, each with a certain function. The digestive system consists of the pharynx, the oesophagus, the crop, the intestine and the gizzard. Food such as soil enters the earthworm's mouth where it is swallowed by the pharynx. Then the soil passes through the oesophagus, which has calciferous glands that release calcium carbonate to rid the earthworm's body of excess calcium. After it passes through the oesophagus, the food moves into

the crop where it is stored and then eventually moves into the gizzard. The gizzard uses stones that the earthworm eats to grind the food completely. The food moves into the intestines as gland cells in the intestine release fluids to aid in the digestive process. The intestinal wall contains blood vessels where the digested food is absorbed and transported to the rest of the body.

Reproductive System
Earthworms are hermaphrodites, meaning they have both male and female reproductive organs. Mature worms have a clitellum (the enlarged segments in the middle of the earthworm), the reproductive parts of this worm.

When two earthworms are ready to mate they adopt a head-to-tail position, cover themselves in a layer of mucus, and exchange sperm. The saddle produces a mucous tube which detaches and moves forward along the body, collecting on the way the earthworm's own eggs and the sperm received from its partner.

Fertilization occurs in the mucous tube which is shed from the front end of the earthworm. This dries in the soil to become an egg capsule, from which one or more young earthworms will eventually hatch. Many species can reproduce several times a year.

Movement: When burrowing underground, earthworms move by having cycles of muscle contractions that alternatively lengthen and shorten the body. The bristles (setae) help hold the stationary part of the worm in place as it "launches" another part forward.

If you would like to know more about earthworms or would like to help in their identification and record, the Earthworm Society of Britain can be found at: http://www.earthwormsoc.org.uk/

Anyone can submit records of earthworms to the recording scheme by going out and looking for earthworms in your local area and telling us what you find. This will allow us to build up a picture of the distribution of earthworm species in the UK. We already have some data, but there are huge gaps in sampling across the country. The Earthworm Society of Britain runs courses on sampling and identifying earthworms which members can attend so you can learn how to go and sample earthworms.

Did You Know?: The Pharaohs of ancient Egypt were amongst the first people to recognise the importance of the Soldiers of the Soil. In fact Cleopatra declared the earthworm sacred, and anyone trying to take them out of the country was subjected to the death penalty. Tests carried out in the Nile valley by the US Department of Agriculture in 1949 proved that the great fertility of the soil there was due largely to the work of earthworms

(Next Newsletter – "Ants")

QUOTES

The continued existence of wildlife and wilderness is important to the quality of life of humans.
Jim Fowler

I am in favour of animal rights as well as human rights. That is the way of a whole human being. Abraham Lincoln

Every man must decide whether he will walk in the light of creative altruism or in the darkness of destructive selfishness.
Martin Luther King Jr.

We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.
Aldo Leopold

What is the good of having a nice house without a decent planet to put it on?
Henry David Thoreau

EASY FUNDRAISING

MTVCA via our treasurer Jean, has joined the group wwww.easyfundraising.org.uk which means that every time an internet purchase is made via this site, the MTVCA could receive a donation. We would love all our members, friends, colleagues who shopped online to register themselves and shop via easyfundraising. Copy and paste the link below and it will take you to the registration form. Simply complete your details and choose Medlock and Tame Valley Conservation Association as your charity. You must always use the site to access whatever online shop you wish to purchase from so that the donation can be made. Once you have registered, it's so easy. Just go to A-Z of shop directories and access your 'shop'. You will see the percentage which the shop will make following your purchase at no extra cost to your purchase. A confirmation email will be sent to you in a couple of days advising of how much you raised. It really is easy to do. There is also a link on the homepage of our website.

http://www.easyfundraising.org.uk/ (Keep this in your favourites!)

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RAVENS

Class: Aves
Order: Passeriformes
Suborder: Passeres
Family: Corvidae
Genus: Corvus
Species: Corax

Raven Vital Statics

Weight: 24-30 oz.
Length with tail: 20-25 "
Wing span: 40-48"

Sexual Maturity: 1 year
Mating Season: Jan-March
Incubation Period: 18-20 days
No. of Eggs: 3-7 avg.
Birth Interval: 1 year

Lifespan: 15 years in the wild

Typical diet: Rodents, insects, grains

Behaviour

The raven is a powerful flyer, often high in the sky. It can glide, soar, dive and tumble. On the ground it both walks and hops and will perch on rocks, trees or fences.

It is a fearless bird when protecting its young but is otherwise cautious. It is possible for ravens that are reared in captivity to be tamed and to take food from the hand.

The raven's call consists of croaks and grunts, but it will also mimic other sounds, including the human voice.

