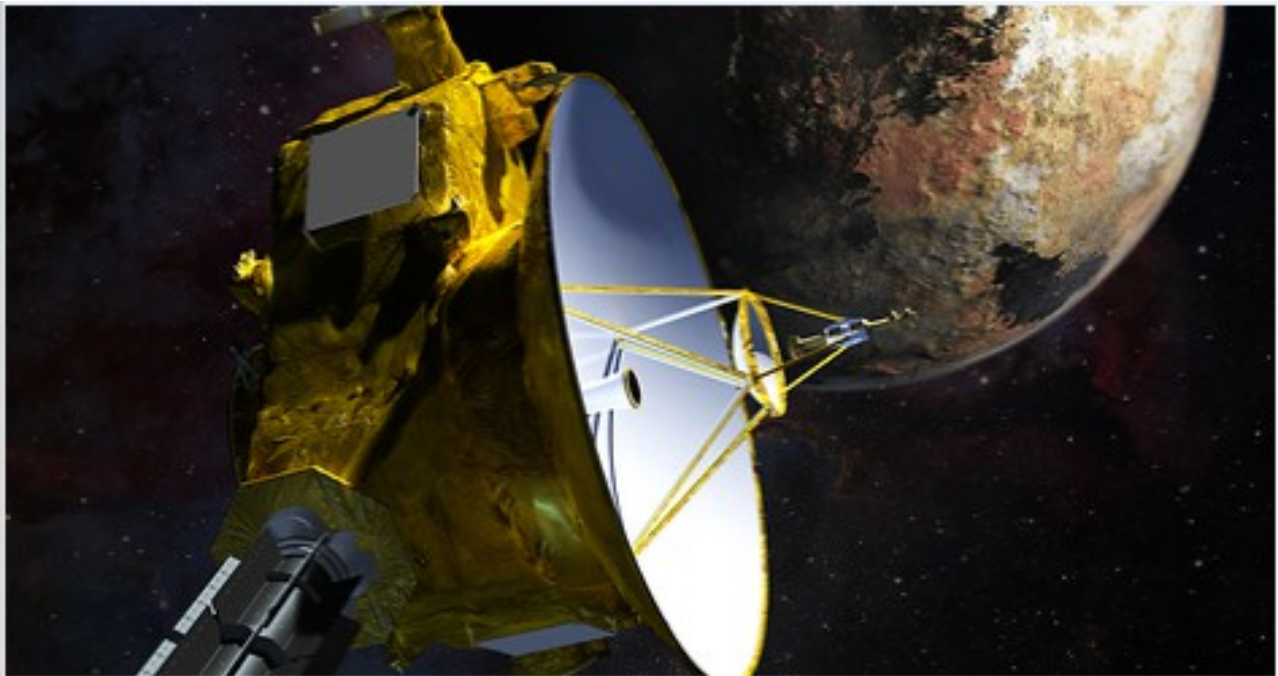


# Thanet Astronomy Group

Astronomy for Everyone in Plain English

## NEWSLETTER

February 2015



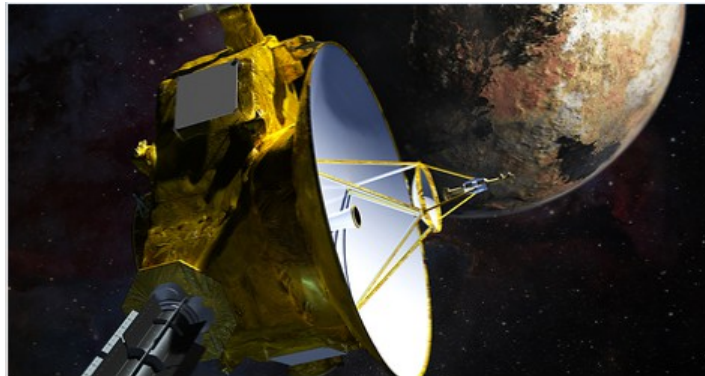
NASA's New Horizons Spacecraft Begins First Stages of Pluto Encounter  
Picture Credit NASA

This space is reserved for promoting member's businesses.  
You can place an advert here for a donation to the group.

