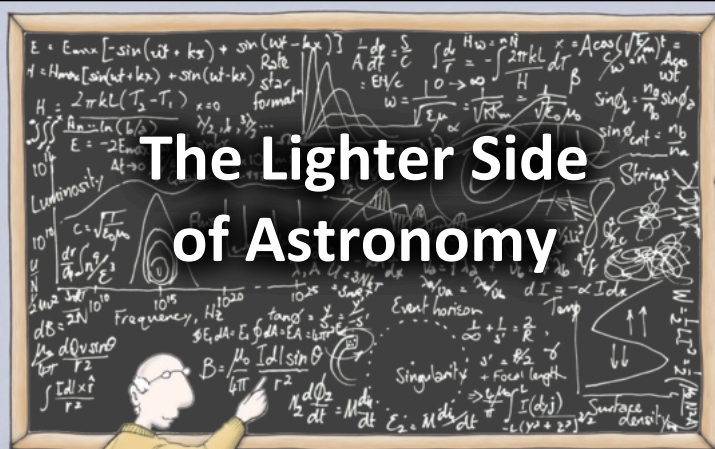


The Lighter Side of Astronomy



The Lighter Side of Astronomy

Dr Steve Barrett BAS 28 Jul 2020

The Lighter Side of ...

- Astronomers
- Telescopes
- Catching Starlight
- Telescopes
- Observatories

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2

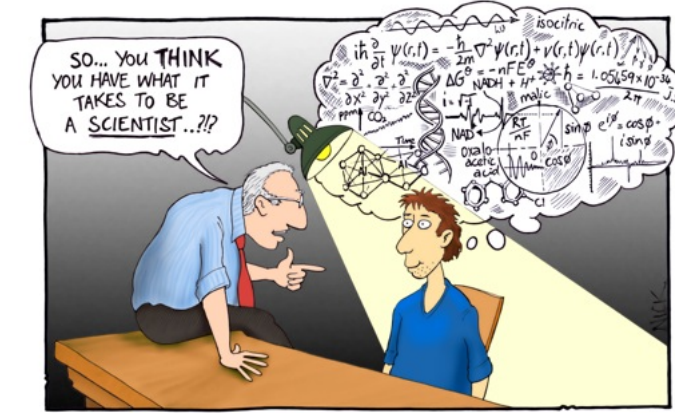
The Lighter Side of ...

Astronomers

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3

Some Astronomers Are ... Scientists



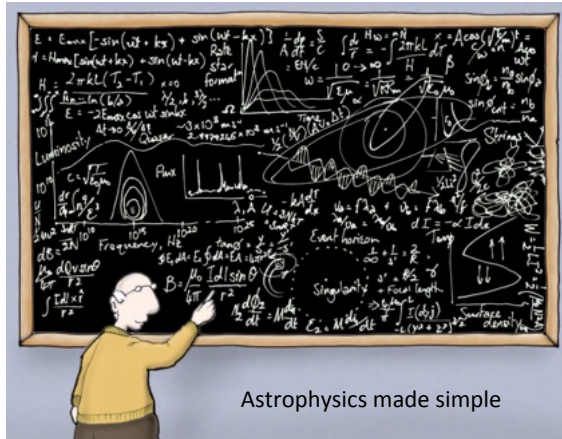
SO... YOU THINK YOU HAVE WHAT IT TAKES TO BE A SCIENTIST...?!

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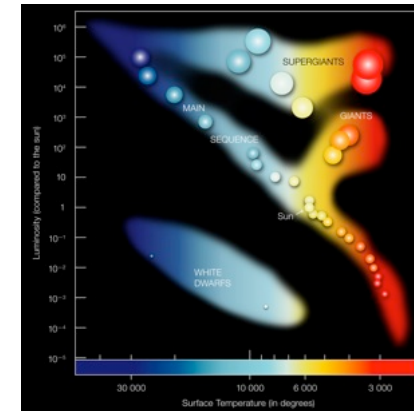
4

