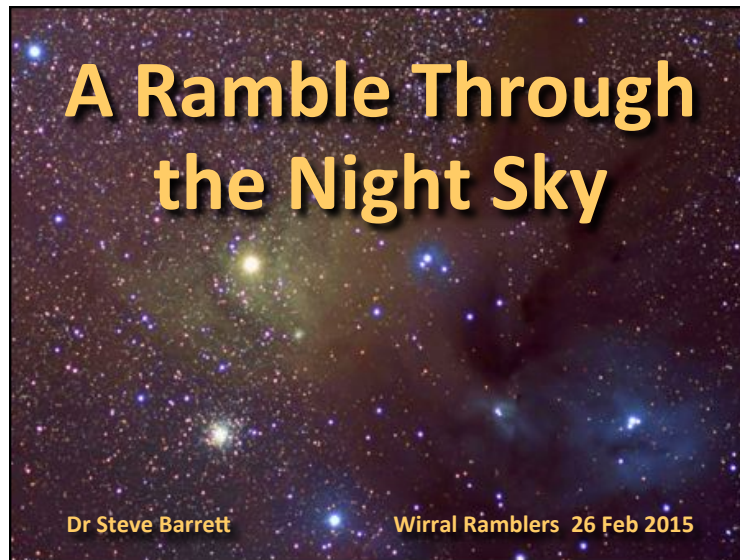


# A Ramble Through the Night Sky



**A Ramble Through the Night Sky**

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What's up there?	planets and comets stars and galaxies
How can I find my way around?	maps apps
What if I want to see more?	binoculars telescopes
How can I take photos?	star trails tracking the sky

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A Ramble Through the Night Sky / Introduction 2

**A Ramble Through the Night Sky**

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**Disclaimer 1**

I'm not an astrophysicist ...  
I'm an amateur astronomer (who happens to be a physicist)

**Disclaimer 2**

I'm not attempting to describe everything 'up there'  
This is a random walk through the Universe  
Along the way, I will show photographs that I have taken

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A Ramble Through the Night Sky / Introduction 3

**A Ramble Through the Night Sky**

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**What's up there?**

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A Ramble Through the Night Sky / What? 4

# A Ramble Through the Night Sky

**Aurora Borealis**



A Ramble Through the Night Sky / Aurora

5

Even our closest  
neighbour can  
be fascinating...  
  
...watching the  
shadows of the  
craters and  
mountains  
change from  
night to night



**Comet Hale-Bopp 1997**



A Ramble Through the Night Sky / Comets

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**Comet Holmes 2007**

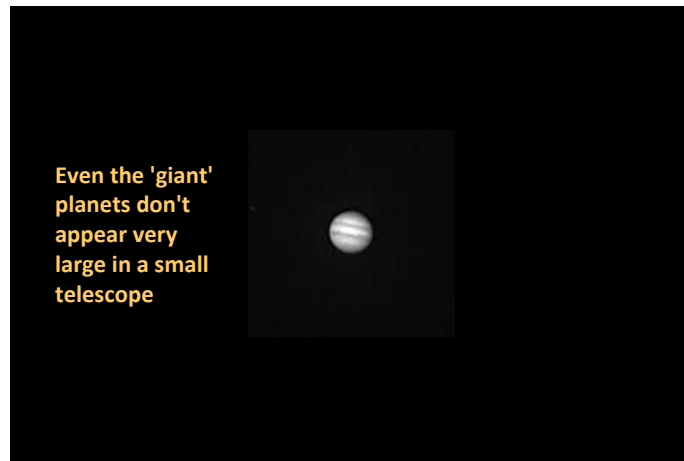


A Ramble Through the Night Sky / Comets

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# A Ramble Through the Night Sky

Jupiter



A Ramble Through the Night Sky / Planets

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Saturn



A Ramble Through the Night Sky / Planets

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Stars and Stuff



A Ramble Through the Night Sky / Stars

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Pleiades Star Cluster



A Ramble Through the Night Sky / Stars / Clusters

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# A Ramble Through the Night Sky

**Centaurus – Crux – Carina**



A Ramble Through the Night Sky / Stars / Constellations

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**Helix Nebula**



Hubble  
Space  
Telescope

A Ramble Through the Night Sky / Nebulae

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**Andromeda Galaxy**



A Ramble Through the Night Sky / Galaxies

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**Markarian's Chain of Galaxies**



A Ramble Through the Night Sky / Galaxies

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# A Ramble Through the Night Sky

How can I find  
my way around?

