

# Thanet Astronomy Group

Astronomy for Everyone in Plain English

## NEWSLETTER

August 2015



*New Horizons at Pluto Credit NASA*

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

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## About the Cover Picture

### NEW HORIZONS



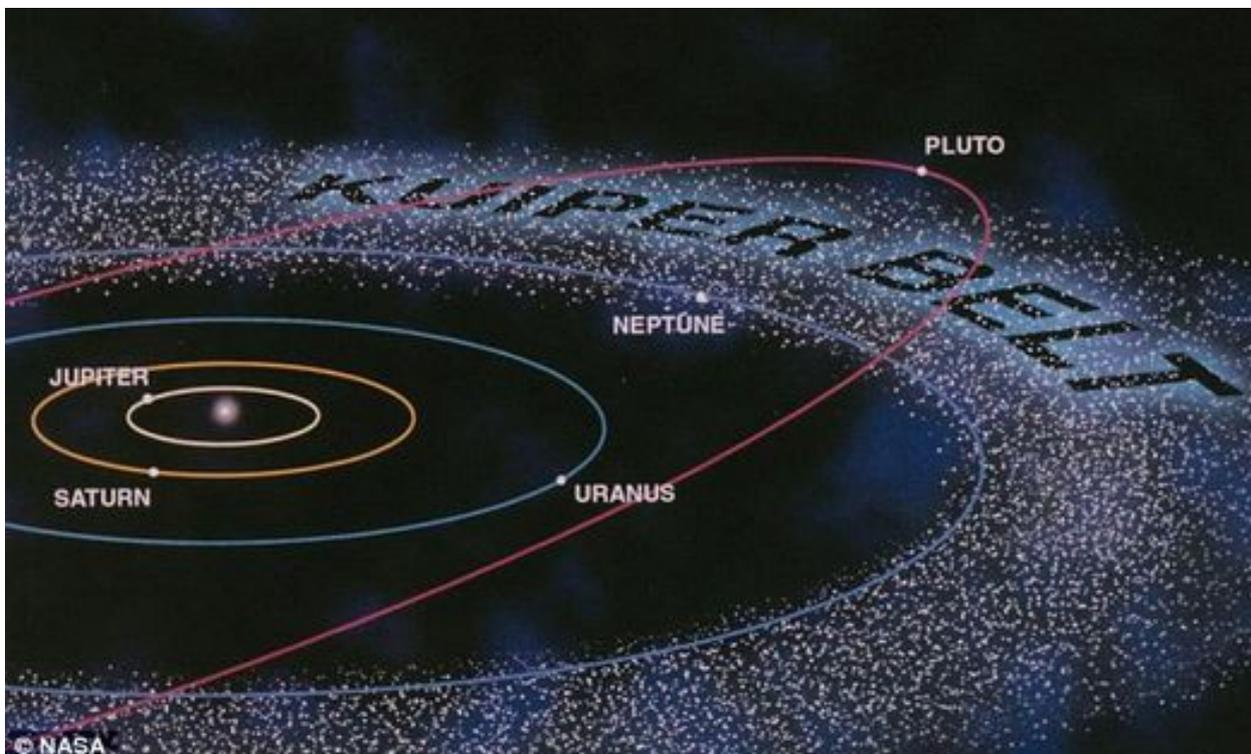
*New Horizons at Pluto Credit NASA*

## New Horizons The Mission

### The New Horizons mission is the first mission to Pluto and the Kuiper Belt

This mission has sent a space craft to the outer reaches of our Solar System to look at the dwarf planet Pluto, and beyond into the Kuiper Belt.

The Kuiper Belt is the region of our Solar System beyond the orbit of the planet Neptune, about 30 Astronomical Units (AU) from the Sun and out to about 50 AU. This region contains the minor planet Pluto and its moons Charon, Hydra, Nix and Styx along with many comets, asteroids and many other small objects mostly made of ice.



*The Kuiper Belt - Credit: NASA*

## About the Cover Picture

### NEW HORIZONS

An AU or Astronomical Unit is equal to the distance between the Sun and the Earth about 93,000,000 miles or 150,000,000 km.



*One Astronomical unit (AU) Credit: NASA/JPL-Caltech*

The New Horizons space craft was launched from Cape Canaveral Air Force Station, space launch complex 41 Florida, at 2:00.00 pm EST on 19th January 2006 almost ten years ago. On a long journey to the almost totally unexplored outer regions of our Solar System.

This launch was the third attempt after two previous attempts that week. The first was called off because of high winds at the launch site and the second due to a power failure at the Johns Hopkins University, Applied Physics Laboratory in Laurel, Md. who operate the New Horizons mission.

