

# NEWSLETTER

## Next Meeting

**Wednesday 2nd May 2012 at 7:30 pm  
at Carter Observatory, Upland Rd, Kelburn, Wellington**

**Adjusting Your Telescope** -Presented by: **Gordon Hudson (Carter Observatory)**- Come along and hear from Gordon, telescope tinker extraordinaire, how to maximise your telescope usage.

Luca Quaglia will give a short presentation on a new method from the USA to measure the distance to the Sun using the Transit of Venus. This method is easy to implement and avoids the uncertainties of timing ingress and egress caused by the black drop effect. We would be keen on having some observers in New Zealand using these methods and sharing the data. They have observers in Australia, Japan and the US. I'm sure that for quite a few of the WAS members (like you!) it would be a piece of cake to take the measurements. The instrumentation is minimal and the technique is rather simple.

### UPCOMING EVENTS:

The next observing evening at the Tawa College observatory will be on: **Saturday 14 April**. Text Chris Monigatti on his mobile 021 890 222 if you want to attend. Note if cancelled due to bad weather, this will be deferred to Saturday 21 April. For other Astronomy related events see our [events](#) page.

Page 1- Next meeting Upcoming events	Page 4 Sun Funnel cont'd.	Page 7- Sky features for May
Page 2- Chairman's report and notices	Page 5 -Conferences; RASNZ and Starlight -Council contacts	Page 8 - Sky chart for May
Page 3 -How to make a Sun funnel by John Talbot	Page 6- Conference accommodation Book review	



## Chairman's Report for May 2012

**The last meeting on Wednesday April 4<sup>th</sup> was by Emeritus Prof. John Harper of Victoria University.** He described explained the reason for the importance of observing the Transit of Venus in the 17<sup>th</sup> and 18<sup>th</sup> centuries which was to establish the size of the Solar System and specifically the distance of Earth from the Sun. Many countries spent huge sums in sending expeditions around the World to make the observations at widely separated locations. Hence Capt Cook's voyage to Tahiti for the 23 April 1769 transit and later transit of Mercury in New Zealand. John explained the two main methods of measuring the parallax that were used. He also described his observations in 2004 while at Cambridge University.

**WAS has sold out of the RASNZ Solar viewers** suitable for observing the transit of Venus.

The viewers will be ideal for viewing the transit of Venus that will take place, and be visible from New Zealand weather permitting, on 6 June 2012. And for the partial eclipse of the Sun in November.

These viewers have been safety tested by one of the world's leading authorities on solar viewing devices and provide full eye protection when observing the Sun directly. Note that the viewer **should not be** used in conjunction with any optical device such as telescope, binoculars, camera etc.

During the transit, Venus is of sufficient apparent diameter to be able to be seen by eye through the filter. Later in the year an eclipse of the Sun will occur and the viewer will also provide a safe and easy way to observe this event, too. Each viewer is supplied with an information sheet about these two events.

If still want one of these please let me know by email asap <mailto:john.talbot@xtra.co.nz> and we will consider buying another batch. Or you can place an order for Solar Viewers by going to: <http://www.rasnz.org.nz/Sales/SolarViewers.html>

**WAS Research Astronomy Group** The Research Group meets each month at 6:30 pm before the main meeting. These meetings are open to all WAS members.

**Occultation Reports** There were 5 positive asteroidal occultation events reported for Australia and New Zealand in March. All from amateur astronomers. **Occultation Predictions** for the Wellington area are on our web site at <http://was.org.nz/01Occs.html> or look at the RASNZ Occultation Section web site at <http://occsec.wellington.net.nz> for both predictions and results from the Australia/New Zealand region.

**Variable Stars.** We have also been working through a series of tutorials by Murray Forbes on processing images with IRIS software in order to get accurate star magnitudes from CCD or Digital Camera images. We hope to have these put into a single document that can serve as an introduction to photometry for variable star observations. Remember visual observing of variable with naked eye or binoculars can also be valuable and a good introduction to the activity. Other observers are welcome to these meetings; please come and introduce your favourite astronomical research topics. Remember there are no stupid questions just stupid answers.

