Friends of Hoddles Creek Inc. ABN 16 968 261 143
email: friendsofhoddlescreek@gmail.com. Mail: PO Box 298 Yarra Junction VIC 3797
web: www.friendsofhoddlescreek.com

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FRIENDS OF HODDLES CREEK NEWSLETTER

Wonderful Wattle

Acacia dealbata: photo Michelle Knoll

Wattle is the common name for the largest genus of flowering plants in Australia, Acacia. There are around 1350 species worldwide, predominantly in the southern hemisphere, with around 1000 of these in Australia.

What's in a name?

The Anglo-Saxon word 'wattle' comes from the old English form of house construction, also used by the early Australian settlers, known as wattle-and-daub. Branches and saplings were cut and woven onto wooden frames to create panels called wattles. This wattle-work was then daubed with mud and dung to fill the gaps. A hut could be built in a day and dried out that night by burning a fire inside. Such wattle-and-daub huts were common in the early days of settlement in Australia. Various types of acacias were ideal for this work because the plants were abundant and their cut stems were very flexible. The city of Sydney is said to have begun with a wattle branch!

Wattle for Australia

Australia's national floral emblem is *Acacia pycnantha*, the Golden Wattle. Wattle was incorporated as a floral motif adornment to the Commonwealth Coat-of-Arms in 1912, while a single wattle flower blossom inspired the design of an Order of Australia medal in 1976. Wattle Day is celebrated nationally on the 1st of September each year. The gold and green (of Wattle) have been adopted as our national colours appearing in a range of applications from Olympic and international sporting uniforms to Australian Made branding.

Wattle for Humans

All parts of the Acacia species have been used by humans at some time for a variety of purposes. Seeds from some Acacia species can be a valuable food source, but care should be taken as some seeds are known to be poisonous. The Paperbark Café, at Kuranga Native Plant Nursery in Mt Evelyn, bakes the most delicious Wattle-seed Scones! Extracts from the bark and the leaves have been used by Aboriginal people for medicinal purposes, as relief of toothache and colds, or applying to wounds and burns. Acacia wood was used by indigenous Australians to make clubs, spears, boomerangs and shields, and *Acacia melanoxylon* (Blackwood) is well known for making fine furniture. Tannin extracted from the bark of several species including *A. mearnsii* and *A. melanoxylon* has been used in the tanning process.

Wattle for Wildlife

Wattles can provide an important food source for birds, mammals and invertebrates. Wattle seeds are eaten by many bird species including cockatoos, rosellas, parrots, pigeons, wattlebirds, wrens and honeyeaters. Other birds glean insects directly from the foliage of wattles. Yellow-tailed Black Cockatoos use their strong beaks to rip open the wood of wattles (especially our local Black Wattle *Acacia mearnsii* and *Acacia melanoxylon* Blackwood) to expose and consume woodboring grubs.

Other birds like silvereyes and honeyeaters feed on the sugary fluid produced by a gland at the base of the leaf of many species. Gum and sap produced by some wattles is an important food source for Sugar Gliders and Leadbeater Possums. Wattle leaves, seeds, pollen and nectar are a food source for invertebrates such as ants, native and honey bees, wasps, weevils, moths and butterflies.

Wattle for Landscape

Wattles are hardy and fast-growing plants that can be beneficial for the landscape and garden, however some species like *A. mearnsii* can become invasive and are considered weeds in many places. Their ability to fix nitrogen in the soil allows wattles to grow well in soils that are deficient, as well as restoring the nitrogen balance in forest ecosystems following fires. They are useful in revegetation since they establish rapidly and provide shelter for slower growing species like eucalypts. Their vibrant yellow and scented blossoms make them a welcome garden species, especially in late winter when little else is in bloom.

Thanks to Yarra Ranges Council for their generous printing of the Newsletter.

Cloudspotting

by Meryl Knoll

View towards Mt Bogong, with low level cumulus fractus in the valley, as cumulus mediocris and cumulus congestus develop over the mountain. High level cirrostratus fibrosis.

