

Summer 2016 Number 12

Kielder Observatory Newsletter



Stop press!
**"An Astronomer's
Tale"**
**published
28th July**

NEWS

Meteor station

OBSERVING

Highlights

July/Aug/Sept

SCIENCE

Observing in Hawaii

TRAVELOGUE

A South African tale



EDITORIAL

I hope you were lucky enough to see the transit of Mercury in May - for once the weather was kind. If not, you will have to wait until November 2019 for the next one! In this edition, astrophysicist Dr Julie Wardlow describes observing in Hawaii, whilst fellow editor Robert Williams relates another of his overseas trips, this time to South Africa. We also take a quick tour of the best planetary nebulae visible in the next couple of months. Meanwhile, look out for our director's book - published on July 28th. Nigel Metcalfe

Editors: Nigel Metcalfe & Robert Williams

newsletter@kielderobservatory.org

Kielder Observatory Astronomical Society

Registered Charity No: 1153570.

Patron: Sir Arnold Wolfendale 14th Astronomer Royal

Full Membership £75 per annum

Friends of Kielder £25 per annum

Kielder Observatory Astronomical Society is a Charitable Incorporated Organisation.

Its aims are to

- * Promote interest in the science of astronomy to the general public
- * Facilitate education of members of the public in the science of astronomy
- * Maintain an astronomical observatory in Kielder Forest to support the above aims

<http://www.kielderobservatory.org>

E-mail: chairman@kielderobservatory.org

secretary@kielderobservatory.org

membership@kielderobservatory.org

admin@kielderobservatory.org





DIRECTOR'S CUT

As always it's a happy news story when we consider that the solstice is now past and we head back into the cold dark



nights that envelop the observatory. Next out of the door should be the midge, first frost and the little blighters are gone well at least for another year. Summer has however and still continues to be an enjoyable time at the observatory with some great pictures being taken by the staff and volunteers, superb events delivered and some very happy guests. Notable are the noctilucent clouds, well lack of them, previous years have been memorable for the NLCs, but this year it has been distinctly quieter, maybe that will change soon and if it does we can all rest assured the team at the observatory will be posting breathtaking pictures, they all have cameras now you see...

Early summer will also be remembered for the new 'art in space' initiative that went down especially well and will be

continued. Part of the initiative was also our astrophotography competition, which is now closed and is currently being judged. So I for sure will be counting down through the next 4 weeks so we can start to see astronomical darkness slowly returning and we get those summer constellations and deep sky objects. As you are all fully aware the Milky Way in the autumn skies with its knots of dark nebulae and star fields is a sight to behold and it is this we guide our guests through. Behind the scenes all continues to go at a pace and we are still pushing with funding applications for the small observatory, which hopefully will be started later this year. As well as that there is the larger project, which is still ongoing and planning for that is a daily occurrence with our partners.

Another significant event is the office move, which by the time you read this will have happened, our new offices enable a smoother transition to and from the facility for our staff and volunteers. There is also the small issue of my book launch on the 28th July. I hope I am the first of many people involved with our observatory that end up in print and publication.

Best wishes as ever and keep looking up!

Gary Fildes (FRAS MSc Hon.Caus.)



KOAS NEWS

TRUSTEE NOTES

The Trustees met on May 16th in Hoult's Yard. The main news is that we are moving to a new office at Prestwick Park, near Newcastle Airport, a purpose-built business park in the grounds of Prestwick Hall - the move will take place in mid July. This will make movement between the office and the observatory much easier, as people will no longer have to cross Newcastle.

Publicity for the observatory was discussed. A need for a new leaflet which can be distributed around tourist boards was identified. There are also plans to upgrade the website (work is now underway). A Sky TV program which included Freddie Flintoff visiting the observatory aired in June.

We have agreed to purchase our own inflatable planetarium system. At the moment we are borrowing one, but there is a need to own one ourselves so we can use it during the week for school visits as well as weekend events at Kielder Castle.

It was noted that charities are now recommended to have a formal reserves policy. There was discussion of what

would be appropriate for the observatory.

Expansion plans: the idea of engaging a professional fundraiser for the project was discussed. Further information would be presented at the next meeting.

The next meeting will be Monday July 25th (at the new office!).