**Thomas Cooke Telescope Volunteers** Thanks to the members who volunteered to help with Saturday evening viewing following the planetarium show. April was well covered and we only need two more volunteers for May and 4 for June, so please put your hand up to do a shift one Saturday evening. A list of dates will be at the next meeting so please come and sign on.

## Making a simple cheap Sun Funnel

By John Talbot.

Some of you will all ready have seen the article on making a Sun Funnel at [www.transitofvenus.nl](http://www.transitofvenus.nl).

I decided this would be a good simple back end for my small 140 mm Meade and set about having a go. The first and quite serious problem was I could not find a good equivalent of the black plastic funnel described in the article. But I came across a description of making a witches hat for Halloween which was basically a funnel with a brim. The pattern (Fig 1) below was marked onto a sheet of black A2 card about 0.5mm thick x 640mm x 460mm (25" x 18") from Warehouse Stationery (\$10).

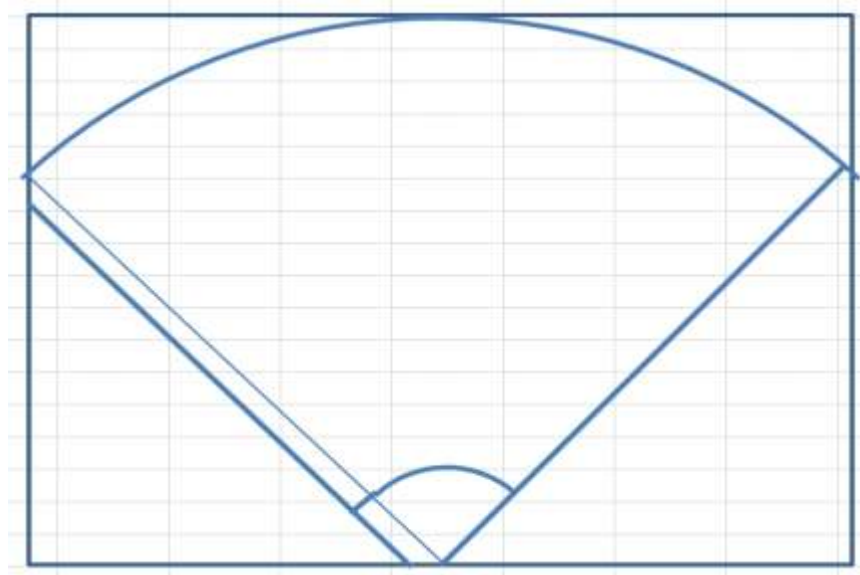


Fig 1. Funnel Pattern

I marked the centre of the bottom long side of the card to use as a centre and then drew an arc from short edge to short edge just touching the top long edge. And a short arc about 2 or 3 cm radius at the bottom. I left an extra bit for overlap when rolled to use as glue flap. This gives about a 23 mm (9 inch) diameter mouth. I used PVA glue but anything that grabs and dries reasonably fast will do.

I held a thick broom handle in my vice to use as a rest when gluing and nipped a couple of small G cramps on each end of glue line and held the rest down on the broom stick while glue set enough to hold.

Then I followed the same process on <http://www.transitofvenus.nl> and cut about four cuts 4 to 5 cm long at small end to allow the eye piece to be inserted and then put a couple of hose clamps (\$4 each at my local hardware or motor spares shop) on and made sure it was pointing down the middle. At this stage I put it on my 4.5inch scope with 25mm Plossel eyepiece and pointed at the Sun and hung a sheet of A4 printer paper over the big end. Lined up and I had a nice roughly 6inch diameter image of Sun. Once focused I could see a sunspot on the Sun image. Printer paper has a lot of fibres that are visible so I got some "parchment" paper at Gordon Harris in Victoria St, Wellington with a dense fine grain and it works much better than printer or "tracing" paper and is only \$2 for an A3 sheet.

