

ANCIENT SITES TO VISIT WITH ASTRONOMICAL LINKS



BOSCAWEN-ÛN STONE CIRCLE

Rock art on the central stone is illuminated at the summer solstice sunrise. The winter solstice sunrise is from the Lamorna gap.



TREGESEAL STONE CIRCLE

The winter solstice sunset is in sea gap which frames the distant Isles of Scilly.

BOSKEDNAN STONE CIRCLE

The setting Moon at its northern lunar standstill position is directly over Carn Galver.



CHUN QUOIT

The winter solstice sunset from Chun Quoit is over Carn Kenidjack.

There are many more examples of astronomically linked ancient sites, these are just a small selection.

Archaeoastronomer Carolyn Kennett has been working with Mayes Creative on the Dark Skies: Bright Stars Project, supported by Heritage Lottery Fund and FEAST Cornwall, and which explores and celebrates our ancient and modern links to the stars and planets, working with a host of partners and schools.

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This leaflet introduces the idea of archaeoastronomy in West Penwith and how we can all attempt to find our way using the signs from the sky.

All the sites mentioned in this leaflet are accessible to the public. Please be responsible, take nothing but pictures, leave nothing but footprints.

The text and images have been supplied by Carolyn Kennett (FRAS)

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CELESTIAL NAVIGATION AND ARCHAEOASTRONOMY IN PENWITH

BY
CAROLYN KENNETT
(FRAS)



ARCHAEOASTRONOMY

Just as we do today, the people of the Neolithic and Bronze Age would try to make sense of the motions in the sky.

The stone monuments in our landscape leave us clues as to how they did this. Many, we know, have been aligned to indicate positions of objects in the sky, the most common being stones that are aligned to the solar cycle, such as the Heel Stone at Stonehenge marking a solstice point.

Other stones are linked to the lunar cycle and some are suggested to have links with other celestial objects such as planets and stars. Archaeoastronomy attempts to understand the secrets that have been locked into the stones by studying the position and design of the monuments and linking them to the sky and landscape around them.



MOTION OF THE SUN

We all learn at school that the Sun rises in the east and sets in the west and this is true for the equinox dates in March and September. As the Sun approaches its summer solstice position it will rise (in the northern hemisphere) at its most northerly position, arching high in the sky. The opposite is true at the winter solstice; at this time the Sun will rise in its most southerly position, staying low in the sky and setting after a few hours. The daily displacement of the Sun along the horizon follows this pattern over the course of a year, the time it takes the Earth to orbit the Sun. The change in the position of the Sun along the horizon is due to the tilt in the Earth which is currently 23.5° . In the Bronze Age this would have been even more pronounced as the Earth had a larger tilt of 24° . This means that the Sun at the solstice in the Bronze Age would rise and set another degree further along the horizon than it does currently.

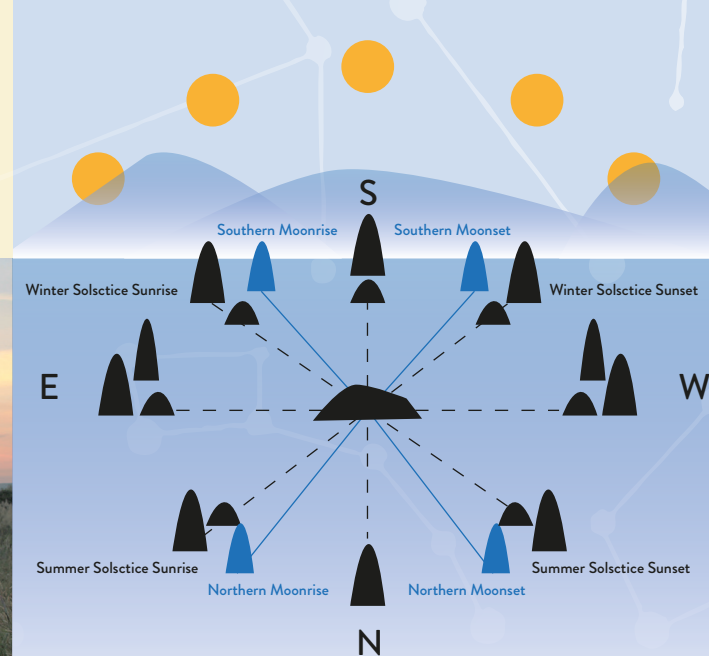
Sites which are linked to the solar cycle are Boscawen-ûn and Tregeseal stone circles.



MOTION OF THE MOON

Like the Sun, the Moon follows a pattern of rising in the east and setting in the west. Its motion is more complex. Instead of an annual cycle the Moon takes 18.61 years to return to the extremes of its positions; these are also known as standstills.

If we are to watch the Moon, its rising and setting positions change during a lunar month, but this is complicated by the Moon not returning to its same position at the end of the month. In fact it oscillates. Every 18.61 years the Moon reaches its most northerly rising and setting position, and within Cornwall these positions have been marked at sites such as Louden Hill, Stripple Stones and Boskednan. The next northern lunar standstill is April 2025.



