



Low Light and Night Time Photography

Hints, Tricks and Tips

What you need

Camera

Quite
Essential !

- › Good ISO range with good noise characteristics at high ISO/long exposures.
- › Manual Control of Shutter Speed, Aperture and ISO.
- › Capable of long exposures.
 - Most cameras have a max of around 30sec in PASM modes.
 - For exposures of more than 30sec you will need B(ulb) Mode.
- › Ability to Shoot RAW
- › Useful:
 - Mirror lock-up.
 - Self-timer.
 - Remote Release.
 - Viewfinder blind.





What you need

Lens

Also Quite
Essential

- › Wide aperture lens preferred because:
 - Easier to focus in low light.
 - Allows use of lower ISOs and faster Shutter Speeds.
 - ‘nifty fifty’ 50mm f1.8 lenses are cheap and great for low-light work
- › Manual Focus
 - Cameras may struggle to focus in low light, the ability to focus manually is an advantage





Accessories



Tripod



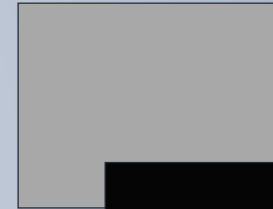
Flash Unit(s)



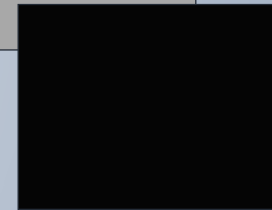
Flash Stand



Batteries



Matt Black Card



Grey Card



Remote Release



Flash Triggers



Torch



Exposure

- › Exposure basics still apply.
 - Metering is difficult – mixture of dark shadows and bright highlights
 - Camera will typically tend to overexpose the dark scene.
 - A ‘Normal’ histogram will result in overexposure. The correct exposure will result in a left skewed histogram.
 - Use Manual exposure or exposure compensation
 - Review results on LCD and adjust
 - Shoot RAW to allow greater flexibility in post processing
 - › Adjust exposure.
 - › Adjust White Balance.
 - › Noise Control



Exposure Considerations

- › High ISOs will
 - Allow faster shutter speeds
 - Allow smaller apertures
 - Result in more digital noise

- › Long Exposures will
 - Allow smaller apertures
 - Allow Lower ISO
 - Blur moving objects
 - Result in more digital noise

Exposure Considerations

- › A wide aperture will
 - Allow a faster shutter speed
 - Allow a lower ISO
 - Result in a shallow depth of field
 - Create bokeh on distant light sources
- › A small aperture will
 - Require a lower shutter speed
 - Increase ISO
 - Create a larger depth of field
 - Create a 'starburst' effect on point light sources





Exposure Considerations

- › A slow shutter speed will
 - Allow a smaller aperture
 - Allow a lower ISO
 - Result in blurring and cause light trails on moving objects

- › A faster shutter speed will
 - Require a wider aperture
 - Require a higher ISO
 - Freeze moving objects



