The Newsletter

of the

Orwell Astronomical Society (Ipswich)

2011
May

Registered charity no. 271313

www.oasi.org.uk

No 463

Entrance to Orwell Park School
This is a modern photograph of Orwell Park with the observatory showing in the back left.
I tried to stand in about the same position the original photograph was taken. This was on the cover of the December newsletter. The only real difference is that I could not find a pair of horses and carriage to match.
E Sims

Society News (Roy Gooding)

1 Committee Meeting Saturday 18th June

All members are invited to attend the next Committee meeting, on Saturday 18th June. Start time 20:00. Venue: Methodist Church Hall.

2 Access into the School Grounds and Observatory Tower

Please use the third gate into the school grounds, this is the gate behind the Gym. If the Black door entrance at the base of the observatory tower is locked, you will have to phone someone in the observatory to let you in. My mobile number is [redacted] (Roy Gooding) alternatively the Observatory mobile is [redacted] during meeting hours. The gate code is on the back of your membership card.

3 Welcome to New Members

Andrew Coulson
Martin & Wendy Chapman
Claire Seeley
Stephen Hubbard
Michael Mulcahey Banks

4 Events Programme for 2011

This provisional event list will be updated through out the year

Meeting	Venue	Date
BAA one day meeting	UEA Norwich	Saturday 7th May
Summer Picnic Social event **See details below**	Holywells Park	Saturday 11th June 18:00
Summer Barbecue Social event	Newbourne Village Hall	Saturday 25th June 13:00 to 24:00
FAS Convention		TBA
Autumn Equinox Sky Camp 2010 Organised by Loughton Astronomical Society with the support of the SPA	Kelling Heath, Norfolk	19th – 30th September
Open Weekend		TBA
Lecture Meeting Telescopes from Hell: (what to watch out for when buying a telescope) by Martin Mobberley	Methodist Church Halls, Blackhorse Lane	Friday 14th October 20:00
Lecture Meeting Are We Star Dust or Nuclear Waste? (Stellar Evolution) by Robin Catchpole	Methodist Church Halls, Blackhorse Lane	Friday 4th November 20:00
Ipswich Beer Festival		TBA
Christmas Meal Social meeting	Venue TBA	Wednesday 14th December

Observational Out Reach Meetings 2011

Astronomy in the Park: Spring Event

Arrive about 30 minutes before the start to set up equipment.

Meeting	Venue	Date
Astronomy in the Park "Observing the sun" 1st option	Christchurch Park Reg Driver Centre	Saturday / Sunday 21st/ & 22nd May 11:00 to 16:00
Astronomy in the Park "Observing the sun" 2nd option if 1st is cloudy	Christchurch Park Reg Driver Centre	Saturday / Sunday 28th & 29th May 11:00 to 16:00

Holywells Park: New Venue

On Friday, 25th March, I received a call from the Park Manager (Nick Wilcox) of Holywells Park, asking if we could contribute to their 75th anniversary. Holywells Park is a park that is probably overlooked by many, I have only visited it a hand full times in the last few decades.

A brief history of Holywells Park, taken from their web site:
Traces of past occupation of the area have been found going back to the Bronze Age. Roman coins have also been found in the park area. The Cobold family was utilising the spring water resources here, to manufacture beer since 1689. In 1812 John Cobold secured the title to the park, and it remained in their hands until 1935 when it was presented to the people of Ipswich. The park was opened to the public the following year.

The park management, was approached by Blacks and Millets, to stage a camping exhibition during the weekend of 11th & 12th June. This event has now been expanded to be part of the Park's 75th anniversary. The tents in the camping exhibition will be hired out for the weekend. There will be various activities taking place on the park for the campers during the whole weekend, ours will one of them.

I have had two meetings with Nick Wilcox on the 29th March and 8th April. The out come is as below.

I have decided to attempt to make this another OASI social event. We already have a long tradition of barbecues and Christmas meals, so how about a summer picnic. This event is a fortnight before the summer barbecue, so if members are unable to attend one, perhaps they can attend the other.

Equipment for observing both the sun and the night sky should be brought along as well as picnic cool boxes and hampers or plastic bags if former are too push.

