



ASTROCAMP

AUTUMN 2022

WELCOME TO ASTROCAMP

Thank you for booking and welcome to AstroCamp.

AstroCamp has gained a reputation as the friendliest and most helpful star party there is. And with common sense and respect for others firmly in mind we hope to still live up to that reputation and ensure everyone stays safe and at ease.

If you're feeling sociable, you are welcome to come and set up around 'The Common', near the reception and the AstroCamp HQ tent. This is also where you'll find the organisers if you have any questions while you're here. If you're new to astronomy or don't have your own telescope and want to look through a range of scopes and ask questions, 'The Common' is the place to come.

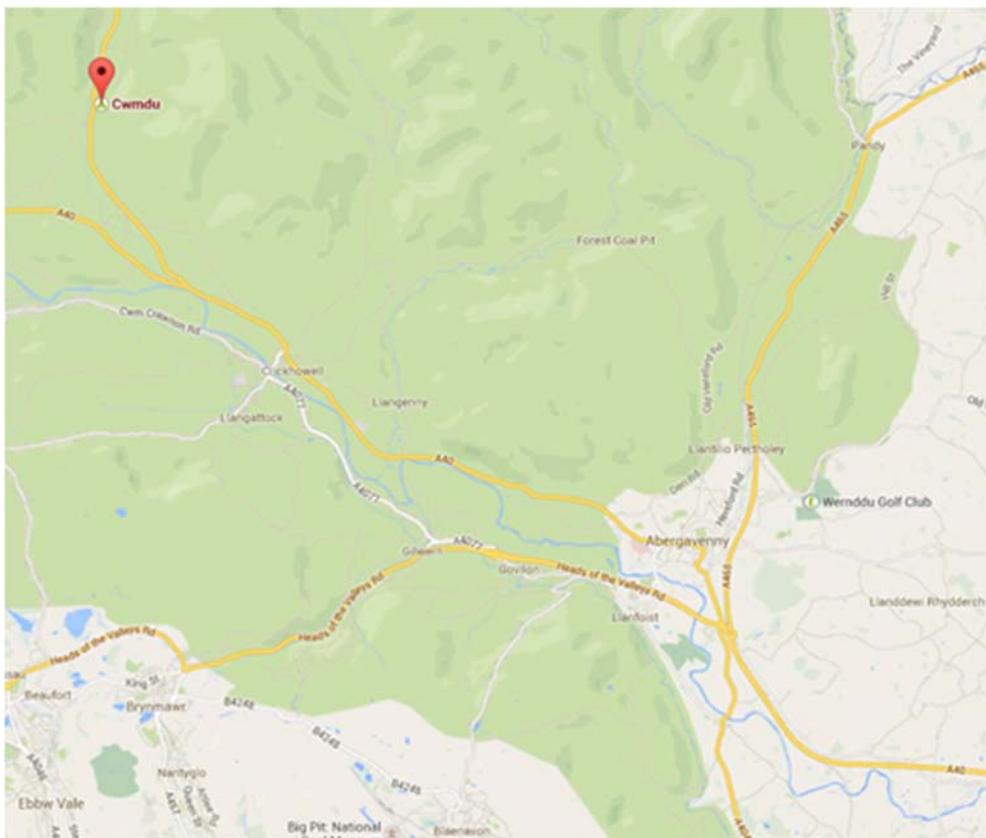
Of course, those that want to find a dark and quiet corner for some observing or imaging in blissful seclusion have everything they want in this weather protected valley under the dark skies of the Brecon Beacons International Dark Sky Reserve.

In this pack, you'll find a guide to the scheduled events and talks that will be taking place this AstroCamp. All talks, events & workshops are included in your admission, so please feel free to come along to any or all that you'd like.

Beyond the campsite, the local pub (the Farmers Arms) provides good food and a warm welcome. The cafe (the Mynydd Ddu Tea Rooms) do exceptional breakfasts and both can be found on the main road through Cwmdru, the A479. Most AstroCamp regulars or the organisers will be happy to point you towards their favourite walk, local landmark, historic building, mountain to climb or village to visit.

Finally, we've once again asked the council to turn off the street lights in Cwmdru for the duration of camp to preserve the splendour of the night skies for us.

HOW TO GET TO ASTROCAMP



By Train: The nearest train station to Cwmdu is Abergavenny. Bus services run weekly to Cwmdu so booking a taxi from the train station is recommended. Taxis cost around £25 each way, but most operators seem to be happy to negotiate a fixed price if you guarantee that you will use them for the return journey.