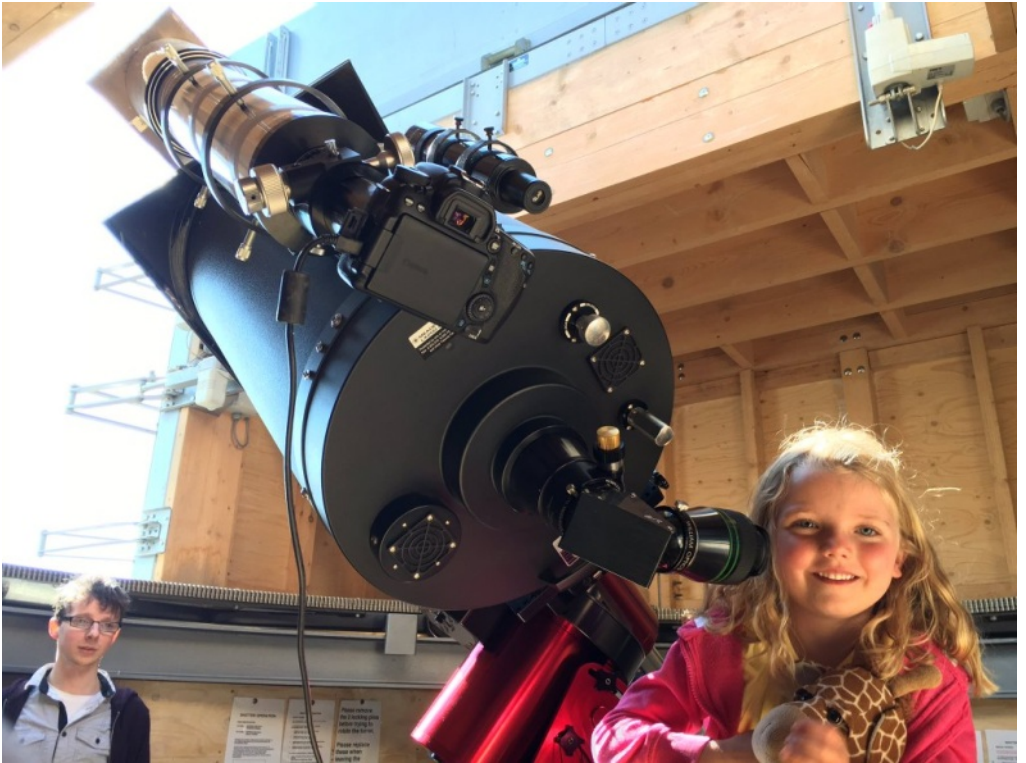
* * * *



Borders Science Festival: our scale solar system at Wilton Lodge Park, Hawick.



OBSERVATORY NEWS



Nell (age 5) thought Mercury was "nice"!

The last few months have been a busy time at the observatory. The astronomical highlight was probably the transit of Mercury in May. For once the North East was blessed with good weather, enabling the whole transit to be viewed. The presence of a nice sunspot group added to the excitement.

In the observatory, new monitors have been installed on the walls, which give a real-time display of information on the

astronomical conditions, and as you can see above we have some well-equipped display tables, which amongst other things are being used to allow our visitors to examine meteorites themselves.

We have had two very successful visits (on 28 April and 16 June) for the whole year 3 year group from Stobhillgate First School, Morpeth, which included approx. 70 children, the headteacher and year group teachers. The events went really



OBSERVATORY NEWS

well and we have received very positive feedback from pupils and teachers alike. We will be developing the relationship with the school further and this will be one of our pilot schools for our educational outreach programme starting in September. The programme will involve working with up to six schools from across the regions with our science presenters going into the schools to present similar events to Space Kids and the Planetarium in the Park.



The observatory has installed new meteorite discovery tables.

On Saturday May 21st we had a presence at the Borders Science Festival in Hawick, running a couple of events in Wilton Lodge Park. We were also represented at this year's Northumberland County Show at Bywell on May 30th, when a couple of the team gave demonstrations on observing and advised on future events.

We are also planning on being represented at the Tall Ships event in Blyth in August and at the Kielder marathon on Oct 1st - so keep your eyes open for us.

You might also have spotted us in the press recently. We have had features in the Journal, the Northumberland in Focus special feature supplement in The Journal, the Hexham Courant and a full page spread in the Sunday Times on July 3rd, following a visit by their special features writer the week before.

Our successful astrophotography competition has now closed. Judging will take place soon, then watch out for an exhibition of the entries later in the year! We will be running Space Kids events throughout the summer holiday, starting on Tuesday 26th July and running every Tuesday and Thursday throughout



Space Kids is always popular and runs throughout the summer holidays.



OBSERVATORY NEWS



Why not come and see some shooting stars in August!?

August, the last one being on Thursday 1st September – 4pm to 6pm. Book your place now! Also for the summer holidays, as well as the usual Saturday shows, Planetarium in the Park at Kielder Castle will run on Fridays from Friday 29th July up to and including Friday 26th August – 7pm to 9.30pm. In addition, there will be some new shows at the Leaplish Waterside Park - details to be announced shortly.

In August we will be holding some Perseid Shooting Star Special events at the observatory. Two events on each night

are being held on Thurs 11th, Fri 12th & Sat 13th August, timings as follows;

* Thursday 11th - 20:00 to 23:00 and 23:30 to 02:30

* Fri 12th & Sat 13th - 20:30 to 23:30 and 23:55 to 02:55

Book now, as these are sure to be popular! Looking even further ahead, our next show at the Vermont Hotel in Newcastle, "Searching for life in the Universe", will be held on September 11th starting at 7pm.

Finally, a new range of merchandise - fleeces, polo shirts and woolly hats - will be on sale on-line and at the observatory whilst the observatory will also be selling pens and fridge magnets.

Oh, and there is the Director's book launch on July 28th - have we mentioned that!?

* * * *

'Brilliant night, traveled here and camped nearby with my girlfriend. Went to the later showing which was an aurora night, the volunteers were brilliant and very knowledgeable. We got to see the moon very clearly and took photos were turned out very clear, we also saw Mars and Jupiter. The staff were so passionate about everything which made our visit even more fun. We stayed until around 3AM and had a hot chocolate to keep us warm. We would definitely visit again!'

Steven, Newcastle upon Tyne



SCIENCE SPOT

From the top of the world the stars shine brightly

So this time we went for something a bit different, and asked professional astronomer Julie Wardlow to describe her experiences of a recent observing trip to Hawaii ...

previous day and had spent the night trying to acclimate to both the altitude and time zone of my upcoming night shifts.

One of the most jarring aspects of observing on Mauna Kea is the altitude — at Hale Pohaku the air is already noticeably thin, but the summit things are much worse, with only around 60% of the



Summit Scenery: Eight of Mauna Kea's telescope shine in the sunset. From left to right are the control room of the Smithsonian Submillimeter Array, the Subaru Telescope, W.M. Keck Observatory (only one of the two telescopes is visible), the NASA Infrared Telescope Facility (IRTF), the Canada-France-Hawaii Telescope (CFHT), Gemini North, the University of Hawaii's 2.2 m Telescope and UKIRT.