## Contents

Cover	1
Contents	2
About the cover picture	3
Thanet Astronomy Group Contact Details	4
Member's Meeting Dates and Times	5
What we did last month	6
Junior Members Page	7
Open University Mini Courses	8
Open University Mini Courses	9
Book Review	10
What's in the sky this month	11
Member's Page	12
<u>*NEW*</u> Did You Know page	13
Junior Astronomers Club (JAC & Gill)	14
Executive Committee Messages	15
<u>*NEW*</u> Adult Word Search	16
<u>*NEW*</u> Junior Word Search	17
Member's For Sale and Wanted	18

## About the Cover Picture



### NASA's New Horizons Spacecraft Begins First Stages of Pluto Encounter Picture Credit NASA

The NASA New Horizons mission launched from Earth on 19<sup>th</sup> January 2006 is on its way to study the Pluto System and the Kuiper Belt. On its way New Horizons made a close pass of Jupiter to use the planets gravity to boost its speed for the long trip out to the Kuiper Belt and Pluto.

New Horizons will study Pluto for 5 months in Summer 2015. The closest approach is scheduled to be on July 14, 2015. After the 5 months studying Pluto, New Horizons will move deeper into the Kuiper Belt to look at some of the minor planets in this remote area of our Solar System.

Jupiter is 778,500,000km from the Sun. Saturn is 1,433,000,000km from the Sun. Uranus is 2,877,000,000km from the Sun. Neptune is 4,503,000,000km from the Sun. Each of these planets are nearly twice the distance of the previous one. Pluto will be about 7,500,000,000km from the Sun when the space craft reaches it.

After a journey of 4,828,000,000km New Horizons awoke from its long sleep in December 2014 and started its 1<sup>st</sup> approach phase of Pluto. It will pass Pluto within the orbit of its 5 known moons. Charon discovered 1978: Nix and Hydra discovered 2005: Kerberos discovered 2011: Styx discovered 2012

The New Horizons Spacecraft is so far away that the radio signals travelling at the speed of light, now take nearly four and a half hours to reach Earth. This also means it is getting very near to Pluto. By mid May the on board cameras will be sending pictures of Pluto and its moons back to Earth, that are better than the best from the Hubble Space Telescope.

Danny Day.

## 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
Library	Janet McBride	01227 364 092
Web Site	Danny Day	01843 228 904



## Member's Meeting Dates and Times

### Thanet Astronomy Group Member's Meetings Dates and Times

4<sup>th</sup> February 2015 at 7.30pm  
4<sup>th</sup> March 2015 at 7.30pm  
1<sup>st</sup> April 2015 at 7.30pm  
6<sup>th</sup> May 2015 at 7.30pm  
3<sup>rd</sup> June 2015 at 8pm  
1<sup>st</sup> July 2015 at 8pm  
5<sup>th</sup> August 2015 at 8pm  
2<sup>nd</sup> September 2015 at 8pm  
7<sup>th</sup> October 2015 at 7.30pm  
4<sup>th</sup> November 2015 at 7.30pm  
2<sup>nd</sup> December 2015 at 7:30pm  
6<sup>th</sup> January 2016 at 7:30pm

All Member's meetings will be held at the :-

West Bay Cafe,  
Sea Road,  
Westgate-on-Sea,  
Kent.  
CT8 8QZ

## What we did last month

January 2015

Well its been another of those months. After a short break for New Years Day, we were back into the flow.

**Saturday the 3<sup>rd</sup>** Public Outreach Meeting.

**Wednesday 7<sup>th</sup>** Members Meeting, for all those that missed it, the agenda is as usual on the diary page of the web site. We started with the usual notices, then there was a presentation about Meteor Showers followed by Questions and Answers.



