

GAZE AT THESE IN AWE, GALILEO

With hi-tech mounts and vast databases, even entry-level telescopes can find celestial objects for you in seconds. Steve Richards samples five

TEST BENCH

Telescopes

BUYER'S GUIDE

The telescopes featured here come with guidance software undreamt of a few years ago. All include motorised mounts that use the **GoTo** feature to point the instrument automatically at a celestial object from the thousands in a database stored on a handheld controller. It's a level of automatic control that just two decades ago only the biggest telescopes in the world enjoyed — at a cost of hundreds of thousands of pounds.

But which type of telescope to choose? Huge differences in the size and brightness of night-sky objects mean that no one design is ideal for all astronomy. Key are two optical features: **aperture** (the width of the telescope's lens or mirror) and **focal length** (how far from the lens or mirror the light is focused). Large apertures let you observe dimmer objects; longer focal lengths give greater magnification for close-up detail.

There are also three different designs of telescope: **refractors**, which use lenses; **reflectors**, which use mirrors; and ones such as the **Maksutov Cassegrain**, which use both. Reflectors tend to be rugged but are costlier the higher their magnification; reflectors are good value but require some cleaning and maintenance; a "Mak" gives excellent image quality but is expensive.

Steve Richards is Sky at Night magazine's Scope Doctor. Our "Best Buy" seal of approval goes to a product combining innovative features, quality and affordability.

PLANET OF THE APPS

Matt Bingham

THIS WEEK: THE BEST APPS FOR The Edinburgh Festival

EDINBURGH FESTIVAL FRINGE
Free; Android, iPhone, iPod Touch

The Edinburgh festival lasts for months but its heart is the 25-day Fringe, which began on Friday. With 2,542 events, it's the biggest ever. This official app will help you research, schedule and book your way through the chaos. As you'd hope, it updates its database every day (last-minute changes being a hallmark of the Fringe). Browse by genre, venue and or what's on right now near you. Tickets can be booked via a phone call or via the app, to be collected at a pick-up point, and there's a link to the Half Price Hut for last-minute bargains. You'll never miss a hot-ticket Ukrainian dance trio again.

IFRINGE EDINBURGH
Free; iPhone, Touch

This has one thing that's missing from the official Fringe app: criticism from sources

you know and trust. So that you'll actually know what you're letting yourself in for, iFringe adds reviews from websites and magazines covering the festival and builds them into its events database. It's as comprehensive as the official app, with links to a ticket hotline and an online booking office, but it's not quite as easy to navigate. Owners of the iPhone, at least, have the option of downloading both.

WORKSNUG PRO
Free; iPhone, iPod Touch

Edinburgh is a hilly city covered in big, stone buildings — a perfect storm for bad mobile phone connections. To make sure you don't miss the daily update for your Fringe app, use wi-fi: WorkSnug has mapped 70 hotspots in the city, most of them free, and fellow WorkSnug users will be adding more as pop-up cafes, er, pop up during the festival. An augmented reality view shows the direction and distance of the

nearest hotspot over the phone's camera feed. It can also display pins on a map; tap on one to find out if the venue is quiet or clamorous, has free powerpoints (for laptop warriors), and if the coffee is any good. WorkSnug is also included in the free Layar augmented reality app for Android phones.

IAN RANKIN'S EDINBURGH
Free; iPhone, Touch

Need a break from the relentless Fringe jollity? Take a tour of the city's bleaker spots with crimewriter Ian Rankin as your guide. The Edinburgh author supplies an audio commentary to 30 real-life locations featured in his many novels, with not a single human statue or unicycling clown in sight — guaranteed.

SUNDAY TIMES ONLINE

For the definitive guide to apps and games, go to thesundaytimes.co.uk/theapplist

DON'T PANIC

Your tech problems solved by our experts

Q Is there any software I can use to eliminate, or at least reduce, vibration distortion in footage recorded from a camcorder mounted on my car dash? The camera itself has image stabilisation — not that it seems to help much.

RT, Dover

A This is a common problem with mobile phones and entry-level camcorders, which lack the sophisticated image stabilisation used by more expensive equipment.

Try the new stabilisation effect that Google has built into its editor on YouTube. To use it, create or log in to an existing YouTube account, upload the offending video and select the Video Editor option on the top menu bar of the Your Video page. Drag the video down to the timeline at the bottom of the screen, and when you hover over the thumbnail select the wand icon for effects. You'll then find the Stabilise function. Select the amount of effect you want to apply, then save the edited video.

The image quality will soften the more you remove the jitters, so play around with the settings until you find the best possible balance between quality and stability.

Nigel Powell

Q When I try to transfer my music files from my computer's hard drive onto my phone, it tells me the files are protected by DRM and that I need to download a licence in order to hear the music. How do I overcome this?

