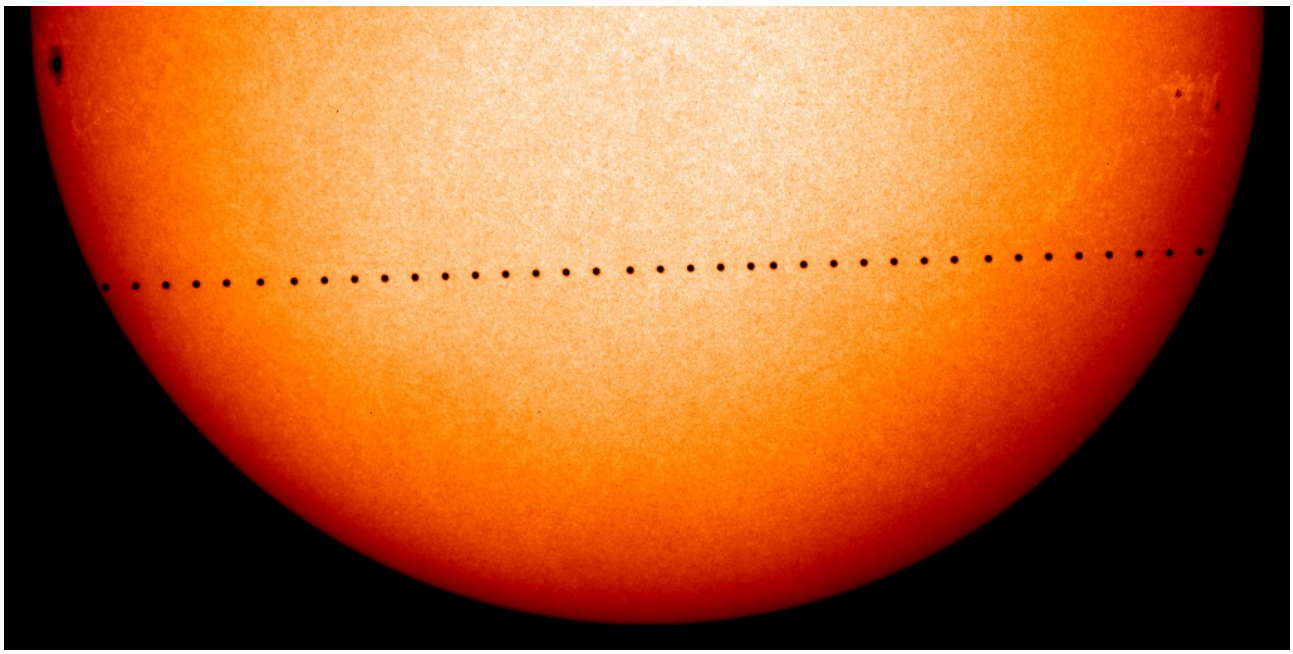
# Thanet Astronomy Group

## Astronomy for Everyone in Plain English

# NEWSLETTER

May 2016

### *Mercury transits the Sun*



*Mercury transits the Sun as seen from Earth in 2006. Credit: ESA/NASA/SOHO*

Contents

## Executive Committee Messages

May 2016

The month of May will start with :-

*May 4th* *Wednesday's members' meeting at the cafe.*

*May 7th* Will start the Saturday meetings.

Please Note : This is the start of the SUMMER season at the cafe and the summer members' meetings start time will be :-

1st June 2016 at 8pm

6th July 2016 at 8pm

3rd August 2016 at 8pm

7th September 2016 at 8pm

**Beginners Guide to Stargazing Course**

All those that would like to attend this course (details on the web site) please email ThanetAstronomyGroup@gmail.com to register your interest.

**Telescope Making Group**

This year 2016 we will be starting work on the first of 3 telescopes we hope to make this year.

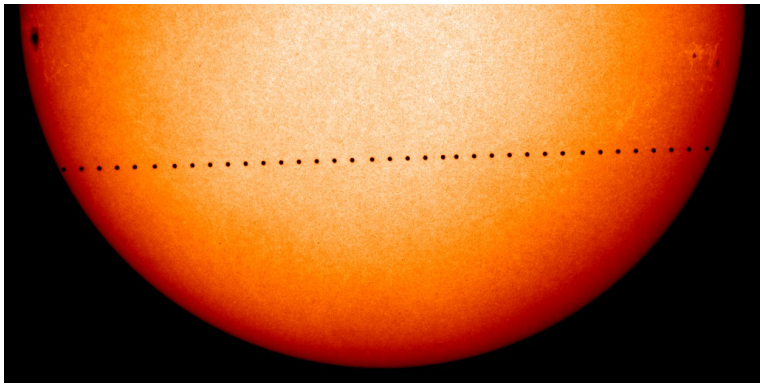
**Note : There is no knowledge or experience needed to join this workshop.**

All those that would like to attend the Telescope Making Group Please email ThanetAstronomyGroup@gmail.com to register your interest.

Danny, George, Gill.

