The Newsletter

of the

Orwell Astronomical Society (Ipswich)

2012
APRIL

Registered charity no. 271313
www.oasi.org.uk

No 473

NEIL VAN GOGH

Neil Morley paints the universe for enthusiastic school pupils at the Woodbridge area school science activity evening at Rendlesham Community Primary School on February 22nd.
Photograph by Michael Whybray.

Society News (Roy Gooding)

1 Committee Meeting Saturday 14th April

Any members who are interested are invited to attend this meeting.
Start time 20:00 Venue: Methodist Church Hall.
The meeting in March was cancelled, as several members were unable to attend.

2 Access into the School Grounds and Observatory Tower

The code for the car park gate, is on the back of your membership card.
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.

3 Welcome to New Members

Mr Tommy Fairweather	Mrs Patricia Chittick	Mr Charles Croydon
Mr & Mrs Christopher Smy	Mr Michael Sharp	Mr Roger Driver
Mrs Samantha Buckingham	Mr Peter Freer	Dr Michael Helliwell
Mr Gary Rogers	Mr Richard Mallett	Mr Bryan Walls

4 Events Programme for 2012

This provisional event list will be updated through out the year

Event	Venue	Date
Workshop Constructing Dobsonian Telescopes and Equatorial Platforms John Wainwright & Martin Cook	Nacton village hall	11th April 19:45 TBC
Quiz to raise money for the 582 observatory restoration fund See details below	Nacton Village Hall	13th April 19:00
Kelling Heath Spring Star Party	Kelling Heath Kelling Norfolk	19th to 23rd April
Yoxford Star Party	NEAS are holding a star party in the Yoxford area and have requested a visit to the observatory	Date TBC

Lecture meeting	Methodist Church Halls, Blackhorse Lane	18th or 25th May Still in planning
Summer Barbecue	Newbourne Village Hall?	TBC
The Autumn Equinox Sky Camp www.starparty.org.uk/	Kelling Heath Kelling Norfolk	Extended event 10 - 21 September Main Event Weekend 14 - 16 September
Lecture meeting Nick Hewitt "Barnard, Gordon and the Darkness". It's about Dark Nebulae.	Methodist Church Halls, Blackhorse Lane	12th October
Open Weekend Option 1	Orwell Park Observatory	20th & 21st October
FAS convention	Cambridge Institute Astronomy?	October TBC
Open Weekend Option 2	Orwell Park Observatory	17th & 18th November
Christmas Meal	TBA	5th or 12th December?

Other Observational Events 2012

Meeting	Venue	Date
Venus Transit	Orwell Park Observatory	6th June
Jupiter occultation	North Norfolk coast	15th July
Perseids provisional meeting	Behind the refreshment hut at "The Dip" Felixstowe	11th August
Geminids provisional meeting	Behind the refreshment hut at "The Dip" Felixstowe	15th December

6 Quiz to Raise Money for the 582 Orwell Park Observatory Restoration Fund

Venue: Nacton Village Hall, The Street, Nacton IP10 0EU
Date: Friday 13 April
Time: 7 :00pm for 7.30 prompt start

Choice of Fish and Chips, Jumbo Sausage and Chips, Veggie Burger and Chips
Bring you own drinks, and snacks if wanted

£7.50 per person
Teams of 6 - 8

Contact Mike on [redacted]

7 Observational Out Reach Meetings 2012

Spring Star Party: Chantry Park

Directions:

- Enter Chantry Park from the Hadleigh road entrance. It is the drive way to the Sue Rider home.
- This drive dose not have any gates so access is always open
- At the top of the drive take the left hand road. There are about 3 speed humps along here.
  At the end of this road, which is about 200 yards long, there is a parking area.

Meeting	Venue	Date
Spring Star Party 1st Option	Chantry Park	Saturday 21st April 20:00 to 22:00
Spring Star Party 2nd option if 1st is cloudy	Chantry Park	Saturday 28th April 20:00 to 22:00

Astronomy in the Park: Spring Event

Meeting	Venue	Date
Astronomy in the Park "Observing the sun" 1st option	Christchurch Park Reg Driver Centre	Saturday / Sunday 19th / 20th May From 11:00 no time set to finish
Astronomy in the Park "Observing the sun" 2nd option if 1st is cloudy	Christchurch Park Reg Driver Centre	Saturday / Sunday 26th / 27th May From 11:00 no time set to finish

Night Sky (April)

All times (GMT)

Moon

Full Moon	3rd Quarter	New Moon	1st Quarter
6th	13th	21st	29th

Object	Date			Mag	Notes
		Rise	Set		
Sun	1	05:30	18:30		
	30	04:27	19:19		
Mercury	1	04:57	16:47	-0.8	Mercury will be lost in the early twilight sky this month.
	30	04:01	16:48		
Venus	1	06:37	23:13	-4.3	Venus remains well placed to observe in the evening sky.
	30	05:40	23:30		
Mars	1	14:33	04:59	-1.2	Mars remains well placed to obseve until the early hours of the morning.
	30	12:47	02:58		
Jupiter	1	06:35	21:23	-2.2	Jupiter is moving into the evening twilight sky this month.
	30	04:56	20:07		
Saturn	1	19:36	06:23	0.6	Satturn is at oposition on the 15th, and is well placed to observe all night.
	30	17:29	04:25		
Uranus	1	05:24	17:43		Uranus is lost in the morning twilight sky this month
	30	03:33	15:58		
Neptune	1	04:28	14:36		Neptune is also lost in the morning twilight sky his month.
	30	02:35	12:46		

Meteor Showers (BAA Handbook)

Shower	Maximum	Limits	ZHR
Lyrids	April 24th	April 19th to 25th	10

Astronomy Workshops

Doors open at 7:30pm.