**Saturday 10<sup>th</sup>** Public Outreach Meeting.

**Tuesday 13<sup>th</sup>** We started a new Tuesday afternoon project, to support a local school (Laleham) teach the children astronomy. The response from the children was overwhelming, we had so many questions that we hardly got started.

**Saturday 17<sup>th</sup>** Public Outreach Meeting.

**Monday 19<sup>th</sup>** We started a two week project to teach the Holy Trinity Beavers pack their Astronomy Badge.

Despite the total failure of the sound track to the presentation, this also went very well with loads of involvement from the Beavers.

**Tuesday 20<sup>th</sup>** This was when things got a bit more complicated (two bookings at the same time on the same day) !! We started at the Holy Trinity Friendship Group at 1:30pm With Danny, George W, Gill, George C and Dave.

We run the "History of Astronomy" presentation 2-3pm and then Danny and Gill went on their way to Laleham. The two Georges and Dave then split the friendship group into 3 smaller groups and each used Stellairum on their laptops to teach a little about the sky and what can be seen. Meanwhile Danny and Gill arrived at Laleham school to teach the astronomy group their 2<sup>nd</sup> lesson. Needless to say all went well.

**Saturday 24<sup>th</sup>** Public Outreach Meeting. Today started out better than expected, there was bright sun shine. Out came the solar filters and we were soon looking at the Sun Spots. But not for long the Tide was coming, we had to pack up and move into the cafe or all have a salty power shower.

**Monday 26<sup>th</sup>** This was to be the 2<sup>nd</sup> visit to the Beavers but has had to be moved to February due to an unexpected medical appointment.

**Tuesday 27<sup>th</sup>** Back to Laleham School where the children are really getting into the swing of astronomy, and amongst the questions we got to the end of the 1<sup>st</sup> part of the course (Basic Stargazing)

**Saturday 31<sup>th</sup>** Public Outreach Meeting.

Then our Main Event of the month the **Kids in Space Show** (Details on the JAC & Gill page and the Junior Members page)

All in just another month at Thanet Astronomy Group.

*Our thanks go out to all that helped to make all this possible !*

Danny Day.

## Junior Members Page

In the last Newsletter, George Harvey wrote that he would like to be a real astronaut and stand on the Moon...well he came one step closer to achieving that at the “Kids in Space” performance in the café on Saturday 31<sup>st</sup> January 2015!



Astronaut Matt attempted

to recreate Neil Armstrong’s first step on the Moon and demonstrated how slowly he would move with no gravity to keep him down on the ground. The children watched as he space walked across the stage and nearly floated away into Space.



Then the audience fell about laughing as Astronaut Matt hopped about on Mercury to demonstrate how hot it would be to live there. But they were soon in even more hysterics as he fell to the floor when the acid rain on Venus attempted to disintegrate his space helmet and he was left struggling to breathe without oxygen!



Luckily, they knew he was only acting but the consequences on the actual planets would, of course, be much more devastating in reality.

As I looked around the café to watch the children’s faces, these were some of the comments I could hear them saying...

“Wow! I didn’t know Jupiter was that big!”

“The Astronaut is floating around the rocket...he’s flying!”

“He’s really funny when he tries to jump!”

“I wish I could go into Space for real!”

**But the best comment of the day came from a parent...**

**“I didn’t know she knew that answer!!!”**

Gill P.

## Open University Mini Courses

**The following mini course is being run by Future Learn via the Open University.**

**They are free to enter and have a certificate of participation at the end.**

**The certificate is optional at a cost.**

At the last member's meeting Sheila kindly showed Gill and I [Janet McBride] how to access the Open University Course on basic astronomy. The course has new information each week for several weeks. I have completed weeks 1 and 2 so far and learned some new things.

Did you know that there are things called proto-stars? Do you know what they are?