**About the Cover Picture**

## Mercury transits the Sun



*Mercury transits the Sun as seen from Earth in 2006. Credit: ESA/NASA/SOHO*

## ***What exactly is a Solar Transit ?***

**What is a Solar Transit ?**

A solar transit is is the passage of an object passing between the Sun and the earth, this does not mean anywhere between the Sun and Earth it has to be in direct alignment so that the transiting object blocks our view of part of the Sun.

**What planets can Transit the Sun ?**

The only two planets that can transit the Sun are Mercury and Venus. This is because they are the only two planets that orbit the Sun between Earth and the Sun.

The Moon can also Transit the Sun but the moon is almost exactly the right size and distance from Earth and the Sun, so that when is passes directly in front of the Sun it blocks out all of the Sun.

*Our Solar System Image Credit: NASA/JPL*

This is called an Eclipse and not a Transit. However, when the moon and Sun do not exactly line up and the moon only partially blocks the Sun this is a Transit but is usually referred to as a partial Eclipse. Other objects, like asteroids, can transit the Sun.

**What Planets can't Transit the Sun ?**

The 5 planets that orbit the Sun outside of the Earth's orbit can't transit the Sun because of their position. These are Mars, Jupiter, Saturn, Uranus and Neptune.

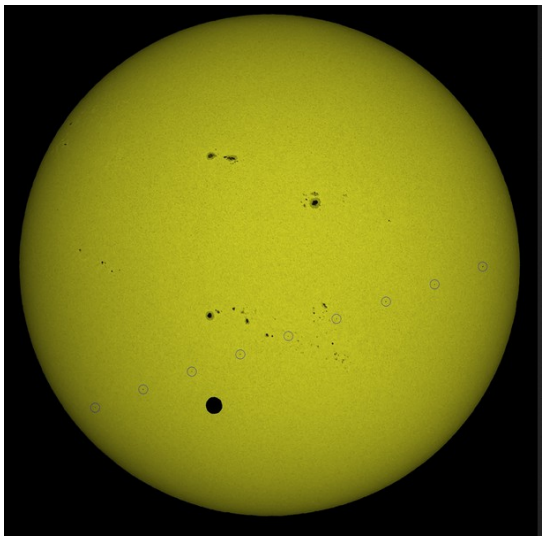
**About the Cover Picture**

# Mercury transits the Sun

## ***How often do these Transits happen ?***

Because the Transits need very accurate alignment they do not happen all the time. But this is not the only problem if you want to see one. Because of the distances between Earth, the Sun and the transiting planet only part of the Earth will be able to see the Transit.

This gets worse when you take into account that only half the Earth can see any Transit because one half the Earth will be in night and therefore not have a view of the Sun at all.



Then there is the point that if your location on Earth places the Sun at a low altitude in the sky (Early morning or late Evening) during the transit, then your view will be obstructed by the surrounding buildings, landscape and the inevitable hayes that is almost always present at or near the horizon.

The final '*nail in the coffin' i*s cloud cover. As we all know this is the most important consideration and it is what stops almost all of our plans to observe anything.

*Transit of Venus 2012 and the HST Credit Thierry Legault.*

In the amazing picture above Thierry Legault has captured the 2012 transit of Venus but also the transit of the Hubble Space Telescope, as well as many sun-spots.

The small dark circle in the bottom left quarter of the Sun is Venus. The small and larger iregular black smudges are sun spots. The tiny circled dots in a line across the Sun are the Hubble Space Telescope.

You can see more about this amazing picture on Thierry Legault's web site :-

http://www.astrophoto.fr/venus_hst_transit.html

## ***Can I see a Transit Soon ?***

**Mercury's 9th May 2016 Transit of the Sun.**

So now you know a little about what a transit is you can look at a transit for real, that is about to happen.

See the “What's in the sky this month” pages, in this newsletter.

Danny.

## Thanet Astronomy Group Contact Details

### Executive Committee

| | | |
|---|---|---|
| Chairman | Daniel Day | 01843 228 904 |
| Treasurer | George Ward | 01843 292 640 |
| Secretary | Gill Palmer | 07543 942 245 |

### Committee

| | | |
|---|---|---|
| Volunteers | George Cozens | 07970 181 395 |
| Members | Sheila Bull | 07791 892 057 |
| Newsletter | Janet McBride | 01227 364 092 |
| Newsletter | Tracy Howes | 07917 710 638 |
| Library | Janet McBride | 01227 364 092 |
| Web Site | Danny Day | 01843 228 904 |
| JAC & Gill | Gill Palmer | 01843 848 064 |

## Members' Meeting Dates and Times

Thanet Astronomy Group

Members' Meetings

**Dates and Times**

6th January 2016 at 7:30pm

3rd February 2016 at 7:30pm

2nd March 2016 at 7:30pm

6th April 2016 at 7:30pm

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**4th May 2016 at 7:30pm**

***** Thanet Astronomy Group AGM *****

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**Next Meeting**

1st June 2016 at 8pm

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6th July 2016 at 8pm

3rd August 2016 at 8pm

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*** 7th September 2016 at 8pm ***

*** Anniversary Three Years at West Bay Cafe Party ***

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5th October 2016 at 7:30pm

2nd November 2016 at 7:30pm

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*** 7th December 2016 at 7:30 for 8:00pm ***

*** Christmas Evening Meal and Entertainment ***

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All Members' meetings will be held at the :-

West Bay Cafe, Sea Road,

Westgate-on-Sea,

Kent.