Workshops START at 7:45pm

Venue: NACTON VILLAGE HALL IP10 0EU

If you are a new OASI member, or haven't been to one of these workshops before – they are a mixture of events of different characters including beginners talks, interactive workshops, hands-on observing sessions, films etc., suitable for all. They are also a chance to chat with other members over a cup of tea and a biscuit, in a venue rather warmer than the observatory dome on a winter's night!

Date	Event	Run by…
11th April	**Constructing Dobsonian Telescopes and Equatorial Platforms.** John will be showing some of the pitfalls of making a Dobsonian if you don't consider some of the engineering problems involved. Optics, materials, how big!, portable or not, designs, accessories etc. Martin will talk about Equatorial Platforms – a way to make a Dob or other telescope track the heavens.	**John Wainwright and Martin Cook**

Mike Whybray Workshops organiser

[redacted] (Mobile) [redacted] (Home)

Workshops venue: NACTON VILLAGE HALL IP10 0EU (next to the small village school, just below and left of the N in Nacton on the map).

Please park on the same side of the road as the hall, but <u>avoid parking on the white lines</u> which mark clear spaces for various driveways and passing places. The police do occasionally check up on this!

6

Green Stars – Fact or Fiction?

Paul Whiting

A number of years ago a debate arose during one of our beginner's workshops as to whether green stars exist or not. If not why not or if they do exist why don't we see them.

After thinking about this for a bit and discussing it over with my astronomy course tutor, I think I can now provide an answer.

But first let's take a step back. Why is a star a particular colour? A star is emitting radiation of one kind or another at just about every frequency going – at some frequencies a lot more than at others. Stars obey a law called the Black Body Radiation law, whereby their energy or radiation output follows a curve similar to that shown in figure 1.

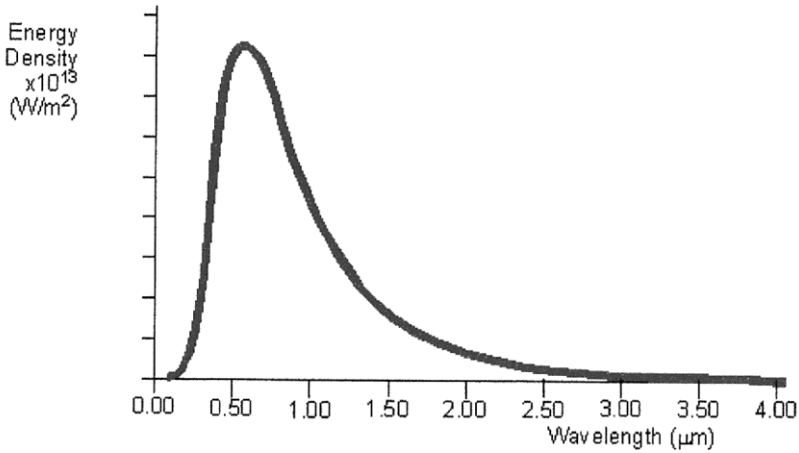


Figure 1: Example black-body curve.

There is a point on this curve (the peak or highest point) that indicates the wavelength of the radiation at which the star emits the majority of its energy. In the example in figure 1 this occurs at about 0.5µm. These black body curves are identical for any star at the same temperature. Figure 1 is the black body curve for an object at 5000K. Astronomers use the Kelvin

scale for this sort of thing – essentially it is the same thing as Celsius, but it starts at absolute zero (the coldest possible). Thus 0°C is approximately 273K.

OK so what about colours. We see the colour of a star as the "colour" corresponding to this peak. If this "colour" is in the visible light band of the spectrum we will literally see the corresponding colour, but often this peak occurs in the infra-red, ultra-violet or radio part of the spectrum so we need specialist kit to be able to "see" these stars. Sometimes objects peak in the much higher energy part of the spectrum, at gamma rays. These "non-visible" objects are typically very dim to see in visible light as they emit much lower levels of radiation that we can actually see with our eyes.

Right so let us now consider the good old Hertzsprung-Russell diagram (figure 2). For such a simple looking diagram you can tell an awful lot about a star from just knowing its colour. However the HR diagram is the subject of another article entirely. Suffice it to say that you can see from the horizontal axis in figure 2 that a star's spectral type, temperature and colour are all related. We have the following spectral types (note there are others):

Class	Temp (K)	colour
O	***≥ 33,000 K***	blue
B	10,000–33,000 K	blue to blue white
A	7,500–10,000 K	white
F	6,000–7,500 K	yellowish white
G	5,200–6,000 K	yellow
K	3,700–5,200 K	orange
M	≤ 3,700 K	red

Now recall the colours of the rainbow: red, orange, yellow, green, blue, indigo and violet.

We have corresponding star colours for everything except green. Where the green should be we have white. So the question is why does green suddenly become white? The answer is that green happens to be in the

middle of the visible spectrum – let me explain. A white star has its black body peak in the green part of the spectrum. However because there is a non-trivial amount of yellow-orange and blue also emitted (from the "shoulders" of the peak in the graph), our brain interprets this green plus other colours as white.