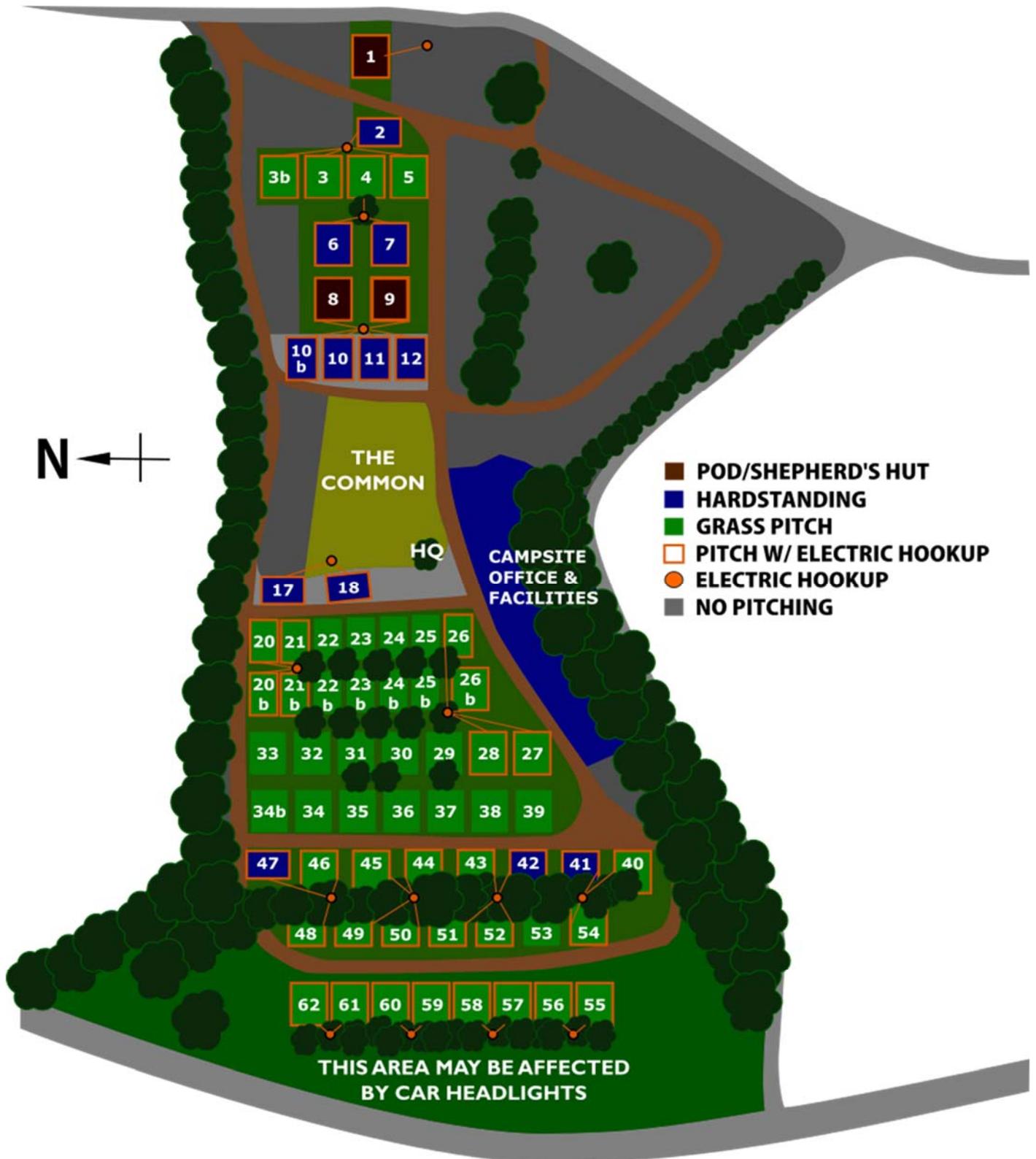
By Car: Cwmdu Caravan & Camp site is located four miles north of Crickhowell just off the A479 Turn right at the Farmers Arms public house in the small village of Cwmdu and follow the signs for 300m.

PLEASE NOTE: While SATNAV may bring you successfully to the area it may NOT deliver you to the campsite. Please follow the "camping" road signs from the Farmers Arms public house for the final 300m to the campsite.

Campsite Address: Cwmdu Campsite, Cwmdu, Crickhowell, Powys, NP8 1RU

CAMPSITE LAYOUT

Please pitch in your allocated area according to the map below. Please only park your car by your tent if it fits well within the dimensions of your pitch. Otherwise please park your car on the sides of the bottom field after unpacking and pitching up. Your neighbour will thank you for it!