CT8 8QA

**Advertisement**

# WEST BAY CAFE

## Sea Road, Westgate-on-Sea
## CT8 8QA

**Location :-**
This Family Friendly Cafe is situated on the promenade just beside the sandy beach opposite the junction of Sea Road and Rowena Road, Westgate-on-Sea, CT8 8QA.

**Access :-**
via a flight of steps behind the cafe.

**Disabled Access :-**
via the main entrance to the bay and a slope at the cafe door.

West Bay Cafe run by Alan and Kate has a very friendly atmosphere.


*Alan outside the new style West Bay Cafe*

There is a wide variety of good food and drinks at very reasonable prices and there are always special offers.

There is seating both inside and outside for those extra hot days.

*A Typical Sunset at the West Bay Cafe*

**The Sunsets at the West Bay Cafe are Spectacular.**

**With a meal, some friends, and a pint or two.**

**What more could you ask for!**

West Bay Cafe have hosted Thanet Astronomy Group since September 2013.

We would like to say a
**HUGE THANK YOU to Alan and Kate**
for all the help and support they have shown us over the last year.

**Please use this Brilliant Seaside Cafe and Tell Your Friends.**

## What we did in April

**Saturday 2nd April** Public Outreach Meeting

Today was the second week of the beach hut season so we will have to carry all the equipment down the stairs rather than drop it off by car from now, to the end of the season.

It was a very nice day with loads of almost warm sunshine. There were loads of interested people around as soon as we arrived.

When we had set up the telescopes, almost all of them equipped with solar filters, the Sun was the main interest of the day. With many people wanting to see the sun spots. We even got some photos.

The day ended just before 4pm when it began to rain but everything got put away before the downpour.

**Wednesday 6th April** Members' Meeting

As usual the Doors opened at 7:30pm and the meeting started with Gill's Notices and updates. Gill and Steve followed this with an update on Tim Peake and the ISS including the planned link-up on Saturday 23 April.

Danny then did a demonstration of how to track the ISS in Stellarium. We were also going to look at the Heavens Above ISS pages but the internet in the cafe was not working so this was skipped and will be done at another meeting.

After the tea break George Ward did another one of his very helpful Star Hopping sessions, locating the constellation Hercules and the Globular Cluster M13 as well as other objects.

**Saturday 9th April** Public Outreach Meeting

Today was a fairly quite day, the weather was a little cold with some drizzle. We had the telescopes out for some of the time with a good level of interest from the public.

The rest of the time was spent in the cafe talking astronomy in general and planing the ISS link- up on the 23rd April.

**Saturday 16th April** Public Outreach Meeting

Today was a sunny but cold day so the telescopes were out in force looking at the Sun. We were without George W today as he had a previous engagement. Several children came to Gill's Junior Astronomy Club and there were plenty of adults interested in what we were doing.

The weather changed about 3pm and got a lot colder and started to rain so we packed up the telescopes and moved into the warmth of the cafe to continue our meeting.

## What we did in April

**Saturday 23rd April** Public Outreach Meeting

Today was the International Space Station (ISS) link-up day. We had been given very kind permission by Wellesley House School to run an overflow event to enable as many people to be involved in the ISS link-up as possible.

We arrived early to set up the equipment, Steve arrived with the gazebo and radio equipment and we began setting up the gazebo and aerials. I then set up the displays with help from Alfie. Gill soon arrived and set up her display. By now there were plenty of people arriving, members and public.