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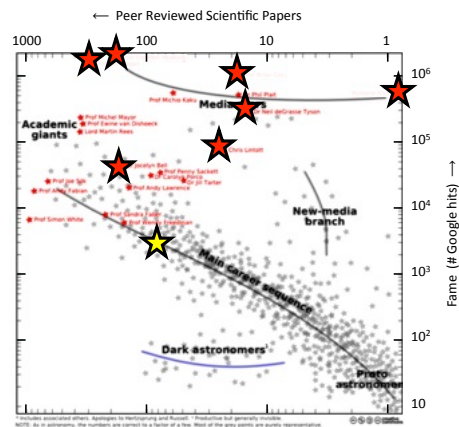
Some Astronomers Are ... Astrophysicists



H-R Diagram of Stars



H-R Diagram of Astronomers



Ancient Astronomers



The Lighter Side of Astronomy

Ancient Astronomers



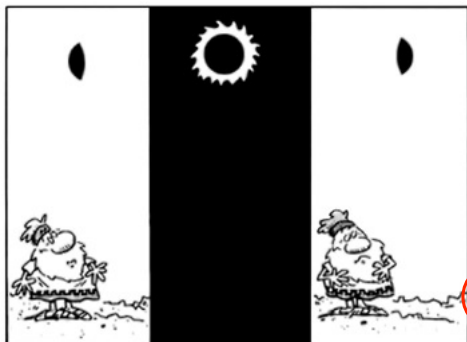
Remember – when summer time ends we have to give everything a slight turn to the left

Ancient Astronomers



Of course, it's still a complete mystery as to how the ancients even managed to MOVE these massive stones...

Ancient Astronomers



It happened right after the eclipse...
It just keeps blinking twelve o'clock!

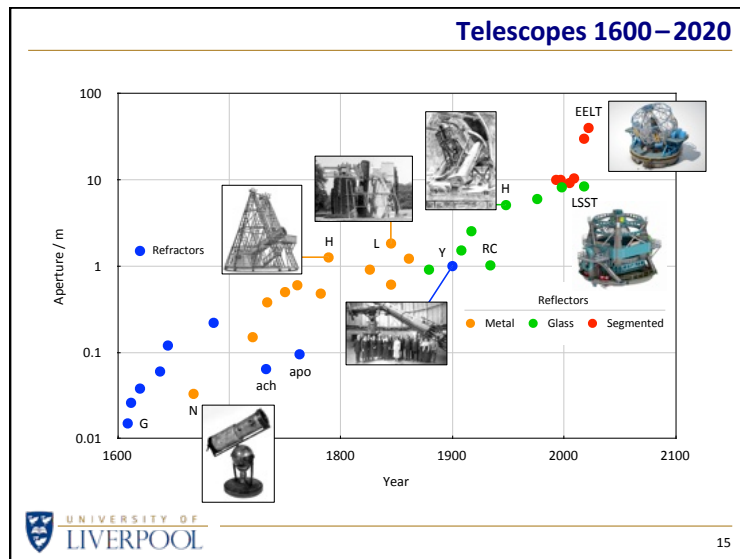
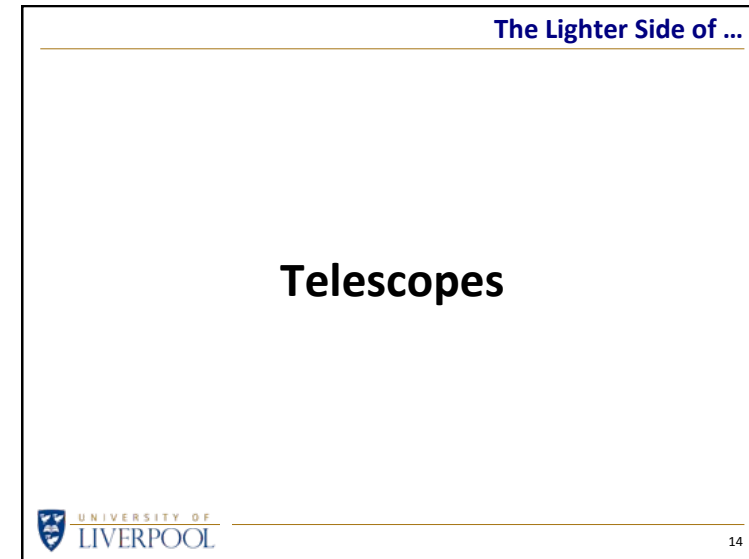
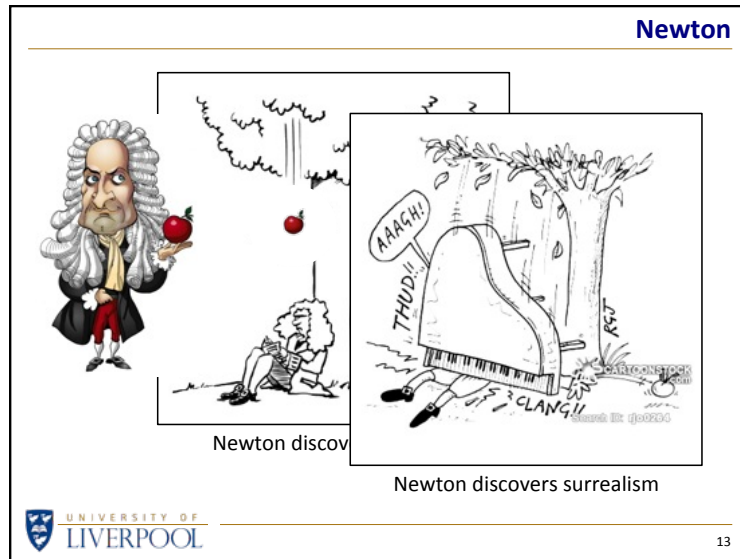
Sundial
Repair

