

Equipment & Techniques Section

# 'Through which end do I look?' – the absolute basics of using a telescope

Having previously advised beginners on purchasing a telescope, it seems appropriate in this new year to write about getting a new telescope up and running. My thoughts on this subject are written for the complete novice, but I hope more experienced observers will find them interesting as well.

As we know, there are many different types of telescope and mounting, each with their own peculiarities of use. I can't cover them all on one page, so will concentrate on a few issues that are common to many. If it really is a new telescope, the first piece of advice is to read the instructions. This may however be of not much help at all, given the standard of technical writing and translation often found. Frequently, one instruction manual is used by manufacturers to cover a wide range of equipment, and often most of what is written there proves to be irrelevant to the beginner's specific telescope.

The telescope needs to be unpacked and assembled; the optics then need to be uncovered for use. If this process proves baffling, an engineering or mechanically-minded person – or photographer – might well be able to help, even if they have no experience of telescopes. The process of uncovering the lenses may not be as trivial as it sounds. I have known the plastic caps on object glasses to be so tight as to need tools (like the 'snake' used for talking the lids off jars) to remove. A further word of warning: don't inadvertently unscrew things you are not meant to. I recently helped a lady who was struggling to remove the white plastic covers from her eyepieces. These were supposed to be pulled off, but she was unscrewing them and, in the process, disassembling the eyepieces.

**Right: Basic German equatorial mount, adjusted to the right angle for London. David Arditti.**



Assuming you have managed to get it together correctly, the telescope on its mounting needs to be placed on firm, level, dry ground. Equatorial mounts can be quite a puzzle to beginners. A German equatorial mount (see picture) needs to have its polar axis oriented north-south and pointing up at an angle of about 51° (in the UK) – to where the North Star, Polaris, would be if it were dark. Do not do this in the dark however: test your telescope in the daytime first.

Familiarise yourself with the operation of the clamps for the axes and the controls that drive the geared wheels (these may be hidden in casings), turning the telescope slowly around said axes. Ensure that the telescope is balanced – so it does not swing when the clamps are loosened – by mov-



**Finder in bracket – the better type, with two screws. David Arditti.**

declination axis, but a sector drive which, if the nut is driven to the end of the thread, becomes jammed-up and requires tools to be freed again. Indeed, I have rarely seen an EQ2 mount that has not been put into this state by a hapless operator. With this poor system, you must always ensure the nut is some-

where near the middle of the thread before you start driving the scope.

Some refractors will not focus without the star diagonal in place, so use that at first, with the longest focal length eyepiece (the one with the highest number of millimetres printed on the side). The diagonal also makes the daytime view less disorienting by putting the image upright, although left and right will be reversed. Start by trying to focus the telescope on a very distant terrestrial object, like a tree or chimney. That focus point will be close to what you need for looking at the Moon and stars – these will however be more tricky, because they move.

Hopefully you will have either a finder telescope or (less good) a laser red dot finder. The latter suffer from the disadvantage that they are too easy to leave switched on, so the battery goes dead. A critical step towards seeing celestial objects through your telescope is ensuring, in the daytime, that when you centre an object in the finder – like a tree or chimney – it is visible in the telescope eyepiece. For finder telescopes, the adjustment is made with two or three screws around the back end of the bracket. When the alignment is right, you need to leave them so that the finder does not wobble. If adjustment of these screws cannot get the finder exactly parallel to the telescope, you may need to reposition the finder bracket on the tube. Red dot finders have some fiddly plastic adjusting wheels, with which you are unlikely to have much joy. If you have a Barlow lens, ignore it.

When night falls, first try your luck with the Moon, if it is up – failing that, try a planet or a bright star. If all appears to have failed and you can see nothing, do not despair. Try to get hold of some astronomers through your local society, use the BAA website forum, or e-mail me. Someone will be able to help you to get your telescope revealing the amazing sights the heavens have to offer, if you have enough patience. Or, if your telescope really is useless, they will be able to advise on what to do next. If you have bought it (as I advised) from a proper telescope dealer, they will be willing to help you in all circumstances – they have a reputation to keep up in this small world of enthusiasts.

Best of luck!

David Arditti, Director

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