



Eclipse & Night Sky Report

Chile 2019



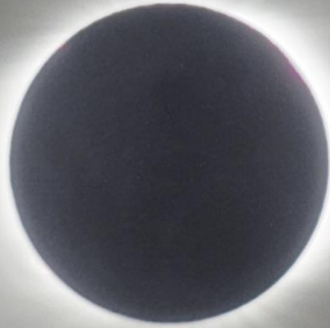
On 2 July 2019, Naturetrek groups observed a total solar eclipse from a site near Vicuña in the Elqui Valley, under perfect conditions. The entire ingress and totality were well-documented by the groups, some members of which also noted shadow sharpening and shadow bands. The extremely dry and clear Chilean air is very well suited to astronomical observations and the night skies are among the darkest on Earth. During our stay in Chile, Naturetrek uncovered many wonders of the rich southern sky, some of which are recorded on the following pages. Words and images by Tom Kerss.



Ingress of the total solar eclipse of 2 July 2019. First contact was recorded at 15:25 local time (19:25 UTC) and totality began at 16:38 (20:38 UTC) lasting 140 seconds. A spectacular diamond ring was observed unfiltered either side of totality.



‘Time-slice’ image revealing the progress towards totality at 30-second intervals.

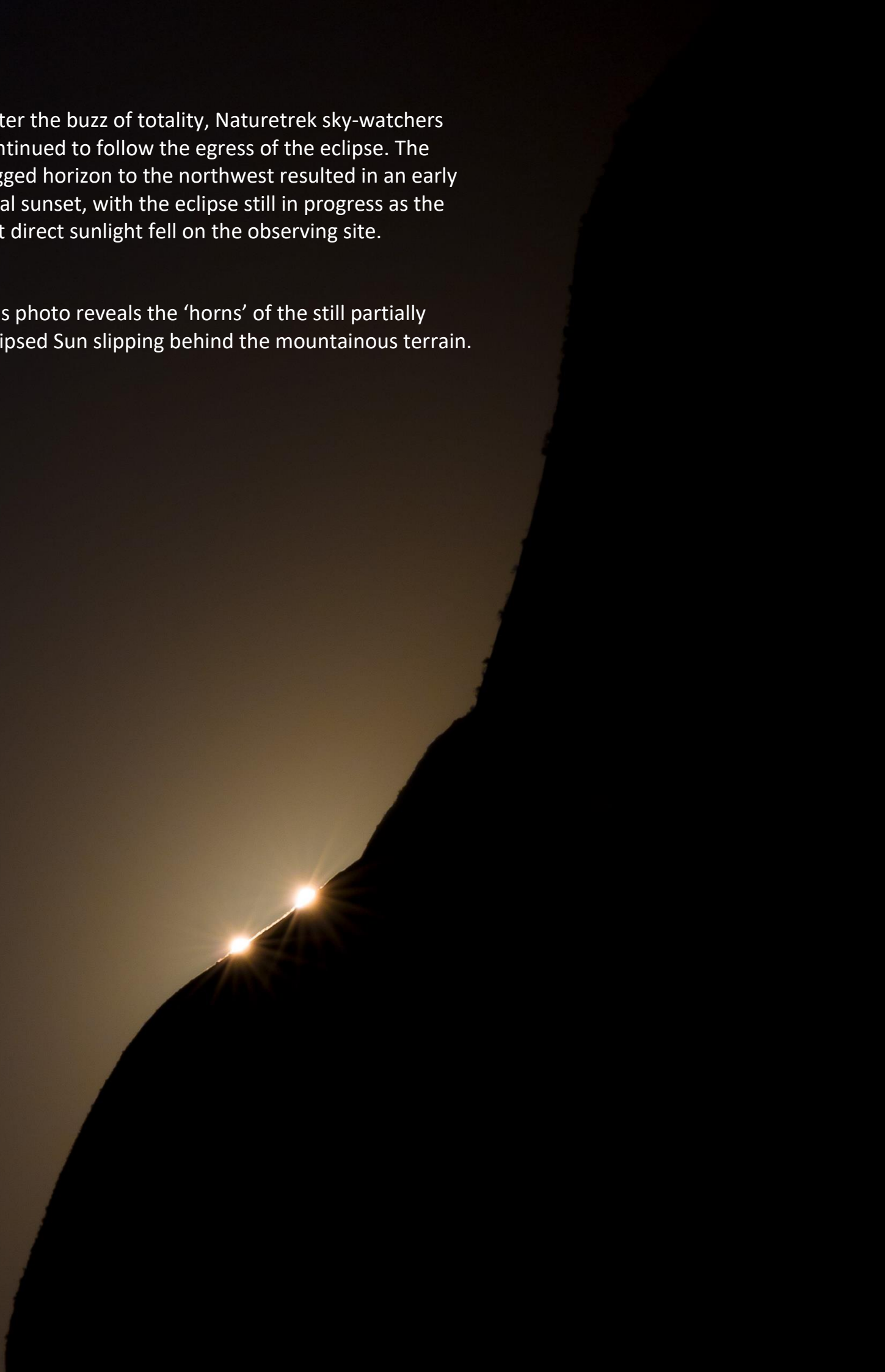


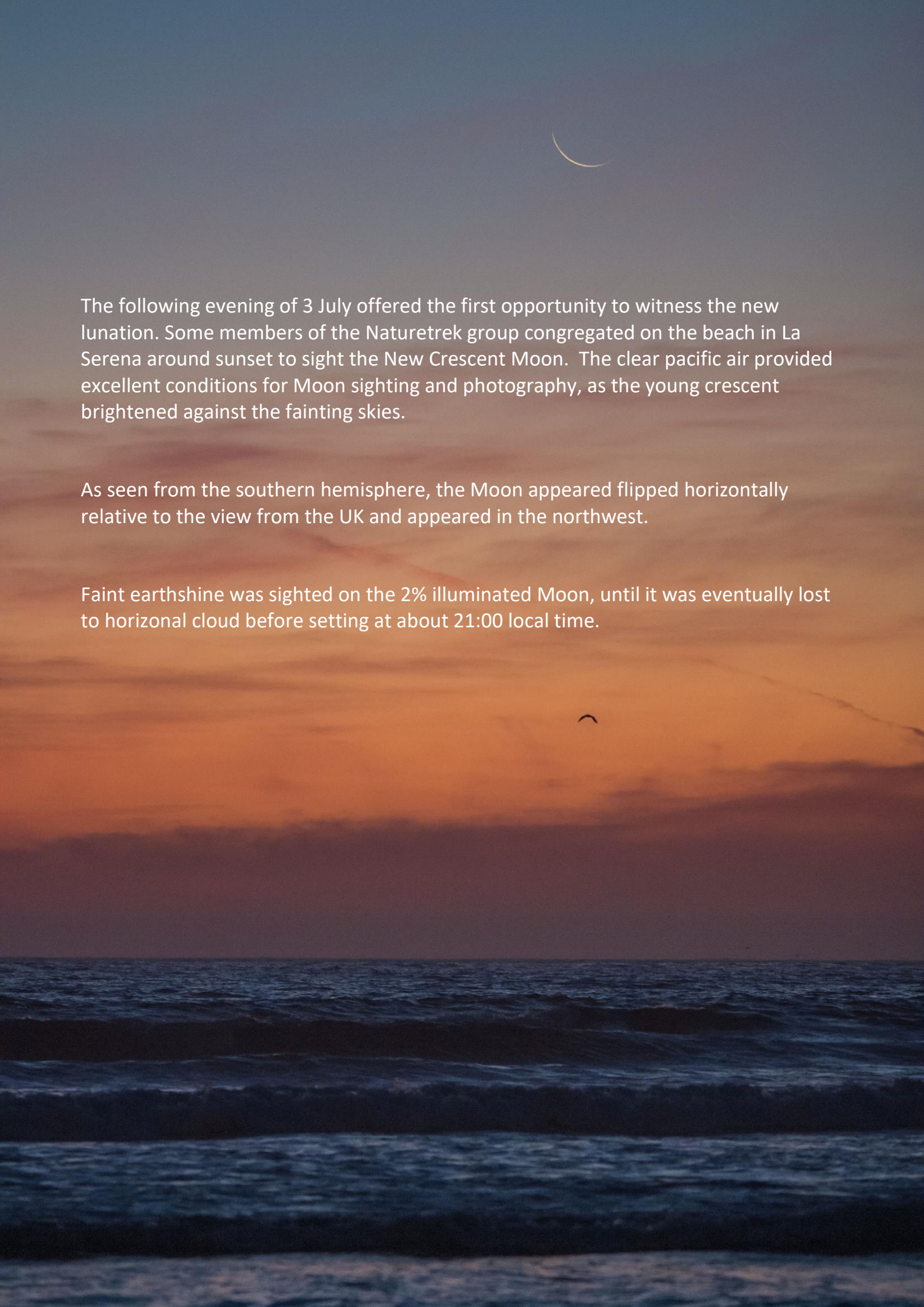
This wide-angle, High Dynamic Range (HDR) photograph during totality reveals faint details in the solar corona, including polar streamers and equatorial wings. During an eclipse, the natural sky colour is dark blue, rather than black as it appears to the eye, due to the scattering of sunlight from regions of the atmosphere around the shadow. The night side of the Moon is faintly illuminated by 'earthshine' – sunlight reflected back from the Earth. Lunar seas are just visible, but the Moon appears to be rotated by 180 degrees when compared with a view from the UK. To the north of the Moon (lower centre of the photo) is mag +3 Mebsuta (ε Gem.) The HDR technique involves combining multiple photographs taken in short succession with different exposure settings.