Web Site : [Johns Hopkins University, Applied Physics Laboratory New Horizons](http://Johns Hopkins University, Applied Physics Laboratory New Horizons)



*New Horizons launch on the Atlas V rocket. Image credit: NASA/KSC*

## About the Cover Picture

### NEW HORIZONS

#### New Horizons Jupiter Lends A Hand

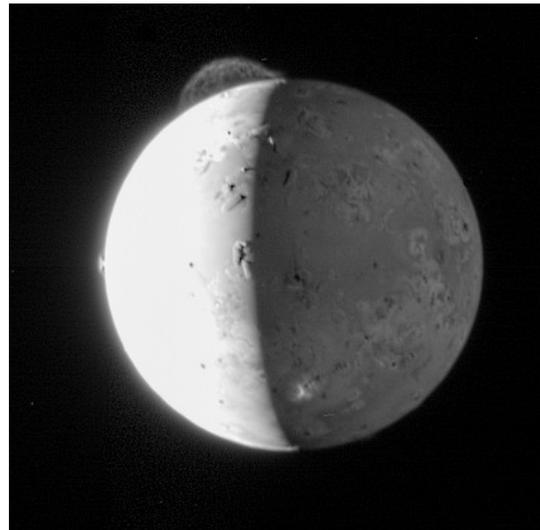
This journey was shortened by a Gravity Assist (sling shot) manoeuvre around the planet Jupiter in February 2007.

This type of manoeuvre takes the space craft very close to a planet or other large object in space and uses the gravity of that object to accelerate the space craft and throw it on its way much like a sling shot does to a stone.

The New horizons team did not waste the opportunity to study Jupiter and its moon while they were passing.

During the New Horizons spacecrafts flyby of Jupiter in February 2007 it took this picture of Jupiter in infrared color composite using the spacecrafts near-infrared imaging spectrometer.

The approximately true-colour composite picture of Io was taken on March 1st 2007. The image shows a 330 km high volcanic eruption of the volcano Tvashtar on Io's night side.



*New Horizons montage of Jupiter and its moon Io.*

*Volcano Tvashtar, Io's night side erupting.*

*Credit: NASA/JHU/APL.*

## About the Cover Picture

### NEW HORIZONS

#### New Horizons Switches Off For A Long Sleep

After the New Horizons gravity assist manoeuvre (sling shot) around Jupiter it was time for a long sleep during the trip out to Pluto.

This hibernation phase of its journey will reduce the cost of its operation, free up deep space network tracking systems for other missions and reduce wear on many of the space crafts systems.

The space craft was put into a stabilising spin at 5 rpm with the antenna pointing towards Earth. Then all unused components, guidance and control systems were powered down.

The flight computer was left running and monitored system health, sending a weekly beacon message back to Earth.

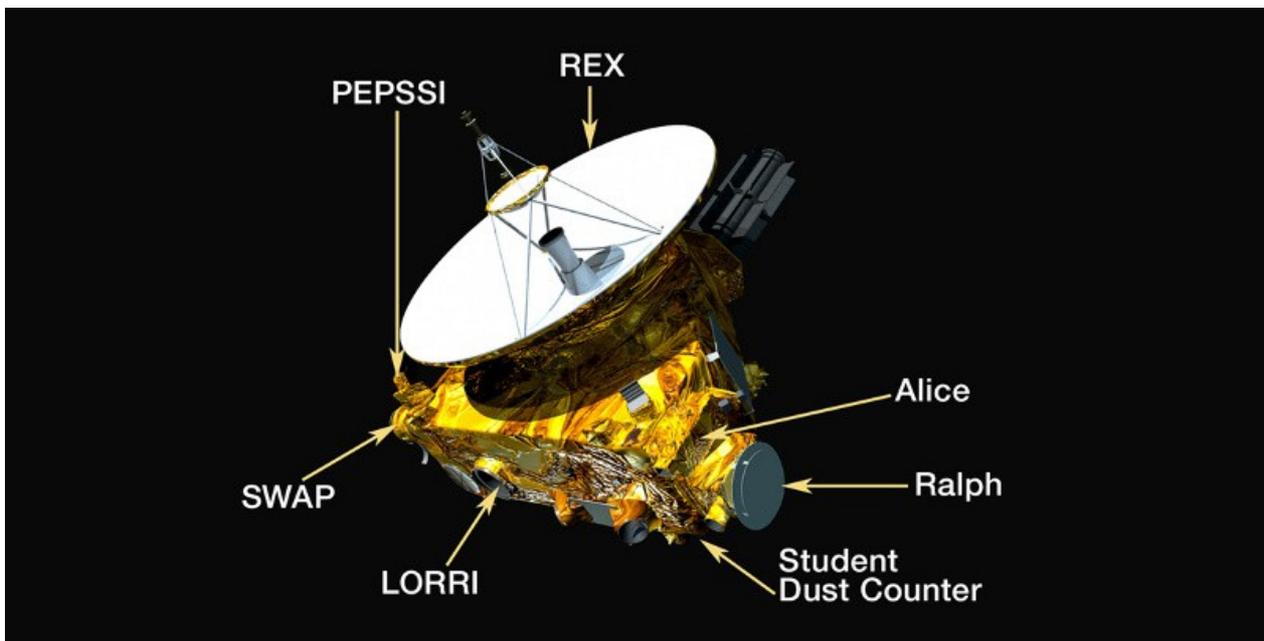
Once a year New Horizons was woken up to do course corrections, system checks and instrument calibration.

New Horizons was the first mission to make operational use of hibernation and the weekly beacon message.