As the sky never gets fully dark in June, an evening "Star Party" is not feasible. As an alternative the meeting should concentrate on observing the sun safety. The Moon will also be in the sky but having a bright sky will reduce the usual contrast expected when viewed from a dark sky. As Saturn and the moon are both in Virgo, a challenge for someone will be to find the planet in daylight using the moon as the reference source. Many years ago, when the moon was just below Saturn, I did see planet in daylight.

Unlike the other outreach meetings in the parks, there is no booking facility for the visitors, the campers already being in residence on the park. I was given an estimate that at least 200 people will be staying on the park.

Nick mentioned that we would be given a donation towards society funds. If the weather is not suitable the event will be cancelled.

Directions to Holywells Park
Main entrance: Cliff Road opposite Dereham Road.
(Cliff Road is between Holywells Road & Clapgate Lane)

There are two car park areas

1 If you are bringing equipment
Half way down the entrance drive, there is a yellow gate with a "No Entry" sign. Pass through the gate. On you're left, just past the park admin block, there is a parking area for park staff. Do not park here. Travel to the end of the drive and turn left. Park beside the wall.

2 If you are just bringing a picnic
Half way down the entrance drive, there is a yellow gate with a "No Entry" sign.
To the right of the gate there is another car park area.
Our event area is down the steps onto the park grass.

Meeting	Venue	Date
Simmer picnic and solar observing	Holywells Park The car parking areas in the park can be used	Saturday 11th June Start: 18:00 End: time: up to the individual

Night Sky (May)

All times GMT

Moon

New Moon	1st Quarter	Full Moon	3rd Quarter
3rd	10th	17th	24th

Object	Date			Mag	Notes
		Rise	Set		
Sun	1	04:26	19:20		
	31	03:42	20:05		
Mercury	1	03:58	16:43	0.4	Greatest western elongation 7th May
	31	03:12	18:39		
Venus	1	03:47	16:30	-3.8	Venus is low down in the pre-dawn sky
	31	02:57	18:01		
Mars	1	03:59	17:30		Mars is too close to the sun this month to be seen
	31	02:42	17:42		
Jupiter	1	04:01	17:27	-2.0	Jupiter is low down in the pre-dawn sky this month
	31	00:00	16:07		
Saturn	1	16:14	04:01	0.8	Saturn remains well place to observe all month
	31	14:09	02:00		
Uranus	1	03:26	15:36		Uranus is too close to the sun this month to be seen
	31	01:30	13:45		
Neptune	1	02:30	12:33	7.9	Neptune is observable in the early morning sky
	31	00:33	10:36		

Meteor Showers

Shower	Limits	Maximum	ZHR
η Aquarids	April 24th to May 20th	May 5th	40
α Scorpids	April 20th to May 19th	April 28th & May 13th	5
Ophiuchids	May19th to July	June 10th June 20th	5

Meteor source is the BAA Handbook

Star Party in Chantry Park Saturday 9th April

(Roy Gooding)

Saturday 9th April, was our most recent public outreach meeting. This time we were at a new venue, namely Chantry Park. The first scheduled date for this event was the 12th March, but unfortunately because of cloud it had to be cancelled. The weather during the first week of April was very good, with some days of almost cloudless skies. The concern was, would the good weather last until Saturday, lucky it did. Our observing site was near the middle of the park, slightly nearer Hadleigh Road than London Road. This was the first time I had been in Chantry Park at night, so I had no way of knowing what the degree of light pollution was, however the site proved to be no worse than the one in Christchurch Park. The nearby street sodium lights did not cause any undue problems, especially when using a light pollution filter.

Equipment in use included:

Roy Gooding:	120 mm refractor and 11 x 80 binoculars
John Wainwright:	16" Dobsonian reflector
Joe Walsh:	200mm reflector
Ben Powis:	125mm & 80mm refractors
James Appleton:	250mm Meade Schmidt Cassegrain

Other members also brought along several more telescopes, but I did not have time to itemise these.