I also learnt that "nebula" is Greek for "misty" and that the Orion Nebula - besides being called M42 - has 3 bright stars within it called the Orion Nebula Trapezium. These can be seen by telescope.

Here are the details of the course :-

### **In The Night Sky: Orion**



This course started 5<sup>th</sup> Jan and may still be available :- Start 5 Jan - For 4 weeks - 3 hours per week

At this web address <https://www.futurelearn.com/courses/orion>

**This course is free to enter**

How many others of Thanet Astronomy Group signed up for this course?

What are you learning?

Please tell us some of the interesting things you have found out and share them with us.

Janet McBride.

## Open University Mini Courses

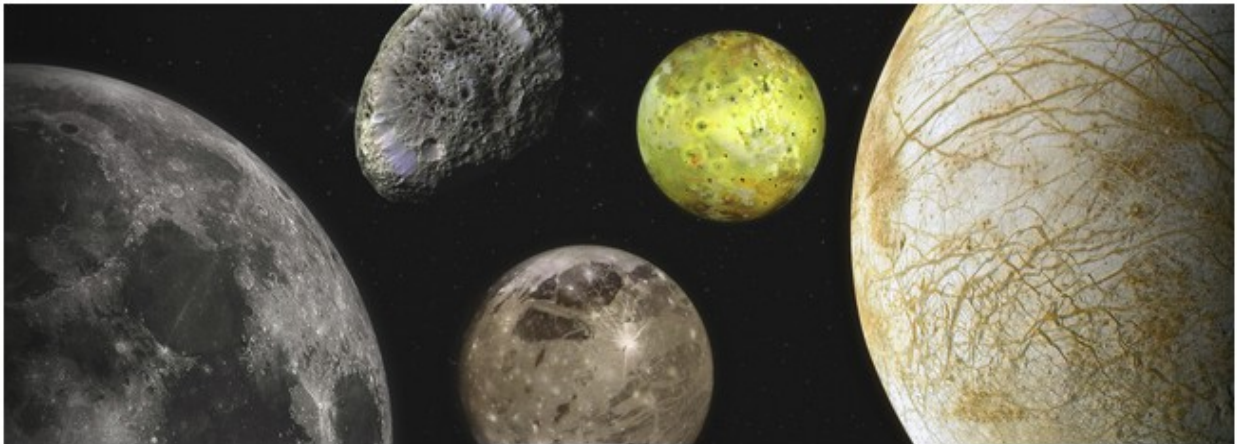
Here is another course that is opening on the 2<sup>nd</sup> of February.

**The following mini courses is being run by Future Learn via the Open University.**

**They are free to enter and have a certificate of participation at the end.**

**The certificate is optional at a cost.**

## **Moons**



**Explore the many moons of our Solar System.**

**Find out what makes them special.**

**Should we send humans to our Moon again?**

This mini course is starting soon :- 2 Feb - For 8 weeks - 3 hours per week

At this web address <https://www.futurelearn.com/courses/moons>

**This course is free to enter**

**Thanet Astronomy group would encourage all our members to enrol on these FREE courses.**

**There are several member already enrolled and working on the courses so there are several people that would love to help you get going.**

Janet McBride.



## Book review

### THE COSMIC TOURIST

Co authors, Brian May, Patrick Moore and Chris Lintott, cover price £25, but shop around.

I bought my copy for less than £10.

This book looks at astronomy from a different angle. All three authors take off in an imaginary space craft named “Ptomely”, their mission is to visit 100 of their favourite places in the universe.