The space craft was the fastest ever to leave Earth at almost 100 times that of a jet-liner. Also no space craft has ever travelled as far to reach its primary target.

New Horizons reached the Moon's orbit in just 9 hours where the Apollo Mission in the 1960's took 3 Days.

It took just 13 months to reach Jupiter Cassini and Galileo took four and six years. But still it would take nearly 10 years to reach Pluto!



*New Horizons Instruments. Credit: NASA/JHU/APL.*

## About the Cover Picture

### NEW HORIZONS

#### New Horizons Wakes Up After Long Sleep

On December 6th 2014 New Horizons woke up from its long sleep. After nearly nine years flight and almost three billion miles the space craft was a last in the final phase of its journey to Pluto.

No space craft had ever travelled so far to reach its primary target. New Horizons was now only 162 million miles from Pluto. The radio signal sent to Earth from New Horizons to confirm it had woken up took four hours and twenty six minutes to reach NASA's Deep Space Network Station in Canberra Australia.

The space craft had spent 1,873 days hibernating in eighteen separate periods, from as little as 36 days to as much as 202 days.

After several weeks while the engineers checked all the instruments and systems were working, on 15 Jan 2015 New Horizons began observing the Pluto System.

In mid may the pictures from New Horizons cameras were even better than the best the huge Hubble Telescope could produce.



*New Horizons Pluto at 1 Million miles and counting... Credit: NASA.*

***This is an on going story and you can follow it on the Thanet Astronomy Group web site.***

***For technical reasons (detailed in the story on the web) the data from New Horizons will take the next 16 months to download to Earth. So we will be adding to the article as new data arrives and time permits.***

***Just click on the New Horizons link at the top of the home page.***

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

## Member's Meeting Dates and Times

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

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  
3<sup>rd</sup> February 2016 at 7:30pm  
2<sup>nd</sup> March 2016 at 7:30pm  
6<sup>th</sup> April 2016 at 7:30pm  
4<sup>th</sup> May 2016 at 7:30pm  
1<sup>st</sup> June 2016 at 8pm  
6<sup>th</sup> July 2016 at 8pm

All Member's 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.

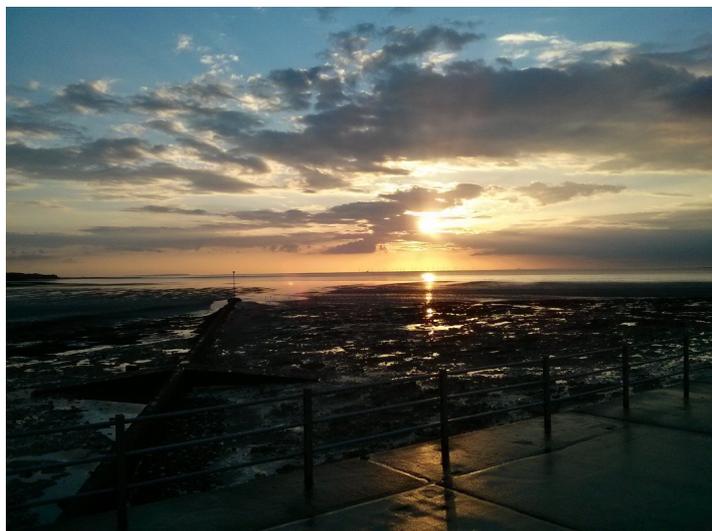
West Bay Cafe run by Alan and Kate and has a very friendly atmosphere.



*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 last month

July 2015

### Wednesday 1<sup>st</sup> Members Meeting

This month we were promoting the subject of Astro photography. This can be as simple and cheap as holding your mobile phone or compact camera in front of the telescopes eyepiece. All the way to telescope mounts that track the stars accurately and cost thousands of pounds along with camera equipment in a similar price bracket.

To have a go at this subject all you need is some form of camera and almost everyone has one.

George Ward's son Steve came and did a talk on the subject giving us loads of good information and pointers on how to get started.

Will all those that have an interest in this subject, let one of us know and we will arrange an evening when we can go out and get some help and practise.

### Friday 3<sup>rd</sup> Dreamland Big Day Out

Dreamland invited two committee representatives from Thanet Astronomy Group to attend an open day for Thanet community organisations at Dreamland. This offer was put to the committee and it was decided that Danny and Gill would attend. Although I [Danny] was not over enthusiastic with the concept of a day in an amusement park, Gill more than made up for my lack of enthusiasm. Including jumping for joy in last months members meeting. Having spent the whole day at Dreamland my opinion has totally changed! The atmosphere there is nothing short of brilliant. Credit for this is down to the utterly amazing staff. Gill wants to point out that it took until 5pm to literally drag me off the dodgems ! You must go !!! and try ALL the RIDES!

### Saturday 4<sup>th</sup> Public Outreach Meeting

It was a lovely day, most of the telescopes were on the Sun and some members were practising taking photos with their phones.

### Saturday 11<sup>th</sup> Public Outreach Meeting

Today was a very busy day! Lots of members turned up to help and we had lots of visitors wanting to know what we were looking at. There was no cloud so most of the telescopes were on the Sun.