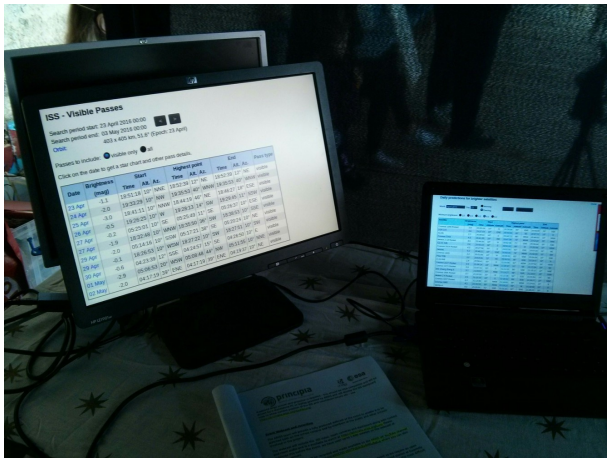
*Some of our visitors*


*Video Link from Wellesley House School*

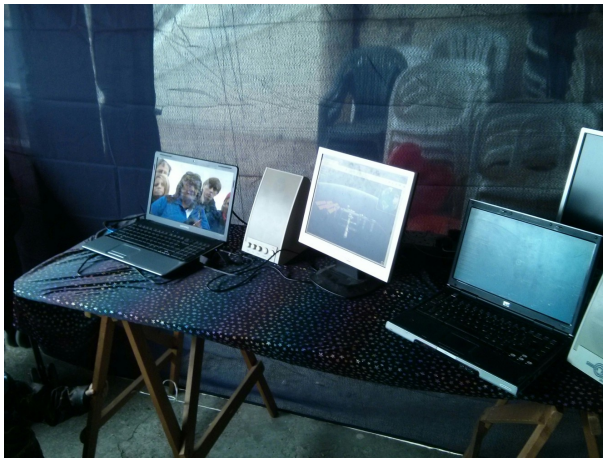
When the time came for the ISS to pass overhead and the link-up we were already listening to the video link to Wellesley House School, explaining what was about to happen.

Because we were linking to the school via the internet and the ISS directly by radio the delay on the link to the school meant that we heard the answers directly from the ISS before the question from the school - which was a little strange!

After the link-up people were invited a close-up look and explanation of the many displays in the gazebo. The event was a fantastic success !




*ISS and Satellite viewing opportunities*



*Video Link : ISS chase view : ISS position in the sky*

**Saturday 30th April** Public Outreach Meeting

Today was a really nice day with loads of sunshine. The telescopes were out on mass, and most people were looking at the Sun along with its several sunspots. Loads of people were asking what we were looking at and some really interested people were asking for info in Thanet Astronomy Group.

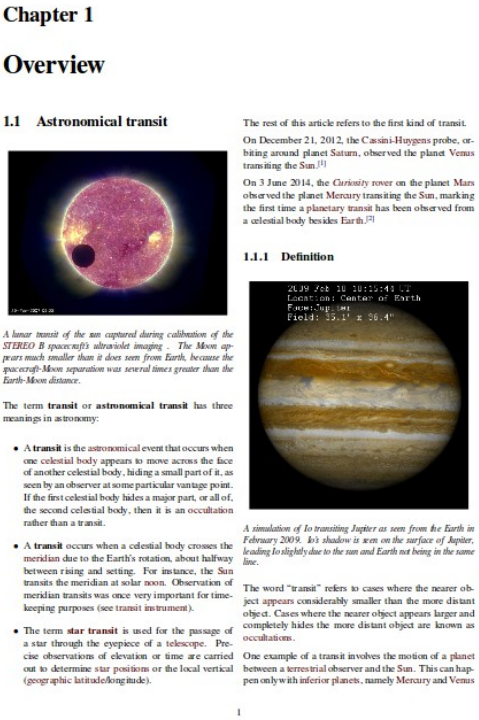
Danny.

**Book review**

# Transits of Planets

**This time I have found a downloadable book we can all have.**

**It's a book on Wikipedia !!**


Chapter 1

Overview

1.1 Astronomical transit

A lunar transit of the sun captured during calibration of the STEREO B spacecraft's ultraviolet imaging . The Moon appears much smaller than it does seen from Earth, because the spacecraft-Moon separation was several times greater than the Earth-Moon distance.

The term **transit** or **astronomical transit** has three meanings in astronomy:

- A **transit** is the astronomical event that occurs when one celestial body appears to move across the face of another celestial body, hiding a small part of it, as seen by an observer at some particular vantage point. If the first celestial body hides a major part, or all of, the second celestial body, then it is an occultation rather than a transit.
- A **transit** occurs when a celestial body crosses the meridian due to the Earth's rotation, about halfway between rising and setting. For instance, the Sun transits the meridian at solar noon. Observation of meridian transits was once very important for time-keeping purposes (see transit instrument).
- The term **star transit** is used for the passage of a star through the eyepiece of a telescope. Precise observations of elevation or time are carried out to determine star positions or the local vertical (geographic latitude/longitude).

The rest of this article refers to the first kind of transit.

On December 21, 2012, the Cassini-Huygens probe, orbiting around planet Saturn, observed the planet Venus transiting the Sun.[1]

On 3 June 2014, the *Curiosity* rover on the planet Mars observed the planet Mercury transiting the Sun, marking the first time a planetary transit has been observed from a celestial body besides Earth.[2]

1.1.1 Definition

A simulation of Io transiting Jupiter as seen from the Earth in February 2009. Io's shadow is seen on the surface of Jupiter, leading Io slightly due to the sun and Earth not being in the same line.

The word "transit" refers to cases where the nearer object appears considerably smaller than the more distant object. Cases where the nearer object appears larger and completely hides the more distant object are known as occultations.

One example of a transit involves the motion of a planet between a terrestrial observer and the Sun. This can happen only with inferior planets, namely Mercury and Venus

1

This book is a collection of Wikipedia articles arranged as a book. This book can also be ordered as a printed book. All the details of how to read – download as a PDF file or order as a printed book are at this address :-

https://en.wikipedia.org/wiki/Book:Transits_of_Planets

The Book itself is at this address :-

Click here to download the book as an A4 PDF.

