A Ramble Through the Night Sky

A Ramble Through the Night Sky

Dr Steve Barrett

2 Contents of Talk

What is up there?
Moon, stars, planets, comets, aurora, nebulae, galaxies

How can I find my way around?
Magazines, books, planisphere, software

What if I want to see more?
Binoculars, small telescopes, 'smart' telescopes

How can I take photos?
35mm cameras, electronic cameras

How can I learn more?
Magazines, books, software, courses

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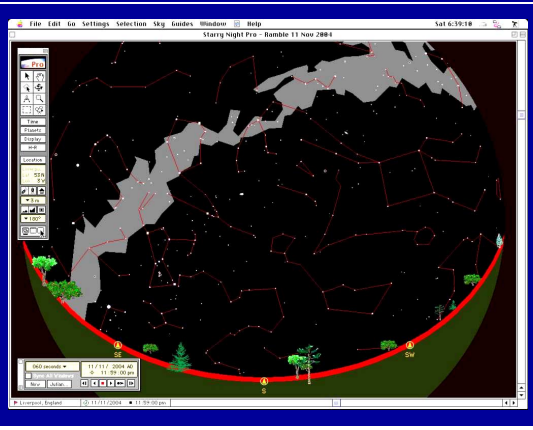
3 Star Maps



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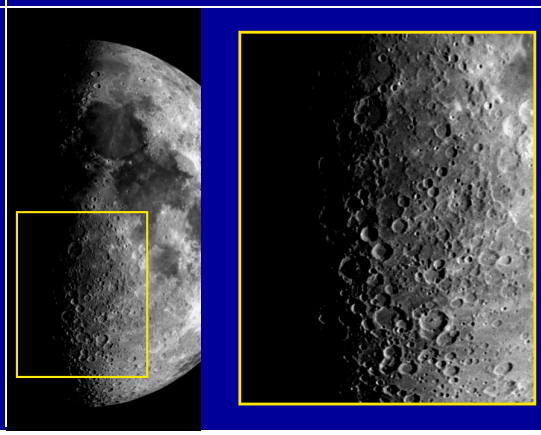
4 Moon



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5 Stars

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6 Stars

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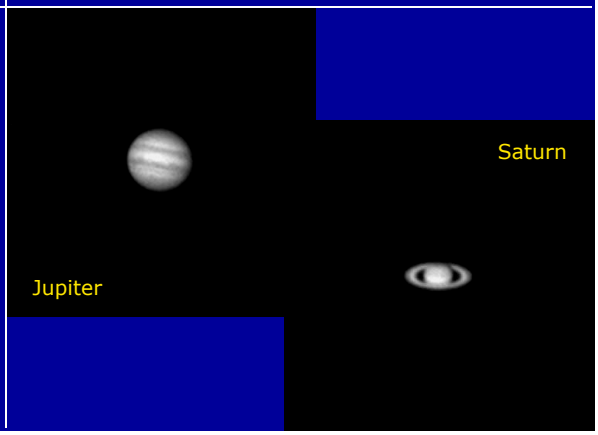
7 **Planets**



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8 **Comets**

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9 **Aurora**

Particles from the Sun hit the Earth's atmosphere, making the air glow

The different colours are produced by the oxygen and nitrogen atoms, and the shapes are formed by the Earth's magnetic field

Aurora are best seen near the Arctic or Antarctic circles

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10 **Aurora**

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11 **Nebula**

A nebula is a cloud of gas that reflects light from nearby stars

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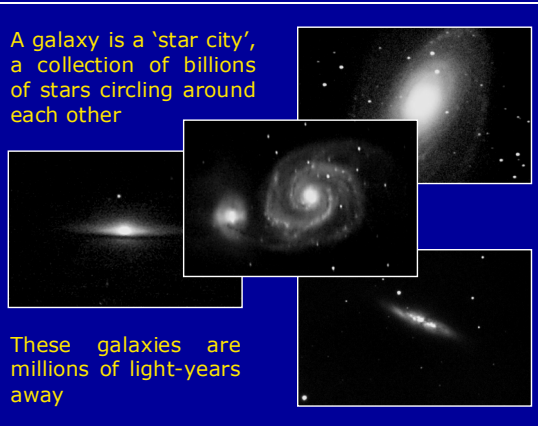
12 **Galaxies**

A galaxy is a 'star city', a collection of billions of stars circling around each other



These galaxies are millions of light-years away

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13 **Want To See More?**

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Binoculars, small telescopes or big telescopes?