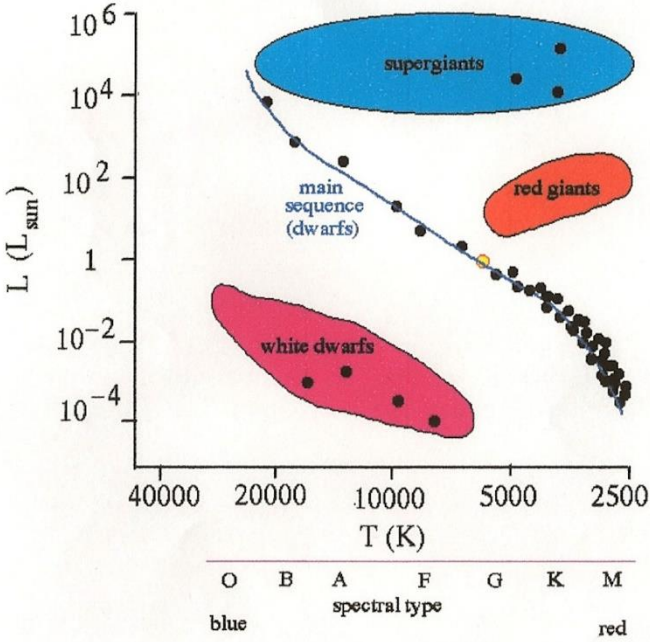


Figure 2: The Hertzsprung - Russell diagram

For the other colours there is less "shoulder" colour present, allowing our brains to see the true predominant colour more accurately, although there is a perceived difference between true peak colour and the visual colour we see.

The table of spectral classes above (from Wikipedia) shows two colours for each class. The proper colour is shown as the background to the column marked "colour", and the perceived colour is the background to the other two columns.

So there we have it – there are stars that should be green, loads of them but due to the inability of our brains to employ a narrow band filter to see the peak black body radiation, we see them as white stars. If figure 3 scares you – stop reading now !

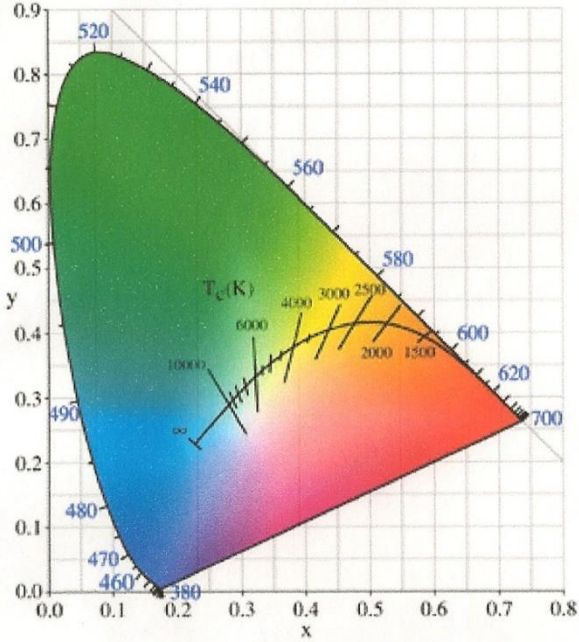


Figure 3: Plankian Locus

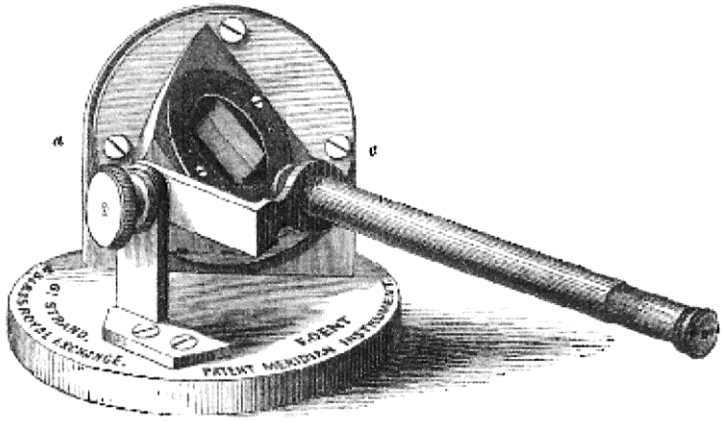
Ok here is the more scientific explanation. Figure 3 is a more complicated representation of the black body peaks all in one diagram. The "locus" (the black curve in the middle of the diagram) shows the colour of various temperature peaks of stars. You can see that low temperature (1500K) stars are red through to high temperature (10000K +) blue stars. Note that the "green" star temperature of 4500-5000K lies at the convergence of the RGB (red/green/blue) region, which shows as white. You can see visually that black body stars will never shine truly green, but at best can only have a slight tint.

[images courtesy of Wikipedia]

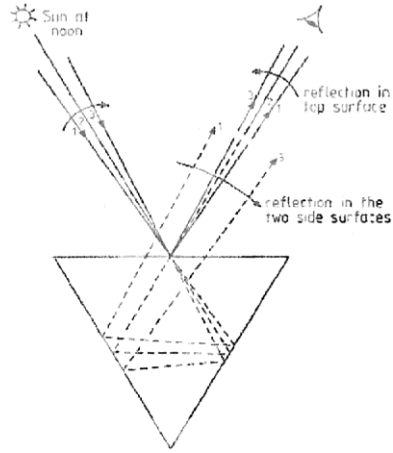
The Dipleidoscope: A Solid State Transit Instrument

By "A Fellow of the Royal Astronomical Society".

The chronometer maker Edward John Dent F.R.A.S. Associate I.C.E., (1790 - 1853) worked in the mid nineteenth century to simplify the transit telescope that was originally developed by Ole Romer (1644 - 1710) in Denmark. Dent wanted to make ascertaining the correct time easily available to the non-astronomical community. He was approached by James Mackenzie Bloxam, a barrister from Denbighshire (born circa 1814, died 1857), with an already working device. The two went into partnership with the first dipleidoscopes going on sale for two guineas (£2 2s or £2.10p) in March 1843. Bloxam appears to be afraid of compromising his professional standing with much of his work only being published after he died. To secure their respective rights over the device, a patent was sought by Bloxam and was granted on 20th June that year (United Kingdom Patent no. 9793). A French patent was applied for on the 24th July 1844. After Dent died his stepson Frederick William Dent took over manufacture.