Galileo



If there were computers
in Galileo's time

The Lighter Side of Astronomy



Telescopes 1600–2020

On the previous slide the following abbreviations are used:

G	Galileo's refracting telescope	< 1" lens
N	Newton's reflecting telescope	> 1" mirror
ach	First achromatic lens	2" lens
apo	First apochromatic lens	4" lens
H	Herschel's 40 foot telescope	47" mirror
L	Leviathan of Parsonstown	72" mirror
Y	Yerkes 40" refractor	40" lens
RC	Ritchey-Chrétien telescope	24" mirror
H	Hale 200" reflector	5m mirror
LSST	Large Synoptic Survey Telescope	8m mirror
EELT	European Extremely Large Telescope	40m mirror

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16

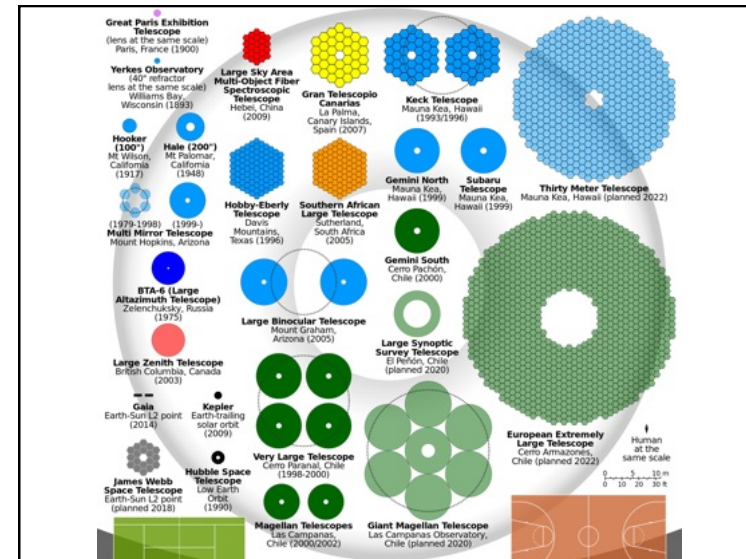
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Hevelius' Telescopes



Hevelius
said it was
"Easy to use"

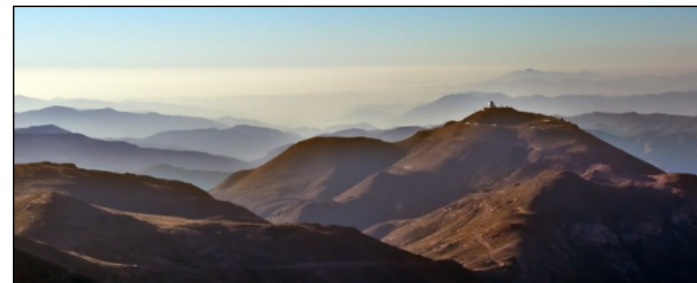
Halley
said it was
"Useless"