Focusing Considerations

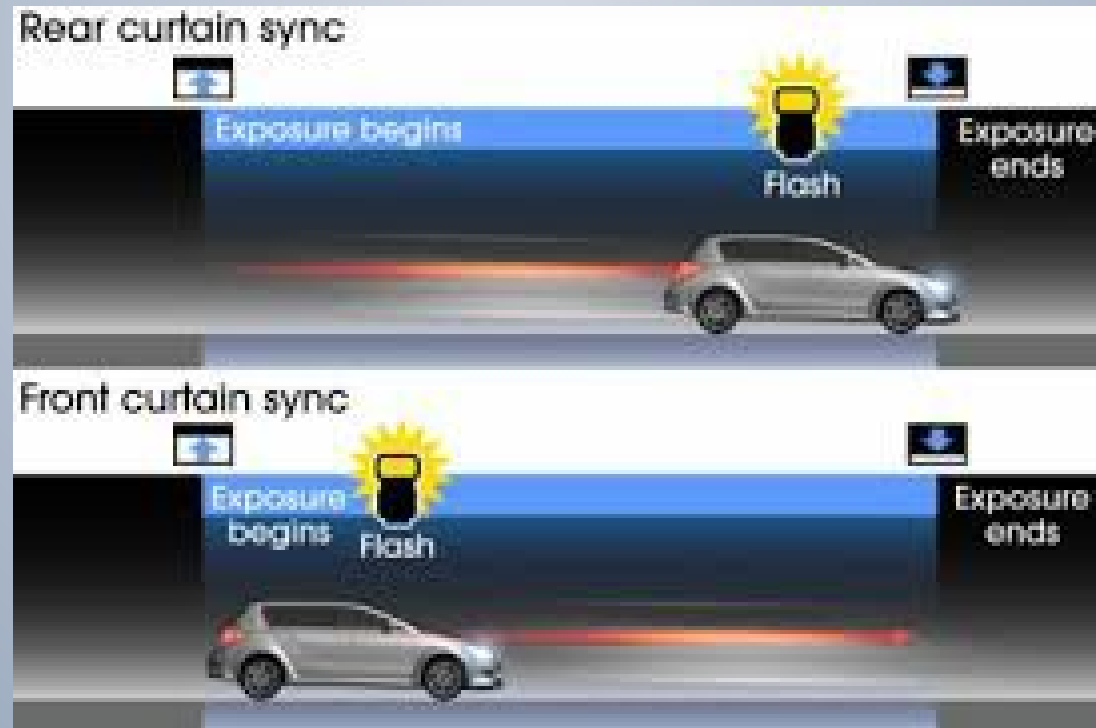
- › FOR HAND HELD LOW LIGHT PHOTOGRAPHY
 - There will probably be enough light to achieve focus automatically in most cases so leave AF on, Single point AF will be more efficient. Be prepared to manually override the focus as required.

- › FOR CAMERA MOUNTED ON A TRIPOD
 - There will probably not be enough light to focus automatically, however
 - If practical, you can use focus assist or use a torch to aid focus
 - Single point AF will be more accurate
 - Where there is not enough light focus manually.
 - You may still be able to use a torch to assist
 - Use Live-View to check focus
 - Use a mid-range aperture to increase Depth of Field
 - For distant objects focus at infinity. (Take care do not just twist the lens to its max, many lenses focus past infinity to allow flexibility for the autofocus)



Using Flash

- › Flash can be useful to light night-time portraits etc.
 - The range of flash is limited to a very short distance.
 - Use the shutter speed to control exposure of ambient light.
 - Use the aperture to control the flash exposure.
- › If the subject is moving then use rear curtain (2nd Curtain) Sync.