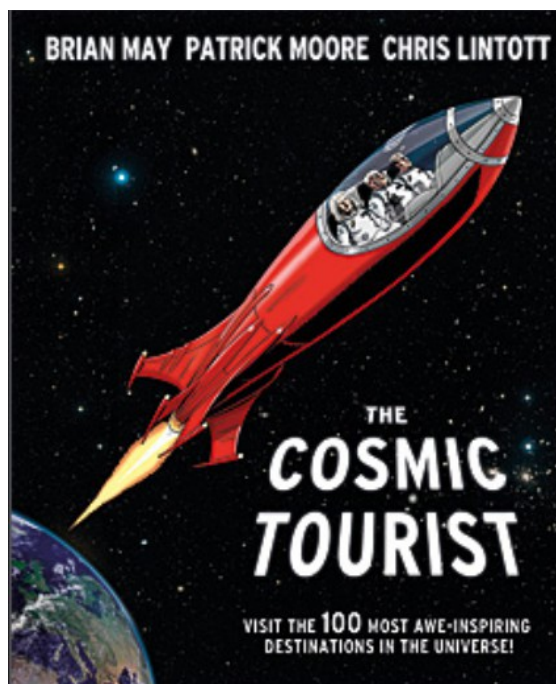
The starting point, of course, is Earth and then on to the Moon, with plenty of both pictures, and as you would expect from the three author / cosmonauts, informative text.

The first 100 pages are taken up with wandering around the Solar system, visiting planets, asteroids, moons and comets. Then they are off to the Kuiper Belt, 12 light hours away. Finally the last stop, the Oort Cloud, one light year distant.

Our intrepid explorers take a close look at many nebulas; globular and open clusters and galaxies, on their way to the edge of the observable universe. Some 13,000,000,000 light years distant.

All in all 109 pages of informative and amusing reading.

George Ward.



## What's in the sky this month

### What to see February 7<sup>th</sup>

**Constellation** (Gemini)

**Stars** (Castor, Pollox)

**Planet** (Jupiter)

In November we wrote about Decembers **Geminid** meteor shower. Although the meteors appeared to originate from **Gemini**, the fact is they are within our solar system. The Earth's orbit passes through the area they are in.

Now I would like to look in more detail at the constellation of **Gemini** that is many tens of light years away from the Earth.

### At 8:00pm

#### Gemini Caster

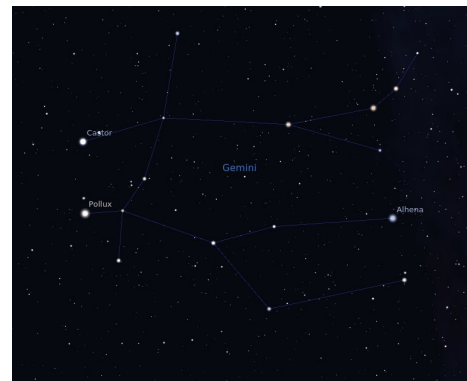
Look South-East at (Az 113° Alt 57°) and you will see the star **Castor**, also known as “Alpha Gemini” because it is the main star in the constellation **Gemini**. **Castor** is 51 light years away and appears to be one star but is part of a 6 star system.

#### Gemini Pollux

Look South-East at (Az 115° Alt 53°) and you will see the star **Pollux**, its the brightest star in Gemini and is also known as “Beta Gemini”. It lies 34 light years from us .



Looking South-East The Constellation Gemini and Jupiter



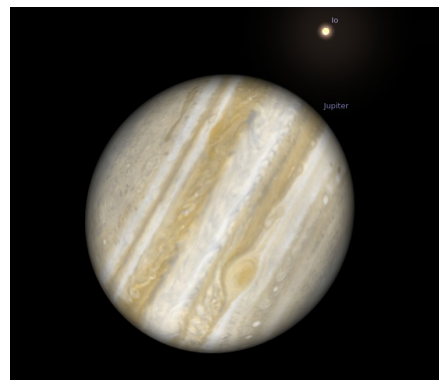
Constellation Gemini the Twins

### Jupiter

Look South-East east at (Az 102° Alt 30°) and you will see **Jupiter**, its easily spotted it's the brightest object in the eastern sky. Using just binoculars or a small telescope you should be able to see 3 of it larger moons they will look like tiny bright stars. At 8:00pm the 4<sup>th</sup> large moon Io is about to pass behind Jupiter and will have reappeared by 11:30pm. With a bigger telescope you could see the Great Red Spot from 7:00pm till 10:00pm.