Hale 200" Telescope



Astronomy From On High

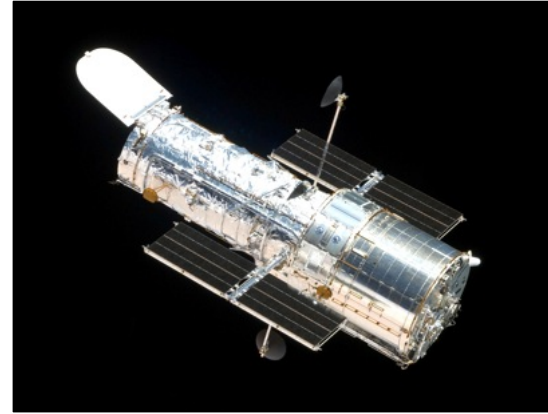


The Lighter Side of Astronomy

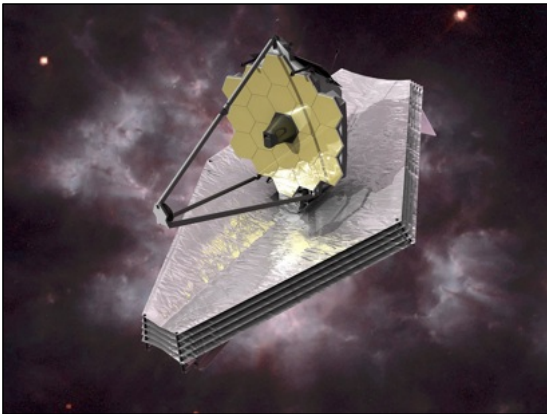
... Or Higher



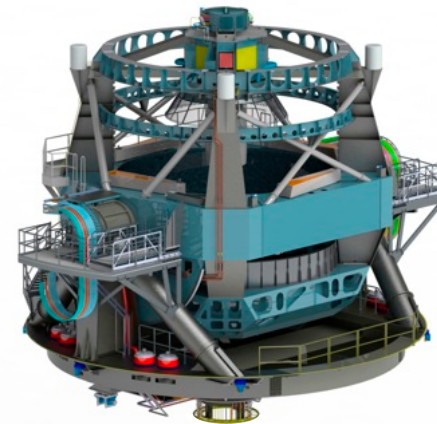
Hubble Space Telescope



James Webb Space Telescope

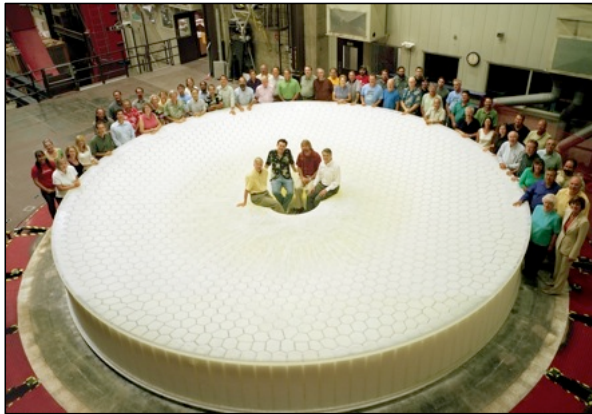


Large Synoptic Survey Telescope



The Lighter Side of Astronomy

Making a Telescope Mirror

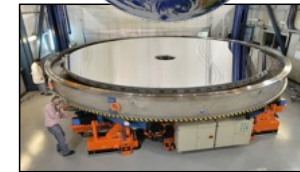


Mirror Smoothness

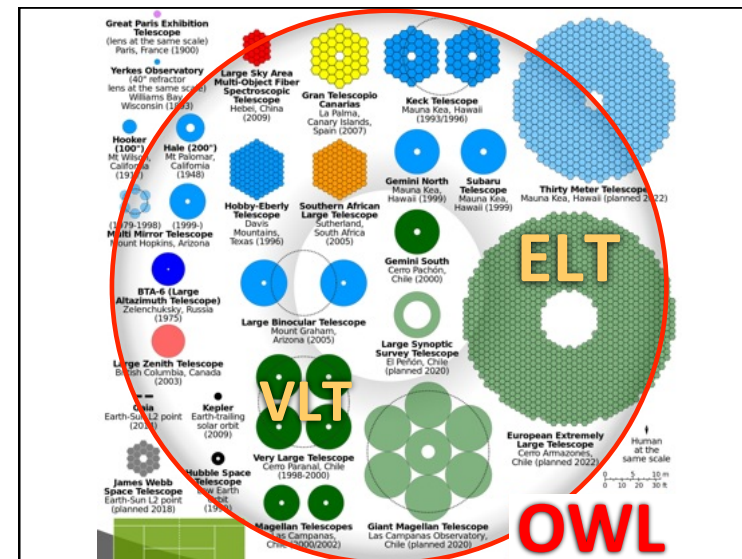
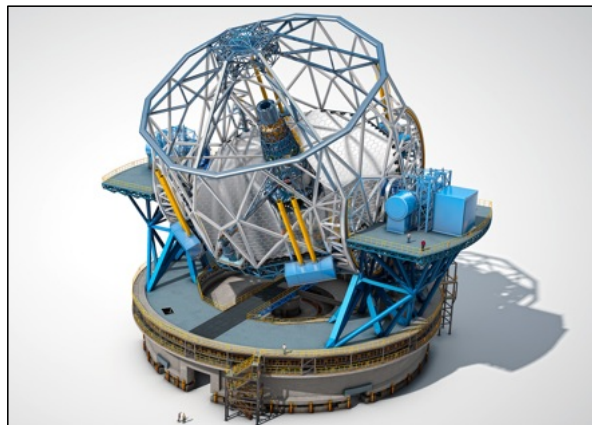
To visualise the degree of smoothness that can be achieved with modern computer-controlled techniques, imagine the mirror scaled up by a factor of a million until it is the size of the Earth...