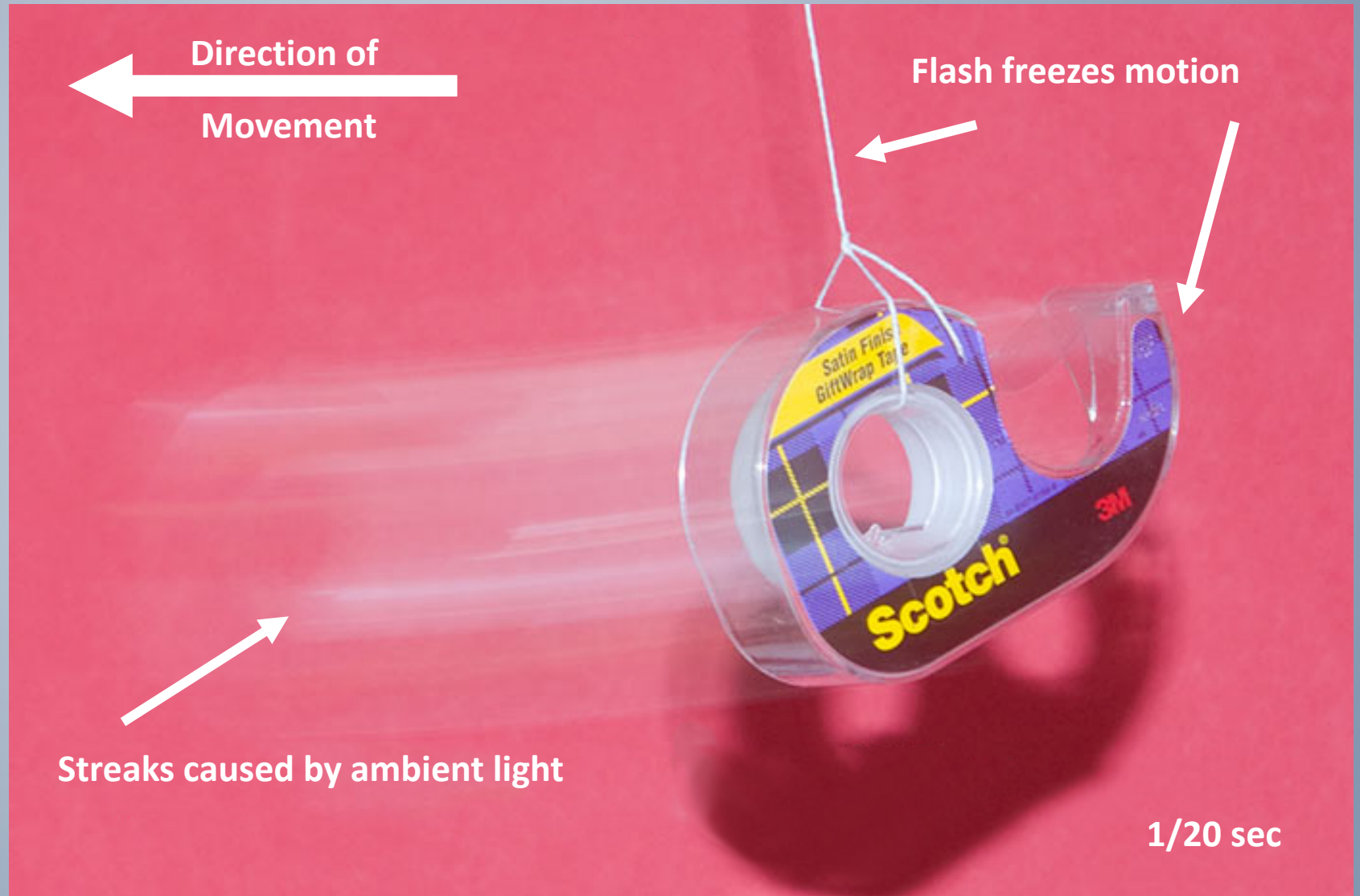
1st Curtain vs 2nd Curtain Flash

Front Curtain vs Rear Curtain Flash

1st or Front Curtain

The shutter opens and the flash fires as soon as the sensor is exposed. This results in a sharp image of the subject.

The shutter remains open and the ambient light results in recording fainter streaking of the subject as it moves before the shutter closes.