Jupiter and its moons



Jupiter close up and the Great Red Spot

#### **Key:**

Az = Azimuth

This is the compass bearing from north in degrees.  
(use your compass)

George Ward.

Alt = Altitude

This is the angle above the horizon in degrees.  
(use your protractor)



## Member's Page

Questions asked by members at the members meeting Wednesday 07 January 2015:-

### **Question: Which direction should I look to locate Jupiter?**

Answer: The direction depends on the rotational angle of Earth; i.e. the time of day or night; the orbital position of the Earth and Jupiter around the Sun. If you look at Stellarium it will calculate it for you. On the evening this news letter is issued at 8pm, Jupiter will be just above the moon. This will make it **very hard** to see. However by the 7<sup>th</sup> Feb the moon will be below the horizon and the sky will be much darker. See below for some viewing options.

Date	Time	Planet	Az	Alt
7 Feb 2015	8:00pm	Jupiter	102°	30°
9 Feb 2015	8:00pm	Jupiter	104°	32°
11 Feb 2015	8:00pm	Jupiter	106°	33°
13 Feb 2015	8:00pm	Jupiter	108°	34°

### **Question: Is it true that Pluto has not made a full orbit since records began?**

Answer: The orbital period of Pluto is 248 Earth years – so it depends on when 'records' began.

### **Question: How do we determine the age of a piece of rock such as a meteorite?**

Answer: Certain stable elements like Carbon can have radioactive isotopes. The half-life of these isotopes is known to be a set amount of time. By measuring the relative amount of the isotope remaining in the rock, scientists can estimate its age. See this web address for the full story :-

[http://en.wikipedia.org/wiki/Radiocarbon\\_dating](http://en.wikipedia.org/wiki/Radiocarbon_dating) If you are reading online you can click this link.

### **Question: What is on the other side of a black hole?**

Answer: If you mean “Where does a black hole lead to?” Then the answer is most likely oblivion, you would be 'Spaghetti-fied' (oops Tech term) stretched into a stream of atoms, on the way in. Then likely 'Crushed' so that your 'Mass' was converted into Energy ( $E=MC^2$ ) on entry.

See <https://www.youtube.com/watch?x-yt-ts=1421914688&x-yt-cl=84503534&v=CGS3mZjL8zA#t=97>

### **Question: Whose idea was it to decide to view the Earth as we do with Australia down under and not on top?**

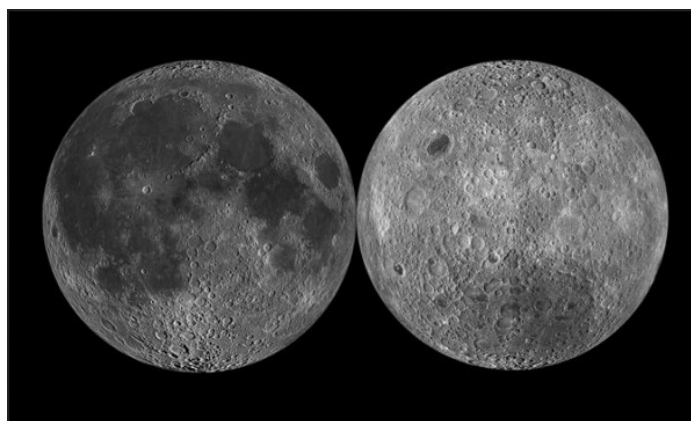
Answer: The original Cartographers (map makers) were Europeans and they set the convention that North is always shown as straight up on a map. Basically they put themselves on top!

### **Question: How different is the dark side of the moon to the side we can see?**

Answer: There are less 'Mira' (Seas: the large dark basins) on the far side of the Moon because it has a much thicker crust than the near side.