...then the deviations from the desired smooth shape would be no more than about 2 cm in height!



European Extremely Large Telescope



The Lighter Side of Astronomy

500m Aperture Spherical Telescope



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Catching Starlight

Star Cluster



Catching Starlight



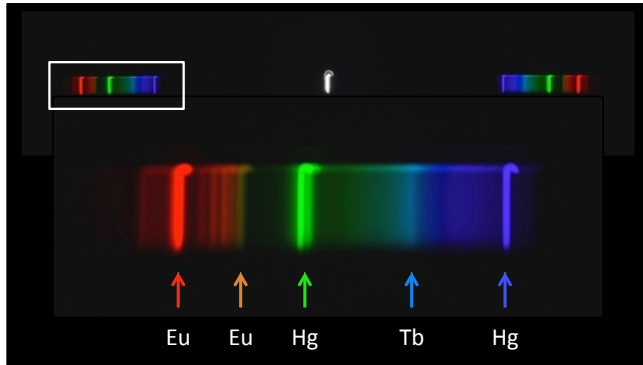
Newton's work on optics in the 1660s established that white light is composed of many colours.

Breaking starlight into its component colours allows us to determine what stars are made of.

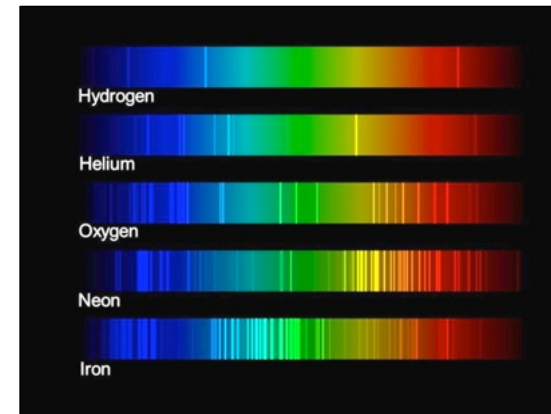
The Lighter Side of Astronomy

Making a Spectrum

A diffraction grating (just like a prism) can reveal the component colours in a fluorescent light bulb