Members started arriving at the park around 19:30. This gave us about 30 minutes to set-up our equipment before the visitors started arriving. As with all previous Star Parties, in the town's parks, we hosted the event, and the Park Rangers looked after the visitors and bookings. The Moon and Saturn were the principle targets for the evening, and these were shown to and estimated 40 visitors. The best of the winter deep sky objects were now disappearing into the western sky. M42 was past its best, but I did show the visitors M45, thorough it was disappearing into the murk near the horizon

This email was received from Richard Garland, one our newer family members
I just wanted to drop you a quick line to say how much we enjoyed the "star party" in Chantry Park last weekend. My wife Sue, son William and I are brand new OASI members and this was the first event we have attended – apart from the Orwell taster session. The established members (too numerous to mention) made us feel very welcome and were extremely informative. The clear sky was obviously a bonus and we were able to see some fantastic images. We are looking forward to the next event!

As normal I would like to thank all members, who were able to attend, making this another successful meeting. (Do we ever have any unsuccessful meetings?)

Tides – what's really going on?

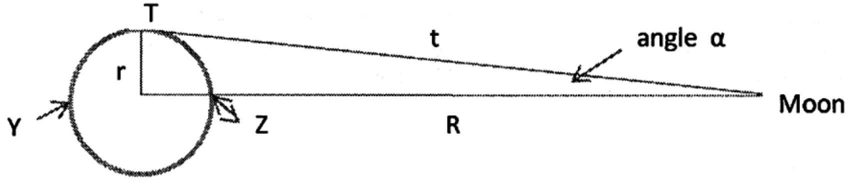
I never quite got tides when I was at school. The part about the sea being pulled upwards on the side towards the Moon was OK. But we were told the sea also bulges out on the far side too – and this was glossed over very quickly. Immediately diagrams including the Sun were produced, and we moved onto springs and neaps before anyone had time to ask awkward questions.

Recently I sought an explanation on the web. This was one of the better offerings: "The side of the Earth nearer to the Moon experiences a stronger gravitational pull than is needed to keep it in orbit with the rest of the Earth. It is therefore pulled towards the Moon. Conversely, on the far side of the Earth the gravitational force of the Moon is weaker than the average."

This is still not easy to understand, and it is not clear why diagrams always show the bulges on each side are the same size. Also it would be nice to know how big to expect them to be.

This is the simplest convincing explanation I can come up with.

<u>The underlying mechanism</u>



Earth, on left, has radius r, and its centre is a distance R from the centre of the Moon.

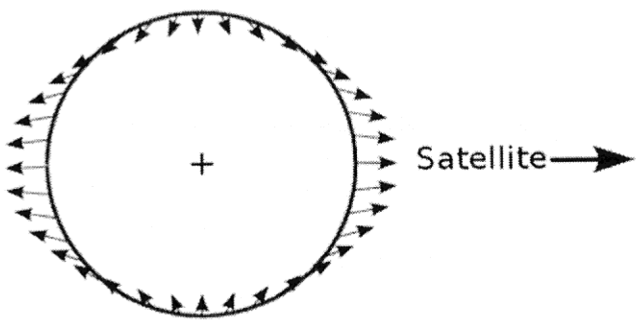
Tides arise from the variation of the gravitational acceleration at different points on the Earth's surface, caused by a body such as the Moon. We will take the reference point of this variation as the Earth's centre of mass. There, the gravitational acceleration is $\frac{GM}{R^2}$, where G is the gravitational constant and M is the mass of the Moon. We also consider the acceleration at two points along the Earth/Moon axis, each on the surface at a distance r from the centre. The acceleration at the point closer to the Moon, Z, is $\frac{GM}{(R-r)^2}$, and at the farther point, Y, it is $\frac{GM}{(R+r)^2}$

The near-side tidal acceleration at Z, in the direction away from the centre of the Earth's centre of mass, is therefore $\frac{GM}{(R-r)^2}$ - $\frac{GM}{R^2}$. This rearranges to $\frac{GM}{R^2}\left(\frac{1}{\left(1-\frac{r}{R}\right)^2} - 1\right)$. By a similar argument, the far-side tidal acceleration at Y, away from the centre of the Earth and so in the opposite direction, is $\frac{GM}{R^2}\left(1-\frac{1}{\left(1+\frac{r}{R}\right)^2}\right)$.