From the balcony high up the dome of the James Clarke Maxwell Telescope (JCMT) I gazed at my surroundings, marvelling at the landscape at the summit of Mauna Kea, Hawaii. This was my fourth time observing with the world-class telescopes atop the 4200 m high Mauna Kea, but it seems that no matter how many times you go the sights still inspire.

I had arrived at Hale Pohaku, the accommodation block at 2800 m, the

oxygen available compared to sea level. At that altitude even walking is hard work for the first couple of nights until your body starts to adjust. I had been warned to drink plenty of water, take things easy, and beware of the symptoms of serious altitude sickness. Thankfully I didn't suffer any major effects this time, just some slightly 'fuzzy' thinking resulting from the low oxygen levels; even the mild headaches that had plagued my previous visits to Mauna Kea stayed away. Though



SCIENCE SPOT

I will admit to repeatedly questioning the choice of the JCMT designers to place the kitchen and bathroom on a different floor of the observatory to the telescope control room — meaning walking up a full flight of stairs and panting like I had just run a race several times a night! The 15 m diameter JCMT is one of 13 telescopes on the summit of Mauna Kea, and is the largest dedicated to observations at far-infrared and submillimetre wavelengths. The aim of my visit was to observe galaxies undergoing massive bursts of star formation in the early Universe. These so-called starburst galaxies are extreme systems — forming stars at hundreds to thousands of times the rate of our Milky Way — and are full of small dust particles that absorb the optical starlight and re-emit it at the long wavelengths that the JCMT is sensitive to. They are also billions of light-years away, so require long exposures to detect, even with state-of-the-art facilities, during extremely dry conditions and stable skies. Submillimetre light is readily absorbed by water vapour in the atmosphere, which is why telescopes such as the JCMT are positioned at high sites (where there is less atmosphere for the light to travel through) and in dry locations (where the atmosphere contains less water vapour).



15 m of JCMT: The 15 m primary mirror of the JCMT taking data through its protective membrane during daylight.

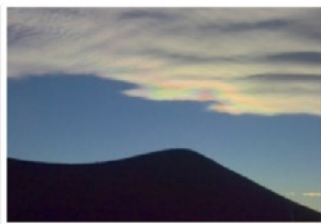
You quickly settle into a rhythm when observing for multiple nights, and this trip was no exception. Each day I'd get up around 4pm for dinner at Hale Pohaku and collect some food to make a 'night lunch' later at the summit, and ensure the WiFi and Bluetooth on my laptop are switched off (mobile phones, WiFi and Bluetooth all disrupt the telescopes). I'd then meet up with that night's Telescope Systems Specialist (TSS) — one of the highly skilled operators who control the nitty gritty of the telescope and instruments — to drive up the mountain in time to do all our checks and preparations before starting our observations. The lower levels of Mauna Kea are often shrouded in cloud, which we have to drive through some days. Some days I found some time whilst the setup is being completed to watch the sun set below the



SCIENCE SPOT

clouds. As the whole upper level of the JCMT structure, including the control room and the balcony, rotates with the telescope the view can be quite variable. Being a submillimetre telescope the JCMT doesn't require darkness to operate, so we start taking science data as soon as the start-up checks are complete and calibration data taken. Most of the data are still taken at night, because that is when the atmosphere is

The JCMT runs a queue system for observing, meaning that astronomers send instructions for the data that they need, and observers and JCMT staff ensure that the data are taken weather and conditions appropriate for each project. When you are at the telescope your project takes priority, but only if the conditions are suitable. This system optimises the efficiency of the telescope and gives each project the best chance of



Nacreous Clouds & Final Sunrise: The weather was not so great on my final night, but it did make for a spectacular sunrise, and (inset) a rare display of nacreous clouds. Silhouetted in the main image from right to left are the University of Hawaii's Educational Telescope, UKIRT, the University of Hawaii's 2.2m Telescope, Gemini North, and the CFHT.

most stable, which gives us better data. Daytimes at the JCMT are mostly used by the engineering crew for maintenance and equipment updates.

getting good data. The El Niño this year has brought good (astronomy) weather to Hawaii, so good in fact that most of the data for my main project at been taken



SCIENCE SPOT

before I even stepped off the plane from the UK! This didn't make it a wasted trip though, and I was lucky enough to have great weather for most of my eight night observing run, using the time to obtain data for other people's projects and some of the major surveys that JCMT is currently undertaking. Once the pre-observing checks and calibrations are done we choose which data to take by matching the available projects with the weather conditions. Each observation typically takes 20–60 minutes and may be repeated multiple times, depending on the goals of the project. I use the time whilst the data are being taken to plan the next observations, check the previous data set for quality, work on other research, or perhaps just make some tea or lunch. Occasionally I'll stand out on the balcony for a while staring at the stars. These are among the darkest skies on the planet, with thousands of stars and the Milky Way clearly visible on moonless nights. Some of the optical and near-infrared telescopes use powerful lasers to correct their data for atmospheric aberration and these can also often be seen.

After about 12 hours of taking data in these blocks we start the shutdown procedures, including taking more

calibration data and performing final checks on the equipment. Since it's spring the sun has long since risen and many of the other telescopes are already closed (most can only operate at night). This gives us just enough time to close up the dome and drive back down the Hale Pohaku less than 14 hours after we left — the limit set by regulations due to the high altitude of the summit. After a quick breakfast sleep is calling, and it feels like no time at all before I'm repeating it all again the next night. Just that little bit more accustomed to the altitude each time.