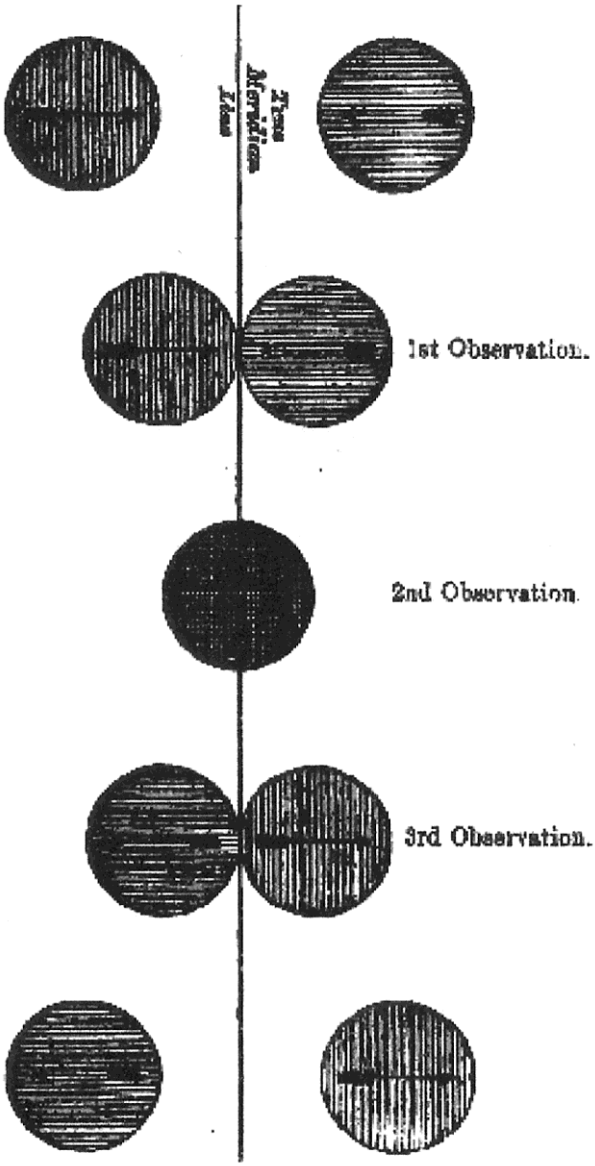
A dipleidoscope consists of an equilateral triangular prism with a clear glass front face and the rear two faces internally silvered. The long axis of the prism is approximately aligned with the Earth's polar axis. The prism thus produces two images of a celestial object, one by direct reflection from the front face that moves in the opposite direction to the object, and the other reflected via the two rear faces that moves in the same direction as the object, but at double speed. At one point these two images coalesce. When the dipleidoscope prism is correctly orientated, this conjunction of images occurs as the object transits the local meridian.

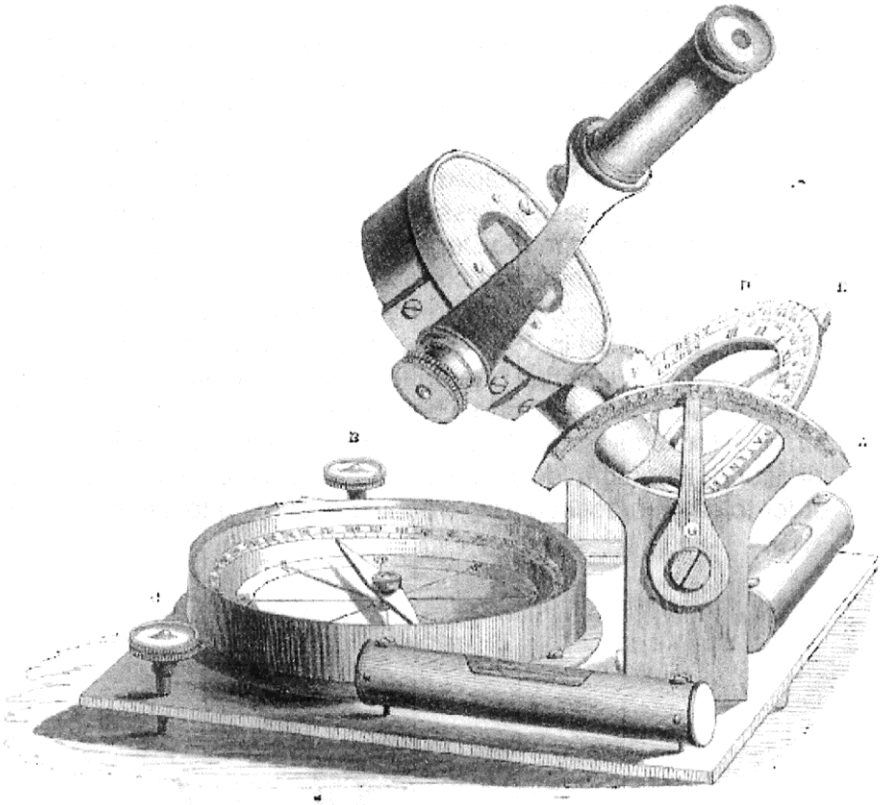


The mounting, which is made of brass, is 2 1/8 inches (52mm) long by 3 3/8 inches (85mm) wide and 2 3/8 inches (60mm) high, and around 1lb 15oz (1kg) in weight. The front aperture of the prism is 7/8 inch (22mm) long by 1/2 inch (12mm) wide. A tight fitting lid was provided to protect the optics from the weather as the instrument was designed to be mounted outdoors with a clear southern meridian aspect, although portable versions were also available. The lid has E. Dent's (or F. Dent for models after 1853) name along with his business address. To aid observation of the moment of transit, a viewing telescope was sometimes fitted. The brass has a dull finish; otherwise solar observation would be difficult, due to the mounting also reflecting the sun. The length and width of the prism is sufficient to allow, as a minimum, correct observation of any ecliptic object. Prospective owners in the tropics were invited to supply the latitude where the instrument was intended to be installed so that the correctly angled mounting could be supplied.