The book is still being worked on at the time of this news letter and there are some parts not yet completed.

Having said the above the book is a mine of information on all things about transits. There are very many amazing illustrations and all of this is FREE for you to download!

I strongly recommend you at least download the book as a PDF and have a look.

The book is arranged into the following 11 chapters. :-

1). Overview, that gives all the basic info you need to understand transits.

2). Transits from Venus, *(not yet complete)*

3). Transits from Earth, all about the past and future transits viewable from Earth.

4). Transits from Mars, about transits as seen from Mars.

5). Transits from Jupiter, about transits as seen from Jupiter.

6). Transits from Saturn, about transits as seen from Saturn.

7). Transits from Uranus, about transits as seen from Uranus.

8). Transits from Neptune , about transits as seen from Neptune.

9). Eclipses from Pluto, all about solar eclipses on Pluto.

10). Transits of Venus – Historical Observations about Venus' Transits.

11). Test and images sources, contributions and licences.

Danny.

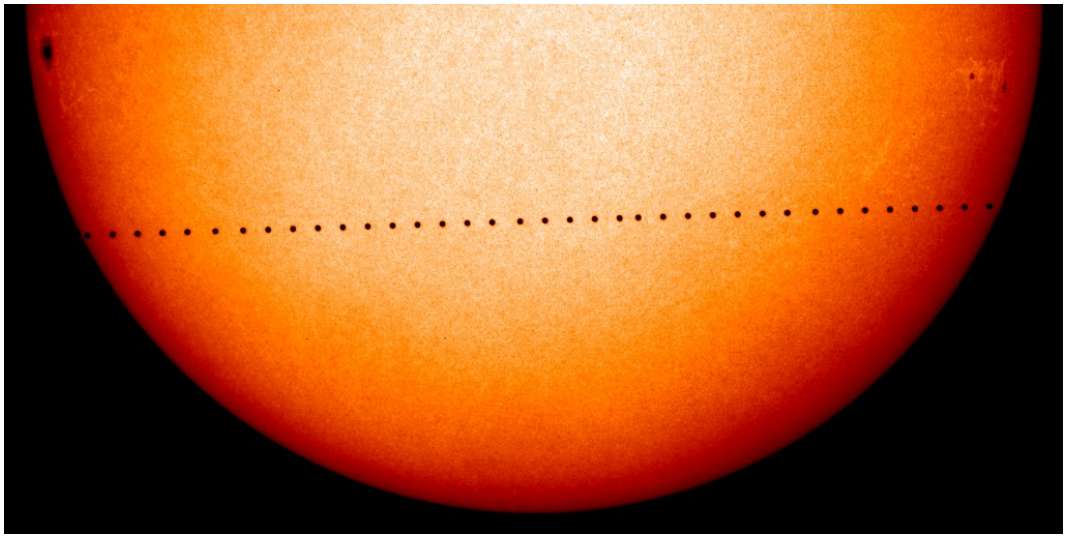
**What's in the sky this month**

**What to see Monday 9th May at 12:20pm**

**Planet** (Mercury)

**Stars** (The Sun)

**Mercury's transit of the Sun**



*Mercury transits the Sun as seen from Earth in 2006. Credit: ESA/NASA/SOHO*

This month we are looking at Mercury's transit of the Sun. We usually try to find events you can see in the evenings or weekends, but this time the BIG EVENT is midday on a Monday.

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**It starts midday MONDAY 9th of May 2016**

**So it's time to book the 9th of May off, if you want to see this rare event.**

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Just after midday on Monday 9th May Mercury's orbit will cross the line between Earth and the Sun. This is known as a transit. The planet Mercury, usually one of the harder planets to see, will pass directly across the face of our Sun. Mercury will show up as a small black spot moving across the sun **over a period of about 7 hours.**

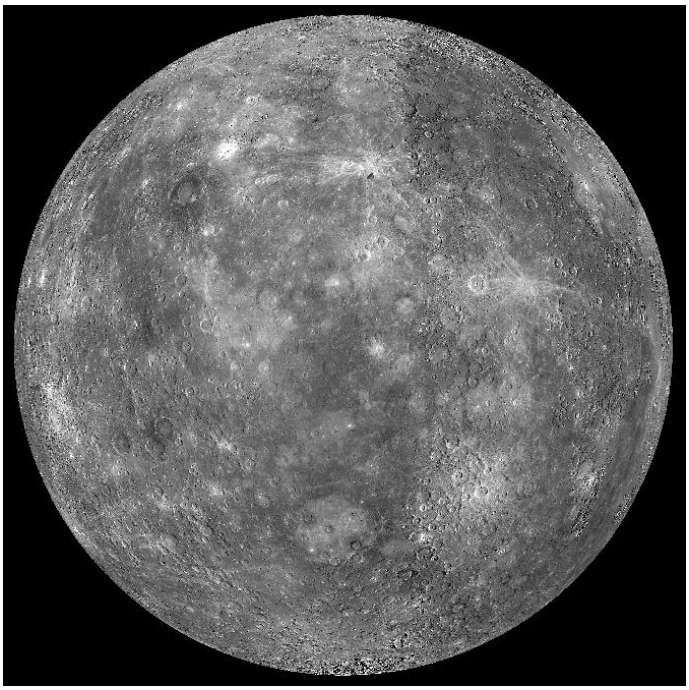
The Sun will be easy to find especially if the sky is clear, just look south and about 55° above the horizon, the Moon will be slightly below and to the left of the Sun. The little star like object a little to the right of the Sun is no star, it's the planet Venus.