With thanks the staff at the East Asian Observatory for their support throughout this observing run. I acknowledge the significant cultural role that the summit of Mauna Kea has within the indigenous Hawaiian community. We are fortunate to have the opportunity to conduct astronomical observations from this sacred site.

Julie

Dr Julie Wardlow is a Research Associate in Astrophysics at Durham University.



NIGHT SKY

JULY 2016 (times in BST)

Lunar phases

New moon	04/07/2016	12:01
First quarter	12/07/2016	01:52
Full moon	19/07/2016	23:57
Last quarter	27/07/2016	00:00

PLANET SUMMARY

Mercury is still too close to the Sun, and can be found by locating the much brighter Venus which is sticks close to for most of the month. Mars is visible between the hours of 23:00 and midnight but will be low down in the west. Jupiter will be a challenging object in the evening twilight as it rises in the east as the Sun sets in the west. Saturn will be high in the sky at sunset and will be visible for about 2½ hours in twilight skies.

THE STARS AT 11PM (BST)

North – The two Bears will be around along with Cepheus and Cygnus in the north east and Perseus near the northern horizon.

East – Draco is high up with Cygnus lying nicely placed for viewing – this will be a

good time to view the late summer Milky Way. Pegasus is near the horizon.

South – Hercules is overhead with Ophiuchus nicely placed. Scorpio is near the southern horizon.

West – Corona Borealis is high up with Virgo low down and Leo about to set neat midnight.

METEOR SHOWERS

The Delta Aquarids are the only notable shower, peaking around July 27-30th.

OTHER EVENTS

Noctilucent clouds – these are very high [70km+] ice clouds and a best seen during the summer months. Look out for thin diaphanous clouds that look like giant fishing nets that will shine pure white or faintly blueish and will be visible around midnight.

The Planets 15/07/2016

	Sun	Mercury	Venus	Moon	Mars	Jupiter	Saturn	Uranus
Rise	04:58	05:41	05:52	17:13	17:03	10:22	18:03	00:13
Transit	13:13	13:55	13:59	21:50	20:57	16:54	22:07	07:04
Set	21:28	22:07	22:05	01:50	00:55	23:26	02:15	13:56



NIGHT SKY

AUGUST 2016 (times in BST)

Lunar phases

New moon	02/08/2016	21:45
First quarter	10/08/2016	19:21
Full moon	18/08/2016	10:27
Last quarter	25/08/2016	04:41

PLANET SUMMARY

Mercury is still too close to the Sun as is Venus. Mars will be visible low in the west after sunset – in twilight. Jupiter will be a challenging object low in the west at evening twilight. Saturn will be visible from around 22:00 for about 1 hour low in the west. The Moon [on the 12th], Mars and Saturn make a nice tight group low in the south-west at 10pm BST.

On the 11th and 12th of August the Moon, Mars and Saturn make a nice group low down in the south west sky at 10pm.

On the 27th, Venus and Jupiter pass within just a few arcminutes on the sky, but will be very low on the horizon (and setting) at dusk.

THE STARS AT 11PM (BST)

North – Perseus, Andromeda and

Cassiopeia are nicely placed for viewing all night.

East – Pegasus and Cygnus are well placed for viewing.

South – Lyra is high up with Sagitta the Arrow just below. Hercules and Ophiuchus are well placed with Sagittarius and Scorpio on the southern horizon.

West – Bootes is nicely placed with Virgo near the horizon.

METEOR SHOWERS

The major focus for August is the Perseid Meteor Shower of the 12th and 13th August. The Moon is just past first quarter and will set at 00:22 so the hours after 02:00 will be favourable for viewing this meteor shower. This shower is a regular performer with around 70 shooting stars per hour.

COMETS

There are no bright comets expected in August 2016.

The Planets 15/08/2016

	Sun	Mercury	Venus	Moon	Mars	Jupiter	Saturn	Uranus
Rise	05:47	08:36	07:36	18:37	16:04	08:53	15:58	22:07
Transit	13:12	14:52	14:27	23:02	19:41	15:12	20:02	05:03
Set	20:35	21:07	21:15	02:32	23:18	21:32	00:10	11:54



NIGHT SKY

SEPTEMBER 2016 (times in BST)

Lunar phases

New moon	05/06/2016	04:00
First quarter	12/06/2016	09:10
Full moon	20/06/2016	12:02
Last quarter	27/06/2016	19:19

PLANET SUMMARY

Mercury is in close conjunction with the Sun and hence not visible until the 28th when it will reach greatest western elongation and be visible low in the east before sunrise. Venus sets only 40 mins after the Sun so will be a very difficult object to observe. Mars will be just visible in the evening twilight low in the west after sunset. Jupiter is in conjunction with the Sun and so not visible this month. Saturn is a challenging evening object low in the west after sunset and then only visible during twilight hours. Uranus is visible for most of the hours of darkness.

THE STARS AT 9PM (BST)

North – Draco, Bootes and Cygnus are high overhead, with Ursa Minor nicely

placed [upside down]. Cassiopeia and Perseus are near the NE horizon. If you are in a dark site, scan through Cygnus with binoculars to find the North America nebula, NGC7000, a misty patch near the star Deneb – the brightest star in Cygnus. East – Cygnus and Lyra are high up, with Andromeda and Pegasus nicely placed and Pisces near the horizon.