A Ramble Through the Night Sky / Navigation

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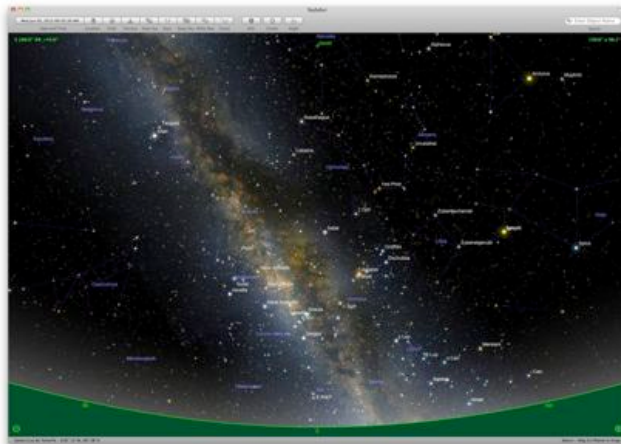
## Maps and Apps



A Ramble Through the Night Sky / Navigation

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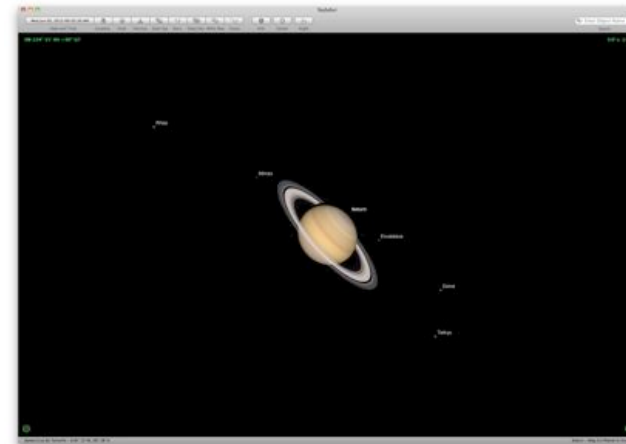
## Maps and Apps



A Ramble Through the Night Sky / Navigation / SkySafari

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## Maps and Apps



A Ramble Through the Night Sky / Navigation / SkySafari

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# A Ramble Through the Night Sky

**What if I want  
to see more?**

A Ramble Through the Night Sky / See More

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## Astronomy Hardware

**Binoculars, small telescope or big telescope?**

How should you decide what is worth buying?

**Is the image...**

Bright? Clear? Steady? Big?

**Making a choice**

You would hope that a large, expensive telescope would give brighter, clearer images.

Even small telescopes need a solid, stable mount to ensure that the image is steady.

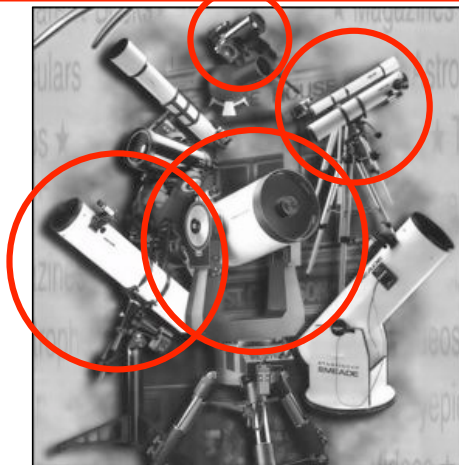
Image magnification is the least important factor.