This is an event which only occurs roughly 13 times each century. The last transit was on 8th November 2006 and the next is not due until 11th November 2019. This 2016 transit will start at about 12:12pm and continue until 19:40pm in the evening (time for Margate Kent). So if you can't get the day off work you could still catch the end of the transit.

**What's in the sky this month**

**Mercury's transit of the Sun**

As Mercury is such a small planet it will not be visible through eclipse glasses, some form of magnification will be required to see the planet pass across the surface of the Sun.



*Mercury*

*Image Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington*

***Any device you use to magnify the image must be fitted with a known good quality solar filter.***

***Never attempt to look at the Sun either directly or through binoculars or a telescope without the use of a solar filter.***

If the weather is clear Thanet Astronomy Group will be out observing this event.

If anyone would like to join in and have a look with our filtered telescopes please contact us via our email address ThanetAstronomyGroup@gmail.com or by visiting us at the West Bay Cafe, Sea Road, Westgate-on-Sea, on any Saturday 1 to 4pm, and ask for information.

If, as usual, our weather lets us down then you can watch the Transit live on the internet at :- www.cosmos.esa.int/web/bepicolombo/mercury-transit.

George Ward / Danny

## Member's Page

Members' Secretary Annual Report

I am pleased to present my Annual Report to the members, covering the year 2015 – 2016

Firstly, I would also like to give my thanks on behalf of the members to Kate and Alan, because without their support and generosity it is doubtful the Group would be where it is now.

As the Executive Committee have already reported on the various activities the Group has participated on during the last year, I won't repeat them all but would like to say that these activities, such as the Scouts and Guides etc; Saturday public meetings and various other public outreach activities; along with our own Stargazing course and, of course, word of mouth all means that there are new members joining all the time and this is essential for any Group to survive and grow, including the JAC and Gill Juniors.

We do need new Committee members - so if anyone would like to lend a hand and become part of our committee - they would be more than welcome.

During the past year we have had many enquiries from members who are interested in all aspects of Astronomy and off shoot subjects. These include astro photography and radio astronomy. (Radio astronomy studies celestial objects at radio frequencies.) We are very, very lucky that we have members who have a great deal of experience and expertise in these areas and this was recently proved with our own Steve (who is our most experienced and qualified radio ham) providing his expertise and equipment so that the Group and members of the public could listen to Tim Peake. Again thanks to Kate and Alan for allowing us to use their facilities.

It can be difficult to meet all members' and, indeed members of the public's demands, but the Group certainly tries and we intend to hold more specialist talks at the members' monthly meetings in the coming year. Our specialists are also generally available at some stage during our hugely popular public outreach meetings, both on Saturday afternoons and the various other days out that we attend and have a 'pitch', such as the again hugely popular Boat Club open day in September (held at the boating pool in Ramsgate). So, if you have any questions, please do not hesitate to ask someone who can then point you in the right direction. If you have a special interest in any related subject please let us know, especially if you would like to 'have a spot' to present your interest at one of our monthly meetings, it is not as scary as it seems, is it Tracy!!!!

I would like to thank all current members for their support during the last year and also their incredible generosity. Our library has grown extensively and we have had many other donations, including another large donation of first class stamps which were used to send out sae's and the letter regarding membership renewal at this AGM. Thank you also to members who print off newsletters and various posters so members can read them in print and also the Committee members for their time given up for general and planning meetings. If any members would like to borrow any books please just ask a Committee member.

We are looking forward to the Group growing during the next year and again, if anyone would like to join the Committee, please see a member of the Executive Committee. You would be more than welcome!

I would also like to add that we often plan to have stargazing evenings for our members but, unfortunately, the weather plays a huge part in the actual carrying out of the plans. Therefore, it is essential that members do keep an eye out for emails as this is really the only way we can contact everyone. Emails will arrive at short notice and I am aware that not everyone checks theirs all the time as some of us have to – owing to work etc. We do try and give everyone as much notice as possible, but the weather may be clear up to dusk and then, suddenly, the clouds roll in, and whoof, the plans are scuppered. So please bear with us, we do try so very hard to get these meetings off the ground – but English weather – need I say more!!!!

We are planning another Stargazing course which you have already heard about, details will follow shortly.

Thank you, and here is to another very successful year.