South – Cygnus and Lyra are high up, with Sagitta and Aquila nicely placed and Sagittarius near the southern horizon. West – Hercules and Corona Borealis are nicely placed. Virgo with Saturn skirts the Horizon. Keep a check on R CrB - a star located in the middle of the 'bowl', of Corona Borealis. This star sometimes throws off clouds of carbon and fades dramatically over a period of a few days. Then the cloud breaks up and the star's brightness slowly returns.

METEOR SHOWERS & COMETS

There are no bright comets or major meteor showers in September.

Night Sky credits: Lunar and planetary data sourced from Cybersky 5

The Planets 15/09/2016

	Sun	Mercury	Venus	Moon	Mars	Jupiter	Saturn	Uranus
Rise	06:41	06:27	09:19	18:53	15:32	07:28	14:02	20:04
Transit	13:02	12:40	14:43	00:00	18:54	13:34	18:04	02:58
Set	19:22	18:55	20:06	04:42	22:16	19:40	22:06	09:38



ASTRONOMERS' TALES

South Africa stargazing travelogue

For most of the past 16 years my main vacation has had a significant astronomical content. It came in the form of a Total Solar Eclipse, a visit to a professional Observatory, another



The author, Robert Williams, at SAAO.

celestial event such as a bright meteor shower or Aurora Borealis or a combination of any of these along with some wildlife watching. In 2014, shortly after returning from my amazing adventure to Tivoli Astro Farm in Namibia, I decided that 2016 would see me heading to South Africa for yet another dose of stargazing of the southern night sky along with wildlife spotting and a splash or two of wine tasting and good food. South Africa is well known for interesting places to go, great food and

wine and plenty of wild animals to see, but to add into that mix some stargazing makes for a much bigger challenge in finding a tour company that can provide a trip to cover all of those bases. However, with the power of the WWW it is possible to find a very special vacation. I did find a British company who would put together such a trip but they were having difficulty getting enough people to make the trip worthwhile for them. So I set about finding a local company in South Africa to provide my vacation. After a bit more Google-ing up popped African Sky and Tours [www.africansky.co.za]. After a browse around their website they offered a '10 day Stargazing and Safari experience in the Western Cape', based from Cape Town and ending in Johannesburg. I had a warm feeling inside me that said that this was the trip for me. So, after a few exchange of emails, I decided on a start date and sent off a deposit, knowing that I would have to organise my own flights to and from South Africa.

I decided that some of the time that I had in South Africa would be in locations away from street lights and so I settled on dates close to new Moon.

This is but a summary of my adventure:



ASTRONOMERS' TALES

Day 1 – fly from Manchester via Dubai to Cape Town to be met by my guide Andre. We then did a short tour of Cape Town, taking in the 'Old City' and later to the Commodore Hotel [5*! - I don't mess about in 2 bit hostels] for an overnight stay <http://www.commodorehotel.co.za/> .

Day 2 – from the Hotel I was taken to Kirstenbosch Botanical Gardens [5* attraction if you are a gardener and even if you are not]

<http://www.sanbi.org/gardens/kirstenbosch> and then onto the first of many

Astronomical attractions – Cape Town Observatory <http://www.sao.ac.za/public/> which has a rich history. We did an afternoon tour to see its history and have a look around the extensive gardens and then back to the Commodore - another cheap sumptuous meal and a glass or two of SA Wine [£12 for Fillet Steak, Cheesecake and 2 glasses of Pinotage – perfect!]. In the evening we went back to Cape Town Observatory for a viewing session though the McClean Telescope, to have a look at Saturn.

Day 3 – we set off from the Commodore Hotel and drove about 300km through the Karoo region – a vast open dry plain and through the Du Toitskloof Mountains seeing the vegetation changed as we got higher and drier. After a lunch stop in

Matjiesfontein – a stop off point on the colonial railway of the 1850s – we continued to Sutherland crossing further expanses of the Karoo and pitched up at a nice guest house – Skitterland <http://www.skitterland.co.za/> – one of many guest-houses in Sutherland that cater for the ardent tourists, who come for the clean air away from the big cities of South Africa. Many of the guest houses in Sutherland town have Astronomical names!. At night Andre drove me about 5km out of Sutherland to do some stargazing – the skies here are very good! Day 4 - was an early start for the drive to the South Africa Astronomical Observatory

<http://www.sao.ac.za/about/visting/sutherland/> – about 100km from Sutherland - and its many telescopes. It is important to pre-book at SAAO as this will allow you a 2 hour guided tour of the facilities by one of the resident astronomers. Then back to Skitterland. In the evening we went to Sterland Farm

<http://www.sutherlandinfo.co.za/> – a few km outside Sutherland for an AV show followed by observing some of the many Planets [Mars, Saturn] and DSOs [Eta Carina, LMC, SMC, Omega Centauri, 47 Tucanae etc.] that were visible on the night I was there through one of five 8"



ASTRONOMERS' TALES

Celestron SCTs that are stationed at Sterland Farm. We got back in time for dinner and then my driver/guide asked if I would like to drive out of Sutherland to do my own stargazing - well yes of course that would be nice – I did not bring an AstroTrac all that way not to use it. After about 1 hour or so of my own stargazing we called it a night as we had another big day ahead of us.

Day 5 – Prince Albert – from Sutherland we headed off to the Swartberg Pass and then onto Dennehof

<http://www.princealbert.org.za/stay/list/dennehof/> for another slice of Karoo life. After another superb meal I was again offered an opportunity to go stargazing a few km outside Prince Albert - again I took the AstroTrac with me to enjoy the clear skies. Day 6 – From Prince Albert we set off for a full days exploration of the Gamkaskloof Gorge

<https://en.wikipedia.org/wiki/Gamkaskloof> also known as 'Die Hell'. In earlier times it took about 100 years to drive a trail up this deep and windy granite and sandstone gorge. Along the way around hairpin bends with sheer cliffs we saw plenty of wildlife including 'KlipSpringer' deer, who seem to be glued onto the sheer rock faces, various birds of prey and some interesting plants such as

Proteas and Tree Aloes.