The instrument was a success and within a year Dent was importing additional parts from France at 3s 6d (17 ½p) per dipleidoscope in order to keep up with demand.

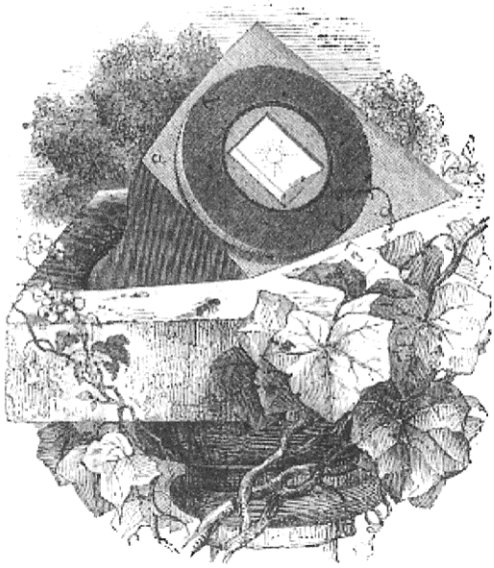
If a transit is taken using either the sun or moon, then Dent recommends taking three observations to increase accuracy. The first as the two limbs initially touch, second as the two images overlap exactly, and finally as the two images separate. Averaging the time of the three events gives the time of the true transit. Tables in a booklet published by Dent give solar semi-diameter values throughout the year allowing for possible missing triple timings to be reconstructed. For solar timing Dent recommends either using the viewing telescope fitted with a dark filter (of the type fitted to sextants) or capturing a projected image using a sheet of paper, held about two feet away from the dipleidoscope. The time taken for the two solar images to pass over each other varies through the course of a year, with a maximum of 2 min 22 sec in mid December and a minimum of 2 min 7.6 sec in mid September. A well adjusted dipleidoscope has a claimed accuracy of less than one second.


True Meridian Line
1st Observation.
2nd Observation.
3rd Observation.



A 'universal' model was also produced with the dipleidoscopic prism being placed on an adjustable miniature equatorial mounting; this enabled the user to make timing observations at any latitude and at up to 45 degrees (three hours of time) either side of the objects meridian passage. This had the great facility of enabling the observer to capture an observation at his convenience rather than waiting for the chosen object to transit, which would depend on the vagaries of the weather.

To help dipleidoscope owners align their instruments Dent produced a 28 page instruction booklet. Additionally, he initially offered to dispatch a competent person with a chronometer to carry out the adjustments. The employee's stay was charged at the cost of actual travelling expenses plus ten shillings (50p) remuneration per day. By 1862 this service was replaced by a double orthogonal spirit level and magnetic compass accessory that was made available at no cost. It was returned to the Dent Company within a specified time, as once the dipleidoscope was correctly set the accessory was of no further use. The booklet ran through at least eight editions and was still being published in 1868 some twenty-five years after dipleidoscopes were first offered for sale. Interestingly, there is a complete section devoted to whether the dipleidoscope owner should arrive at his local station later (eastern longitude) or earlier (western longitudes) than the local time obtained from the dipleidoscope in order to catch a desired train (running according to Greenwich Time).

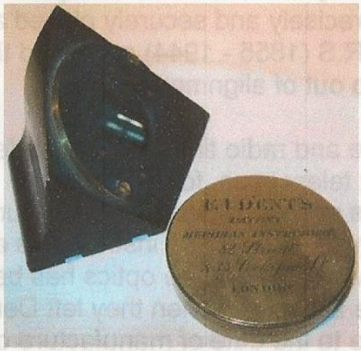


The word 'dipleidoscope' is derived from the Greek and means 'double image viewer'.

The dipleidoscope, as manufactured by Dent, uses three separate pieces of glass. These have to be precisely and securely placed and in 1928 Sir Charles Vernon Boys F.R.S (1855 - 1944) promoted the use of a solid prism which cannot go out of alignment.

The advent of telegraphic, telephone and radio time signals made amateur dipleidoscopes (and transit telescopes, for that matter) redundant. However, dipleidoscopes can still occasionally be found in antique shops and on-line auction sites. As these instruments are solid state, with no moving parts to wear, unless the optics has been interfered with, they can still operate as well as when they left Dents workshop over a century ago. A clue to the date of manufacture of the instrument is whether E(dward) or F(rederick) Dents name is on the lid and what addresses are given, as Dents business opened additional shops over the years. Each dipleidoscope also has a serial number stamped on the back.

ILLUSTRATION OF THE SIMPLE MODE OF TAKING AN OBSERVATION WITH THE DIPLEIDOSCOPE



An early model by E. Dent (serial no 295)

A later model by F. Dent (serial no 903)
(Before restoration)

Both examples are from the author's collection

ECLIPSES OF JUPITER'S GALILEAN SATELLITES

On 11 January 2012, Mike Whybray presented the second instalment of a most interesting workshop on *Measuring The Speed Of Light*. Among the historical techniques that he described was that of Ole Rømer who, in 1676, presented evidence to the French *Académie des Sciences* that the speed of light was finite. Later analysis of Rømer's data by Christiaan Huygens and others derived a value for the speed of light of 227,000 km/s. (The modern value is 299,792.458 km/s.)