BK, Dublin

A As these tunes employ DRM — digital rights management; ie, copyright protection — they are

probably either in the WMA format, as used by Windows Media Player, or old AAC tracks from the days when Apple copy-protected the music it sold through iTunes.

Your reference to a licence suggests that they're WMA files. You can restore DRM licences from a back-up of the tracks using Windows Media Player and the Licence Manager entry in its Tools menu — that's if you made a back-up, of course. If not, try contacting your music seller to see if you can reacquire the licences.

However, if the songs play without a problem in Windows Media Player on your computer, I suggest you burn them onto a CD then reimpart them from the disc. When asked, choose the MP3 format, as it's sure to play on your phone.

The same advice applies to iTunes: burn any DRM-protected AAC songs to disc and reimpart them as MP3 files.

Tony Smith
Email your tech queries to dontpanic@sunday-times.co.uk



BEST FOR DIMMER OBJECTS

CELESTRON NEXSTAR 130SLT £339

It is not possible for a single telescope to excel at allowing you to view all the many types of object in the night sky (see panel, above right). That said, the Celestron NexStar 130SLT reflector telescope offers the best compromise between light-gathering power and magnification of any on test. At 130mm, its aperture is the widest in the group, while, with a medium focal length of 650mm, it is also fine for observing the planets. The NexStar comes with a brace of eyepieces: with the x26 one you will be able to study the larger deep-sky objects and star fields; its higher-magnification x62 eyepiece is ideal for gazing at the moon. The supplied GoTo motorised mount has access to a database of more than 4,000 celestial objects. All GoTo mounts need to be set up so that they know in which direction to point the telescope to find the objects you want to view: the one in this package uses the SkyAlign system, the simplest and most beginner-friendly alignment method available on any computerised telescope.

Verdict A great telescope and mount combination for general night-sky observing, at an attractive price too.
★★★★★
celestron.uk.com

BEST FOR WIDEFIELD VIEWS

SKY-WATCHER STARTRAVEL 102 SYNSCAN £300

Large star fields, star clusters and nebulae (enormous clouds of lit-up gas and dust) are known as widefield objects and best observed using a telescope with a short focal length. The Startravel 102 refractor fits the bill: it has a focal length of just 500mm and, with its two eyepieces, gives magnification of x25 and x50, with a bright view from its 102mm aperture. It is no slouch at viewing the moon, either, and its computerised mount contains a vast database of more than 42,900 objects. Unusually for an astronomical telescope, it shows objects the "right" way up (most show them upside down), meaning you could use it during the daytime for purposes other than star-gazing.

Verdict Crisp, bright views; big database; and it's even good for birdwatching.
★★★★☆
www.opticalvision.co.uk

BEST FOR PHOTOGRAPHY

CELESTRON NEXSTAR 4SE £399

With its 1325mm focal length and 102mm aperture, this Maksutov Cassegrain (see panel) packs a punch for planetary and lunar observing. If you get bored with our solar system, its database of a further 40,000 objects will keep you busy. The computerised mount also has a built-in "wedge" that tilts it to match the rotation angle of the Earth, making it much easier than the other telescopes here to follow objects across the sky. That's a prerequisite for long photographic exposures; for shorter exposures of bright objects, the mirror flips down to supply a camera port on which you can mount a compact camera or webcam, with light reaching it directly from the optical tube.

Verdict A quality instrument with some great features for photographers.
★★★★☆
celestron.uk.com

BEST FOR PORTABILITY

MEADE ETX 80 AT BACKPACK £289

British towns are awash with light pollution, which will have an extremely detrimental effect on your night-sky viewing. The solution for urbanites is to head for the countryside with a "grab and go" telescope — such as this one. This little refractor, with a 400mm focal length and 80mm aperture, is a great travelling companion, because it comes with its own backpack, into which the entire outfit fits. Included in the kit are two eyepieces, a built-in Barlow lens (which doubles the magnification of the eyepieces supplied to a maximum of x83), a tripod and a GoTo computerised mount with a database of more than 1,400 objects.

Verdict A lot of telescope in a small, neat, portable package, with a good range of magnification available.
★★★★☆
meade.uk.com

BEST FOR MOON AND PLANETS

SKY-WATCHER SKYMAX 127 SYNSCAN £385

At 1500mm, this telescope has the longest focal length of any on test, making it a great planet-seeker, where getting in close is important. That's not its only attribute: with a 127mm aperture, it collects 55% more light than a 102mm telescope, so you can observe dimmer objects, too. This Maksutov Cassegrain isn't just for solar-system observations; a celestial database of 42,900 objects will let you spread your wings into deep space to seek out distant galaxies or globular clusters (groups of stars), and it has the precision to separate faint binary stars (pairs of stars in the same star system). Magnification of either x60 or x150 is available using the two eyepieces.

Verdict A powerful instrument with good light-gathering power.
★★★★☆
www.opticalvision.co.uk