Spectra of Elements



Pillars of Creation



Cat's Eye Nebula



The Lighter Side of Astronomy

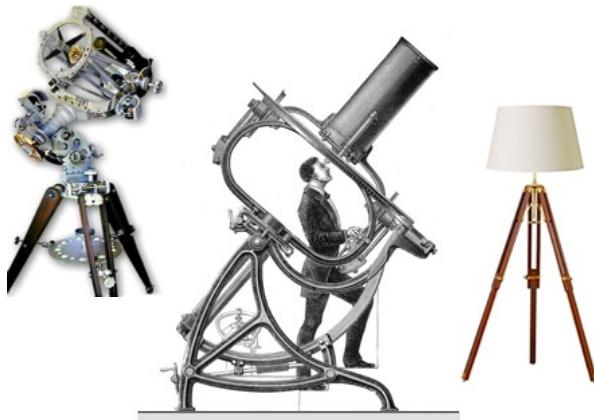
Galaxies



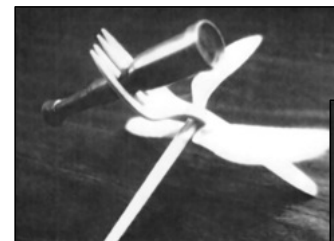
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Amateur Telescopes

Making Telescopes



Smallest Telescopes



Fork-mounted telescope

Probably the
best telescope
in the world?



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When One Is Not Enough



When Two Is Not Enough



Size Matters



Working in Wood



The Lighter Side of Astronomy

Craftsmanship



A garden telescope designed by amateur telescope maker Russell Porter.

45

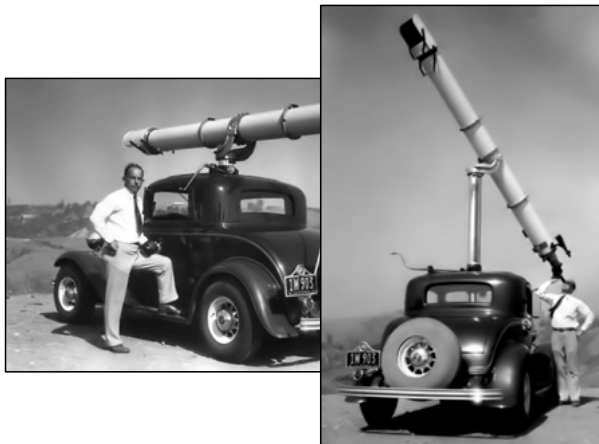
Astronomy On the Move



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46

Astronomy On the Move



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47

Tele-Volvo



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48

The Lighter Side of Astronomy

The Lighter Side of ...

Observatories



49

Teide Observatory



See "A Week Above the Clouds" for more

50

Teide Observatory



See "A Week Above the Clouds" for more

51

A Week Above the Clouds



See "A Week Above the Clouds" for more

52

The Lighter Side of Astronomy

Star Trails



See "A Week Above the Clouds" for more

53

Mons Telescope



See "A Week Above the Clouds" for more

54

Palomar Mountain



55

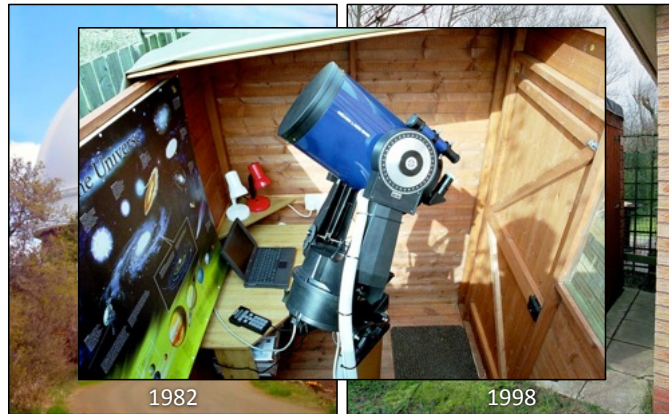
Back Garden Observatory



56

The Lighter Side of Astronomy

Back Garden Observatory



Craftsmanship



Astronomy On the Move



Astronomy On the Move



The Lighter Side of Astronomy

Professional Astronomy



Amateur Stargazer



Acknowledgements

Astro Bob	astrobob.areavoices.com
Sidney Harris	www.sciencecartoonsplus.com
Scott Hilburn	www.gocomics.com/theargylesweater
Nick Kim	www.lab-initio.com
Mike Lester	www.cartoonistgroup.com
Miscellaneous	clipartfest.com
xkcd	www.xkcd.com

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www.liverpool.ac.uk/~sdb/Talks

Dr Steve Barrett BAS 28 Jul 2020