On the next page are images of the Sun taken a bit over a day apart clearly showing sunspots that have moved- they are not dirt on my lenses or the screen. These are taken with my old Nikon 3100 point and shoot digital camera. The times are camera re- corded so if one synchronises the camera clock before or after the observation it will be accurate

Photographing your PC screen while displaying the Date and Time Properties window soon after synchronising to Internet time using the [msltime.irl.cri.nz](http://msltime.irl.cri.nz) server should allow to be within 2 seconds of UTC. If you have a KIWI OSD GPS unit photograph the video screen to get to within 1 second. The PC and camera clock display are the limiting steps.



Fig 2: Sun Funnel on Meade 140mm



Fig 3: Image at 20120422 01:48:30 UTC



Fig 4: Image at 20120423 03:33:11 UTC

**WARNING** - This setup with a small telescope seems to work OK without overheating the eyepiece but if you want to use a 6 inch or bigger telescope you will need a front filter or stop aperture to reduce the energy you are applying. I understand the risk is in melting, or worse boiling, the glue that holds the doublet or triplet achromatic lens in the eyepiece together. It would be sad and expensive to do this.

The Sun Funnel will be at next meeting for those who would like to see it.

## RASNZ Conference June 15-17

---

From Dennis Goodman, Chair, RASNZ Standing Conference Committee:

Well as I write this it is just under 3 months to Conference - and that time will fly by very quickly. Conference registrations are starting to come in now, and we encourage you to register early.

Registration forms are available on the RASNZ Webpage ([www.rasnz.org.nz](http://www.rasnz.org.nz)) Likewise for those wanting to present papers/poster papers - please lodge your intentions via the paper/poster-paper form on the RASNZ Webpage. The deadline to get the early registration discount is still some weeks away, but by registering now you will make sure you don't miss out.

Carterton is a lovely town within the Wairarapa region. It is blessed with a nice, temperate climate, good shopping, some nice cafes, high quality wineries nearby, and also nearby is Stonehenge Aotearoa. A visit to the latter will be an option for those wishing to take it.

Again, our thanks to The Phoenix Astronomical Society for hosting the 2012 Conference. They are putting in plenty of work, so let's show our appreciation by turning up in substantial numbers. We are also advancing with plans for the RASNZ Conferences in 2013 in Invercargil, and 2014 in Whakatane. See you at Conference.

Cont next page...

## Third International Starlight Conference

---

The Starlight Conference is at Lake Tekapo, 11-13 June 2012. The website is accepting registrations and on-line requests to give an oral or poster paper. Visit [www.starlight2012.org](http://www.starlight2012.org) for full details.

It will be a multidisciplinary conference on the scientific and cultural benefits of observing dark starlit skies. The meeting will be of interest to RASNZ members and to many other interest groups in education, tourism, environmental protection and to those interested in the cultural and ethnic aspects of astronomy. As participation will be limited, early registration is encouraged.

The Starlight Conference is jointly hosted by the University of Canterbury and by RASNZ, and is being sponsored by the University of Canterbury, by RASNZ, by the Royal Society of NZ, by Endeavour Capital Ltd and by the NZ National Commission to UNESCO.

-- Abridged from a note by John Hearnshaw.

Council Members of the WAS council for 2011-12

Executive:

President; John Talbot [john.talbot@xtra.co.nz](mailto:john.talbot@xtra.co.nz)

Vice President; Gordon Hudson [gordon@kpo.org.nz](mailto:gordon@kpo.org.nz)

Secretary; Chris Monigatti [chrison@xtra.co.nz](mailto:chrison@xtra.co.nz)

Treasurer; Lesley Hughes [hpwas@hugpar.gen.nz](mailto:hpwas@hugpar.gen.nz)

Curator of Instruments; Gordon Hudson

Website; John Homes

Telescope Custodian; Chris Monigatti

General Council Members- Frank Andrews, Roger Butland, Aline Homes, John Homes and Bill Parkin,

Newsletter Editor; Vicki Irons

### **...RASNZ Conference cont.**

As with the 2010 and 2011 Conference there is no on-site accommodation.