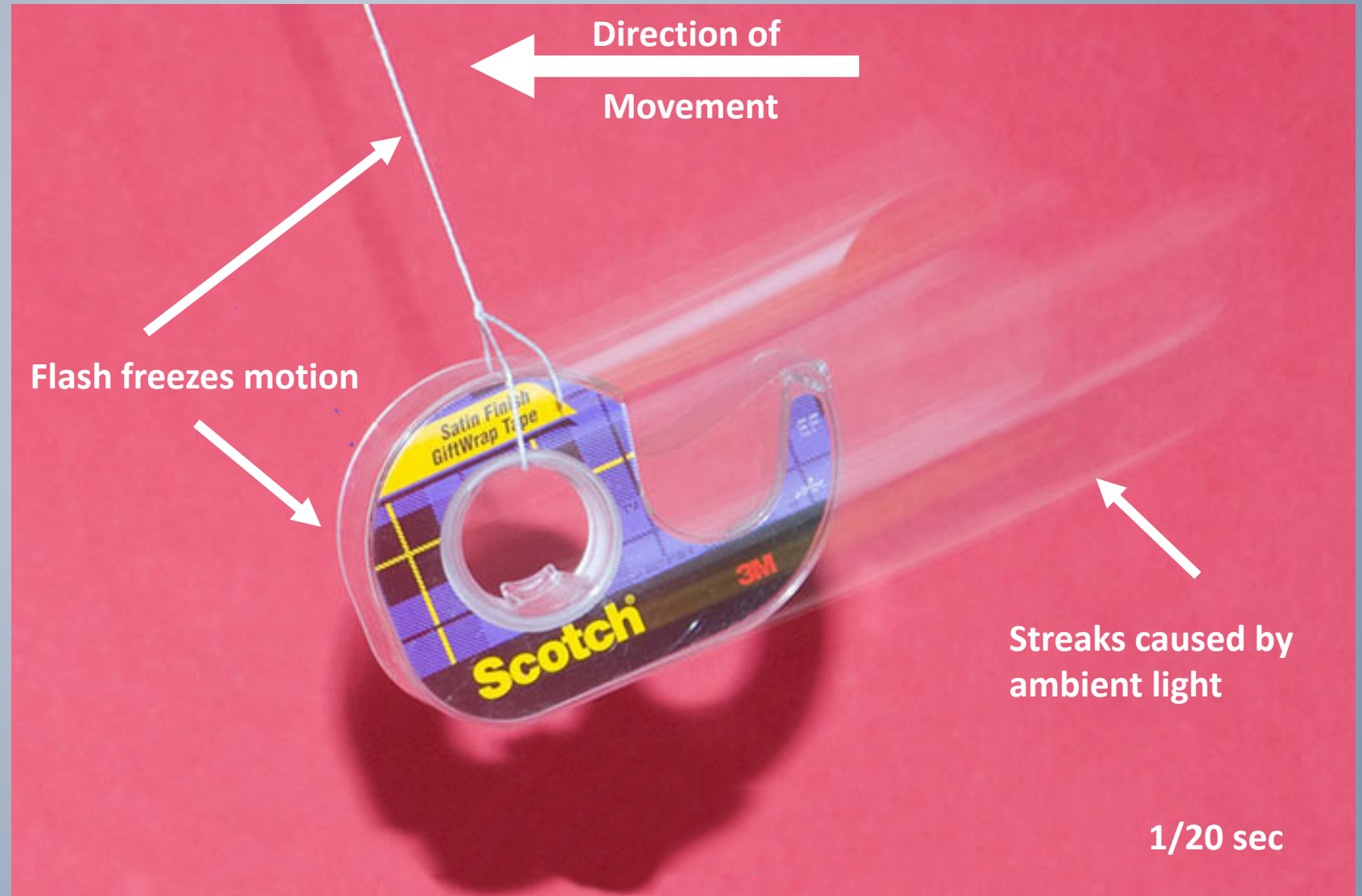
1st Curtain vs 2nd Curtain Flash

Front Curtain vs Rear Curtain Flash

2st or Rear Curtain

The shutter opens and the ambient light results records fainter streaking of the subject as it moves.

Just before the shutter closes the flash fires and a sharp image of the moving subject is recorded.





High Speed Sync or Auto FP Flash

- › Normally Flash can't be used with high shutter speeds
 - Typically limited to $1/160$ or $1/250$ – depends on camera as sensor must be fully exposed when flash fires.
 - Can be limiting in daylight conditions, when you want to use fill-in flash for example.
 - Eg you might want to use fill in flash to light a backlit subject in daylight and you want a wide aperture to blur the background, this may require a shutter speed of $1/1000$ at these speeds the sensor is never fully exposed, so using a flash would result in 'banding'.
 - HSS (or FP) avoids this limitation by continuously firing the flash while the shutter is firing.
 - HSS (or FP) has similar characteristics to continuous light
 - No 'Freeze motion' effect
 - HSS (or FP) is dependant on both the Flash unit and Camera (and flash triggers if you are using them) supporting it.

Focal Plane Shutter



Focal Plane Shutter



Nikon D3s



Flash to Subject Distance

- › The FLASH to SUBJECT distance determines the Exposure
 - NOT the CAMERA to SUBJECT distance
- › If you use off-camera flash (OCF), you can position the flash as required to produce the effect you want and it will also give you the freedom to move the camera position without affecting exposure.