We also met the one and only resident of this valley who spends her time growing fruit and also creating South African



SALT - the South African Large Telescope. A 10 metre mirror is hiding in that dome!

moonshine [legally!]. In the evening after another superb meal we set off into the Karoo for yet more stargazing.



ASTRONOMERS' TALES

Day 7 – An early start we set off towards George – on the Garden Route. The last time I was in George [June 2001] I had an evening under a stunning starry sky.

From George I caught a plane to Skukuza Airport – one of the main fly-in gateways to the Kruger National Park. On the way to our Lodge I saw all manner of animals and birds – both small and large, and some crocodiles as well. I settled in at the Jock's Safari lodge [about 6**s in my opinion] <http://www.jocksafarilodge.com/> . At 5pm we were summoned to our safari vehicles and our driver – Ben. By now I had met with a South African couple who just happened to be at JSL the same time as I was. We went on a safari until about 8pm when we had to return to base for a 3 course meal with pre-dinner drinks and yet more South African wine [When in Rome ...etc.]. After dinner I collapsed into my 4 poster bed with the sound of the bush all around me.

Day 8 started with a 5am wake up call followed by coffee and cake at 05:30. At 05:45 we set off for a morning game drive and saw the Big Five [elephant, leopard, buffalo, rhino, lion] and the Little Five [actually I made that up but we did see genet, civet, mongoose [3 types] , loads of birds of all sizes, antelopes of various types etc. and most importantly NO

SNAKES [too dry for them in June]. At 08:30 we returned for breakfast – for quite a smorgasbord of South African treats. After breakfast we had an hour or so to ourselves then it was 11'ses [more coffee and cakes]. Again another pause to do our own thing [i.e. download my pictures from the camera] then came lunch [which was massive!] The afternoon set off from lunch with another pause to do our own things then at 3pm we met up with our guides for another 3 hours safari into dusk - seeing yet more wildlife. Returning at 8pm for a quick freshen up then dinner was served as the previous day. Finally at around 10pm I collapsed into my bed.

Day 9 went much the same as day 8 except that we had a speciality South African BBQ for Dinner – and my tour company had arranged for a special 'night in the bush' [after the game drive and dinner] with my ranger, his vehicle and a very big gun. I took the AstroTrac and after setting up we had an audience of about 25 antelope milling around us as the lions and hyenas sharpened their dinner implements.

Day 10 was time to say goodbye to Jock, and we saw yet more wildlife including a leopard in daylight on our way back to Skukuza. From there a short plane ride



ASTRONOMERS' TALES

back to Johannesburg and then a connecting flight via Dubai back home. If you want to see my photo album please look here...

[It may take you a while to brose through the images!]

<https://www.flickr.com/gp/56553919@N04/496h3e>

Would I do this trip again – very definitely
YES

Would I recommend this trip to another stargazer – absolutely YES.

For more details of this trip please go to this website :

<http://www.africansky.com/tours/10-day-sa-stargazing.html>

Enjoy!