During the brief night-like sky conditions, Mars, Mercury and Venus became clearly visible to the eye, as well as Sirius, Procyon, Castor and Pollux, and the brightest stars in Orion.

After the buzz of totality, Naturetrek sky-watchers continued to follow the egress of the eclipse. The rugged horizon to the northwest resulted in an early local sunset, with the eclipse still in progress as the last direct sunlight fell on the observing site.

This photo reveals the 'horns' of the still partially eclipsed Sun slipping behind the mountainous terrain.

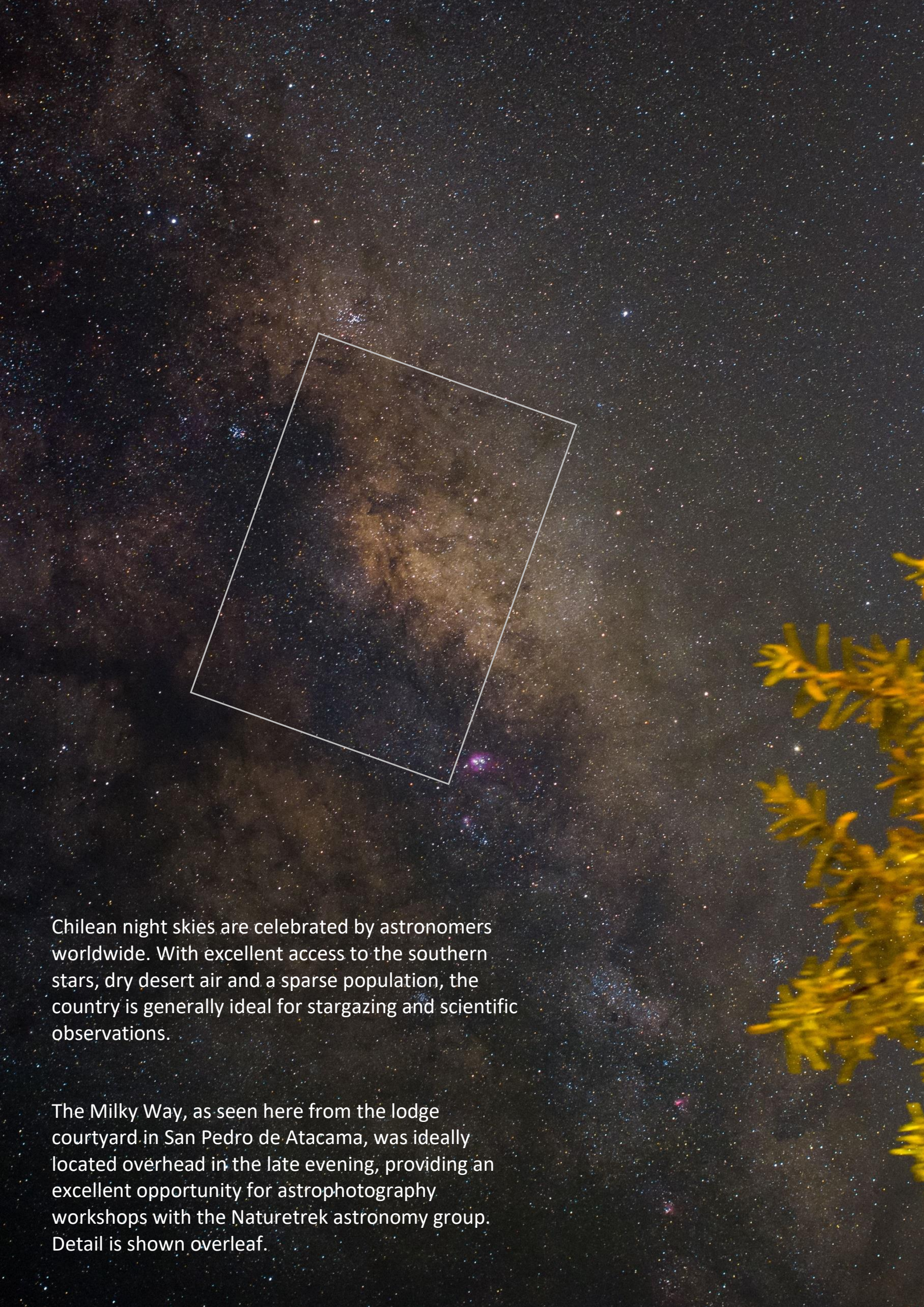




The following evening of 3 July offered the first opportunity to witness the new lunation. Some members of the Naturetrek group congregated on the beach in La Serena around sunset to sight the New Crescent Moon. The clear pacific air provided excellent conditions for Moon sighting and photography, as the young crescent brightened against the fainting skies.