Noise Reduction

› LONG EXPOSURE NOISE REDUCTION

- If use a long exposure then the camera sensor may generate some noise. If Long Exposure Noise Reduction is ON then after your camera has taken a photo, it will take another 'blank' exposure of equal length and then uses this to subtract sensor noise from the photo.
- + Removes noise that's difficult to remove by other means.
- Puts your camera out of action by a period equal to your exposure

› HIGH ISO NOISE REDUCTION

- High ISO noise reduction is only applied to JPEGs.
- Better results can be achieved with your computer in post process

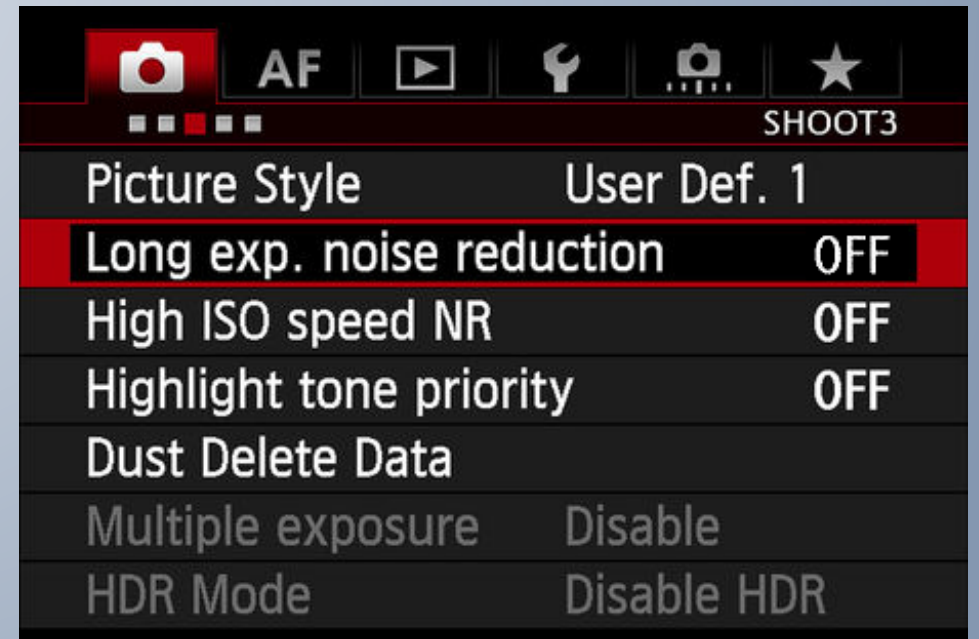




Image Stabilisation/Vibration Reduction

› FOR HAND HELD LOW LIGHT – **SWITCH IT ON**

- If you are hand holding low-light street scenes etc, then IS/VR/OS can be very useful.

› FOR CAMERA MOUNTED ON A TRIPOD – **SWITCH IT OFF**

- When the Camera is mounted on a tripod the camera isn't going to move, and the IS/VR/OS can create shake as it tries to compensate for movement that does not exist – so switch it off.
- To keep vibration to a minimum:
 - Do not touch the tripod during the exposure
 - Consider hanging a weighted bag from the tripod for extra stability
 - Use a remote release if you have one (or use a short time-delay)
 - If your camera has mirror lock-up consider using it.

Blending Etc

› In Camera

- If shooting things like fireworks consider holding the shutter open on the B(ulb) setting. Use a black card or cloth to cover the lens and uncover it when a rocket is launched and then repeat this a few times.
- Some cameras allow in camera multiple exposure and/or in camera HDR
- Most cameras allow you to bracket exposures automatically

› Post Production

- Take multiple photos at different exposures and blend them in photoshop to compensate for dark shadows and bright highlights.
- Rather than take very long exposures for star trails (30mins) etc, take several exposures eg (10sec) and then blend them in Photoshop.





Starting Points

- › Stars
 - 24mm : f2.8 : 20sec : ISO 1600
- › Car light trails
 - 50mm : f:8 : 10 sec : ISO800
- › Street Scenes
 - 50mm : f5.6 5 sec : ISO400
- › These are just a guide – light levels will vary – EXPERIMENT.
- › In general keep the ISO as low as possible
- › Keep the f stop in the small region f5.6 – f16

Fireworks

- › Get to the display early to scout out good locations
 - Look out foreground interest, buildings, reflections
 - Obstructions
- › No Flash
- › ISO 100 or 200
- › f 5.6
- › Use Tripod
- › Manual Focus at infinity
- › Use 'B' to hold open several seconds, one burst, or several bursts
- › Check LCD and adjust ISO/Aperture as required
- › Consider stacking several shots in post-production