Robert

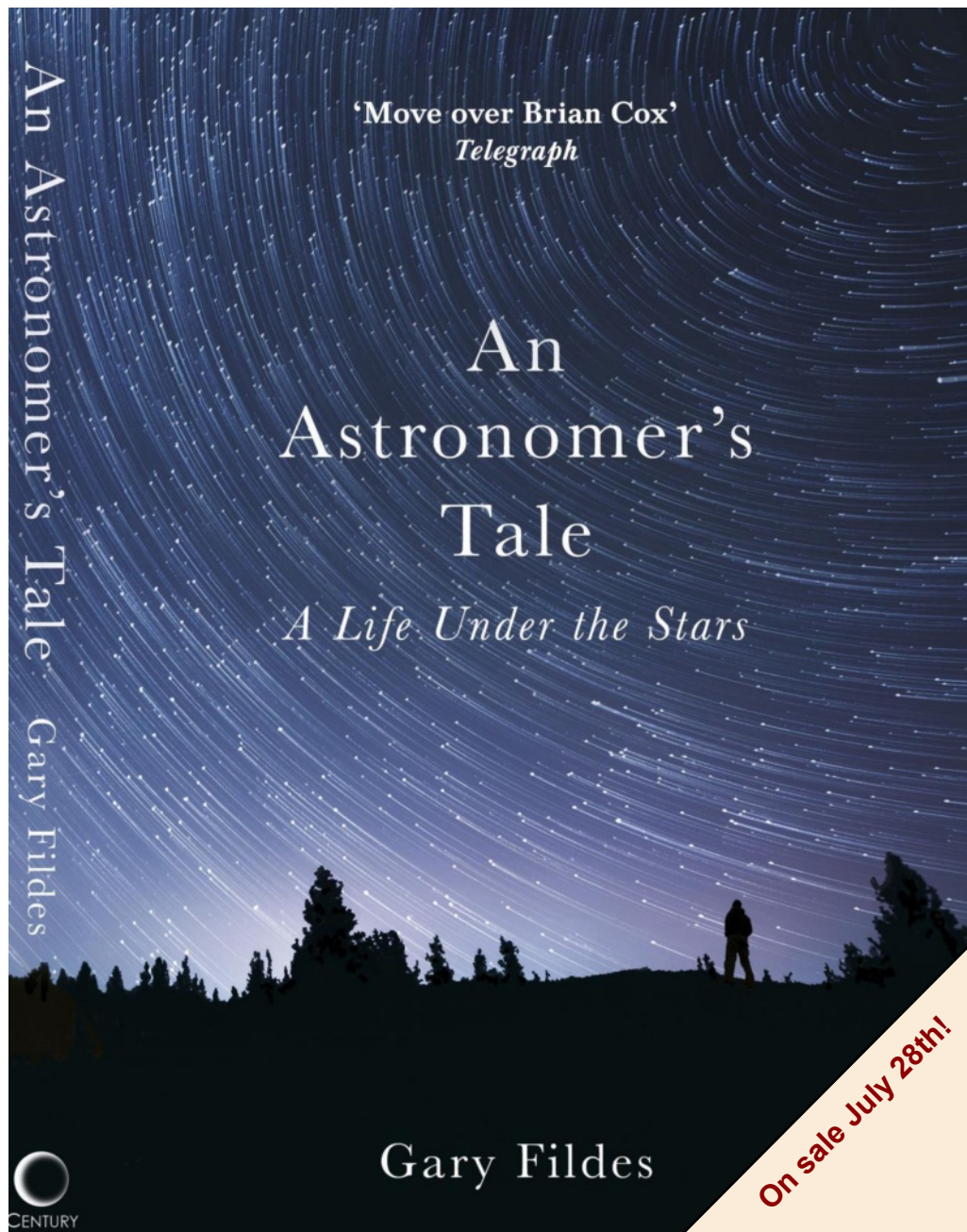


'Inspiring. It engaged both me and my 12 year old kids. I enjoyed this event so much more than I had expected. Even though the skies were cloudy, we still managed to see quite a bit. Fabulous. What a great bunch of people.'

Chris



LOOK OUT FOR ...



'Move over Brian Cox'
Telegraph

An Astronomer's Tale

A Life Under the Stars

An Astronomer's Tale Gary Fildes

Gary Fildes



On sale July 28th!



OBSERVERS' SLOT

Planetary Nebulae

Often overlooked in favour of more popular targets like galaxies and emission nebulae, the late summer months, with the Milky Way high in the sky, are a great time for observing planetary nebulae.

Despite the name, they are nothing to do with planets, but are actually formed by clouds of gas ejected from stars as they head into old age. As many of them appear compact and round in a telescope, the term planetary, coined long before their true nature was understood, stuck.



M57, the Ring Nebula in Lyra, is probably the most famous planetary, looking like a tiny smoke ring, even in the smallest of telescopes.

The brightest ones (M27 and M57) can be seen with binoculars, but a telescope is needed for most. Visually they respond well to narrow band or nebula filters, as most of their light is generated by emission at specific wavelengths from

elements like oxygen and hydrogen. They really come into their own

photographically though, where even a simple DSLR camera will show beautiful blue/greens and sometimes reds. And as many planetaries are small and compact, the colours often show up in exposures of just a few tens of seconds. If there is a planetary in the field you are unlikely to mistake it for anything else! And don't be fooled by the fact that most of them are not Messier objects - Messier was cataloguing objects which could be mistaken for comets, so simply wasn't interested in most planetary nebula.

Here is a list of some of my favourites in view over the next three months, in order of best viewing date. I have only included ones which are reasonable high up from the North East. Some are easy and some like NGC6781 will need some dedicated astrophotography to spot!

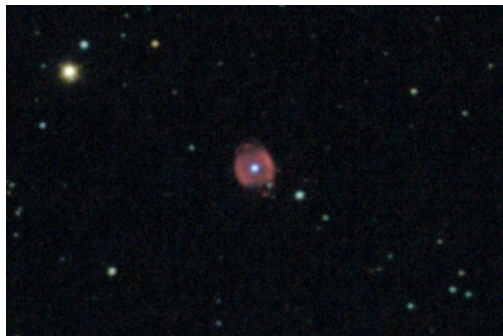


M27, the Dumbbell Nebula, comes a close second to the Ring Nebula.

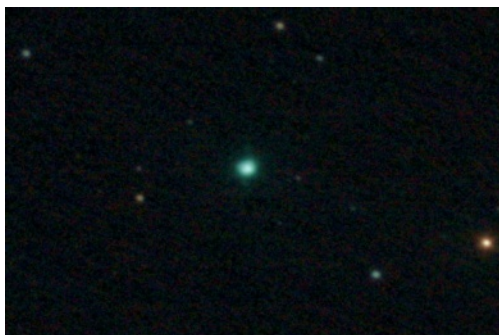


OBSERVERS' SLOT

NGC6210 - Turtle nebula (Hercules)
NGC6543 - Cat's Eye nebula (Draco)
M57 - Ring nebula (Lyra)
NGC6781 - Snowglobe nebula (Aquila)
NGC6828 - Blinking Planetary (Cygnus)
M27 - Dumbell nebula (Vulpecula)
NGC6905 - Blue Flash (Delphinus)
NGC7008 - Fetus nebula (Cygnus)
NGC7027 - Green rectangle (Cygnus)
NGC 40 - Bowtie nebula (Cepheus)



NGC 40 (also Caldwell 2) is a fascinating object, as it is the only planetary I have seen which comes out red in a standard DSLR.



NGC6210 is an example which is small and bright, and very easy to photograph through a telescope.

This is just a small subset of objects available to amateur telescopes. A comprehensive list of planetary nebula can be found at <https://www.astroleague.org/files/obsclubs/PlanetaryNebula/StandardList.pdf>

Nigel Metcalfe

All photos by the author.