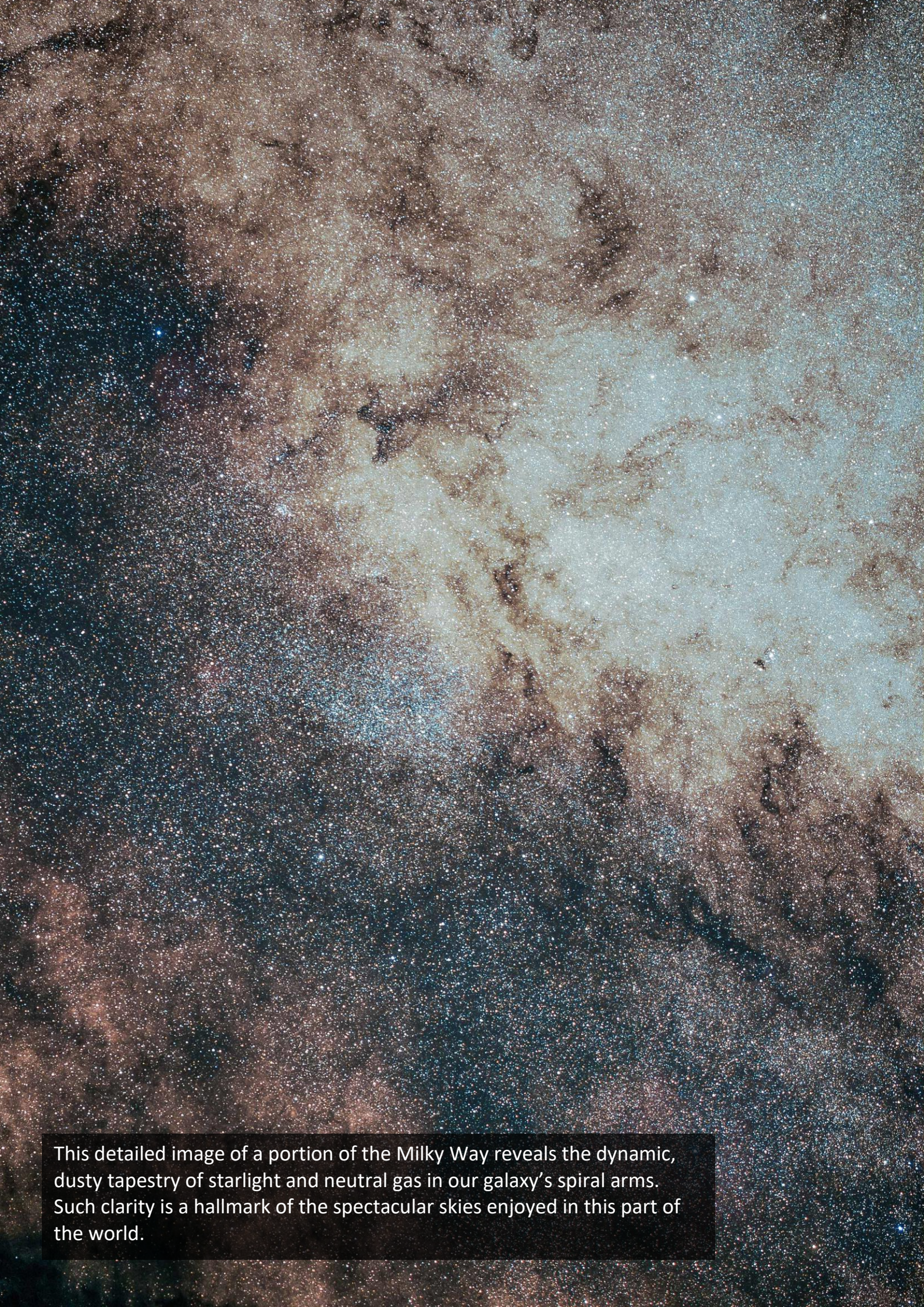
As seen from the southern hemisphere, the Moon appeared flipped horizontally relative to the view from the UK and appeared in the northwest.

Faint earthshine was sighted on the 2% illuminated Moon, until it was eventually lost to horizontal cloud before setting at about 21:00 local time.



Chilean night skies are celebrated by astronomers worldwide. With excellent access to the southern stars, dry desert air and a sparse population, the country is generally ideal for stargazing and scientific observations.