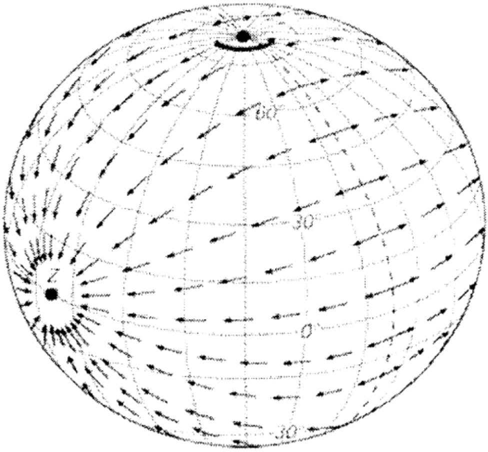
This shows that the tidal effect is not exactly the same on each side of the Earth. However, we know r is much smaller than R. We can expand using the binomial theorem, and ignore the higher order terms involving $\frac{r}{R}$. The result in both cases is $\frac{2GMr}{R^3}$, so the effect on each side is the same for most practical purposes. Also, the effect drops as the cube of the distance to the tide-inducing body, and this goes some way to explaining how the tidal effect of the Sun comes to be rather less than that of the Moon.

Now consider point T in the diagram, at a distance t from centre of the Moon. The gravitational acceleration owing to the Moon has a component downwards, perpendicular to the Earth-Moon axis. This is wholly tidal, as it is entirely absent at the centre of the Earth. The downwards component is $\frac{GM}{t^2}.\sin\alpha$, or $\frac{GMr}{t^3}$. The distance t can be worked out using Pythagoras, but when higher order terms in $\frac{r}{R}$ are ignored, for practical purposes t is the same as R. The downwards component can be taken as $\frac{GMr}{R^3}$. This is half the size of the effect at points Y and Z.

The tidal effects all the way round can be found from a fuller analysis, as in http://oceanworld.tamu.edu/resources/ocng_textbook/chapter17/chapter17_04.htm. But enough work has been done to make the picture below plausible.



It is actually horizontal forces in the ocean which create the tides, and it can now been seen that these will be strongest in the mid-latitudes. Another picture, showing the flows if the Earth was entirely covered in liquid:



The Moon is above point Z, but note that Z is not always on the equator. It can be anywhere in the tropics.

Height of the tide

What sort of value does this approach imply for the size of the bulge? We are interested in h, the difference in the heights of the ocean at Z (or Y) and at T. For a unit test mass, this represents a difference in potential energy of gh, where g is the acceleration due to gravity at the surface of the Earth.

Imagine taking the unit test mass from the centre of the Earth to point Z. The average assisting force from the tidal effect would be $\frac{1}{2}.\frac{2GMr}{R^3}$, operating over a distance r. The work supplied to you would be $\frac{GMr^2}{R^3}$. To take it from the centre of the Earth to T, the tidal effect would resist you, and you would have to do work of $\frac{1}{2}.\frac{GMr^2}{R^3}$ on it. So the difference in potential energy of the unit mass at Z and at T is $\frac{3GMr^2}{2R^3}$.

We can equate this to gh. Also, by considering the gravitational attraction of the Earth, of mass E, on a test mass at the surface, we know that $g = \frac{GE}{r^2}$.

This leads to $h = \frac{3}{2}.\left(\frac{M}{E}\right).\left(\frac{r}{R}\right)^3.r$.

(Incidentally, this applies to the ocean whatever liquid it is composed of – water, mercury, liquid ammonia, etc.)

The Earth has about 80 times the mass of the Moon, so $\left(\frac{M}{E}\right)$ is 1/80, and the Moon is about 60 Earth radii away, so $\left(\frac{r}{R}\right)$ is 1/60. The radius of the Earth is 6370 km. This implies h = 0.55 metres. This is not very large, but it is not far off what is observed at many mid-ocean locations. It needs a lot of interpretation before it can be related to marine tides in general.

Doing the same sum for the Sun's tidal effect on the Earth gives h = 0.25 metres.

Consideration of the 'barycentre'

Some explanations of the tide get very hung up about something called the barycentre. This is simply the centre of mass of the Earth-Moon system. It actually sits inside the Earth itself, about 1000 miles below the surface.

Strictly the Moon does not revolve around the Earth, but the whole system rotates around the barycentre. The classic picture is of a highly asymmetrical dumbbell rotating in space, with the Earth doing a kind of wobble.