NATURAL NAVIGATION WITH CELESTIAL OBJECTS

LEARNING A LITTLE ABOUT THE SKY CAN HELP US LEARN THE DIRECTION WE ARE TRAVELLING AND WHAT THE TIME IS. THESE FOLLOWING TIPS WILL HELP YOU NAVIGATE YOUR WAY THROUGH THE DAY.

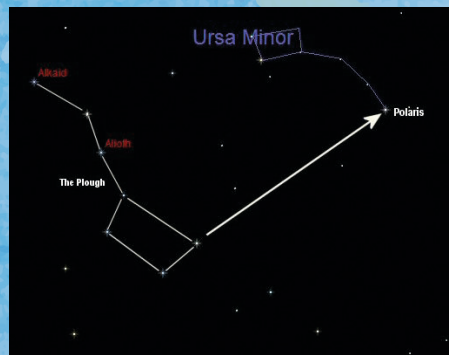
NAVIGATION AT NIGHT

FINDING NORTH

Polaris is currently the star at the northern celestial pole. Over the course of the night all the other stars rotate around this star. When you learn how to find Polaris you can find where north is.

Polaris is not a really bright star, but it is easy to find. Follow the end of the plough, and you will find Polaris between the Plough and Cassiopeia.

In the Bronze Age the star at the northern celestial pole would have been different. This is due to a 26000-year cycle called precession. The north star at this time would have been Kochab, which is found in the constellation of Ursa Minor and is the one of the stars in the quadrilateral.



FINDING EAST AND WEST WITH ORION

The constellation Orion rises in the east and sets in the west. Orion's Belt, the only three bright stars that form a short straight line in the whole night sky, rise very close to due east and set very close to due west. If you want to be really accurate then the first star in the belt to rise and set, called Mintaka, will always rise and set within one degree of true east and west. Kochab, which is found in the constellation of Ursa Minor and is the one of the stars in the quadrilateral.



TELL THE TIME WITH THE MOON

The phase of the Moon can help us tell the time in the following way.

The full Moon rises at approximately 6pm, it is found directly overhead at midnight, and it sets at approximately 6am.

The waxing half-Moon rises in the east at midday, is found overhead at 6pm and sets at midnight.

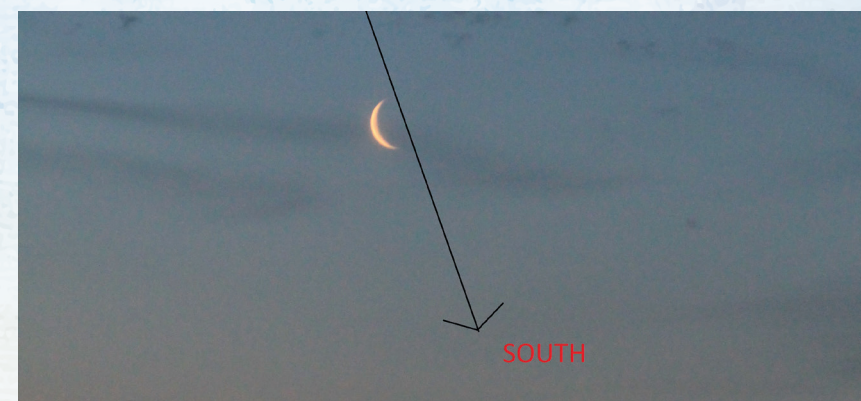
The waning half-Moon rises at midnight, is directly overhead at 6am, and it sets at midday in the west.



FINDING YOUR WAY WITH THE MOON

Through the lunar month the Moon goes through a number of phases and knowing what type of Moon you are looking at helps you work out your location. When the Moon is in its crescent phases you can find south in the following way.

The waxing crescent Moon can be seen in the west just after sunset. The waning crescent Moon can be seen in the east just before sunrise. If a line is drawn from the two points of the crescent Moon, this line extended to the earth will point to the south.



NAVIGATION IN THE DAY

FINDING YOUR WAY WITH THE SUN

By following the path of a shadow made by the Sun over a number of hours, it is relatively easy to find which way you are looking. The easiest way to do this is to place a stick upright in the ground and watch the motion of its shadow. If you mark the place where the shadow first touches it will be at the west position. A few hours later the end of the shadow will be the eastern point. Then draw a line between these two points and you will find where west and east are. In ancient times people could have used standing stones as a shadow stick to mark the passage of time.



OTHER DAYTIME TIPS FOR FINDING YOUR WAY

The growth of mosses and lichen can help you find your way. These will grow on the shaded side or north side of objects such as trees and stones. Trees also tend to grow larger branches to the south, where they get the most sunlight.

In Penwith we don't have many trees, but bushes can help by showing the direction of the prevailing wind.

The wind in West Penwith blows from a south-westerly direction, so the bush will point in a north-easterly direction.