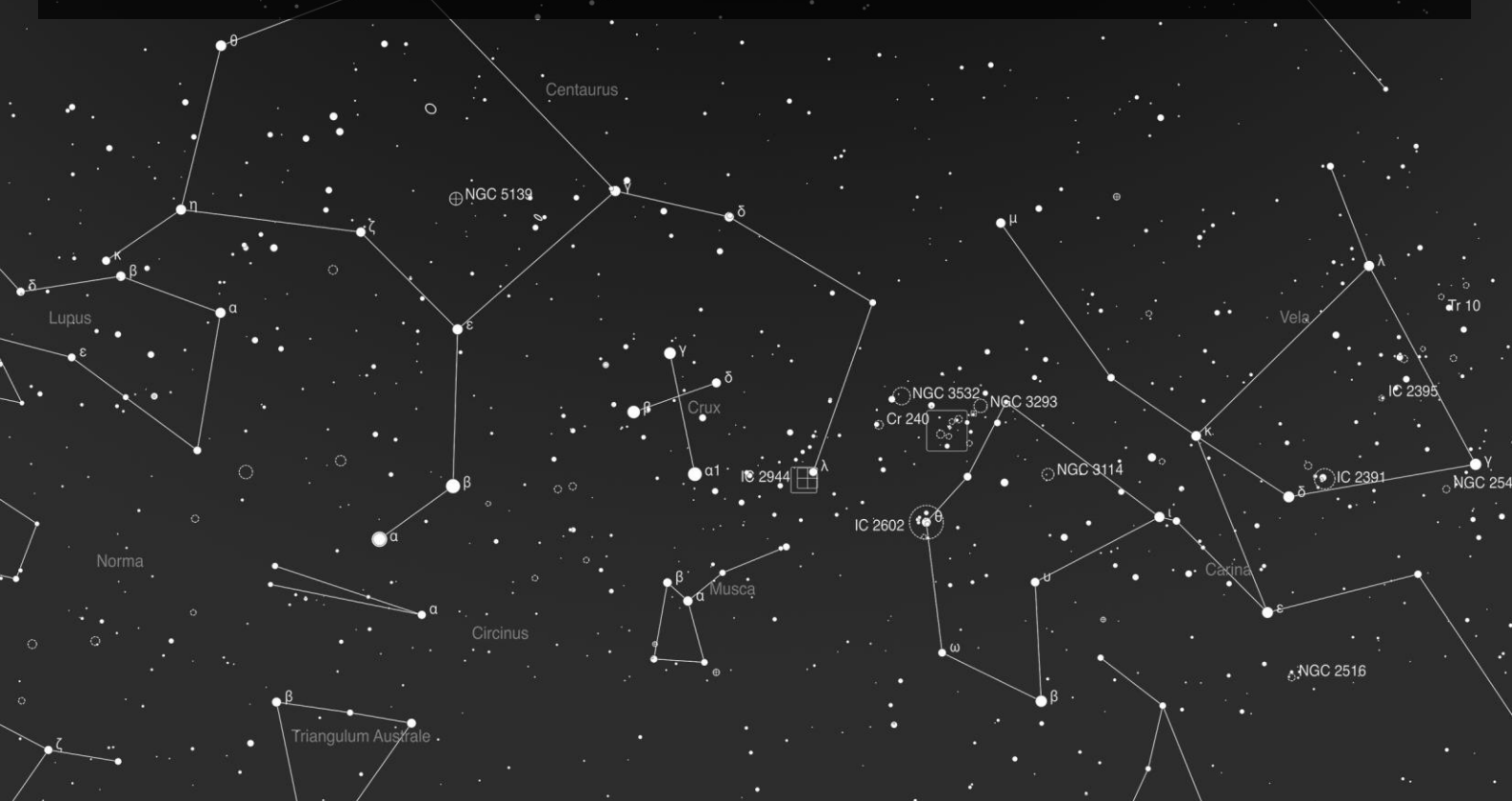
The Milky Way, as seen here from the lodge courtyard in San Pedro de Atacama, was ideally located overhead in the late evening, providing an excellent opportunity for astrophotography workshops with the Naturetrek astronomy group. Detail is shown overleaf.