Post Production

- Shoot RAW to give the greatest flexibility in post production
- Adjust exposure and white balance as required
- Use the Highlights/White, Shadow/Black sliders to taste
- Use the DEHAZE and CLARITY sliders to improve the image
- Use Plug-in such as Imagenomic to reduce noise
- Stack several shots in layers in Photoshop and set the blend mode to 'Lighter Colour'



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Starting Points



5 sec f18 ISO 100 (Tripod)

Starting Points



5 sec f8 ISO 100 (Tripod)

Starting Points



5 sec f8 ISO 100 (Tripod)

Starting Points

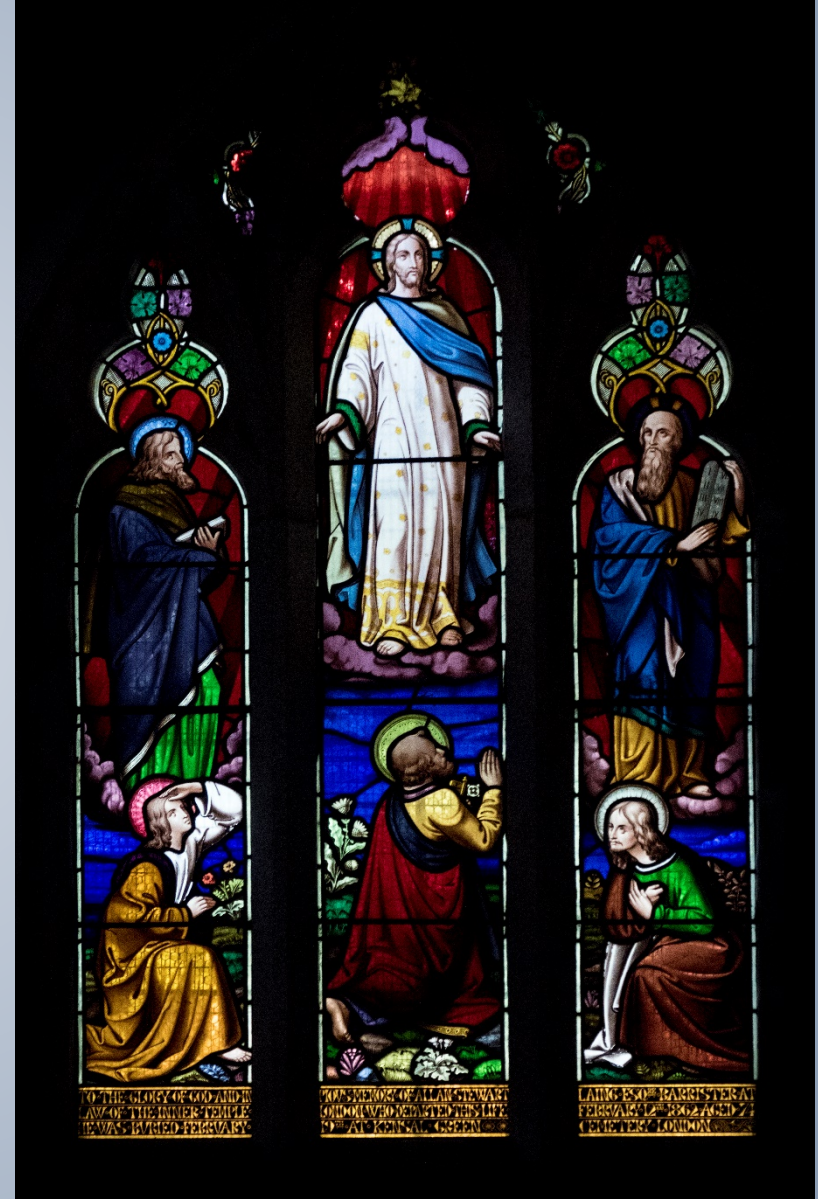


1.5 sec f4 ISO 200 (rested on bridge/self timer)

Starting Points



30 sec f3.5 ISO 3200 (Tripod)



1/30 sec f3.5 ISO 1600 (Hand Held)

Starting Points



1/30 sec f4 ISO 3200 (Hand Held)



Time to WAKE UP!

Any Questions