Some attempts to explain the tides go on to examine this motion about the barycentre, but either they are glib and unconvincing, or they become unnecessarily complicated.

This motion does need to be accounted for, but the dumbbell idea is misleading. It all becomes clearer if you imagine preventing the Earth rotating on any axis through its centre, while still allowing the system to rotate about the barycentre. The Earth's centre will move in a circle, whose radius is its distance from the barycentre. I can then just about get my head around the idea that every other point inside the Earth, and on its surface, will move at the same speed as the Earth's centre, and in the same direction, describing a circle of the same radius. The centre of each point's circle will be displaced from the point itself in the direction parallel to the Earth-Moon line. Because every point moves in exactly the same way it has the same acceleration. This can be accounted for by the Moon's gravitational attraction at Earth's centre of mass. It is the $\frac{GM}{R^2}$ term seen earlier, acting parallel to the Earth-Moon line.

A final thought

The rotation of the Earth about its own axis, once every sidereal day, also causes it to bulge around the equator. It is very much higher than a tidal effect bulge – about 13 miles - but because it applies to the whole Earth as well as the oceans, and does it not move around, it goes largely unregarded.

In the next newsletter I will say more about the tides, as seen on the Earth, within the solar system, and beyond.

Tides – Earth, Moon, planets and beyond

In the previous newsletter I looked at how the gravitational attraction from the Moon varies across the Earth, and how this raises the tides. (It has been reprinted showing the equations correctly. See the insert in the current newsletter.)

The Earth is within the Moon's "gravity gradient" - the way the gravity from the Moon varies in space - and this basic mechanism has wider application elsewhere. But before looking further afield, how useful is this simple theory for predicting the actual tides in the sea?

It does explain roughly how big the tides are, and roughly how often we can expect them to be. But this picture is too simple to apply in practice.

In principle, the tidal bulges would stay put opposite the Moon while the Earth rotates on its own axis underneath. Also, as the Moon completes one circuit round the Earth, which is tilted on its axis, the bulges would also appear to sweep back and forth in a north/south direction across the tropics. On average, the Moon reaches its highest point over a given spot every 24.84 hours, so a bulge should go past every 12 hours and 25 minutes. (The smaller bulges caused by the Sun should pass every 12 hours.)

But seawater is viscous, and the oceans are not deep enough to allow disturbances to travel as quickly as that. In any case, the continents and the ocean basins interfere. In shallow bays and estuaries, local resonances are set up and have a considerable effect. It all becomes very complicated. Nevertheless, in many places the dominating frequency of the tide is once every 12 hours 25 minutes.

Earth tide

There is also an Earth tide. The body of the Earth is fairly elastic, and the outer part of its core is liquid. It all duly responds to the Moon's gravity gradient. The size and position of Earth tide bulges turn out to be quite close to what a straightforward interaction with the Moon predicts. Sometimes the actual movements are counteracted by the weight of contrary marine tides in the ocean above. Movement occurs sideways as well as vertically, but the sideway movement is several times smaller. The classical theory of Earth tides was not developed until 1905.

Volcanologists can use the movements from the predicted Earth tide when calibrating their instruments. Some sensitive engineering projects have to allow for Earth tides, for example, the 8.6 km diameter Large Hadron Collider at CERN.

Tidal acceleration

As the Earth rotates on it axis, one of the ocean tidal bulges always keeps ahead of the point directly below the Moon. The Moon pulls back on the bulge, acting as a giant brake. The bulge, in turn, gives the Moon an extra tug in the direction of its orbit around the Earth. This process is called tidal acceleration.

Just as a brake dissipates energy by heating up, the tides dissipate energy too. The estimated average rate of dissipation is 3750 gigawatts. Water turbulence accounts for 98% of this, particularly near the seabed in shallower areas. The remaining dissipation arises from friction inside the Earth itself.

Because of the braking action, the rotation of the Earth about its own axis is slowing down. The Moon also picks up a little energy from the Earth (amounting to about $1/30^{th}$ of energy lost by tidal dissipation). The speed of the Moon in its orbit actually decreases, but it also moves further away. Its kinetic energy decreases, but its potential energy increases even more.