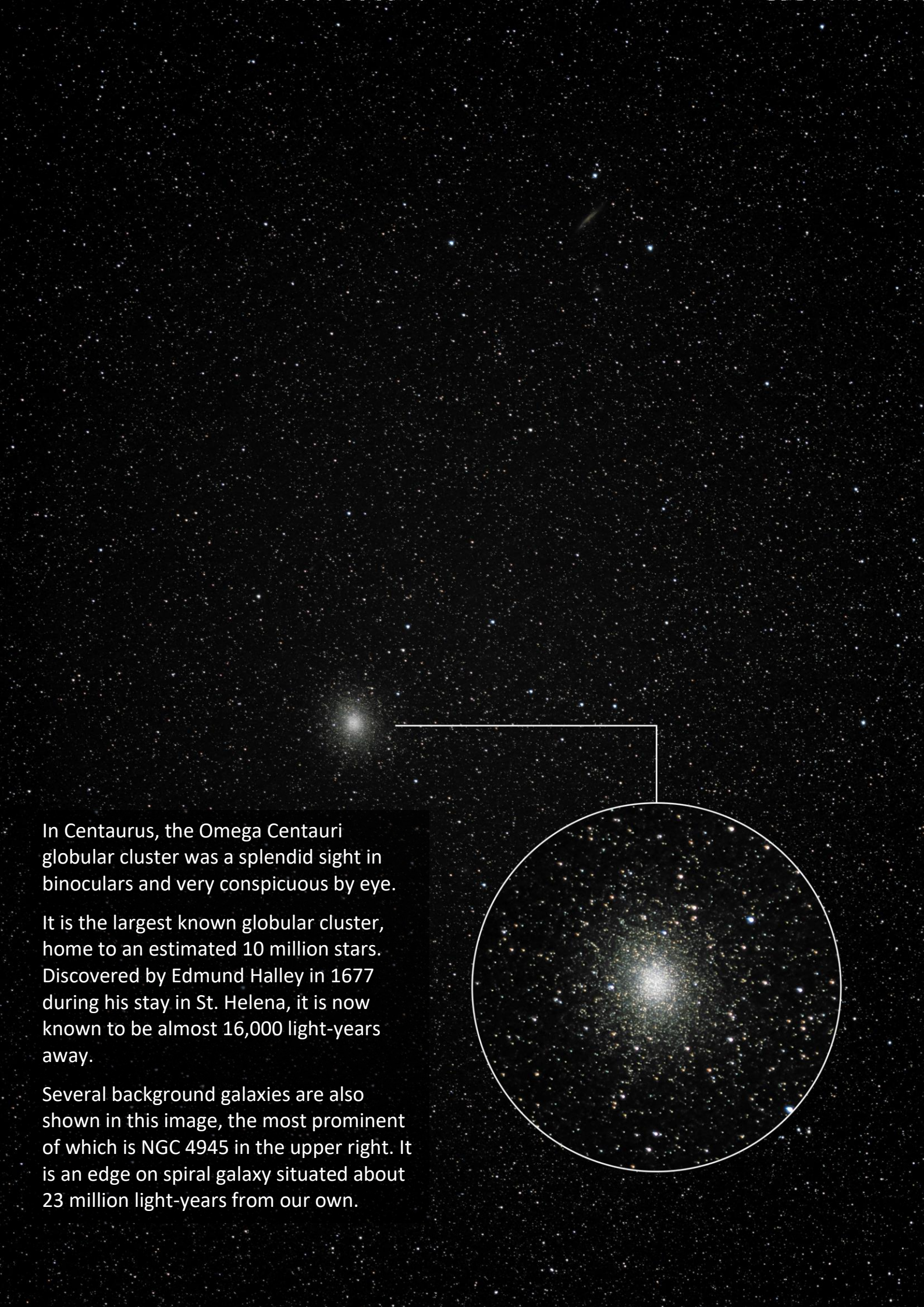


This detailed image of a portion of the Milky Way reveals the dynamic, dusty tapestry of starlight and neutral gas in our galaxy's spiral arms. Such clarity is a hallmark of the spectacular skies enjoyed in this part of the world.



July's southern skies are resplendent with beautiful constellations and deep sky objects never seen from the UK. Crux, Carina, Centaurus and Scorpius provided particularly fine views. Sky-watchers identified many objects considered absolute highlights among both hemispheres.





In Centaurus, the Omega Centauri globular cluster was a splendid sight in binoculars and very conspicuous by eye.