Carterton is a town rather than a city, but there are plenty of accommodation options in the town itself, or very nearby. The Standing Conference Committee has grabbed a motel within the camping ground.

There are more nice cabins there, plus motels and hotel accommodation, several B & B's in Carterton. At Masterton they have backpackers. The Carterton Events Centre is a venue with tiered seating so everyone can easily see the screens.

On the registration form there is the train timetable for those who need public transport from Wellington to Carterton. The train station is all of 5-10 minutes walk from the Carterton Events Centre, and from some of the accommodations options.

The papers timetable information will be put on the RASNZ page. The feature papers will be those from Ed Budding (Fellows lecture), and from our guests Wayne Orchiston and Clive Ruggles. Clive will also give a public lecture late on the Sunday afternoon. All details will be on the RASNZ Webpage as they become available.

Conference takes place a little over a week following the Transit of Venus. We are anticipating several people will want to attend. If enough interest is indicated we could set aside time to discuss the transit, present observations, findings etc. within the programme then we can do so. But, please tell us...

### **Book Reviews**

“Don’t Sell Your Coat” by Harold Ambler and “The Chilling Stars” by Henrik Svensmark  
*reviewed by Vicki Irons*

Ambler’s book provides a full coverage of several sciences which show data considered controversial about climate change and “global warming”. He covers the effects of urban vs rural temperature records, the viability of converting food production to fuel production and variability of ice thicknesses, but the part of most interest to us as astronomers is the chapters extolling the work of Henrik Svensmark and his book “The Chilling Stars: A New Theory of Climate Change” which postulated the theory that the number of sunspots has an effect on limiting cosmic rays which are believed to seed cloud formation. Consequently when sunspot numbers are few we have more clouds and cooler weather. This is the sunspot/temperature relation noticed by Maunder and described as ushering in the “mini” ice age when the Thames regularly froze.

Svensmark looks at our unpredictable Sun and suggests that it may well be more responsible for climate variations than we perceive at present. His book is worth a read and is based on good science. Ambler’s book covers several science disciplines while describing more controversial ideas rather emotively.

Henrik Svensmark concluded his book with the simple observation that planet Earth is finite; we know fossil fuels are finite therefore it makes sense to limit their use, save them for services that are vital to our wellbeing and stop burning them for frivolous use (such as car/ motorbike races, driving down to the local dairy or inefficient heating) and start operating as though every extracted drop is truly valuable and can provide great worth when utilised optimally.

Astronomers who enjoy learning about the Sun know of its powerful, variable and unpredictable nature and may enjoy learning of these ideas that are currently so important.



## The Evening Sky in May 2012

**Venus** (not shown) is the brilliant 'evening star' appearing low in the northwest soon after sunset. It sets around 7:20 pm at the beginning of the month but only 30 minutes after sunset at the end. As the sky darkens **Sirius** appears in the west with **Orion** below it. **Canopus** is southwest of the zenith. **Crux**, the Southern Cross, and the Pointers are southeast of overhead. Midway up the north sky is orange **Mars**. To its left is Regulus, the brightest star in Leo. High in the northeast sky is **Saturn** making a close pairing with **Spica**, the brightest star in **Virgo**. Below them, low in the northeast is **Arcturus**, a bright orange star often twinkling red and green.

**Venus** is catching us up and getting closer. It is slipping lower in the twilight as it moves between the Earth and the Sun. It is 53 million km from us mid-month. In a telescope it appears as a tall thin crescent as most of its sun-lit side is facing away from us. Venus crosses the face of the sun ('transits') on June 6. That event will be visible from New Zealand.