### Saturday 18<sup>th</sup> Public Outreach Meeting

It was a little bit cloudy today, and we had to move the telescopes from the Sun at times. We had lots of visitors today.

Danny and the JAC and Gill club also went on the planet walk around the bay.

### Saturday 25<sup>th</sup> Public Outreach Meeting

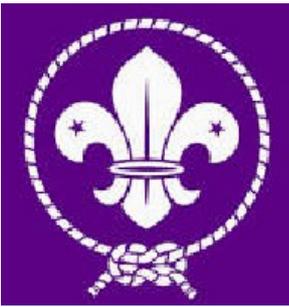
Today was a bit cloudy and chilly. Although we still had quite a few visitors, including members from another astronomy group. We managed to get a few glimpses of the Sun but most telescopes were on the Wind farms and other targets on the horizon.

With only 6 meetings this was a very quiet month at Thanet Astronomy Group.

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

Tracy Howes / Danny Day.

## Junior Members Page



Our intrepid Junior Astronomer, George Harvey, has been on a Big Night Out recently with the Thanet Scouting groups.

Following the success at last year's Astronomy Presentation at the Autumn Beavers' Space Camp Sleepover, we were invited to attend the Annual Summer Camp at Quex Park.



With over 800 children (ranging from 6-16) and their Scout Leaders from across the District Scouting Associations.

They started their camping weekend on Friday 26<sup>th</sup> June and were sleeping over until Sunday 28<sup>th</sup> in an array of tents, although the youngest Beavers were treated to a Night in the Museum so didn't need to brave the elements outside!

Luckily, Saturday had been a beautiful day for them to participate in all the variety of activities provided by the Leaders e.g. Badminton, Archery, Zorb - Football, Air Rifle Shooting, Circus Skills and Water Rockets...to name but a few!

By the time it was our turn to set up, everyone was settled happily around a huge camp fire singing songs! The heat of the day had passed and left clear skies for our Stargazing. We were rewarded with a rather beautiful three quarter moon in the South and a glimmer of Saturn nearby as the evening wore on.

In the West, Venus and Jupiter were as clear as anything, to the amazement of the children (and Leaders) who thought they were just stars! It never ceases to thrill me when we are able to explain that they are actually looking at other planets within our Solar System and not just stars in the sky!

It thrilled me even more to see how accomplished Young George has become at organising and explaining to his peers how the Solar System is mapped out and how star constellations are grouped!

Our thanks also go to Big George (Ward), Danny, Dave and Tracy for helping to supervise the enthusiastic visitors. Thankfully, we didn't have all 800 youngsters descending on us at the same time as the packs that did take the time to visit us in the middle of the dark field were all very enthusiastic and full of fascinating questions...which we hope we were able to answer for them to inspire their inquisitiveness to find out more for themselves!

Gill Palmer.

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## Book review

### The Planets

By Heather Couper with Nigel Henbest

This book is based on the popular channel 4 TV series The Planets 1985.

The book starts with chapter one and a short introduction to the history of astronomy,

Chapter two on Mercury gives loads of details including information about the Mariner 10 mission and some of the amazing pictures that were sent back.

Chapter three covers Venus with Radio Telescope images of the 60 mile diameter crater of the volcano Maxwell. This image was created using the worlds largest radio telescope at Arecibo.

Chapter four deals with the Earth covering its unique environment that is so different to all the other planets.

Chapter five takes a short break from the list of planets and describes our Moon, covering many details and information about the Apollo and future planned missions.

Chapter six looks at Mars and covers details about the huge volcano Olympus Mons and the Viking Orbiter and lander.

Chapter seven looks at the gas planet Jupiter covering its massive storm the Great Red Spot and its four largest moons Io, Europa, Ganymede and Callisto.

Chapter eight deals with the most photogenic of the planets Saturn and its rings.

Chapter nine looks at Uranus and Neptune together amongst other information covering the Voyager missions.

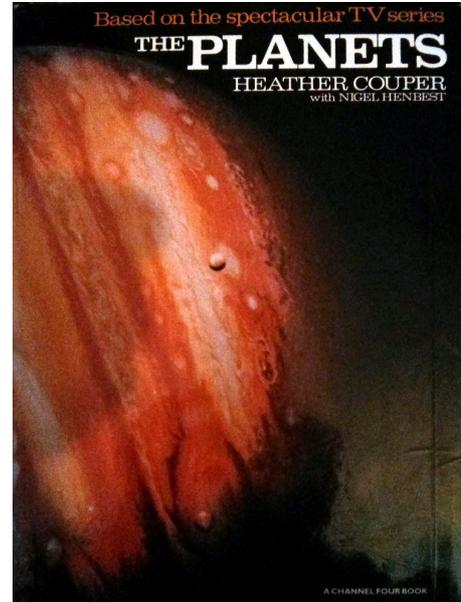
Chapter ten looks at Pluto and at the time of publication the suspected tenth planet of our solar system.

Chapter eleven deals with the Asteroids and Comets and chapter twelve looks at the birth of the planets.

There are three useful appendices on :-

Planet Spotting, Observing the Planets, Facts and Figures, and a comprehensive index.