Rømer's method was based on observations of eclipses of Io, the innermost of the Galilean satellites of Jupiter. The four Galilean satellites of Jupiter orbit the planet approximately in the plane of its equator, in orbits that are nearly circular. Their positions relative to the planet therefore repeat approximately periodically. Jupiter casts a shadow into space on the opposite side from the Sun it and it is possible, therefore, when the planet is not too close to conjunction or opposition, to observe eclipses of the Galileans. If the orbits of the Earth, Jupiter and the Galileans were coplanar, only disappearances would be visible before opposition and only reappearances would be seen after opposition; however, because the orbits are, in fact, not exactly coplanar, in addition, a low number of reappearances are visible before opposition and a low number of disappearances after.

The finite speed of light means that, compared to the mean, when Jupiter and the Earth are relatively far apart in their orbits (near to conjunction), eclipse events appear delayed; conversely, when they are relatively close together (near to opposition), they appear early. Neglecting orbital eccentricity and many other lesser factors, the maximum timing difference (which cannot in practice be observed) equates to the light travel time across the diameter of the Earth's orbit, approximately 17 minutes.

The outer edge of Jupiter's atmosphere is tenuous and transmits some light, thus the shadow cast by the planet has fuzzy edges and is not sharply defined. Further, the Galilean satellites have appreciable diameters (ranging from 3643 km for the smallest, Io, to 5262 km for the largest, Ganymede). As a satellite moves through its orbit, it takes a non-zero time to enter or exit the shadow, thus eclipse phenomena are not instantaneous, limiting the accuracy with which they can be timed.

Following Mike's workshop, Martin Cook, Alan Smith and I attempted to make a few trial observations of eclipses of the Galileans, to determine how feasible it would be to attempt a modern reworking of Rømer's technique. Table 1 summarises our findings.

Date	Obs	Details
14 Jan 2012	James	**Telescope:** 250mm Meade SCT, f10, 26mm e/p (mag x96). **Io reappearance:** A few minutes before midnight on 14/15 Jan, I observed Io emerge from the shadow of Jupiter. Was not ready for the event and could not accurately define the instant when Io first became visible. Full reappearance took several minutes.
15 Jan 2012	James	**Telescope:** 250mm Meade SCT, f10, 26mm e/p (mag x96). **Ganymede disappearance:** Could not determine when disappearance started, however, full disappearance took several minutes. Finally lost visibility of Ganymede at 00:06:17.
19 Feb 2012	Alan	**Telescope:** 250mm Dobsonian, f6 with 25mm e/p (mag x60). **Ganymede disappearance:** I found it really difficult to estimate the disappearance although Ganymede was very faint for ages. 20:19:00 Ganymede still visible. 20:19:10 No longer visible (lost in glare of Jupiter?) I had loads of glare caused by the mirror being out of alignment and probably needing a good clean! Telescope in need of collimation so unable to use high magnification eyepieces. I decided that attempting to observe the reappearance was not worthwhile given the low magnification, so gave up at 20:30.
19 Feb 2012	Martin	**Telescope:** 250mm Dobsonian, f5.4 with 18mm e/p (mag x76). **Ganymede disappearance:** I found it impossible to estimate the start time. Disappearance took ages and fading was slow. 20:19:11 Final disappearance. I had tons of glare and a focus which changed constantly. Mirror will need cleaning! Did not attempt to observe the reappearance as Jupiter was too low down and obscured by a neighbour's trees.
19 Feb 2012	James	**Telescope:** 250mm Meade SCT, f10, 26mm e/p (mag x140). **Ganymede disappearance:** 20:10:56 Confident that Ganymede had become visibly fainter. 20:19:20 Could no longer discern Ganymede reliably. 20:19:44 Last trace of Ganymede vanished. **Ganymede reappearance:** 21:49:50 Confident Ganymede visible again. 22:01:30 Ganymede approx same brightness as Io. Could not discern any further brightening after this. Throughout the observations, I suffered from glare from Jupiter. On two occasions. I mistook internal reflections in the eyepiece of light from Jupiter as the start of reappearance of Ganymede.

Table 1. Trial observations of eclipses of Galileans.

Our preliminary conclusions, based on visual observations with timing via a stopwatch, were as follows:

- Disappearance and reappearance events lasted for many minutes, much longer than we had anticipated.
- It was impossible to time accurately the start of a disappearance event; fading became visible only after several minutes.
- The start of a reappearance event could be estimated to within, perhaps, several tens of seconds.
- Glare from Jupiter was a significant problem, highlighting the need for clean optics and accurate collimation.
- Practice would likely improve the quality of observation and timing.
- We hoped, after a little practice, to be able to time eclipse disappearance times with a consistency (between observers) of several tens of seconds. This level of accuracy would likely enable us to analyse our observations to estimate the speed of light.

We decided therefore to make further observations of eclipse disappearance events, with a view to calculating, once sufficiently many timings are available, an estimate of the speed of light. Only one more event occurs under reasonably favourable observing conditions before Jupiter reaches conjunction on 13 May. Unfortunately, around the time of conjunction, the planet is too close to the Sun for successful observation of eclipses and, following conjunction, it is not until mid-August that disappearances begin to occur once more under reasonably favourable observing conditions. Table 2 lists, for the remainder of 2012, the mid-times predicted by the BAA for occultation disappearance events occurring under favourable circumstances up to 01:00 UT each night. Where corresponding reappearance events are also visible, they too are listed. There are many other events happening at more challenging observing times, and a full list may be found in the BAA *Handbook* for 2012.