[Techie bit: Angular momentum is conserved. Because the Moon is further away, the moment of inertia of the Earth-Moon system about its centre of mass (the barycentre) increases. The angular velocity of the system does decrease slightly, but the net effect is for the angular momentum about the barycentre to increase. This increase is at the expense of the angular momentum lost by the Earth as its rotation about its own axis slows down.]

These processes have been going on for a long time. The geological record from 620 million years ago shows that the solar day was then around 22 hours, with about 400 days in a year. There were just over 13 full moons per year, compared with 12.37 now.

Currently the Moon is receding at 38.14 millimetres a year. The length of the day is increasing by 1.7 milliseconds a century. (It would be greater than this, at 2.3 milliseconds a century, but for a contrary speeding-up effect. The Earth is changing shape as the polar diameter increases following the Ice Ages – the so-called 'post-glacial rebound'. The result is analogous to a rotating ice-skater who speeds up when she raises her arms above her head.)

Tidal locking

Just as the Moon is now slowing down the axial rotation of the Earth, in times gone by the Earth was slowing down the axial rotation of the Moon. Because the Earth is so much bigger, the effect on the Moon was more marked. The Moon's rotation has now slowed so much that it spins just once in the time it takes to revolve around the Earth. Because of this synchronous rotation the Moon always shows us the same side. Its tidal bulges do not move around on it, and it is said to be tidally locked.

The larger planetary moons are all tidally locked, except for Saturn's satellite Hyperion. This rotates chaotically, from a combination of factors – eccentric orbit, highly irregular shape, and gravity from the large moon Titan.

Pluto has a relatively large moon, Charon, in a close orbit. Not only is Charon tidally locked to Pluto, but Pluto is locked to Charon. In effect they rotate around each other, as if joined by a rod connected to points on the two surfaces.

It used to be thought that Mercury was tidally locked to the Sun, but space probes show that a resonance has been achieved, caused by Mercury's eccentric orbit. Mecury is now known to rotate 3 times on its axis for every 2 times it goes around the Sun.

A reversal of roles was discovered in the star system Tau Boötis. It is a binary, and the primary star is slightly bigger than the Sun. The secondary is a distant red dwarf, which takes thousands of years to go round it, and has little influence. However, an extra-solar planet with four times the mass of Jupiter also goes round the primary, in a very close, eccentric orbit. It has tidally locked the star, and the primary rotates every 79.5 hours on its own axis, exactly matching the orbital period of its planet.

Io's volcanos

Jupiter's moons Io, Europa and Ganymede have orbital periods which are fixed in a 1:2:4 ratio, owing to a gravitational effect called Laplace resonance. The tides raised on Jupiter by the innermost moon, Io, should cause Io to move further away, but the resonance does not allow this to happen. Io's own rotation is tidally locked by Jupiter. However, Io has an eccentric orbit, and as it goes round Jupiter there is some variation in the size and position of the tidal bulges which Io experiences. Normally this eccentricity would be smoothed out, but again it is countered by the resonance.

In practice there is an enormous difference between the heights of the bulges on Io as it makes its closest and furthest approaches to Jupiter. This difference may be 100 metres. The consequent internal heating leads to violent geological activity. Only one publication had previously speculated on this possibility, and most of the astronomical community was amazed when Voyager 1 discovered volcanoes on Io in 1979.

Tidal accretion

White dwarfs are stars at a final stage in stellar evolution. Typically they have a mass 50% to 70 % that of the Sun, but they are only about the size of the Earth, and a million times denser. If a white dwarf is a member of a binary system, and close to a giant companion star, it can raise a tidal bulge on the giant. The bulge can be so large that matter from the top of it becomes more attracted to the dwarf than to the giant. Matter moves across, and this process of tidal accretion increases the mass of the dwarf. There is a limit – the Chandrasekhar limit – to how heavy the dwarf can become before it becomes unstable. The limit is 1.4 times the mass of the Sun. When it is exceeded, the white dwarf usually collapses to become a neutron star or a black-hole. However, a carbon-oxygen white dwarf may react differently. The temperature of the dwarf increases through compressional heating, and the rate of the internal fusion reactions increases. Eventually a thermonuclear flame ignites, and the dwarf explodes in a spectacular way. This is a leading explanation for Type Ia supernovae.