**Danny Day**



## What's in the sky this month

### What to see Saturday 8<sup>th</sup> August at 10pm

**Constellation** (Hercules)

**Stars** ( Pi Herculis, Eta Herculis, Epsilon Herculis and Zeta Herculis)

**Globular Clusters** (M13 M92 )

Many people come to us wanting to know why it is so hard to see the constellations, they never look remotely like the pictures (with the exception of one or two like The Big Dipper and Orion). The trick is to understand two things !

1. There are many stars in the sky and this alone is enough to confuse anyone.
2. Most of the stars in any particular constellation are not bright enough to see in our light polluted sky.

**Therefore the constellations can not be seen as they are shown in the books**, unless you are somewhere very dark indeed. You need to know the brightness of the stars you are looking for so you can ignore the dimmer ones that can't be seen. Then you can look for the pattern of the brighter stars, that can be seen.

**Magnitude** is the scale of Star Brightness.

At 10:00pm look South West at 229° and up above the horizon at 63° You will see the star Epsilon Herculis (HIP 81693A) this is the centre bottom star of the four keystone stars of the constellation Hercules. From there you will be able to locate the other brighter stars in the constellation.

Hercules is a good example of the above problem, (identifying constellations). The keystone asterism is perhaps the most recognisable feature of this constellation. It consists of a square of four stars, Pi Herculis (**Magnitude 3.15**), Eta Herculis (**Magnitude 3.45**), Epsilon Herculis (**Magnitude 2.85**) and Zeta Herculis (**Magnitude 3.90**), these four stars form the abdomen of Hercules.



*Hercules Keystone 4 Stars*

I have included in the pictures the three bright Stars Vega (**Magnitude 0.00**) Altair (**Magnitude 0.75**) and Arcturus (**Magnitude 0.15**). To help you locate Hercules. Vega is the 5<sup>th</sup> brightest star in the sky, so Vega at magnitude 0 is very bright.

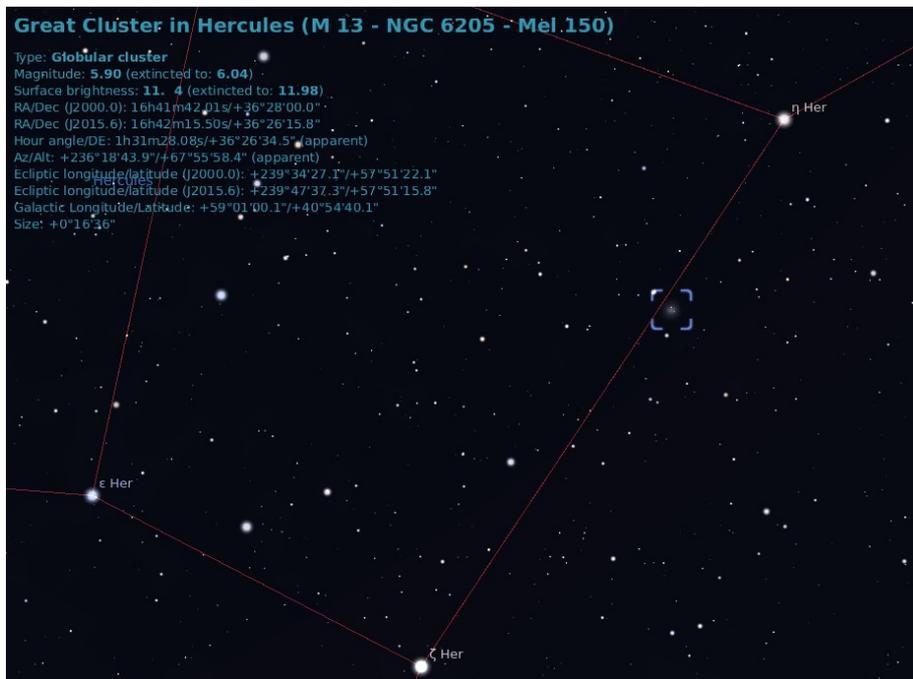
## What's in the sky this month



*Hercules Constellation Art*

The constellation Hercules also contains two Messier objects, M13 and M92, both Globular Clusters. These can be seen with almost any basic small telescope or a pair of binoculars.