Clouds are something we tend to take little notice of, except for those radar images on the TV news or the Bureau of Meteorology (BOM) website that may signify a cold front and rain, dampening the ground and often our mood. Much like going for a walk in the forest can raise our spirits, focusing on what lies above can be invigorating too, but without the exercise. What fills the sky on a cloudy day is not necessarily all doom and gloom.

Clouds and rain

While a cloud is essentially composed of water droplets in a liquid or ice form, not all clouds bring rain. Whether or not a cloud produces rain depends on the size of the water particles it contains. Droplets and ice crystals all fall due to the influence of gravity, but the smaller they are, the slower they fall. While clouds form as a result of air rising, the particles from the clouds will only fall if they become large enough to fall through the air rising below them.

A cloud can be referred to as a **hydrometeor**, consisting of minute particles of liquid water, ice, or both, suspended in the free air and usually not touching the ground. It may also include larger particles of liquid water or ice as well as non-aqueous liquid or solid particles such as those present in fumes, smoke or dust. (WMO-407 International Cloud Atlas)

Naming clouds

Luke Howard, an Englishman born in the late 18th century, is known as the father of meteorology and also for his naming of clouds. In his Essay on the Modification of Clouds, first published in 1803, Howard named (in Latin) and described seven major types of cloud, with terms that are commonly used by meteorologists worldwide today, including **cirrus** (hair), **cumulus** (heap), **stratus** (layer), **nimbus** (rain cloud) and three further combinations of these.

The International Cloud Atlas

Almost a century after Howard 'named' the clouds, in 1896 The International Cloud Atlas was first published, and after seven further editions, it remains the undisputed reference on cloud classification, now with its own website. It lists ten basic groups of clouds, still named and classified according to the Latin 'Linnaean' system, similar to our classification of plants and animals. These ten groups are known as 'genera' and from these evolve a number of 'species' that further describe each cloud.

There are numerous 'varieties' and finally 'accessories' that can form appendages to a cloud. Clouds are also classified according to their altitude (measured in feet) and grouped as following:

High level clouds (between 16,000 and 45,000 ft): cirrus, cirrostratus, cirrocumulus

Middle level clouds (from 6,500 to 23,000 ft): altocumulus, altostratus, nimbostratus

Low level clouds (below 6,500 ft): stratus, stratocumulus, cumulus, cumulonimbus

Cirrus are those wispy, thread-like clouds that form at high altitudes. Their appearance actually comes from ice crystals falling through the air, but never reaching the ground. While they are generally a cloud of fine weather, cirrus can indicate the approach of a warm front, with the meeting of a warm and a cold air mass. The lighter warm

air is forced to rise over the cold air mass, leading to cloud formation and lowering clouds indicate that the front is drawing near, bringing potential rain in the next 12 hours.

Cirrostratus are mainly transparent, milky veils of high cloud, with their two species being fibratus (fibrous) and nebulosis (smooth). Cirrostratus are perhaps better known for their ability to produce white or coloured rings, spots or arcs of light around the sun or moon known as 'halo phenomena'. The ice crystals that form the cirrostratus clouds behave like prisms and mirrors, refracting and reflecting the light between their faces and sending shafts of light in different directions. Some of the more common of these phenomena are known as sundogs, light pillars and the 22°halo.

Cirrocumulus are high patches of cloud or layers of tiny cloudlets that appear as white grains. They are usually regularly spaced, often arranged in ripples and, according to folklore, an indication that bad weather is on the way. Wind and gravity both have an influence in creating the rippled pattern in the thin cloud layer, which is referred to as a mackerel sky because it resembles the scale pattern of a mackerel fish.

Altocumulus are mid-level layers or patches of small clouds, or cloudlets, that form in the shape of rounded clumps, rolls or lenses. Lenticularis (lens-shaped) is perhaps the most interesting of the four species. These form quite commonly over mountains as air is forced upwards over the obstacle. These clouds have sometimes been mistaken for UFO's as a result of their classic flying saucer shape and appearance, which can appear quite solid and smooth, due to the fact that they are composed of a large number of very small droplets.