Sheila.

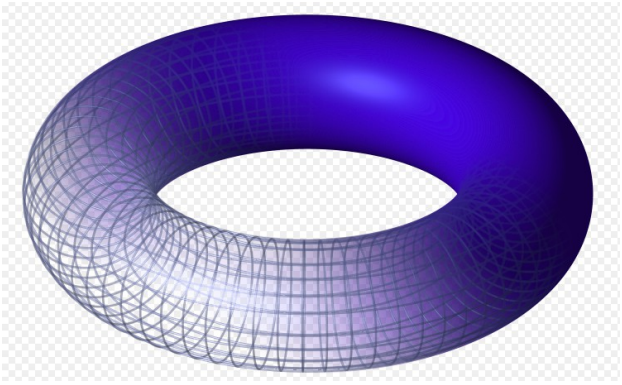
## Did You Know ?

What are Toroidal Planets?

**What makes toroidal planets special?**

A torus is often referred to as a doughnut shape and as such a toroidal planet is just a doughnut shaped planet.

*Doughnut*



*Torus*

What makes them special though isn't really their novelty, but their rarity. In fact we have never, as far as we are aware, observed a toroidal planet.

Under both Newtonian and Relativistic models of gravity they theoretically **can exist.** However, there is an enormously small criteria for their formation. For example if the planet's core circle radius is over three times the size of the surface radius, then the planet cannot be stable. In other words you can't have a thin loop.

They also have to have a high angular momentum and mass. Another problem facing toroidal planets is that, especially during formation, if not just generally, they are very unstable and collisions could easily disturb the integrity of the structure - causing it to collapse.

This seems very unlikely not to occur, under the current best theory of planetary formation nebular hypothesis. This theory suggests that nebular gas and dust in the accretion disk coagulate to form small bodies called planetesimals and these then collide over time to form planets.

So it would be hard for a toroidal planet to remain sheltered enough to survive. Another interesting problem is the fact that no-one has ever publicly made estimates or predictions at the rarity of toroidal planets. To compound the problem no modern method of planetary analysis is really sufficient to distinguish one from a spheroidal planet, so whilst we know we have absolutely no way to gauge their existence or rarity.

## Did You Know ?

Modelling Toroidal planets.

**So how do we know that they are possible gravitationally?**

Well we know this because we have been modelling planets for decades in order to better understand our own, that's how we can model the Earth as a spheroid for GPS systems to map onto.

We model planets by comparing them to droplets, since the strength of the rock composing a planet could never compare to the weight of the planet itself. So you can imagine that if a water droplet is spinning it will bulge outwards perpendicular to the axis of its spin. The same thing occurs in planets.

In the case of earth it means that the equator actually bulges out so that the surface at the equator is 21km further from the centre of the earth than the surface at the poles is. In toroidal planets it's the outward force of it's spin that stops it just collapsing into the hole in the middle.

**Would the gravity on the surface be different?**

In answer to the second question, yes gravity would be different. In fact unlike on earth which has a variation of only around $0.06ms^{-2}$ a toroidal planet of the same mass would have a variation of around $4.33ms^{-2}$.

The regions with the weakest acceleration due to gravity would be the equators, whereas the regions with the strongest gravity would be near the poles, but would point inwards due to the centre of mass being in that direction. As you can probably imagine the doughnut shape can also support much more varied orbits for moons as well with one potential orbit just being a moon bobbing up and down in the hole in the planet.

**Weather on Toroidal Planets**

Weather on a toroidal planet could vary a lot dependent on the tilt that it has to its host star. If it has no axial tilt then the inner part of the planet would never receive light and so would be much colder than the rest of the planet, whilst the temperature difference would drive trade winds, the cool regions would cause the condensation of all water, and maybe even $CO^2$ and result in the world being very arid. With an earth-like tilt of 23° the weather would theoretically be relatively similar excepting that some regions would experience some timespans of continuous night or day, and that during summer and winter the light could shine past into part of the inner ring. A particularly amusing side-effect of this is that the sunrises would have much darker-reds and gradients of colour since light would already have passed through the other side of the planet. This is rather unfortunately overshadowed by the fact that these sunrises would only last between 10-30 seconds due to the spin speed necessary for these planets to be stable. In fact a day on a typical toroidal planet would be between 2 and 4 hours. 45° tilts would result in a warmer outer equator, cooler poles and a frigid inner equator, with temperature differences again quite comparable to Earth, which would drive some trade winds.

Thomas.

## Junior Astronomers' Club (JAC & Gill)

### JAC and Gills

WOW!!! What an exciting month for our Junior Astronomers!

After learning about Tim Peake and his Principia Educational Programme over the past four months, JAC and Gill actually got to hear and see him speaking live from right over our heads at West Bay Cafe on Saturday 23rd April 2016!!!

Thanks to the combined efforts of our Chairman, Danny, and our Thanet Astronomy Group member, Steve, who is also a member of Hilderstone Amateur Radio and Electronics Club, we were able to listen in to the live link up between Wellesley House School in Broadstairs and Tim Peake on the ISS.