ASTROCAMP EVENT SCHEDULE

Saturday 24th

- 13:00 Arrive at campsite, pitch up & set up.
- 15:00 Meet & Greet. Come to the gazebo on The Common to meet new friends, share stories & a drink or two.
- 17:30 **Collimation: Schmidt-Cassegrain Tutorial – Paul Williamson**
Time: 1 hour
Equipment: None (own telescope optional)
Location: The Common
- 21:00 **Live Sky Tour - Paul Hill**
Equipment: None (own telescope/binoculars optional)
Location: The Common, Bob the Dob
Rain/Cloud: A digital sky tour under the gazebo

Paul Hill is an expert science communicator and highly skilled practical astronomer – one of the few that shuns these new-fangled tracking telescopes, preferring to dance across the cosmos by his own guiding hand. Using his almost encyclopaedic knowledge of the night sky, Paul will take you on a tour of the best objects available to view this Astrocamp. Feel free to gaze in wonder with the naked-eye, or join in with your binoculars or telescope.

Sunday 25th

- 13:00 **Professor Mike Edmunds – “The Antikythera Mechanism”**
Time: 1 hr 15 mins
Equipment: Chair
Location: The Common, HQ gazebo
- Professor Edmunds is Emeritus Professor of Astrophysics at Cardiff University and, as of May 2022, the President of the Royal Astronomical Society. He has spent a large part of his career undertaking research to determine the chemical composition of galaxies and the Universe. He headed up the Antikythera Mechanism Research Project, an international collaboration investigating the extraordinary astronomical machine dating from around 200 BC, discovered by sponge divers over a century ago, off the Greek island of Antikythera.
- In this talk, Professor Edmunds will take us through the astonishing tale of unravelling the mysteries behinds the world’s first mechanical computer.
- 14:30 **Awesome Astronomy Crew – Quiz**
Time: 1 hour
Equipment: Paper, pen, chair
Location: The Common, HQ gazebo
- Back by popular demand is the legendary Astrocamp Quiz! By your request, this year we’ll be branching beyond astronomy ... but to what? Guess you’ll have to play along to find out...
- 15:30 **Awesome Astronomy Crew – Astronomy Panel Bonanza**
Time: 1 hour
Equipment: Chair
Location: The Common, HQ gazebo
- Do you have a burning question about astronomy or space exploration that you’ve always wanted answered, but never known who to ask? In this one-hour Live Podcast Special, we’ll be answering all your spacey questions, even throwing in a debate or two!
- 16:30 **Mystery Experiment**
Time: 1 hour
Location: The Common, HQ gazebo
- Is it a bird?
Is it a plane?
No, it's none of these things. But it is a very cool experiment resurrected from the days of Astrocamp gone by. Come along and see the invisible whizz by!

21:00 **Live Sky Tour - Paul Hill**
Time: 30 minutes
Equipment: None (own telescope/binoculars optional)
Location: The Common, Bob the Dob
Rain/Cloud: A digital sky tour under the gazebo

Using his almost encyclopaedic knowledge of the night sky, Paul will take you on a tour of the best objects available to view this Astrocamp. Feel free to gaze in wonder with the naked-eye, or join in with your binoculars or telescope.

Monday 26th

14:00 **"Down where the stars are strange"— Kevin Quinn**
Time: 30 mins
Equipment: Chair
Location: The Common, HQ gazebo

Have you ever seen your shadow by starlight? A rarity for those of us in the Northern Hemisphere, unless we travel to the land of the upside down. If you think the Milky Way is epic at Camp, just you wait until Kevin shows us his and Alan's holiday snaps.

Southern Hemisphere stargazing offers a treasure trove of celestial wonders, and in this short talk, Kevin will tell us about his August 2022 trip to the Tivoli Astro Farm in Namibia.

14:30 **Astronomy 101 – Jenifer Millard and Paul Hill**
Time: 1hr 30 mins
Equipment: Chair
Location: The Common, HQ gazebo

In this series of short talks, expert science communicators Dr Jenifer Millard and Paul Hill will take you back to basics, introducing some key phenomena of the night sky. On the roster at this Astrocamp are asteroids, comets, nebulae, and the mysteries behind how stars shine - everything you need to know to take your stargazing to the next level.

16:00 **Planetary Imaging and Processing for Beginners – Damien Phillips**
Time: 1 hr 30 minutes
Equipment: Chair & Laptop
Location: The Common, HQ gazebo

Following on from the Astrophotography for Beginners workshop from our Spring event, we explain how to get started with imaging our solar system. From what equipment you can use, what software you will need as well as how to process your images. Join along with the processing section by downloading the Jupiter and Moon captures and the software available via our Google Drive here: <https://shorturl.at/fwMOX>

A USB drive will also be available from Damien at camp if you are unable to download them before arriving on Saturday.

