Some examples

first my own, from Bath
then some good ones.....

Stars individually are just points of light – no size.

- Groups of stars (clusters) are good targets
- Gas clouds of various forms are also common and good targets too.
- Distant vast clusters of stars (galaxies) are advanced targets (very faint, even if not small)

Almost all appear as fuzzy shapes to the eye even in big amateur telescopes.

Some designation codes are worth knowing for identifying 'deep sky objects.

The brightest of the 'fuzzies' in the sky were identified by Charles Messier in the mid-1700s.

So most amateurs go after these first. But they are a hotchpotch of objects; distant galaxies, nearby star clusters or gas clouds, etc.

They were coded in discovery order from M1 to M103.

M42 (Orion Nebula, below the 'belt') 200mm telephoto

M42 again – but DSLR (Canon 350D) on an 8” f/6.3 SCT telescope

Comet Holmes – 480mm F.L. Refracting telescope – 13x30s exposures

Comet Hale-Bopp (1997) – Fujichrome transparency film! 200mm telephoto (Chinon SLR)

The Double Cluster in constellation Perseus – 1200mm F.L, 6x30s

M27 – Dumbbell Nebula (a planetary nebula) 20x30s at FL 1250mm

M13 – constellation Hercules – Globular Cluster – 10x30s exposures 2000mm FL

M57 in constellation Lyra – another planetary nebula – 10x30s exposures 1200mm FL

M45 – The Seven Sisters star cluster – 200mm telephoto - 5x30s

NOT MINE!

M51 - Whirlpool Galaxy.
30x3min exposures – ISO1600 Canon 450D 8” Newtonian f/4

http://astrobackyard.com/astrophotography

M81 and M82 in the Plough.
Instrument: 9.5" f/4.9 Newtonian F/stop: 5.6
Exposure: 12 x 10 minutes + 2 minutes + 30 seconds
Camera: Canon 350D with Baader UV-IR-Cut-Filter
Sensitivity: ISO 800

http://www.nightsky.at

Definitely not one of mine

M101 in the Plough

http://www.nightsky.at

Instrument: 9.5" f/4.9 Newtonian
F/stop: 5.6
Exposure: 12 x 10 minutes + 2 x 2 minutes
Camera: Canon 350D with Baader UV-IR-Cut-Filter
Sensitivity: ISO 800

M3 Globular Cluster

http://www.nightsky.at

Instrument: 9.5" f/4.9 Newtonian
F/stop: 5.6
Exposure: 21 x 2 min + 3 x 10 s
Camera: Canon 350D with Baader UV-IR-Cut-Filter
Sensitivity: ISO 800

Imaging telescope or lens: Canon EF 400mm f/5.6L USM
Imaging camera: Canon EOS 70Da
Mount: SkyWatcher Star Adventurer

https://www.star-watcher.ch/blog/

Total exp: 1.5hours

Rosette Nebula – fancy kit!

http://www.nightsky.at

Instrument: JSO 4.9" f/3.8 Wright-Newtonian
F/stop: 4.9
Exposure: 10 x 20 min + 1 min
Camera: QHY8pro – CCD Camera (not DSLR)

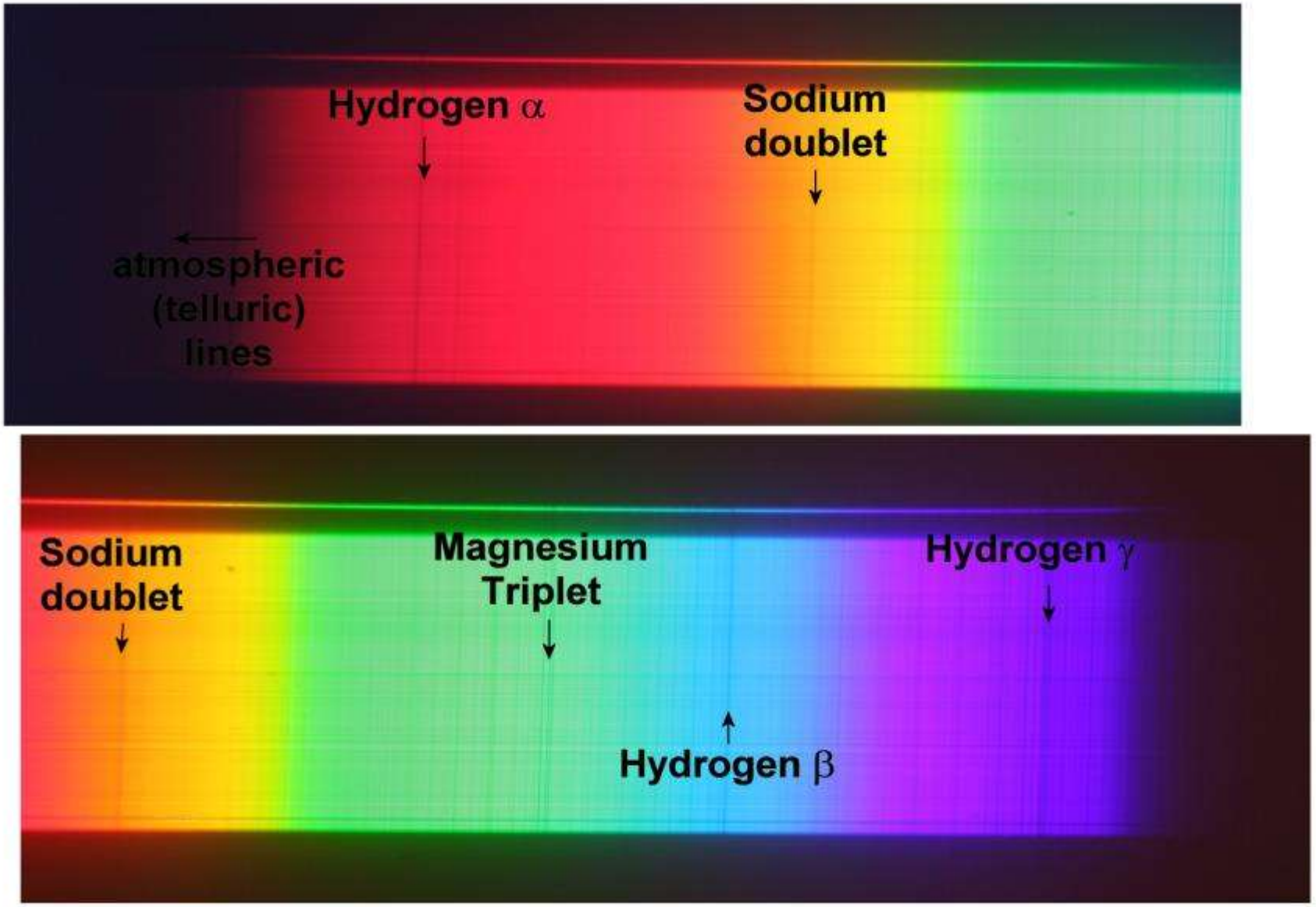
CCD Cameras are usually used in a B&W mode.
For colour three colour image filters are taken and combined.

Red Filter | Green Filter | Blue Filter

Combined Image

https://starizona.com/acb/ccd/basicstakcolor.asp

My new fad! Spectroscopy.



The Sun's spectrum with annotated lines due to various elements

Hydrogen lines in a stars spectrum (Vega)

Lots of molecules in the cool atmosphere of Betelguese

Some lines in the spectrum are bright and tell exotic stories

Some nebula only emit colours related to their composition – here M42