A similar thing can happen in binary systems where the small companion is a neutron star or a black-hole. Then the matter transferred from the larger star heats up, so that it emits X-ray radiation. There can be further emissions, but only if the matter subsequently hits a surface – which a neutron star will have, but a black-hole won't. The variations in such sources are a way in which we can 'see' evidence for the existence of black-holes.

Joe Startin

OCCULTATIONS DURING MAY

The table lists lunar occultations which occur during the month under favourable circumstances. The data relates to Orwell Park Observatory, but will be similar at nearby locations.

Date	Time (UT)	D G R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
07 May	21:34:52	D	0.20+	-15	16	7.4	Hip 31987
08 May	23:20:59	G	0.30+	-20	6	5.0	74 Gem
11 May	00:06:25	D	0.51+	-20	8	5.4	omega Leo
12 May	20:28:38	D	0.72+	-7	36	7.4	Hip 54445
12 May	21:30:58	D	0.73+	-13	32	6.8	66 Leo
12 May	22:20:15	D	0.73+	-17	27	7.5	Hip 54656

Note in particular the event on 08 May 2011 when, at 23:20:59 UT, the Moon appears to pass just N of the star 74 Gem, at an apparent distance of only 0.01 lunar radii. From approximately 100km north of Orwell Park, the event is visible as a graze, with the track crossing Lincolnshire and North Norfolk.

James Appleton

John Isaac Plummer – Another Piece In The Jigsaw Puzzle

John Isaac Plummer (1845 – 1925) was Colonel Tomline's professional astronomer at Orwell Park Observatory during the period 1874-1889. His life and work have long been a focus of interest and research for member of OASI.

JIP's birth certificate lists his place of birth as Garden Row, Deptford. A search of mid-19th century maps of Deptford for this address has been unsuccessful, but has revealed a street with a similar name, Gardners *[sic]* Row, situated just north of a large railway interchange and market gardens to the west of the town centre. The street no longer exists, likely having been destroyed in the Blitz.

The 1851 census indicates that JIP's family moved after his birth to 78 High Street, Deptford. For several, years, this address too, was thought to have been destroyed in the Blitz. However, while exploring the area recently with Google Streetview, I located the following view of the premises. Although the ground floor of the building is nowadays fitted out with a modern shopfront, the upper floors look as if they date from JIP's era! JIP's father was a grocer, and it is possible that the building was fitted out in the mid-19th century too with a shopfront on the ground floor.

I hope to research the history of the premises further on a future visit to London.

James Appleton. 20 April 2011

Telescope Sale - OASI Classifieds!

Due to the generosity of members of the public in recent years, OASI currently owns many more telescopes than are required. Equipment curator John Wainwright aims to create additional storage space by disposing of surplus instruments.

John will consider **any offer** for the telescopes below.

For further information about the telescopes, to arrange a closer look at them, or to make an offer, please speak to John in person on Wednesday evenings at Orwell Park Observatory or email him via the OASI web site: info@oasi.org.uk

Fullerscopes Reflector

Newtonian.

28cm aperture primary mirror.

Focal length 170cm.

31.75mm rack and pinion focuser, could be converted to 50mm.

10x40 finder telescope.

White ABS hard plastic optical tube, cast aluminium mirror cell and spider.

Various eyepieces and accessory lenses.

Potential for conversion to Dobsonian mount.

Condition: fair.

Tasco Reflectors

Mass-produced and very reliable. Ideal for the beginner in astronomy.

Model no. 3TR (53140) *Luna*.

Newtonian, 75mm aperture primary mirror, focal length 70cm.

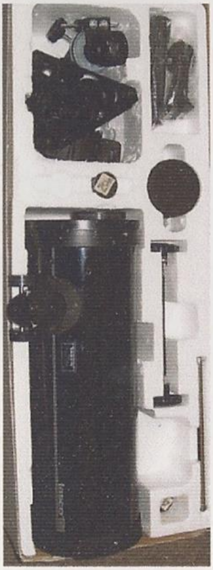
24.5mm focuser.

5x30 finder telescope.

Bright red aluminium optical tube.

Complete with 2x Barlow lens and 20mm eyepiece.

Condition: good.