Tuesday 27th

12:00 Leave campsite.

The Common (in the middle of the campsite) is the area we've created for socialising and observing together. There's always lots of people gathered here to share eyepiece views and learn new astronomy tricks from others.

Join us in the AstroCamp family at The Common *but please do respect the proximity comfort of others.*

“STRAIGHT FROM THE HORSE'S MOUTH”

PAUL'S LIVE SKY TOUR – 21:00 – SATURDAY & SUNDAY

This camp's tour is in the area of the sky that culminates around 11pm, that is, it reaches the highest point in the sky as it crosses the meridian as you look to the south. Looking up you will find Pegasus, the divine winged horse that was sired by Poseidon (long story) and ridden by the slayer of the Chimera, Bellerophon.

The Great Square of Pegasus, which will be to the South East at this time, is the obvious way point in the sky, made up of (clockwise from top right) Scheat, Markab, Algenib and Alpheratz. We start the tour by looking for the head of Pegasus and for that we look for the star Markab - because the winged horse of the Gods is upside down!

From Markab look for two stars to the right, Homan and Xi Pegasi that mark the neck of the horse, then work further to the right and down to mag 3.5 Biham, the back of Pegasus' head and then to the nose and mouth, which you will see further to the right and up as an obvious mag 2 yellowy-orange star called Enif or Epsilon Pegasi. This star is a red supergiant, about 620 light years away and over 200 times the radius of the Sun. It is a slow variable star and has been observed as bright as mag 0.7 and as faint as 3.5. Enif translates as nose and from here we are going to look for the cosmic sugar lump that is dangling in front of the horse's muzzle.

GLOBAL CLUSTER M15

This is an easy find and can be located by putting Enif in your finderscope and then moving right and up (to the North West) and as Enif leaves the view M15 enters. This is a globular cluster about 40,000 light years from Earth and is around 125 light years across. It's an impressive globular that is often forgotten about and only really needs a 4" and above to resolve individual stars.

Moving on down...

GLOBAL CLUSTER M2

So once you've enjoyed M15, if you are observing around the time it culminates, you can grab two more globs by moving your scope straight down. The first is M2 in Aquarius and is pretty much a straight drop of the finder scope of about 15 degrees towards the star Sadalsuud which is the right-hand star of the pair of stars you can see below Enif. If you miss it then find Sadalsuud and move up a finderscope width and here you will find another 40,000 light year distant glob whose stars were first resolved by Caroline Herschel. It is a globular with interesting lanes and granulation at high powers in bigger scopes.

GLOBAL CLUSTER M72 AND THE SATURN NEBULA

If you are lucky, and this is where the hills around Cwmdru may defeat you, there is a third glob on this vertical line from the horse's nose in the form of M72. Look for a pair of stars on the right side of Aquarius from Sadalsuud, down from Altair in Aquila. These are Algedi and Dabih. Working back towards Sadalsuud you should find the fainter star Albali halfway. Below this star you should find not only globular cluster M72, but also NGC7009, the Saturn Nebula. Both of these are quite faint and much smaller than the previous two, M72 is only 40 light years across and is 50,000 light years away, while the Saturn Nebula can be mistaken for an out of focus star at low power. As a bonus you get to immediately compare the Saturn Nebula with its namesake; as the ringed world itself is just 10 degrees away in Capricornus, below and slightly to the left!

THE TAIL END...

So for the second half of the tour we are going to the other end of Pegasus, which strangely is a horse with no tail. Pegasus ends abruptly at the square and immediately becomes the constellation of Andromeda, an area of sky that despite no standout asterism, is very familiar to most astronomers. The reason for this is of course one of the standout objects of the night sky M31, the Andromeda Galaxy. At Cwmdru you should be able to pick up M31 with the naked eye, as a blurry patch of sky below Cassiopeia and halfway towards the Great Square. When you take a look at M31, do remember to look for M32 and M110, two satellite galaxies of M31. M32 can look lost in the disc of the larger galaxy and is much closer, while you may have to move your scope in the direction away from M32, North West, as M110 is further out and often on the edge of the eyepiece.

A GHOSTLY ERROR...

