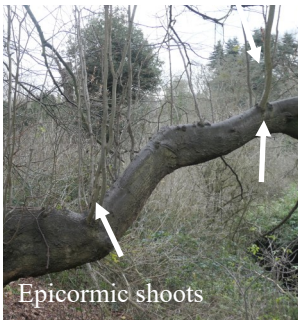
A Winter Walk in Vinters Valley Nature Reserve.

Southern Loop Jan.2026

EDUCATIONAL EXTRA

1 Lime Tree Avenue. *An information sheet is on the VVR website under Tree of the Month,* ***July 2022***
What is normally referred to as a Lime tree is in fact a cross between a Small Leaf Lime, *Tilia cordata* & a Large Leaf Lime, *Tilia platyphyllos*. The older looking trees at the north end of the avenue are these hybrids which typically have masses of suckers around their bases. They are also very prone to aphid infestation with its accompanying rain of sticky honey dew on anything below. The younger -looking trees at the south end, which would have been closer to the house, are Large Leaf Limes which are distinguished from 'Lime' by their lack of suckers.

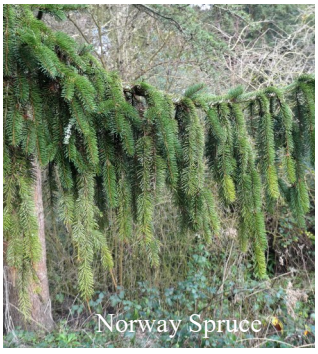
Why do they look younger ?
I think it unlikely that the avenue was planted in two stages & the trees are probably all the same age. However, it could be that the hybrid Limes are showing 'hybrid vigor' or 'heterosis'. This is where hybrid plants often show much more enhanced development than that which occurs in either parent. It is particularly apparent in & relevant to food crops which show quicker maturity, more growth/yield, & higher tolerance to drought. This may not be purely genetic but also caused by epigenetic effects where other factors affect the expression of existing genes.


Epicormic shoots

Where do all the suckers come from ?
All trees have dormant buds called 'epicormic buds ' below their bark. This applies to the roots, trunk & branches. They are normally suppressed by hormones from the growing tips of the plant but can be triggered to grow by damage or stress such as drought or an infection. Hybrid Limes are an exception to this rule & the excessive sucker growth seen here is normal. Another example of epicormic growth is where lots of small branches start to grow vertically upwards part way along existing mature branches. This is apparent on these Limes & also Goat Willows—there are several in the Reserve.

2 Coastal Redwood *An information sheet is on the VVR website under Tree of the Month,* ***Sept 2022***
If you look closely at the twigs you will see there are TWO types of leaves. There are very small scale-like leaves clasping the tip & at intervals along the twig, & between these are longer flattened leaves in two rows. They are supposed to smell of grapefruit if you crush them (although I haven't detected it.)
Why is the bark red & so thick & fibrous ?
The red colour of the bark is due to a high concentration of tannic acid which makes it resistant to rot, fungal diseases & wood-boring insects. Its thick (up to 30cm in some trees) fibrous nature makes it an excellent insulator against wild fires however this seems incongruous as the species evolved in a more moist, fog-driven, coastal areas where wild fires would have been less common. Also, unlike the Giant Sequoia, they do not require intense heat to make their mature cones open. Coastal Redwood cones dry naturally & open when conditions are appropriate for wind dispersal of their seeds. However, their resistance to fire does mean that they will survive when the understory is destroyed. A consequence of this is more fertile soil & more light for developing seedlings.

3 Norway Spruce. This tree was probably an unwanted Christmas tree that was planted by a member of the public. The species native range is northern & eastern Europe where there is heavy snowfall in winter hence the drooping shoots which will shed snow. This also exposes the leaves to sunlight from lowers angles such as is the case during long winters. Like many conifers (but not all) it is an evergreen.


Norway Spruce

Do the leaves on evergreens last the life of the tree ? No. They last between 3 & 10 years in spruces then they are shed & replaced.
Why don't conifers shed their leaves in winter ? They have a thick waxy layer that prevents water loss when in winter most water is frozen in the ground. Also, conifers have a water-conducting pipework called tracheids which although not as efficient as the more advanced 'vessels' in broadleaves they can better withstand freezing temperatures & possible build-up of ice inside them.