**Mars** is fading as we leave it behind. We passed it in early March. It is now around 160 million km away and small in a telescope. **Saturn** is a nice sight in a telescope. A small telescope will show the rings. Saturn's largest and brightest moon, Titan, orbits about four ring-diameters from the planet. Larger telescopes will show Saturn's smaller moons looking like faint stars close to the planet. Saturn is 1330 million km away in mid May.

Below Sirius are **Rigel** and **Betelgeuse**, the brightest stars in **Orion**. Between them is a line of three stars: Orion's belt. To southern hemisphere star watchers, the line of three makes the bottom of 'The Pot', now on its side. **Sirius**, 'the Dog Star', marks the head of **Canis Major** the big dog. Sirius is the brightest star in the sky though planets Venus, Mars and Jupiter can be brighter.

**Crux**, the Southern Cross, is southeast of the zenith. Left of it are Beta and **Alpha Centauri**, often called 'The Pointers'. Alpha Centauri is the closest naked-eye star, 4.3 light years away. It is a binary star: two sun-sized stars orbiting each other in 80 years. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away. **Canopus** is also very luminous and distant: 13 000 times brighter than the sun and 300 light years away.

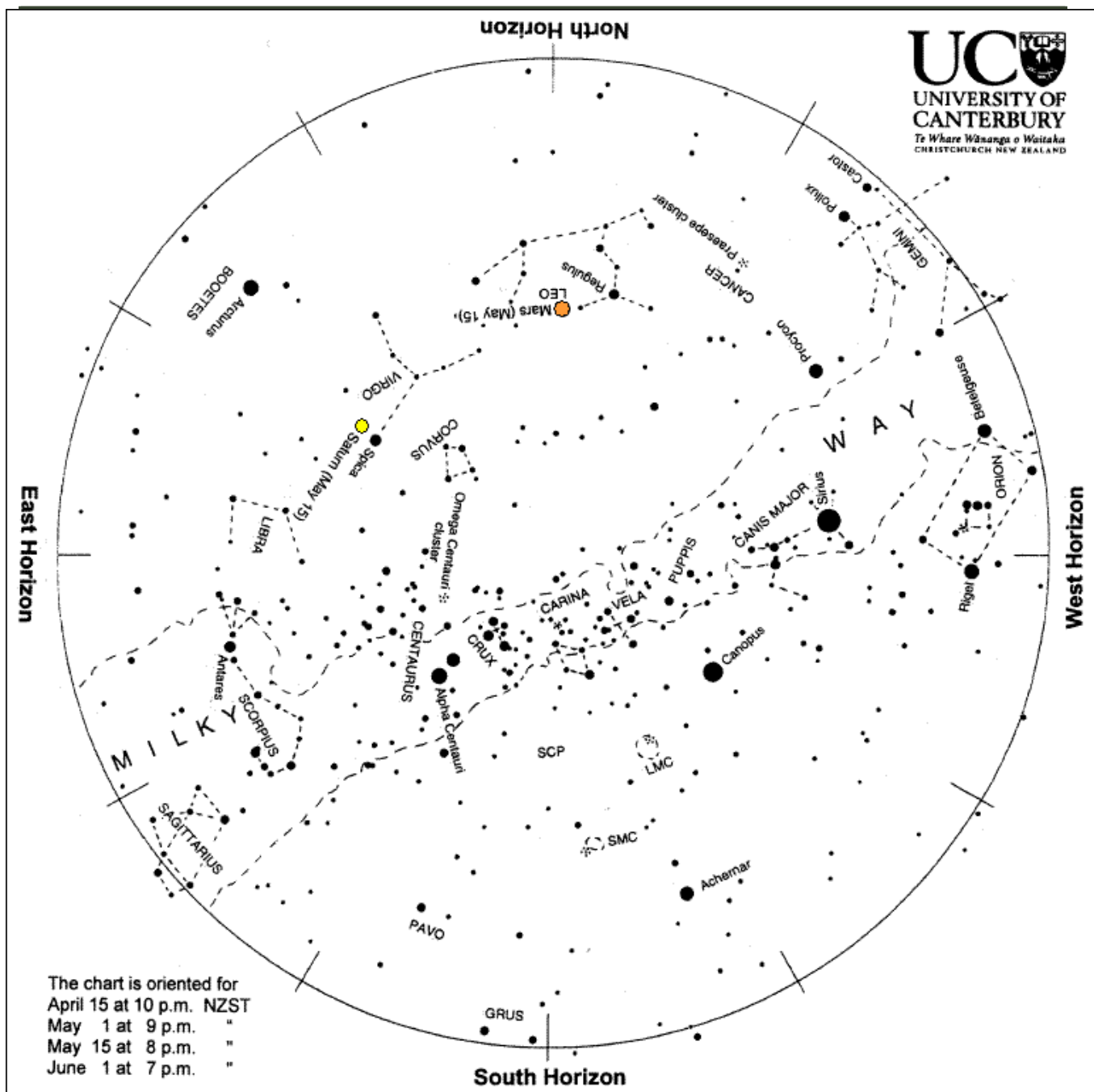
Low in the east is the orange star **Antares**, marking the heart of the Scorpion. Antares means 'rival to Mars' in Greek. It is a red giant like Betelgeuse; 600 light years away and 19 000 times brighter than the sun. **Arcturus**, in the northeast, is the brightest red star in the sky but, at 37 light years, is much closer than the red-giants previously mentioned. It is about 120 times brighter than the sun.