Is the image…

Bright?	Bigger is better
Clear?	Bigger is better
Steady?	Must have a stable mounting
Big?	Not that important

10x50 binoculars are a great way to start

What type of telescopes are there?

14 **Telescopes**

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

15 **Telescopes**

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Refractors
Use lenses to focus the light

16 **Telescopes**

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Refractors
Use lenses to focus the light

Reflectors
Use mirrors to focus the light

17 **Telescopes**

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Refractors
Use lenses to focus the light

Reflectors
Use mirrors to focus the light

Schmidt-Cassegrains
Use both lenses and mirrors

18 **Telescopes**

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Refractors
Use lenses to focus the light

Reflectors
Use mirrors to focus the light

Schmidt-Cassegrains
Use both lenses and mirrors

Compact S-C
Have user–friendly controllers to point the telescope

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19 **Astronomical Observatories**

A domed observatory provides a stable platform for the telescope and shelter from the wind

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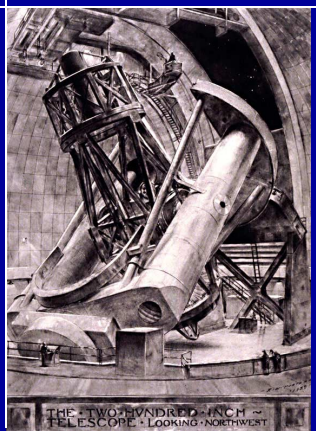
20 **Astronomical Observatories**



The Hale telescope was built in the 1940s and has a mirror 5m (200") in diameter.

For half a century, it remained the world's largest telescope.

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21 **Astronomical Observatories**

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22 **Taking Photographs**

35 mm cameras with 'B' setting

Mount the camera…

- on a fixed tripod
- 'piggy-backed' on a telescope
- onto a telescope, using it as a lens

Manual better than automatic (old cameras!)

Modern digital cameras are very sensitive, but exposure time is limited to ~ 30 sec

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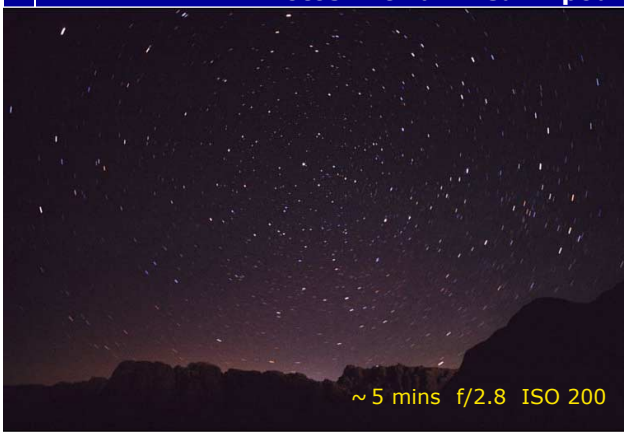
23 **Photos with a Fixed Tripod**