4 Hazel. *An information sheet is on the VVR website under Tree of the Month,* ***Jan.2022.*** *Also one on* ***Catkins*** *in* ***April 2025***
Hazels can grow into substantial trees but many, like this one, remain as shrubs shaded by other vegetation. However, they are adapted to shady conditions by having relatively broad leaves to capture the maximum available light; they have an increased concentration of chlorophyll & accessory pigments to capture longer wavelengths of light & they have a low compensation point. This is the light intensity where the uptake of carbon dioxide by photosynthesis balances that produced during respiration ie they can continue to grow under low light intensities. There is also evidence to suggest they require less light (quanta) per molecule of carbon dioxide converted into sugars so their biochemistry may be slightly different..

5 Two conifers. Conifers by definition have cones rather than flowers. They arose at least 300 million years ago (mya) whereas flowing plants appeared about 130 mya. It is thought that they diverged from a common seed producing fern ancestor on the supercontinent of Gondwana. The Atlas Cedar diverged from other Mediterranean cedars about 6.5mya. Cedars do not hybridise in nature due to their geographical separation but they do hybridise if kept together such as in parks. Hybrids of the Atlas & Deodar Cedars called Cedrus tesi cultivars, have been cultivated in Italy since 1980. They have large wide-spreading branches & a pyramidal overall shape so are attractive ornamental trees.
Spruces diverged from the Pines about 180-120mya but all spruces around today shared a common ancestor 28mya. The Norway Spruce naturally hybridises with the Serbian Spruce but commercial breeding with other Spruces has led to dwarf & weeping ornamental forms as well as disease resistant varieties for commercial timber production.

6 Spanish Fir. *An information sheet is on the VVR website under Tree of the Month,* ***Jan.2023.***
If you walk under the tree & look up you can just about make out the very stiff grey-green leaves. They remain on the tree for up to 15 years which is the longest known for a conifer.
How old & how tall is this tree ? It was most likely planted as a young tree, possibly 10 years old, by the Whatman family who took over the estate in 1783 & over the years landscaped it. In the wild they live for hundreds of years but this specimen is probably about 250 years old.
At the base of the tree beside the path is a dead Elder tree with a short horizontal branch projecting towards the path. The tip of this branch is 2.3m above the ground. If you walk (back) north up the path, say 50m, pick up a twig/blade of grass & hold it up so that the length above your finger matches the height of the dead Elder branch tip, you can move it to see how many of these can be stacked on top of each other to match the height of the Fir tree. Multiply by 2.3m & you have the height of the tree.

7 Holm Oak. *An information sheet is on the VVR website under Tree of the Month,* ***Feb. 2023.***
It is an evergreen broad-leaf tree which sheds leaves continuously rather than on a seasonal basis. Its leaves are very variable in shape—sometimes Holly-like, but more generally oval to lance shaped.
The hormone that maintains the single stemmed nature of trees by suppressing lateral growth is IAA or indole-3-acetic acid. Removing its effect by coppicing (cutting close to the base) or pollarding (cutting part way up the trunk) has been made use of for centuries to induce multiple stemmed growth. IAA however has a wide range of effects such as influencing cell division & elongation. The latter is the cause of trophic movements such as the growth of leaves & shoots towards light & the growth of roots towards gravity. Its exact effect is concentration dependent & in high concentrations this leads to uncontrolled uncoordinated growth & death. In the 1950's synthetic forms were used as a herbicide. IAA production is widespread in soil bacteria & also mammals where one of its effects is to induce cell death (apotopsis). By coupling the molecule to specific antibodies it has been possible to target cancer cells.

8 Beech *An information sheet is on the VVR website under Tree of the Month,* ***June. 2023***
This specimen seems to have more than its share of scars from the loss of branches. Whereas some may have been sawn, the majority look like they have been shed naturally where regrowth of callus wood from a cambium (layer of dividing cells) gives rise to a mass of undifferentiated cells that slowly expand & spread over the hole. Its function is to prevent the entry of fungi & insects.

9 Bird identification board. In addition to the birds shown on this notice the lake attracts many less common migrants but listing these is outside the scope of this information sheet. However, do keep an eye out for our local Kingfisher which is present all year & identifiable as a flying flash of bright blue.

10 Dogwood. The bright red young shoots of this are a clear identifying feature of this shrub in winter. There are between 30 & 60 species but a number of cultivars have been created to enhance the bright red stems in ornamental hedging plants. Before 1548 is was called a 'dog tree' but by 1614 'dogwood' had been adopted together with 'dog berries' or 'hound berries' for its black fruit. Should you return in summer, pick a leaf & fold it in half to gently break it. The two halves will have fine white threads of latex stretching between them.