The **Milky Way** is brightest in the southeast toward **Scorpius** and **Sagittarius**. In a dark sky it can be traced up the sky past the Pointers and Crux, fading toward Sirius. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. The thick hub of the galaxy, 30 000 light years away, is in Sagittarius. The nearby outer edge is by Orion. A scan along the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds, particularly in the **Carina** region, to the right of Crux, and in Scorpius.

The Clouds of Magellan, **LMC** and **SMC**, are midway down the southern sky, easily seen by eye on a dark moonless night. They are small galaxies. The Large Magellanic Cloud is about 160 000 light years away and is about 5% the mass of our Milky Way galaxy. The Small Cloud is around 200 000 light years away and 3% the mass of our galaxy. That's still many billions of stars.

**Mercury** (not shown) ends a morning sky appearance in late May. At the beginning of the month it rises in the east two hours before the sun. Its rising time gets steadily later as it moves to the far side of the sun. It is around 190 million km from Earth at mid month and tiny in a telescope.

*A light year (l.y.) is the distance that light travels in one year: nearly 10 million million km or  $10^{13}$  km. Sunlight takes eight minutes to get here; moonlight about one second. Sunlight reaches Neptune, the outermost major planet, in four hours. It takes four years to reach the nearest star, Alpha Centauri.*



**The Evening Sky in May 2012 - using the chart**

To use the chart, hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge. As the earth turns the sky appears to rotate clockwise around the south celestial pole (SCP on the chart). Stars rise in the east and set in the west, just like the sun. The sky makes a small extra westward shift each night as we orbit the sun.

Venus (not shown) is the brilliant 'evening star' appearing low in the northwest soon after sunset. It sets 1½ hours after the sun at the beginning of May but only 25 minutes after sunset at the end. Sirius, the brightest star, is midway down the western sky. Directly below it is Orion with the bright stars Rigel and Betelgeuse, and 'The Pot'. Canopus, the second brightest star, is southwest of overhead. Saturn and Spica make pair of stars of medium-brightness in the northeast. Below them is Arcturus often twinkling red and green. To their left is Mars, similar in brightness and colour to Arcturus. Crux, the Southern Cross, and The Pointers are southeast of the zenith. The Scorpion, on its back, is rising in the southeast. The Milky Way spans the sky.