Date	Satellite	D (UT)	R (UT)
02 Apr	G	20:21	
Jupiter at conjunction 13 May 2012			
17 Aug	G	00:33	02:27
31 Aug	I	23:58	
16 Sep	I	22:15	
17/18 Sep	E	22:51	01:14
29 Sep	G	00:32	
09 Oct	I	22:26	

Date	Satellite	D (UT)	R (UT)
19 Oct	E	22:26	
25 Oct	I	20:43	
01 Nov	I	22:37	
03 Nov	G	20:31	22:35
10 Nov	I	19:00	
11 Nov	G	00:31	02:35
13 Nov	E	19:29	
17 Nov	I	20:54	
20 Nov	E	22:04	
24 Nov	I	22:49	
28 Nov	E	00:40	
Jupiter at opposition 03 Dec 2012			
24 Dec	G	00:32	02:42

Table 2. Mid-times of eclipses.

Observations are welcome from any member of OASI. Indeed, the more observations that can be fed into the data analysis, the better should be the estimate of the speed of light. Reports of observations should include the following: name of observer; location; contact details; telescope; eclipse event; estimated time; method used to time event. Please email any observations to james.appleton@bt.com. Once a sufficient quantity of observations is available, I will analyse the data to make an estimate of the speed of light.

Further information:

- Mike Whybray's slides from workshops on the speed of light: http://www.oasi.org.uk/Events/Astro_Workshops/Workshops.htm
- Chapter 16 of W. Schlosser *et al*, *Challenges of Astronomy*, Springer-Verlag, 1991.
- Wikipedia pages on Ole Rømer.
- Event calculator for Jupiter's satellites: http://www.twcac.org/Whatsup/jb/Jupiter%27s%20Moons.html

James Appleton
07 March 2012

OCCULTATIONS DURING APRIL

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 / R	Lunar Phase	Sun Alt (d)	Star Alt (d)	Mag	Star
01 Apr	22:29:50	D	0.71+	-30	39	6.3	ZC 1281
02 Apr	23:33:38	D	0.81+	-32	34	5.4	Ω Leo
25 Apr	20:32:53	D	0.17+	-12	23	3.0	ζ Tau
	20:47:50	R		-13	21		
27 Apr	21:35:53	D	0.34+	-17	26	7.2	ZC 1116
29 Apr	22:52:18	D	0.55+	-22	23	5.2	κ Cnc
30 Apr	22:47:53	D	0.66+	-21	27	7.3	Hip 48918

On the nights of 25 and 26 April, the Moon traverses rich star fields of the Milky Wai in Taurus and very many occultations occur (37 and 45 respectively).

During the evening of 01 April, the star 29 Cnc is grazed by the N limb of the Moon. The event is very convenient for members of OASI as the graze track passes only 7.6 km from Orwell Park at 19:30 UT. The event occurs during nautical twilight, with the Sun only 9° below the horizon, so the sky will not be completely dark. The magnitude of the star is 5.9. From Orwell Park, the event will be an occultation of short duration.

Weather permitting, an observing trip will be observed to the graze line where, if theoretical calculations are correct, observers with telescopes of circa 10 cm or greater aperture should be able to watch the mountains on the limb of the Moon pass in front of the star, alternately hiding and revealing it. Please contact me if you are interested in participating in an observing trip.

James Appleton

Transit of Venus, 6 June 2012

This is the second transit of Venus (TOV) visible from Orwell Park Observatory, unfortunately only the end hour is visible but will still be worth observing.

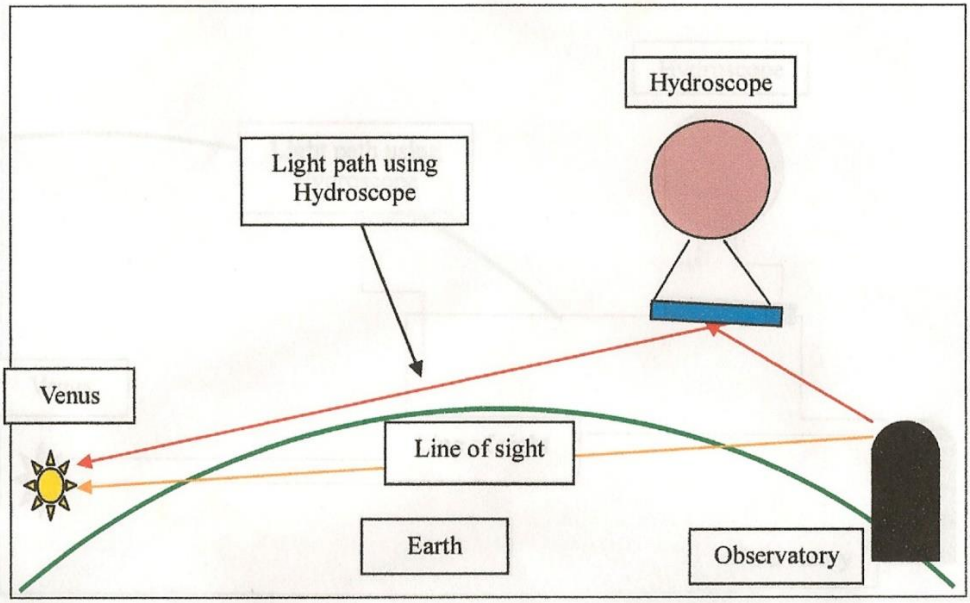
Whilst doing some family history research I came across a device used in the First World War which consisted of a hydrogen filled balloon and a large reflective mirror which was launched above the enemies trenches and acted like a large periscope. As it was known the Hydroscope worked effectively but unfortunately it was multidirectional and gave your trench positions away as much as finding the position of the enemy, it was therefore nicknamed the fools scope.