24 **Photos with a Fixed Tripod**

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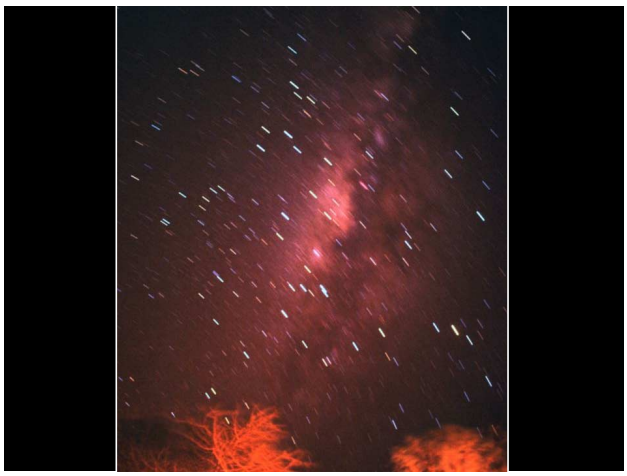
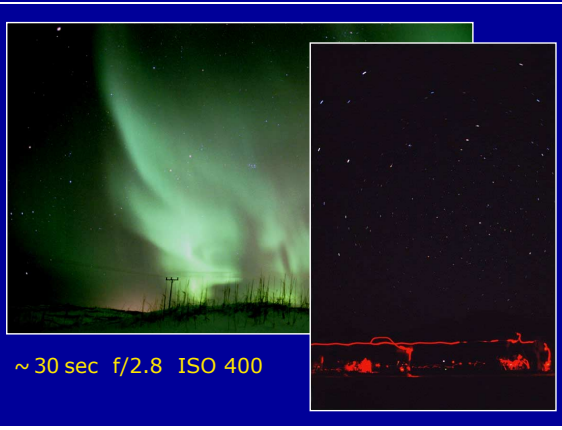
25 **Photos with a Fixed Tripod**



28 **Photos with a Fixed Tripod**



~30 sec f/2.8 ISO 400

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29 **Photos 'Piggy-Backed'**

~2 min f/2.8 ISO 400

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30 **Photos 'Piggy-Backed'**

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31 **Photos Through a Telescope**

5 min exposure 10 min exposure

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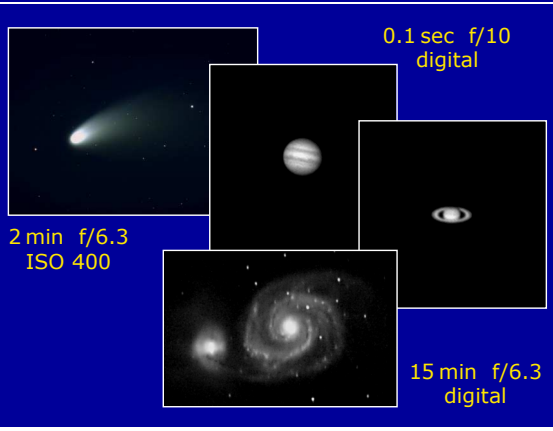
32 **Photos Through a Telescope**



0.1 sec f/10 digital

2 min f/6.3 ISO 400

15 min f/6.3 digital

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33 **Want To Learn More?**

Magazines, book, astronomical societies

Distance learning…

- Exploring the Universe
- The Universe Through a Small Telescope
- Galaxies
- Astronomy for Teaching

The National Schools' Observatory Project

- Access to the Liverpool Telescope

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34 **Summary of Talk**

What is up there?

Finding your way around

Want to see more?

Taking photos

Learning more

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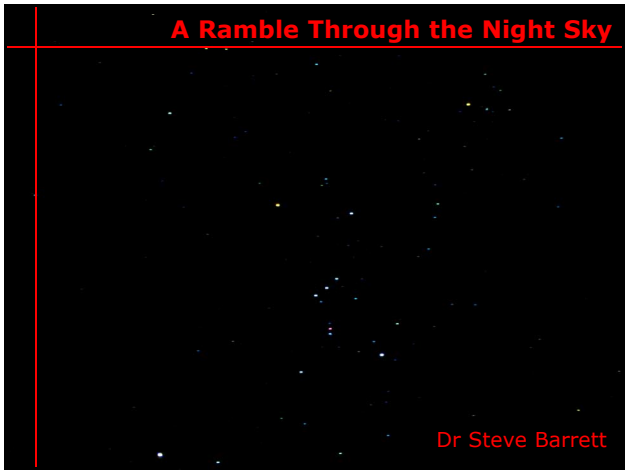

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36

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