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Breeding Behaviour

Ravens mate for life and, after a nest has been built on a rock ledge or in a tree, return to it year after year. The male raven fetches the nesting materials, such as twigs, hairs and moss, and the female builds the nest. Five or six eggs are laid at any time from mid-February to May. Incubation is done mainly by the female raven with occasional help from her partner. The eggs hatch after about 20 days, and the young stay in the nest for up to 42 days.

Only one brood is raised in a season.

Feeding

Ravens feed mainly on carrion, which includes the afterbirths of sheep. However, they will also finish off injured animals or even kill smaller mammals such as rabbits. They are not averse to taking the eggs and young of other bird species.

Breeding & Nesting

The birds nest in a variety of locations. Many nest sites are in alcoves or large fractures in cliff walls, or on protected ledges that are well shaded. Nests can also be built in small shrubs, on bridge underpasses, telephone poles and signposts along railways.

Ravens build large bulky nests of stout sticks and line the centre with bark, hair, fur, grasses or even plastic bags. The birds lay 3-7 turquoise coloured eggs that are blotched with brown. Mostly, the female incubates the eggs, while the male feeds her at the nest site. The eggs hatch in 18-20 days, and the young leave the nest (fledge) at 35-42 days old.

Ravens in Myth and Literature

Ravens have featured in the myths, legends and literature of societies across their range for many centuries.

In the past, ravens were associated with gibbets, where they would pick at the flesh of the bodies of hanged criminals. This, together with their black colour and sinister appearance, helped to foster many stories linking ravens with the underworld, and they have featured as reincarnated spirits or

minor deities in a number of mythologies.

Famous occurrences in literature include Edgar Allan Poe's 1845 poem "The Raven", in which it is "a bird of ill omen" that crushes the hopes of a bereaved man by croaking "Nevermore" (http://www.houseofusher.net/raven.html).

However, in Charles Dickens's novel "Barnaby Rudge", the title character has a pet raven named "Grip" who is his constant companion through good times and bad, and indeed is his only true friend. Incidentally, Dickens himself kept pet ravens.

As mentioned above, ravens are known to imitate the human voice, and captive birds can acquire a "vocabulary". However, the assumption that speech implies understanding is, of course, a false one and can simply be mimicry.

Ravens at the Tower of London

Nobody knows when ravens first appeared at the Tower of London, but the legend has persisted for centuries that, should they ever leave, not only the Tower but also the Kingdom will fall. King Charles II decreed that at least six ravens must always be resident at the Tower, and this has been the case ever since, although several died of shock during the London Blitz of World War II and had to be replaced.

The current complement is seven ravens. They are unlikely to leave, partly because their wings have been humanely clipped to ensure that they cannot fly too far!

(Next Newsletter – "Rooks")

HOUSE APPEAL

Thank you for all donations received for our special house appeal which we launched in our last Newsletter in order to fund the redecoration of our main reception room.

We hope to start re-decorating in the Spring and to utilise all the varied abilities and skills of our multi-talented members! Please let us know if you could help us in this regard.

Any and all contributions are, of course, very welcome and much appreciated. Just make sure that any donations given are marked specifically for the "House Appeal" so our treasurer will know where to allocate these.

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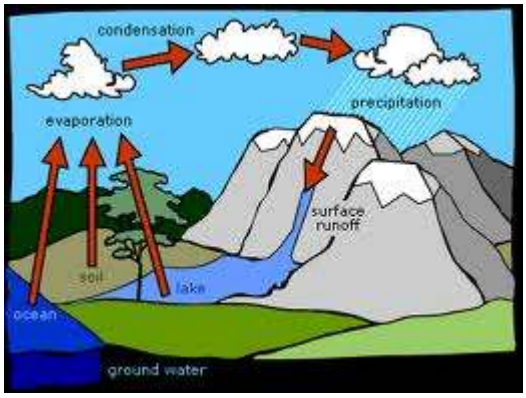
CYCLES IN NATURE

The Water Cycle (the hydrologic cycle)

There are many cycles in nature. A cycle is a process with no beginning or end. Cycles involve steps that move in a predictable pattern. At the end of the cycle, you find that you are back at the beginning.

Water is a unique substance. It is one of the few materials on the Earth that exists naturally as a solid, liquid, or gas. Changes in state, such as solid to liquid or gas to liquid, are caused by changes in energy. Changes in this energy, which ultimately comes from the sun, are measured by changes in temperature.

The water cycle is one example of a cycle in nature and is concerned with the journey water takes as it circulates from the land to the sky and back again. The water cycle is of particular interest because it impacts our lives in many ways. Parts of the water cycle include the weather that we experience, the amount of water that we must add to our lawns in the summer time, the location of bodies of water for water storage and recreation, and the importance of water conservation. Approximately three-fourths of the Earth is covered with water--salt water. Of this water, approximately one percent is the fresh water on which we depend. The fresh water that we use and its continuous replacement is a result of the water cycle.



There are six important processes that make up the water cycle.