A Ramble Through the Night Sky / Telescopes

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## Astronomy Hardware

There are many types of telescope available, making a choice somewhat confusing



A Ramble Through the Night Sky / Telescopes

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## Astronomy Hardware

**Refractors**

use lenses to focus the light



A Ramble Through the Night Sky / Telescopes

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# A Ramble Through the Night Sky

## Astronomy Hardware



Refractors

use lenses to focus the light

**Reflectors**

use mirrors to focus the light

A Ramble Through the Night Sky / Telescopes

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## Astronomy Hardware



Refractors

use lenses to focus the light

Reflectors

use mirrors to focus the light

**Schmidt-Cassegrains**

use both lenses and mirrors

A Ramble Through the Night Sky / Telescopes

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## Astronomy Hardware



Refractors

use lenses to focus the light

Reflectors

use mirrors to focus the light

Schmidt-Cassegrains

use both lenses and mirrors

**Compact 'Go To' telescopes**

user-friendly controllers to  
point the telescope

A Ramble Through the Night Sky / Telescopes

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## Observatories



A Ramble Through the Night Sky / Telescopes / Observatories

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# A Ramble Through the Night Sky

## Teide Observatory

Astrophysics students get to visit...



A Ramble Through the Night Sky / Telescopes / Observatories / Teide

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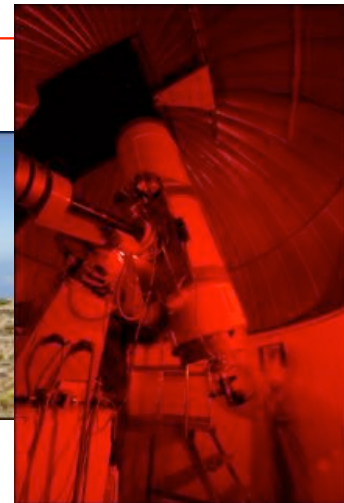
## Teide Observatory



A Ramble Through the Night Sky / Telescopes / Observatories / Teide

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## Teide Observatory



The Mons telescope

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## Teide Observatory



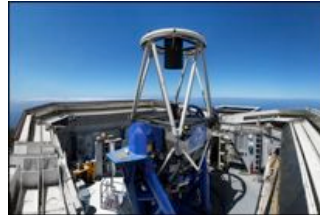
A Ramble Through the Night Sky / Telescopes / Observatories / Teide / Mons

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# A Ramble Through the Night Sky

## La Palma Observatory

On the neighbouring island of La Palma is the fully-robotic Liverpool Telescope



A Ramble Through the Night Sky / Telescopes / Observatories / La Palma / LT

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The Eagle Nebula imaged with the Liverpool Telescope



## How can I take photos?

A Ramble Through the Night Sky / Photography

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## Star Trails



A Ramble Through the Night Sky / Photography

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# A Ramble Through the Night Sky

## Star Trails



A Ramble Through the Night Sky / Photography

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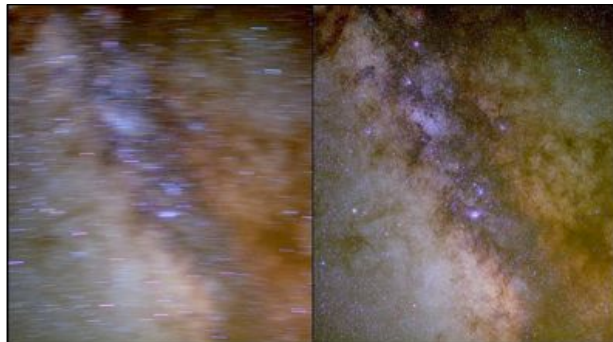
## Avoiding Star Trails



A Ramble Through the Night Sky / Photography / Star Tracker

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## Avoiding Star Trails



Star tracker off

Star tracker on

A Ramble Through the Night Sky / Photography / Star Tracker

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## Photography with a Star Tracker

A mosaic of four images of part of the Milky Way

The Milky Way is not just a smudge of light across the sky – a surprising amount of detail can be seen

# A Ramble Through the Night Sky