In the Second World War it was again put into very successful use by the British Navy to see

ships over the horizon. It again consisted of a large mirror floating high above the ship and used in conjunction with binoculars and telescopes. After much research into the device it became obvious that it could be used to observe the start of the transit of Venus provided we had a large mirror positioned in roughly the correct place and height.

The mirror would obviously have to be of a light construction so that we would not need a massive balloon to lift it high above the ground. I started constructing a very lightweight balsawood frame and covered the framework with a very thin reflective material, the final mirror ended up measuring 2 m x 1.2 m and weighing only350 kg. With such a lightweight device it could easily be lifted into the sky by a small meteorology balloon filled with helium gas (met balloons are easily obtainable from eBay) and could be tethered to the ground by relatively thin fishing line.

The device would ideally need to be launched to a height of 400 m near the coast of Felixstowe. The drawing below shows how the device will work.



I am looking for volunteers to help man the Hydroscope at Felixstowe. If you can possibly help please contact myself at the club e-mail address

Martin

STONs Nights

As British Summer Time (Daylight Saving in Meade speak) starts at the end of March, there will be no formal arranged STONs after March until October 2012.

If anybody has something special they wish to observe, then contact Gerry Pilling, Patrick O'Sullivan or Dave Robinson to discus and we will see what can be arranged.

Gerry Pilling.

GRAZE OF 29 CNC, 01 APR 2012

On 01 Apr 2012, there occurs a grazing lunar occultation of the star 29 Cnc. Parameters of the event are as follows:

Time (UT):	19:30
Limb:	North
Moon's phase:	0.70+
Name:	29 Cnc
Hipparcos:	41578
Tycho:	808-1546-1
PPM:	125310
ZC:	1271
Magnitude:	5.9
Spectral class:	A5V
Altitude:	52°
Azimuth (NESW):	172°
Position Angle:	22°
Cusp angle:	10° north, dark side
Sun altitude:	-9°

The graze track and other circumstances of the event are available on the OASI web site: http://www.oasi.org.uk/Occultations/Occ_Summary_2012.htm.

The track passes close to Ipswich (in fact, within 8 km of Orwell Park Observatory). From the Observatory, the event will be seen (weather permitting!) as a very short duration occultation.

Circumstances of the event are not ideal, however, in view of the proximity of the graze track to Ipswich, Alan Smith is attempting to locate a suitable observing site on the line and, weather permitting, we will organise an observing party to the chosen site to observe the event. Please contact Alan or me if you are interested in participating.

James Appleton
03 March 2012

Newsletter Articles

Our Society is always on the lookout for newsletter articles! If you would like to submit an article, please email it in Microsoft word format <e.g.A5 landscape 12 point font> to the editor, Eric Sims at [redacted] by the third Wednesday of each month to ensure it appears in the next month's newsletter. If you don't have access to a computer, please phone me at the number published inside the back page of the newsletter.

Eric Sims 26

Orwell Park Observatory - Quiz

Since 1967 the Orwell Astronomical Society of Ipswich has looked after Orwell Park Observatory, but 148 years of weathering the elements has sadly taken its toll, and parts of the exterior and fabric of this Observatory are now in dire need of restoration.

Recent surveys have identified urgent remedial work costing at least £500,000. OASI are therefore holding a quiz in order to help raise funds for this project.

Details are as follows:-

QUIZ and RAFFLE

In aid of the 582 Restoration Fund of Orwell Park Observatory

Friday 13 April
7 pm for 7.30 prompt start

Nacton Village Hall, The Street, Nacton IP10 0EU

Choice of Fish and Chips, Jumbo Sausage and Chips, Veggie Burger and Chips
BYO drinks, and snacks if wanted

£7.50 per person
Teams of 6 - 8

Contact Mike on [redacted] or Tina on [redacted].

Please come along to support this worthy cause, have a good evening and help your Observatory in the process.

If you are not able to attend the evening but still wish to donate a raffle prize, these can be handed in at any OASI event before then.

The number 582 is used for our Restoration Project Fund as, despite being originally a private observatory, Orwell Park is actually registered with the International Astronomical Union which accords all operational observatories a unique number.

Orwell Park Observatory is number 582 (Greenwich is 000!) out of a list of over 10,000 Observatories on the list.

Hope to see you there!

Tina Hammond

DIARY for APRIL

STONs	**SMALL TELESCOPES OBSERVING NIGHTS AT THE OBSERVATORY** **As the British Summer Time starts at the end of March, there will be no formal arranged STONs until October 2012.** **If anybody has something special they wish to observe, then contact Gerry Pilling, Patrick O'Sullivan or Dave Robinson to discus and see what can be arranged.** ☎ 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. ☎ Martin Cook [redacted] mobile [redacted] ☎ Roy Gooding [redacted], mobile [redacted]
Wednesday 11th April Doors open 7.30pm Start 7.45pm	**OASI WORKSHOP** **At Nacton Village Hall** **Constructing Dobsonian Telescopes and Equatorial Platforms.** **By John Wainwright and Martin Cook** ☎ Mike Whybray [redacted]
Thursday	**OBSERVATORY VISITS BY LOCAL COMMUNITY GROUPS** **Nothing organised for this month** ☎ Paul Whiting FRAS [redacted]
Saturday 14th April 8.00pm	**NEXT COMMITTEE MEETING** **Venue: The Methodist Church Hall** **Blackhorse Lane Ipswich**

SPRING STAR PARTY: CHANTRY PARK
1st Option Saturday 21st April 20:00 to 22:00
If cloudy
2nd Option Saturday 28th April 20:00 to 22:00
Enter Chantry Park from Hadleigh Road.

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]
Please send material for the OASI web site (e.g. observations, notices of events, general interest articles) to **info@oasi.org.uk**