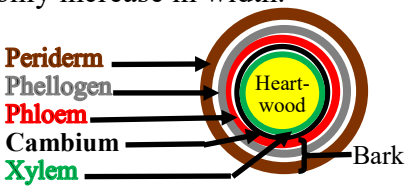
11 Oak & London Plane tree *Information sheets for both trees are on the VVR website under Tree of the Month,* ***Sept. 2022 & July 2023*** The September 2022 article shows this Oak tree before it fell & makes reference to the massive branches that overhung the then path. At the time I estimated the mass of one branch, excluding branchlets & foliage, to be four & a half tonnes. It is the largest branch jammed into the ground under the fallen tree.
This diseased London Plane is one of two in the Reserve. The other, more vigorous specimen stands near MacGrory's Meadow towards the NE of the Reserve (see both Northern Walks). It has developed a pronounced lean necessitating a closure & re-routing of the adjacent path for safety reasons.

12 Yew Trees *An information sheet is on the VVR website under Tree of the Month,* ***Feb. 2022.***
There are many Yew trees in the Reserve, some, such as that at the bottom of Yew Tree Steps being very old indeed. Young trees grow quite rapidly, up to 30cm a year under good conditions, but their growth slows considerably as they age & they are amongst the longest lived trees in Europe where some have been estimated at 3000 years old. They are not considered 'ancient' until over 900 year old. Old trees don't grow in height & their increase in girth reduces from 5mm down to 1mm per year. Age estimation is difficult as nearly all old trees have hollow centres so counting growth rings is impracticable. The bark contains alkaloids which can block the sodium & calcium channels in heart muscle & cause cardiac arrest, however, a derivative called Paclitaxel is used to treat ovarian & types of lung cancer.

13 Downy Birch aka White Birch is one of over 100 species growing in temperate zones. Hybridization is a very common naturally occurring phenomenon in birches so many show intermediate characteristics. However, Downy Birches never show the black diamond bark pattern of Silver Birches. Silver birch cells have a 2n number of 28 chromosomes whereas the Downy birch has a 2n of 56 suggesting chromosome duplication caused by the failure of the chromosomes in a fertilised female cell to separate leading to a doubling of their number. Subsequent divisions occur normally so the double package of chromosomes is present in all cells of the tree. Alternatively a cross with a Dwarf Birch which also has 28 chromosomes is possible. Birches are very adaptable to different conditions making them a prolific pioneer species (one that is the first to spread onto open ground) & this is related to their ability to hybridize.

Cut Leaf Beech *An information sheet is on the VVR website under Tree of the Month,* ***Oct. 2023***
Beech trees have relatively smooth bark & this is because it is thin compared to other trees. If you walk round the tree you will see a heart & initials carved into it but unfortunately without a date. The carving is at the same height up the trunk as the day it was carved because tree trunks only increase in width.

The cambium is a layer of cells that can divide parallel to the stem surface so as to give rise to xylem (water conducting) cells to the inside & phloem (sugar conducting) cells on the outside. In this way the stem can only grow outwards. The oldest xylem cells eventually become compressed & non-functional so forming the heart wood.



Cross section

As the tree matures, another dividing layer called the phellogen arises on the outside of the phloem & divisions of it give rise to the outer corky layer which we call the bark, although to be correct, the bark is actually the outer layers of compressed phloem, phellogen & the periderm. The thicker the bark, the more it will crack & become fissured as the trunk expands. In Spring the cambium becomes active & produces new phloem & xylem cells. The latter are large & thin-walled so in a cross section of the trunk they appear lighter than the older more inner xylem & this shows up as a tree ring. The width of this depends on the growing conditions at the time. Drought & cold weather lead to thinner rings.

14. Holm Oak. *An information sheet is on the VVR website under Tree of the Month,* ***Feb. 2023.***
The Holm oak's native habitat is warm, relatively dry, Mediterranean regions, but the largest group of them in Europe is on the Isle of Wight near Ventnor where in the 1800s Victorian residents planted them because of their resistance to salty sea air. However, Jays collected the acorns & buried them on the nearby St Boniface Down where they germinated & now form a large extensive wood. This has altered the chalkland habitat, so goats have been introduced to eat the fresh saplings & so limit the spread. You can see the effect Jays have in the Reserve in Netley Meadow where every year oak saplings have to be removed to maintain the area for grass & wild flowers to grow & provide food for butterflies & moths.

15 Scots Pine These trees are native to Scotland & once grew in England & Wales too. 7000 years ago it was one of the commonest trees but suffered from climate change when it became warmer & wetter. Excessive exploitation for timber led to them becoming extinct in England & Wales by the 1600s. They remained restricted to scattered pockets in Scotland collectively referred to as the Caledonian Forest. In the 1800s there was widespread re-planting by the Victorians & this tree is an example of that. Although Scots Pines are not regarded as native to England, they flourish in the current climate. They are said to live for up to 700 years.

AB Jan.2026