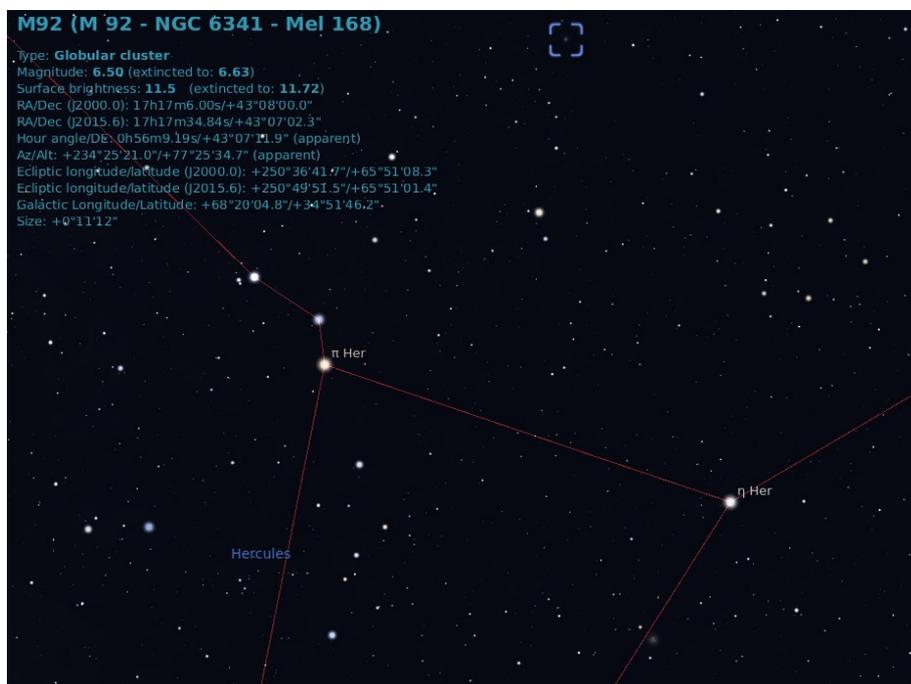
M13 (*Magnitude 5.90*), is thought to consist of up to a million stars and lies about 25,000 light years from us, it's about 145 light years in diameter.



*M13 location on the right hand edge of the keystone*

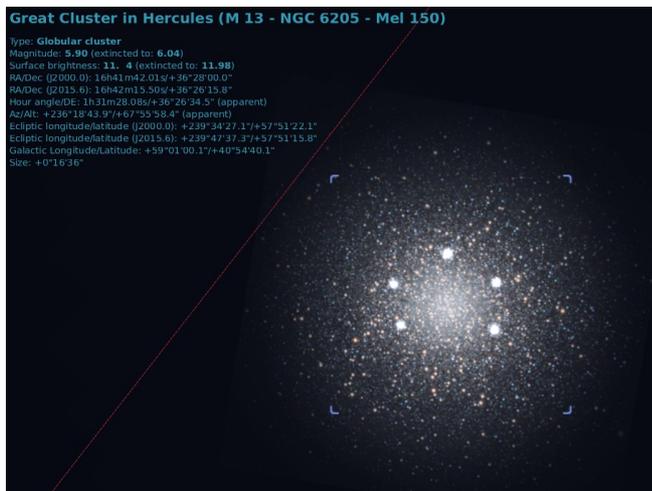
## What's in the sky this month

M92 (*Magnitude 6.50*) was discovered in 1777 by Johanne Bode, it's about 27,000 light years from Earth and contains some 330,000 stars. It is over 200 light years in diameter.



*M92 Location above the keystone stars*

Here are a couple of close up pictures of the Messier objects, M13 and M92.



*Close up of the Globular Cluster M13*



*Close up of the Globular Cluster M92*

George Ward.

## Member's Page

### Thinking about members holidays

This month I wanted to remind members that if you are going away on holiday, especially if you are going abroad - to 'look up' and take note of what you can see in the night sky.

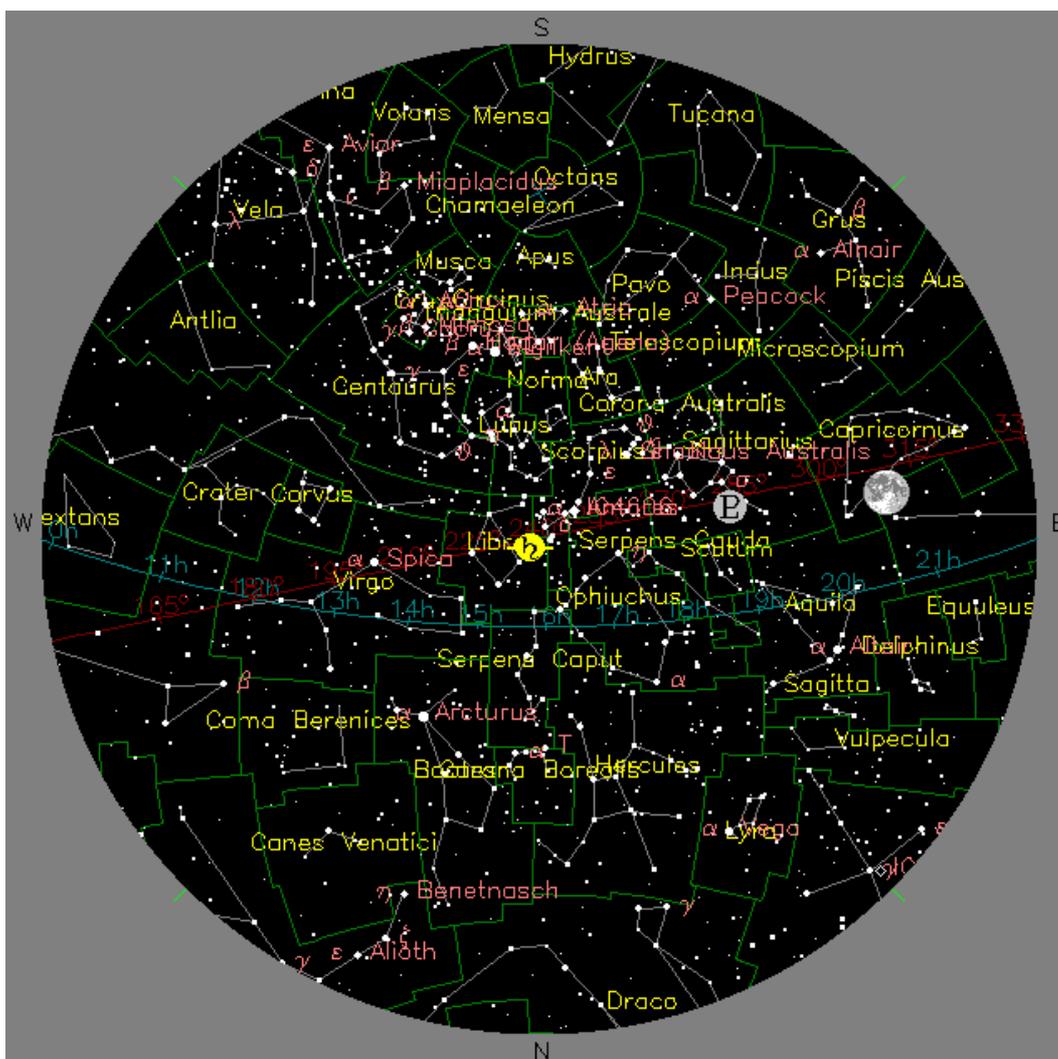
I remember when I first joined Thanet Astronomy Group in 2014, and had completed the Stargazing course – I went on holiday to Morocco and one clear night was able to recognise what I was seeing – I wrote it down and told Danny about it when I got back.