When huge meteors struck the moon during the heavy bombardment between ~4.1 and 3.8 Billion years ago. The thin crust on the near side, allowed the impacts to break through the 'mantle' (surface crust) of the moon.

This allowed basaltic lather to erupt and fill in ancient large impact basins. These large lava flows have covered craters that were formed early in the Moon's history, but later smaller impact craters can still be seen in the Mira. This is not the case for the thicker mantle on the far side.



Near Side

Far Side

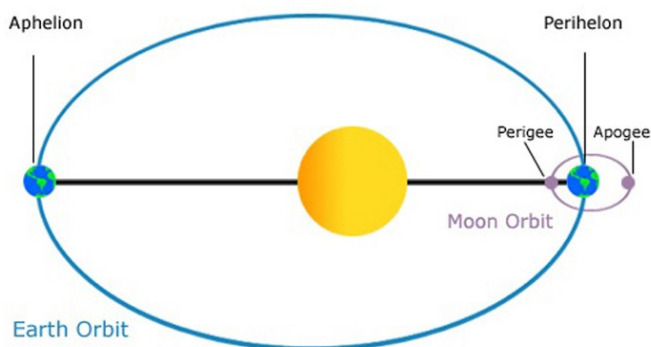
It is likely that each side of the Moon has received equal numbers of impacts, but the resurfacing by lava results in fewer craters visible on the near side than the far side. Even though the both sides have more than likely received the same number of impacts.

Further, the oldest areas in both near and far sides are saturated, meaning that they have reached equilibrium (each new crater, on average, destroys one old one). In this case, the density of craters is no longer an accurate measure of the number of hits the surface has received. See <https://www.youtube.com/watch?v=UIKmsQqp8wY>

**Thanks to all the members who asked the questions. Sheila Bull: Members Secretary February 2015**

## Did You Know

### Aphelion and Perihelion



It's a curious fact, that when planet Earth is at its closest point to the Sun, known as **Perihelion**. We in the northern hemisphere experience our coldest weather. This occurs sometime about the beginning of January, when the Earth is at a distance of around 91 ½ million miles from the Sun.

Of course we experience the opposite (our hottest weather), six months later during July, when we (the Earth) are at our furthest from the Sun, known as **Aphelion**. At this point Earth is at a distance of 94 ½ million miles from the Sun.

For those living in the southern hemisphere, the opposite applies.

So what causes this curious effect ?

The reason is, the Earth orbits the Sun tilted at an angle of 23 ½ degrees. If you have a globe of the world you will notice that it is tilted. Therefore when our planet is at its nearest to the Sun, we in the northern hemisphere are pointed away from the Sun. As a result our daylight time is shorter, and the Sun is much lower in the sky, therefore we receive less warmth.

Likewise the southern hemisphere is pointed toward the Sun so the opposite applies. This tilt is very important, it gives us our seasons. If the Earth was not tilted, both northern and southern regions would experience constant freezing temperatures all year round.

**Note.** The dates for both Aphelion and Perihelion vary from year to year. Here is a table of dates and times from last year 2014 to 2020.

Year	Date/Time of Perihelion	Date/Time of Aphelion	Perihelion Interval
2014	Jan 04 11:59	Jul 04 00:13	367.31 days
2015	Jan 04 06:36	Jul 06 19:40	364.78 days
2016	Jan 02 22:49	Jul 04 16:24	363.68 days
2017	Jan 04 14:18	Jul 03 20:11	367.65 days
2018	Jan 03 05:35	Jul 06 16:47	363.64 days
2019	Jan 03 05:20	Jul 04 22:11	364.99 days
2020	Jan 05 07:48	Jul 04 11:35	367.10 days

George Ward.

## Junior Astronomers Club (JAC & Gill)

### Kids in Space Show

The beginning of 2015 gave our Junior Astronomers a unique chance to experience what it might be like to be real astronauts for an afternoon. We were treated to an inspiring performance of “Kids in Space” by Jo and Matt from Spacefund.