The Amateur Radio International Space Station (ARISS) programme has been actively supporting schools from all over Britain to encourage children to have first hand experience of Space related Scientific and Technological experiments.

For months 23 schools from all over Kent have been preparing for this historic link up in Thanet under the supervision of Science Co-ordinator, Kerry Sabin-Dawson, from Wellesley House and the UK Space Agency. They had been chosen as one of 10 schools across the country lucky enough to host this unique link up experience.

Five children from different schools in Kent had chosen their questions very carefully to put to Tim and two pupils from the school facilitated the Q and A time as they had achieved their Amateur Radio licences in order to perform their task expertly on the day. The questions were very thought provoking as you can see...Today is International Marconi Day. How do you think Marconi would feel about this radio communication?

1). What happens to a compass in Space?
2). From Space, what evidence can you see that humans are having a negative impact upon Planet Earth?
3). What is the biggest lesson you have learnt whilst being in Space?
4). It is 400 years today since Shakespeare died. Which Shakespearean quote do you think best describes your mission?

Tim admitted himself that this was a tricky question as he was not too good on Shakespearean quotes but he hoped his mission would inspire the younger generation to think about our future and to think about Science and how we could change things for the better in the future!

Reach for the Stars!

Gill Palmer.

## Junior Members

The JAC and Gill outreach has been very busy this month as we were invited to attend two exciting events within the local community.

The first event was an Easter “eggs” travaganza (excuse the pun) based in Ramsgate over two days during the school holidays. A group project called Discovery Planet had teamed up with Kent University to set up activities to encourage children to learn navigational skills.

There was an inflatable Astrodome set up within Christ Church in Vale Square which children and adults were able to enter and be treated to a trip around the stars. Thanet Astronomy Group were set up under a gazebo outside giving the children an opportunity to make their own planets out of balloons and rice and learn more about the constellations and planets of our Solar System!

Many thanks go to the JAC and Gill children and parents who attended and helped me to set up the equipment.

The second event was based at St. George's School on Thursday 28th April to help the 14th Broadstairs Cubs to achieve their Astronomy Badge. There were 36 extremely lively and enthusiastic children between the ages of 8 and 10 ½ (and their leaders) all keen to lap up the information being presented to them.

As well as learning about the 5 Circumpolar Constellations which they can see all year round, the children were fascinated to hear about Tim Peake's mission on the International Space Station this year and last year's Rossetta mission to land the space probe, Philae onto Comet 67/P. That covered two of their requirements to achieve their badge, the next one was to understand what defines a planet. So to help them, they made their own!

This then led us to guessing the names of the 8 planets in our Solar System and learning to say them in the correct order using our clever rhyme...

My Very Easy Method Just Speeds Up Names!

Unfortunately, our typical British weather struck again, so we were unable to use the telescope to observe outside. However, we are keeping our fingers crossed for the return visit at the beginning of May when we are hoping to be able to view the Sun safely at the beginning of the cubs' meeting using George's filter on his telescope...weather permitting!

If not, good old faithful Stellarium will come to our rescue to bring the stars and planets to life in the comfort of their meeting room!

Reach for the Stars!

Gill Palmer.

## Adult Word Search

| | | |
|---|---|---|
| DOUGHNUT | ECLIPSE | GRAVITY |
| MERCURY | MOON | PLANET |
| PRINCIPIA | SOLAR | SUNSPOT |
| TOROIDAL | TRANSIT | VENUS |

K H J W W Z P Y V T N O M D E
N F A X I P B N F H Q K B C J
X W G N N E K E O F S J M W B
Y W Q A A W N S A K I U V B Y
A M X T I Q B P N T R T N Y T
P X W Q I P L I O V L R B E I
V B W G T U I L O K A T U V V
G N S W C I N C M Q D E G F A
T O P S N U S E N O I N T S R
O A Y R B O R N U I O A O W G
B W S S L C M G A P R L Q Q O
W Z S A U Z H W C R O P W N B
T Q R R D N K U Q Z T I S G N
V X Y T U W S X M T R H H A J
K B Q T V B V E W M B F G O E

Danny.

**Junior Word Search**

| | | |
|---|---|---|
| DOUGHNUT | GRAVITY | MERCURY |
| MOON | PLANET | SOLAR |
| SUNSPOT | TRANSIT | VENUS |

N N S U N S P O T
O T I S N A R T M
O B K T B P U E Y
M K T S L N R X Q
K S V A H C S W S
Q V N G U O K U Q
G E U R L A N D V
T O Y A O E L T R
D G R A V I T Y H

We hope that you find the Adult and Junior word searches interesting and that they inspire you to look up any of the words you don't know *Absolutely Everything About* :-)

If you like these please let us know and we will continue to produce them.

We are thinking of adding a crossword as well in future newsletters. If you like this idea please let us know.

Comments Please : you all know the email address !

Danny.

## Members' For Sale and Wanted

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