I am going to Mauritius in September this year which is in the Southern Hemisphere – so I am hoping to see and chart lots of night skies. It gets dark very early, around 6pm so I will have long viewing nights to see how things progress.

So if you are going away please do let me know what you see [Maybe even take a picture or two]. I will write a report collating all information later in the year.

The chart below shows what is in the sky above Mauritius on 31 July 2015.

See : <https://www.fourmilab.ch/cgi-bin/Yoursky?z=1&lat=20.1&ns=South&lon=57.7&ew=East>



*Sky above Mauritius 20°6'S 57°42'E at Fri 2015 Jul 31 15:27 UTC*

## Member's Page

### Thinking about members holidays

I am sure you all know the story behind why there was a 'Blue Moon' on 31 July. Just in case you are not sure. There were two full moons in July. This is a rare occurrence, and leads to the saying 'once in a blue moon'. I spent the evening with some other members of our Group and Tracey took some photos.



*Blue Moon at 22:20 31/07/2015*

Sheila Bull

Members Secretary

## Did You Know ?

### Retrograde Venus and Uranus

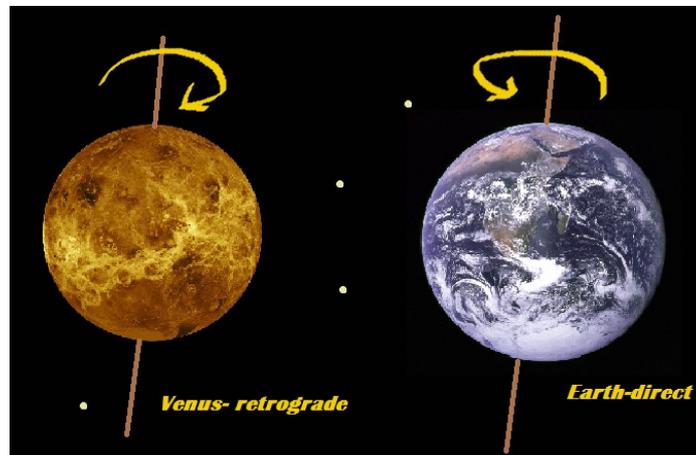
#### Retrograde :- To Move Backwards

Venus is one of only two of the eight planets in our solar system that have a non standard rotation.

Mercury, Earth, Mars, Jupiter, Saturn and Neptune all rotate in the same way that the Sun rotates. They also orbit around the Sun in the same direction. This is anti clockwise when viewed from above the Sun's North Pole.

The other two planets Venus and Uranus have a retrograde or backward rotation.

On Earth the Sun rises in the East and sets in the West but on Venus the Sun rises in the West and sets in the East. Venus has a very slow retrograde rotation, its day (one rotation) lasts 243.09 +/- 0.18 Earth days. Note :- This is longer than its year which is 224.701 Days.



*Rotation of Venus and Earth*

It is believed that this retrograde rotation was caused by some large object hitting Venus early in its history and being totally absorbed by the planet (unlike the impact that created the Earth's Moon).

Uranus also has a retrograde rotation but its axis is so tilted that it almost 'rolls around its orbit'.



*Rotation of the planets ( including Pluto :-)*

Danny

## Junior Astronomers Club (JAC & Gill)

This month, we have had three very exciting developments which the Juniors have been thrilled to be a part of.

The first was hearing that NASA's probe New Horizons had finally reached its destination. We were able to see the photos it was sending back from Pluto, 3 billion miles away! One of our members even worked out that she was the same age as the length of time it had taken to get from Earth to Pluto, which meant that the probe had taken off 9 and a half years ago...the year she was born!