Model no. 30291.

Newtonian, 114mm aperture primary mirror, focal length 50cm.

24.5mm focuser.

5x24 finder telescope.

Black aluminium optical tube.

With tripod, Eq 1 equatorial mount, counterweights and slow-motion hand controllers for RA and dec.

Complete with 4mm & 20mm eyepieces.

In good working order. Little used.

Unique Reflectors

At the other end of the spectrum from the previous instruments, the telescopes below are unique, and offer the ideal opportunity for the advanced amateur looking to begin his/her next project in telescope conversion, etc.

Home-constructed Newtonian. 22cm aperture primary mirror, focal length 190cm.

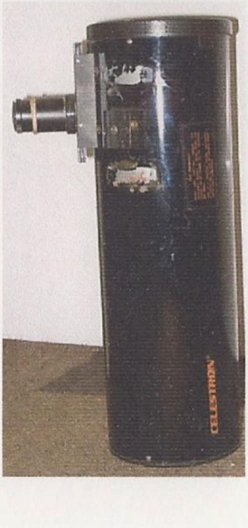
31.75mm rack and pinion focuser.

Sighting tube.

Grey hard plastic optical tube, cast aluminium mirror cell and spider. Carrying handles fitted to optical tube.

Adjustable counterweight.

Condition: poor.



Model: Celestron *Comet Catcher*.

Apochromatic Newtonian (a standard Newtonian with the addition of a front corrector plate).

14cm aperture primary mirror, focal length 48cm. 31.75mm focuser (not rack and pinion, instead moves position of secondary mirror).

No finder or sighting tube.

Dark blue aluminium optical tube.

Condition: poor.

James Appleton, 15 April 2011

OASI Committee Contacts & Responsibilities

Neil Morley	Chairman	☎ [redacted]	Chair committee meetings. Represent OASI to external bodies.
Roy Gooding	Secretary	☎ [redacted]	Respond to enquiries. Press & publicity. Observatory decoration. Open days.
Paul Whiting FRAS	Treasurer	☎ [redacted]	Finance. Visits by outside groups.
James Appleton	Committee	☎ [redacted]	Minutes of committee meetings. Web site.
Bill Barton FRAS	Committee	☎ [redacted]	Safety & security.
Martin Cook	Committee	☎ [redacted]	Membership. Tomline Refractor maintenance.
Tina Hammond	Committee	☎ [redacted]	Librarian.
Peter Richards	Committee	☎ [redacted]	Lecture meetings. Email distribution lists.
Eric Sims	Committee	☎ [redacted]	Newsletter.
John Wainwright	Committee	☎ [redacted]	Equipment curator.
Mike Whybray	Committee	☎ [redacted]	Workshops.

Trustees

Honorary President

Dr Allan Chapman D.Phil MA FRAS

DIARY for May

STONs	**SMALL TELESCOPES OBSERVING NIGHTS AT THE OBSERVATORY** STONs will restart in October. Solar and daytime planet observing by arrangement with Paddy O'Sullivan. ☎ Paddy O'Sullivan [redacted] ☎ Gerry Pilling [redacted]
Wednesdays From 8.00pm	**OBSERVATORY CLUB NIGHTS** Observing with the Tomline Refractor and other telescopes if skies are clear. ASTEROID OBSERVING PROJECT. ☎ Martin Cook [redacted], mobile [redacted] ☎ Roy Gooding [redacted], mobile [redacted]
Wednesday	**OASI WORKSHOP** Nothing Arranged At Nacton Village Hall If you are interested in running or helping at a workshop please get in touch with Mike Whybray. ☎ Mike Whybray [redacted]
Thursday	**OBSERVATORY VISITS BY LOCAL COMMUNITY GROUPS** ☎ Paul Whiting FRAS [redacted]
Saturday 18th June 8.00pm	**NEXT COMMITTEE MEETING** **Venue: The Methodist Church Hall** **Blackhorse Lane** **Ipswich**

TASTER EVENING
Tuesday 3rd May

Society Contact Details

Observatory tel. no. (meeting nights only): [redacted]
Secretary: Roy Gooding [redacted] (day) [redacted] (evening)
E-mail queries: **info@oasi.org.uk**
Chairman: Neil Morley [redacted]