The Theatre Company had received a UK Space Agency grant to pay for their performance and generously offered their services to Thanet Astronomy Group and our JAC and Gill Club. The event was on Saturday 31<sup>st</sup> January 2015 and attended by over 40 enthusiastic children and their equally enthusiastic parents.



First of all, the children (and parents) were enrolled as crew members in a space rocket bound for a journey around the Solar System. Along with Captain Jo and Astronaut Matt, they embarked on a spectacular 50 minute voyage of the planets taking in all the sights along the way. Including a dramatic count down to launch us into Space and a bombardment of asteroids within the Asteroid Belt.

Astronaut Matt attempted to follow Neil Armstrong's first weightless steps on the Moon combined with fascinating footage of Astronauts floating inside the Space Station.

We then visited each built-to-scale model planet to compare the sizes of our nearest neighbours Mercury, Venus and Mars before coming face to face with scale models of Jupiter, Saturn, Uranus and Neptune, to show how small the inner four planets are compared to the four mighty gas giants! Some of the children in the audience were smaller than the model gas giants themselves. We all have difficulty comprehending the actual size of Jupiter, Saturn, Uranus and Neptune,



The culmination of our afternoon was when the children themselves had the opportunity to “hold” the planets in their hands on our journey back to our own Sun. However, Astronaut Matt pointed out that it was impossible to make a scale model of the Sun as it would be as big as a hot air balloon, there would be no room in the café for all of us to see the show in the first place!

(A point that was cleverly reinforced in his re-wording of “Twinkle Twinkle Little Star”...as we all sang ”Twinkle Twinkle Giant Star” to end!!!)

Gill Palmer.

## **Executive Committee Messages**

### **Your Newsletter**

**\*\*\* Three NEW Pages Added. \*\*\***

This month we have added three new pages to the newsletter :-

- 1). Did You Know
- 2). Adult Word Search
- 3). Junior Word Search

Let us know if you like these pages, and any suggestions for new pages you would like to see added, or any pages you would like us to remove.

### **Annual General Meeting Notice :-**

The AGM will be on March 4<sup>th</sup> in the cafe, instead of the members meeting. All members Adult and Junior are welcome. We will be proposing some changes to the Constitution and electing officers of the committee and executive committee, so it is important that you are there to guide our group forward and of course, vote.

The agenda will be posted in the members section of the web site in due course.

You will be reminded about the AGM by email in February.

### **Spreading the word about our group**

If you know anyone that is interested in astronomy please let them know about our group.

### **The Beginners Guide to Stargazing**

We are planning to re-run this early this year. There are many members that have not yet had a chance to do the course even though we ran it twice in 2014. Also several members have requested to take it again !

### **Thanks**

Our thanks also goes out to all the Members, their families and the friends of the group.

(-: Wishing you all Clear Skies :-) and a Happy New Year.

Danny, George, Gill.

## Adult Word Search

ASTRONAUT

CELESTIAL BODY

CORE

CRATERS

EQUINOX

FOOTPRINT

HORIZON

IMPACT CRATERS

LUNAR

LUNAR ECLIPSE

LUNAR ROCKS

LUNAR WATER ICE

NEW

OCEAN TIDES

PHASES

SHUTTLE

SOLAR ECLIPSE

SOLAR SYSTEM

SOLSTICE

SURFACE

TELESCOPE



## Junior Word Search

EARTH  
JUPITER  
MARS  
MERCURY

MOON  
NEPTUNE  
PLUTO  
SATURN

SUN  
VENUS

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

**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.**

**If you really like the idea we are thinking of adding a crossword as well**

**Comments Please : you all know the email address !**

## **Member's For Sale and Wanted**

This page is for members to place items for Sale and Wanted adverts.

Please let us know if you have anything you would like on this page.

Email us at : - [thanetastronomygroup@gmail.com](mailto:thanetastronomygroup@gmail.com)

Or call Danny 01843 228904 or George 01843 292640