1. **Condensation** - the opposite of evaporation. Condensation occurs when a gas is changed into a liquid.

2. **Infiltration** - Infiltration is an important process where rain water soaks into the ground, through the soil and underlying rock layers.

3. **Runoff** - Much of the water that returns to Earth as precipitation runs off the surface of the land, and flows down hill into streams, rivers, ponds and lakes.

4. **Evaporation** - the process where a liquid, in this case water, changes from its liquid state to

a gaseous state.

5. **Precipitation** - When the temperature and atmospheric pressure are right, the small droplets of water in clouds form larger droplets and precipitation occurs. The raindrops fall to Earth.

6. **Transpiration** - As plants absorb water from the soil, the water moves from the roots through the stems to the leaves. Once the water reaches the leaves, some of it evaporates from the leaves, adding to the amount of water vapour in the air. This process of evaporation through plant leaves is called transpiration.

There are two major components of the Earth: matter and energy. The energy that we use on Earth ultimately comes from the sun. This energy is used to provide food for plants, to heat our homes, power the wind, and ultimately creates fossil fuels. Once energy is used, it must be replaced. All the matter that is on/in the Earth already exists here. That means that there is a finite amount of air, water, minerals, and rocks on this planet. In order for changes in matter to occur, such as the growth of plants and animals or the build up of soil, these materials must be reused or recycled.

When we think of the water cycle, we often first think of bodies of water on the surface of the Earth, such as lakes, reservoirs, oceans, rivers, and streams. Water from these surfaces enters the water cycle upon evaporation. Evaporation occurs when increases in energy (from the sun) is great enough to turn a liquid into a gas or water into water vapour. Water vapour is also added to the atmosphere by transpiration**.** Transpiration is the release of water by plants. Plants collect water through their roots and lose it as it evaporates into the atmosphere through small openings on the undersides of their leaves. Many of our activities also add water vapour to the air: e.g. hanging our clothes out to dry and sprinkling our lawns on sunny days. Interestingly, only pure water evaporates. This means that the mud in puddles, the salt in the ocean, and pollutants stay on the surface of the Earth. Only pure water turns into water vapour. In this way, we can get fresh water from salty ocean water.

Once water vapour is in the air, it often stays there. This water vapour is called humidity. Humidity can vary from 0% in the deserts to 100% right before a summer rain storm. Warm air holds much more water than cold air. When water vapour cools, it condenses**.** We can see the condensation of water in the form of clouds. We can also see condensation whenever water vapour comes in contact with cold air or cooler objects. Look on your mirror after a hot shower - this is condensation in action. In nature, dew and frost are a result of water vapour condensing onto the cooler surfaces of plants and windows. Water vapour condenses when it reaches higher elevations because the air is cooler.

As water vapour cools into clouds, many things can happen to it, depending on the temperature. If the clouds stay relatively warm, the water vapour will collect into larger and larger drops until they are too heavy to stay aloft. Rain is one form of precipitation. Precipitation returns water from the atmosphere back to the surface of the Earth. If the clouds are cold enough, other forms of precipitation may occur. Water vapour may turn directly into snow in a process called sublimation (moving directly from a gas to a solid or a solid to a gas). Hail may be formed when rain drops are tossed high into the clouds and colder temperatures. As these small drops freeze, they are dropped lower into the clouds, coated with water, and then blown back up into the atmosphere to freeze again. When too heavy to be blown around in the clouds, hail stones drop to the Earth.

When water returns to the Earth, it can be absorbed into the soil. This process is called percolation**.**

Water will trickle through the tiny spaces between the soil particles and eventually collect above an impermeable rock layer. This water and saturated soil above the rock layer is called ground water**.** Ground water can move to lower elevations and depression through underground "rivers." The top level of the ground water is called the water table. Any depression in the Earth below the water table appear as lakes and ponds.

Different types of soil will vary in their ability to absorb water. When water is not absorbed by the ground, it may create surface runoff. Runoff water travels over the surface of the ground and causes soil erosion. Evidence of this type of erosion can often be found in road cuts and other unprotected soil surfaces. Plant roots are important aids in the prevention of surface erosion.

Precipitation that falls on the ground or on the surface of bodies of water can once again evaporate, starting the water cycle over again. The water cycle is an essential part of the natural system and is vital to all living things. Without the continuous return of fresh water to the land, land plants and animals could not exist

(Next newsletter – The Nitrogen cycle)

USEFUL CONTACT USEFUL CONTACT NUMBERS

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0161 330 9959 (Susan Stewart)

07711 388468 (Jean Lythgoe)

It's always good to hear from our members. f you have a photograph or article which you would like to contribute to the newsletter, then please email Susan (Secretary) at mtvca@yahoo.co.uk or write to Susan at 5 Oaken Clough Terrace, Ashton under Lyne OL7 9NY.