We all love the heart shaped landscape and laughed at the whale shaped shadow at the side of the planet.

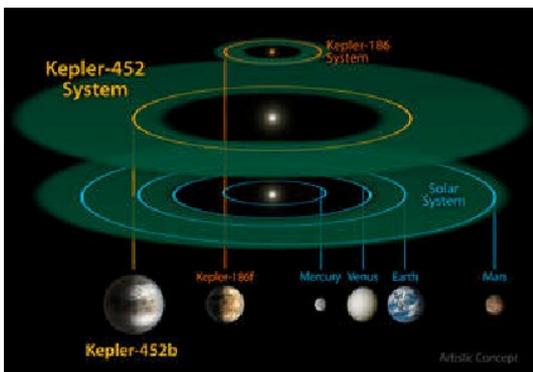
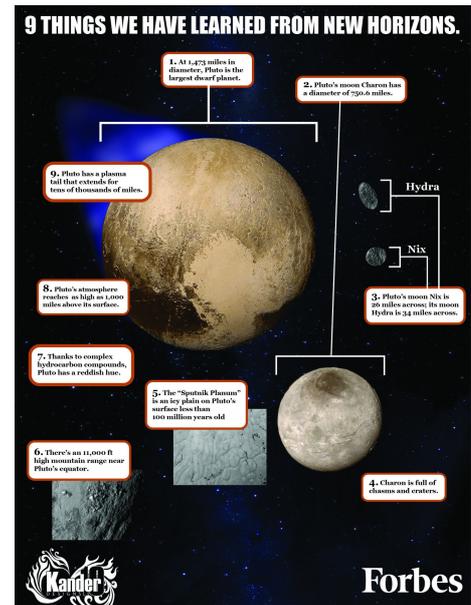
The second big event was the news that a New Earth 2.0 has been found on Thursday 22<sup>nd</sup> July 2015. Kepler-452b is the most Earth-like planet ever discovered, a place with just enough sunlight to possibly support the crops and house plants of life forms like ourselves. In celebration of the big discovery, the Juniors made their own planets, gave them names and described their features to one another as if they were news reporters on TV!

Which brings us to our third big event! The day after the real newsflash about the discovery of 452b, JAC and Gill had a call from Radio 5 Live to invite our younger members to ask some questions to Astronomy experts who were in the studio that day!

Raphael, aged 10, spoke to Tim O'Brien, Professor of Astrophysics in the School of Physics & Astronomy at The University of Manchester. Raphael asked if they had found out if it was a rocky planet or a gas planet but unfortunately the experts have not had enough information yet to answer that question as it is 1400 Light Years away!

Wilson, aged 8, then spoke to Carol Mandrell from the Jodrell Bank Observatory. He wanted to know how old the planet was and if there may be fossils on it. Unfortunately, she explained it would take us 28 million years to get to the New Earth, so we could not possibly guess how old it may be. If there were fossils on Kepler 452b, that would assume that there may be life forms on the planet in the past but we do not know enough about it yet.

Juliana, aged 6, told Carol she had just had her 6<sup>th</sup> birthday and wanted to know how long she would have to wait for her next birthday if she was on New Earth? Carol told her she would have to wait a bit longer than an Earth year as it takes 384.843 days for New Earth to orbit its sun whereas our Earth only takes 365 and a quarter!



I wonder what questions Galileo would have asked if he had been around in the 21<sup>st</sup> Century. He would have been amazed at the advances in technology and the discoveries that have been made!

Who knows what will be discovered next and how far we will reach across the Universe!

Reach for the Stars Junior Astronomers!

Gill Palmer.

## **Executive Committee Messages**

### **Your News Letter**

We are looking for feedback about the news letter. If anyone has any comments please let us know. If you have any ideas for pages you would like included let us know.

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

Don't forget to let people know what a friendly group we have and that anyone is welcome to come along to the Saturday meetings and learn a little about Astronomy and have a look through the telescopes.

### **Sub Groups**

If any members are interested in setting up any sub groups such as Astro Photography, Telescope Repair, Telescope Collimation, Telescope Making !! Radio Astronomy or any other astronomy related subject please come and let me know [Danny]

**As the junior group is proving so popular Gill would appreciate any help any one can provide particularly Saturday the 8<sup>th</sup> and 15<sup>th</sup> when Gill will be on holiday, star gazing in Gran Canaria.**

### **Thanks**

We would like to thank all the members that continue to support our efforts on the Saturday meetings and the committee members that give so much of their time to support the group.

Danny, George, Gill.

**Adult Word Search**

**APOGEE  
CIRCUMPOLAR  
GRAVITY  
NEBULA  
PERIHELION**

**ASTEROID  
CRATERS  
HYDROGEN  
NEW HORIZONS  
PLUTO**

**CHARON  
ELLIPSE  
ICE DWARF  
PARRALLAX  
SATELLITE**

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

## Junior Word Search

CEPHEUS      CHARON      GALAXY  
JAC AND GILL      MERCURY      PLUTO  
POLARIS      SATURN      SUNSPOTS

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

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

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