Not been to Kielder yet?

Then why not book one of our events for you or your family?

Advanced booking is essential. Weekend events can fill up several weeks in advance. Please book online at <http://www.kielderobservatory.org/events/> or call us on 0191 265 5510. We can also be contacted at admin@kielderobservatory.org

SPECIAL EVENTS:

Summer Space Kids on Tuesday and Thursday from July 26th to September 1st
Perseid Shooting Star Special 11th/12th/13th August



GALLERY

Remember, we would love to display your images here - all the better if they are taken up at Kielder, but it is not essential. Please send them to

newsletter@kielderobservatory.org

along with a brief description of how and when they were taken.



Those Kielder Observatory mugs are getting around! Here is one from Salou, Spain, taken while on holiday by Paul & Sharon Cummings

Have you taken a Kielder mug somewhere unusual? If so, send us a photo!

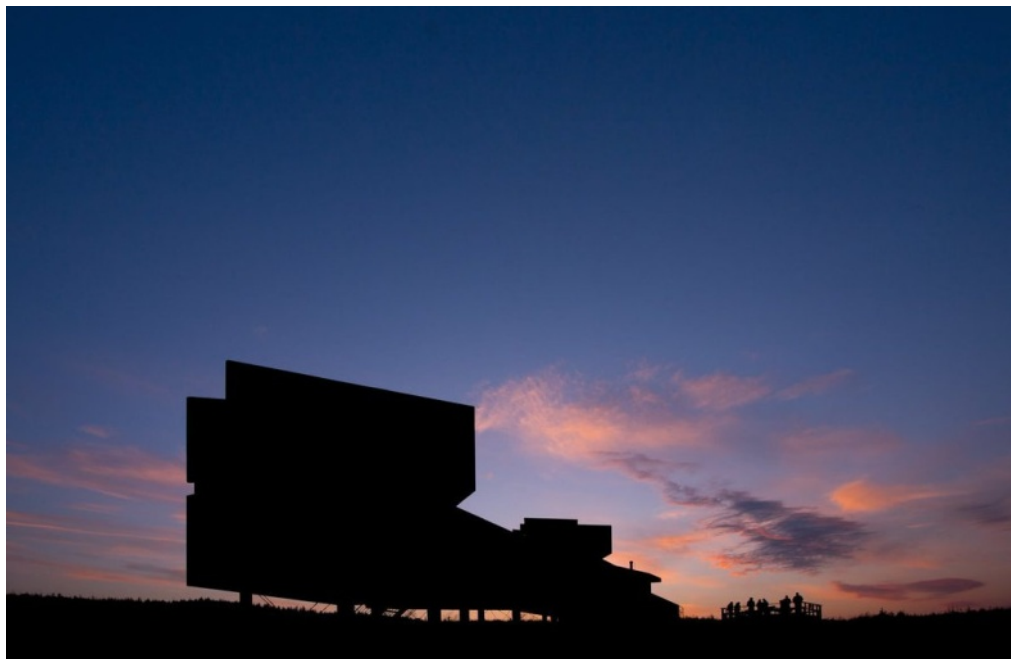


Next time you are at the observatory why not treat yourself to a Kielder pen!





GALLERY



Clear skies and a stunning silhouette!



The transit of Mercury on May 9th offered some great photo opportunities. Our Operations Manager John Holmes took this one at Kielder though the 16" with his phone.



GALLERY



And just to prove it, here is Mercury seen through the LCD screen on the back of a camera attached to the 16".



Mercury passed by a nice group of sunspots during the day. Photo taken by your editor with a compact camera held up to the eyepiece of a 5" 'scope on the roof of Durham University Physics department.



GALLERY



Top: Orion rises in this wide-angle shot of the observatory.

Bottom: noctilucent clouds were seen in June.





GALLERY



Top: a lovely view of a crescent moon illuminated by Earthshine.

Bottom: yes, it rains sometimes! A double rainbow over the observatory.



'Searching For Life in the Universe!'

Bringing Kielder Observatory to Newcastle



Starring: Gary Fildes,
Director Kielder
Observatory



Kielder Observatory is coming to the Vermont Hotel in Newcastle once again to bring alive the wonders of our universe

One of the oldest questions we, as a race has ever pondered is whether there is life elsewhere in the Universe?

This evening's event will consist of Gary talking about the differing strands of research that are asking this very question, the results of which may be a complete surprise to most!

This will be followed by a Q & A session and the Observatory team will be on hand to show you images, talk telescopes as well as astronomy

- Exploring whether there is life elsewhere in the Universe
- Physics with Dr Fred
- Telescope Workshop
- Finding and locating objects in the sky

VENUE: Ball Room at The Vermont Hotel, Newcastle upon Tyne, NE1 1RQ.

DATE: Sunday 11th September 2016 7:00pm – 9.30pm

TICKETS: £16.50

FIND OUT MORE AND BOOK ONLINE:

www.kielderobservatory.org/events/kielder-observatory-comes-to-newcastle/

OR CALL US: 0191 265 5510

Went with a few friends for a birthday and had a great time, managed to see Jupiter including the great red spot, Saturn and it's rings as clear as anything and observe a blue and red binary star system. The staff are really engaging and passionate about the centre and do very well conveying complex scientific principles in a light hearted manner. They can also offer a range of advice on astrophotography and home star searching for the amateur astronomist.

Steven, St Helens

KOAS: Your Window to the Universe

<http://www.kielderobservatory.org>

**KIELDER
OBSERVATORY**
Infinite Inspiration



TM