Next up you are moving the scope down towards the bright star you can see below M31. This is the next bright star out from Alpheratz; the top left star of the Square. This is the star Mirach, a red giant about 200 light years away and the brightest star in Andromeda. While the star itself is interesting, the real fun here is looking for Mirach's ghost. This is galaxy NGC404, just 7 arcminutes from the star and difficult to see in the glare. Move Mirach just out of the eyepiece and look for a small disc of light that you might mistake for an artifact on the lens caused by the mag 2 star. You have found Mirach's ghost, a galaxy just outside our local group and one that is smaller than the Milky Way's Small Magellanic Cloud!

MAG 5.7??

Now for one of those targets that some fabled astronomers, giants of the field, legends that are spoken of in myth, will claim can be seen naked eye. Technically yes, and if you have the eyes of a child and are stood in the clearest, darkest skies on Earth then you might have a chance., But while M33, the Triangulum Galaxy, is a mag 5.7 target, it has extremely low surface brightness and is a diffuse target. To find it, draw a line from M31 to Mirach and then extend that line the same distance down below the star. It is actually above and to the right of the actual triangle asterism of the constellation. It is above and to the right of the star Mothallah, which is on the right hand corner of the triangle. Well worth a look and large scopes well tease out the spiral arms.

COLOUR CONTRAST...

Next up we move to the left and to the next brightest star to the left after Mirach and the end of the Andromeda asterism. This is Almaak or Gamma Andromedae, a beautiful double star of contrasting blue and yellow, separated by 10 arc seconds. The primary is a mag 2 K3 star, cooler but not dissimilar to the Sun, while the blue-green secondary is mag 5. Interestingly the secondary is itself a binary!

LAST STOP...

Our last stop is found just a bit beyond Almaak, and whereas finding tiny NGC404 was a challenge, locating NGC891 should not be too difficult. This is an edge on spiral about 30 million light years away and is part of the NGC1023 cluster, which can be found in Perseus. You should find it easily by sweeping 3 ½ degrees to the east from Almaak. Good power and aperture should reveal a distinct dust lane.

Find me on the common if you need more pointers...and I wish you clear skies and happy hunting!

STAR CAMP ETIQUETTE

LIGHTS

Please only use red light torches at night. If you use a laptop, please cover the screen with a sheet of red acetate. Toilet block lights will be switched off or covered in red acetate during the dark hours. Please do not use laser pointers if it is dark and cloud free as they'll interfere with astroimaging and can be dangerous. Also, cigarette lighters produce light as well as heat. Please screen your lighter flame from astronomers. Please be aware that lights inside tents and caravans are also visible to people outside of them - red lights or no lights please.

This is the one piece of etiquette that will make offenders very unpopular - dark adaption takes up to half an hour to achieve but only a second of normal light will take you back to square one.

EQUIPMENT

People will be happy to let you look through the eyepiece at their scopes but please do ask the owner before taking a look. Be aware that telescopes are carefully aligned and assembled and as little physical contact to see through them is best.

Be mindful of astroimagers. Astrophotography requires very steady and unobscured exposures, so please don't touch or walk in front of a scope being used for imaging. We will try and set aside an area for astroimagers for this very purpose. I'm told they're still a very friendly bunch despite their obsession with long exposures!

CARS

No car movements are permitted after dark, so please arrange to arrive before this time. Remember that opening car doors or the boot always turns an interior light on so disable them if you can or remove the fuse before sunset. Alternatively, cover them with opaque tape, including those in the boot. If a bright light is unavoidable call out: "LIGHTS IN 3 SECONDS" to give everyone time to turn the other way.

The best advice here is to remove everything you'll need from cars before nightfall and don't return to them.

CHILDREN

Children are welcome to the event, but please remember the field is dark, there are lots of very valuable bits of equipment and many people will have carefully aligned their telescopes. Also, tired astronomers are often glad of a lay in the following morning. Please keep your children and their volume under control.

NOISE

We want this to be an astronomy *party*, but please be considerate of others and refrain from any raucous behaviour, loud talking or music. Some people will want to catch up on some sleep for a few hours during the night and others will be sleeping during the day. Please be considerate of others trying to sleep when it is cloudy by not playing music late at night.

RUBBISH

The site is rich in wildlife and a very pleasant place to stay. We would like to keep it that way. Please keep your rubbish in a suitable container and dispose of it in the bins provided. Dark sites and loose trash do not mix well.

DOGS

Well behaved dogs are more than welcome to the event, but please remember the field is dark, there are lots of very valuable bits of equipment and many people will have carefully aligned their telescopes. Also, tired astronomers are often glad of a lay in the following morning. Please keep your dogs on a lead if they are anywhere near other people's equipment and their volume under control. Please also be mindful of others who might have a fear of dogs.