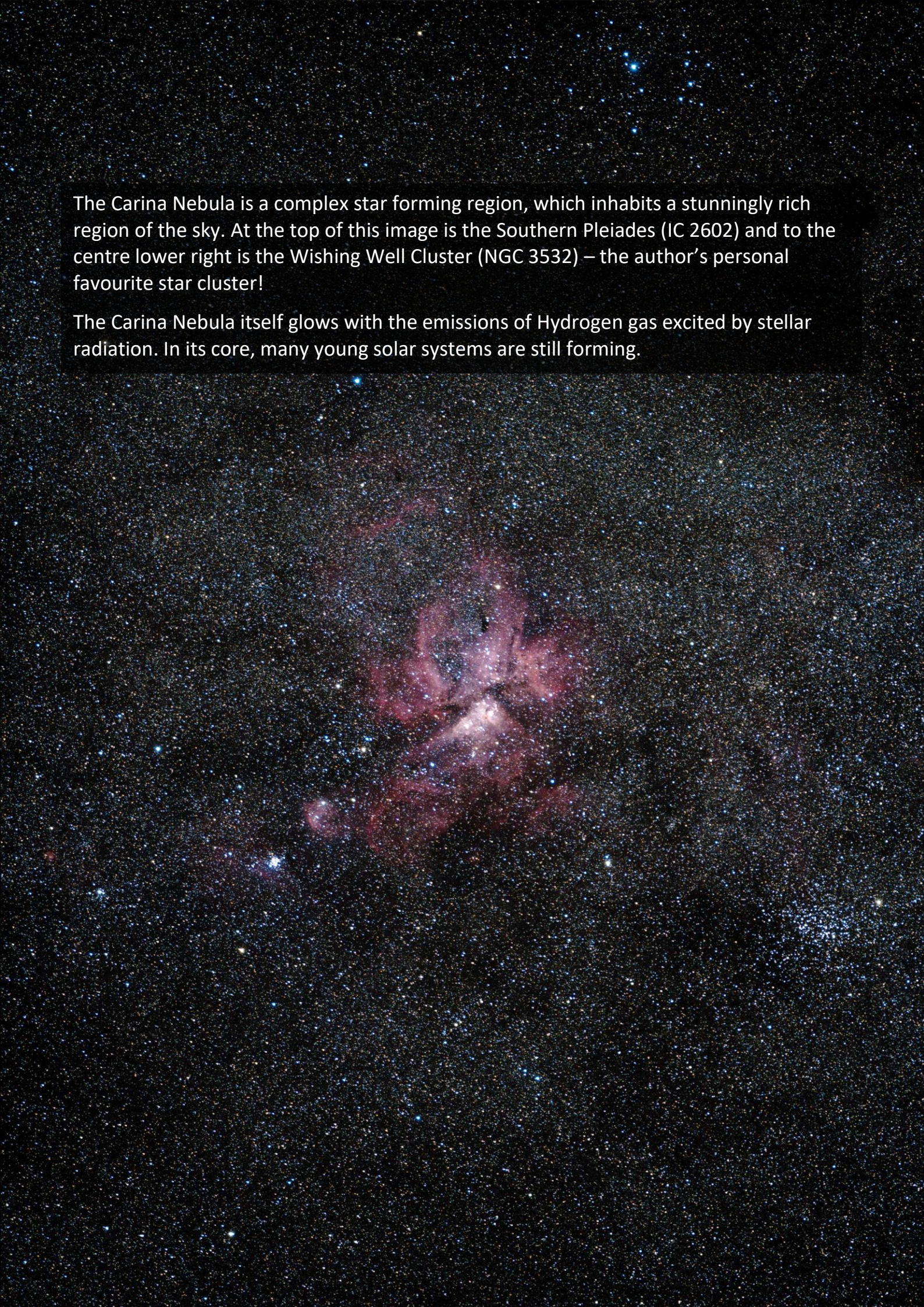
It is the largest known globular cluster, home to an estimated 10 million stars. Discovered by Edmund Halley in 1677 during his stay in St. Helena, it is now known to be almost 16,000 light-years away.

Several background galaxies are also shown in this image, the most prominent of which is NGC 4945 in the upper right. It is an edge on spiral galaxy situated about 23 million light-years from our own.



The Carina Nebula is a complex star forming region, which inhabits a stunningly rich region of the sky. At the top of this image is the Southern Pleiades (IC 2602) and to the centre lower right is the Wishing Well Cluster (NGC 3532) – the author's personal favourite star cluster!

The Carina Nebula itself glows with the emissions of Hydrogen gas excited by stellar radiation. In its core, many young solar systems are still forming.





Bright orange Antares – the heart of Scorpius – is part of a dreamlike star-scape, in which the interplay of starlight and galactic dust is fully explored. This extraordinary region of the sky grazes the southern horizon as seen from the UK, but soared high overhead in Chile for the astronomy group to admire and capture.