Altostratus is the mid-level version of stratus that can appear as a featureless layer of grey cloud stretching across the entire sky. While generally considered by meteorologists as the boring cloud, this is the cloud that can literally make our day at dawn and dusk. When the sun is low on the horizon, the light accentuates any contours at the altostratus base and transforms the dull grey sheet into an array of colours in shades of orange, pink and mauve to give us a beautiful sunrise or sunset.

Nimbostratus are thick, grey, featureless blankets of cloud, thick enough to block out the sun and known to bring prolonged and continuous rain, snow or hail. They are the deepest of all the layer clouds, extending through more than one level of the troposphere and often extending over many thousand square kilometres. There are no species or varieties as the cloud appearance is generally so uniform.

Stratus is a flat, grey sheet of cloud which is overall featureless in appearance. The saying 'having your head in the clouds' aptly refers to stratus, as this sheet or blanket of cloud can often occur at ground level when we generally refer to them as fog or mist. Stratus are the clouds most likely to dampen our mood, not because they bring rain, but because they tend to hang around blocking our vision and obscuring the sun.

Stratocumulus are low layers or patches of cloud with well-defined bases. They are usually composed of clumps or rolls and often show strong variations in tone from bright white to dark grey. One of their species, stratiformis forms when the clumps or rolls extend over a large area forming a 'roll cloud'. Near the tiny town of Bourketown in North Queensland, a particularly impressive roll cloud, known as

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Cloudspotting

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View from Schoolhouse Road towards the Donna Buang mountain range with stratocumulus interspersed with cumulus fractus.

The Morning Glory can develop during spring, luring glider pilots to make an annual pilgrimage to 'surf' the cloud.

Cumulus are the low, detached, puffy clouds that look like soft cotton wool balls floating in the sky. They tend to develop vertically in rising mounds that are randomly scattered across the sky. They also tend to have flat bases. Four species further describe cumulus as humilis (humble) being the smallest and wider than their height; mediocris (average) being as tall as their width; congestus (piled up) being taller than their width; and fractus (broken) being those small cumulus clouds with ragged edges.

Cumulonimbus, sometimes referred to as the thundercloud is capable of producing heavy rain, hail, thunder and lightning. Cumulonimbus extends through all three levels of the troposphere, beginning as a humble cumulus cloud that grows vertically through the mediocris and congestus stages and into cumulonimbus. A typically mature cumulonimbus cloud resembles a huge vertical column, often capped at the top by an incus (anvil), as a result of the cloud reaching the top of the troposphere, where it then spreads out in plumes of ice crystals giving the top of the cloud a smooth appearance.

I'm on Cloud Nine

In the original publication of The International Cloud Atlas, number nine on the list of the ten cloud genera was cumulonimbus. The phrase 'being on cloud nine' referred to being on the highest one. Then, in the second edition of the Atlas, cumulonimbus was relegated to number ten. However, the phrase stuck and so we now understand that being on cloud nine is to be in an elevated state of happiness (although it's doubtful that sitting on top of a cumulonimbus would be the cause of any state of elation).

The ten genera of clouds just described are not always easy to distinguish, as the sky often contains numerous genera of multiple species, with different varieties, not to mention all their accessories!

Our daily skyscape is in a constant state of change as clouds develop and grow with the forces of thermals, wind and temperature. Regardless of the science, we can simply appreciate clouds for their beauty and temperament, always remembering that every cloud has a silver lining.

https://cloudatlas.wmo.int/

http://www.bom.gov.au/weather-services/about/cloud/cloud-types.shtml

https://books.google.com.au/books/about/Essay_on_the_Modification_of_Clouds.html?id=toU-AAAAYAAJ&redir_esc=y

https://cloudappreciationsociety.org/

The Cloudspotters Guide, Gavin Prector-Pinney, Hodder & Stoughton, Great Britain, 2006.

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