macarthur astronomical society

prime focus

monthly journal of the M.A.S.

Volume 14, Issue 7 July 2009

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MAS Committee

President's Report: John Rombi

Welcome to the July edition of Prime Focus.

Last Month

Our speaker (member) Bob Bee gave a mesmerizing presentation "Mythology and the Stars".

I have used Bob's method of remembering which constellation follows which, a great asset especially after many months of cloudy skies and forgetting where everything is placed.

Thanks Bob!!

Public Nights

We've just completed our fourth public night of this year (July 4th)

(Continued on page 2)

Observing Dates

July
18/07/09 Stargard
20/07/09 General Meeting
25/07/09 The Forest

August
15/08/09 Stargard
17/08/09 General Meeting
22/08/09 The Forest

September
12/09/09 Stargard
19/09/09 The Forest
21/09/09 General Meeting

October
10/10/09 Stargard
17/10/09 The Forest
19/10/09 General Meeting

November
14/11/09 The Forest
16/11/09 General Meeting
21/11/09 Stargard

December
12/12/09 Stargard
19/12/09 The Forest
21/12/09 General Meeting

President's Report: John Rombi

Due to illness I was unable to attend, I would like to thank ALL the members that gave of their time and expertise to the 100 or so members of the public that took advantage of the clear skies.

Cawdor Public School

M.A.S visited this small school on June 29th. Thanks go to Geoff, Roger, Lloyd, Trevor & Anne for extracting the "WOW's & COOL" that I heard from around the field. It's a satisfying achievement when you know that you have reached into the soul of child with the wonders of the Universe.

Bob gave his usual excellent presentation to the children, prior to the observing session.

As usual Bob primed the children with wonderment that readied them for their time at the eyepiece.

Stargard & The Forest

Have been cloud or rained out lately.

Hopefully the weather will clear, so I can remember how to use my telescope.

What's on?

There are many more functions being held throughout the year, so please check out the website's "What's on" column.

Please let Roger or I know if you can attend.

Next Month

Assoc Prof Geraint Lewis will make a return trip to M.A.S Tonight.

I would like to welcome our **WEBMASTER & ASTROIMAGER EXTRAORDINAIRE Chris Malikoff**; his presentation will be on "**Imaging with a DSLR**".

Until next time,

Clear Skies, John Rombi

Secretary's Column: Roger Powell

Many say astronomy is all about 'luck' and we have not had a lot of that with the weather lately. Many of our recent scheduled observation nights at Stargard or The Forest have been ruined by bad weather. However, eight members did get 'lucky' at Cawdor School at the end of June, with a clear sky almost right up to the end making an enjoyable evening for the students and members.

Despite the moonlight, I managed to pick out several Messier objects while waiting for the students and was busy showing Saturn, to some gob-smacked parents and children, when my 'luck' ran out. My dew heater cable got jammed between the telescope and the fork, prematurely ending my involvement.

My 'luck' deteriorated further a few days later when I was out on my front driveway practicing nightsky imaging with my DSLR. A gust of wind blew the tilted tripod over, damaging the front end of my camera lens on the concrete.

The realist in me says that 'luck' has nothing to do with these two personal astronomical disasters. The jammed cable would have been avoided if I had set up properly before sunset, instead of doing it hurriedly after dark. Lesson learned! The damaged camera lens would have been avoided if I had simply adjusted the tripod for the slope or not used it in windy conditions. Expensive lesson learned!

So, bad luck is mostly just a myth. Which leads on to my next subject, mythology.

One aspect of astronomy that has never attracted me is mythology. Ancient tales of centaurs, hunters , serpents or aboriginal dreamtimes do not inspire me. As Carl Sagan once said, there are two ways to view the stars: either as we would like them to be; or as they really are. I have always opted only for the latter, because a myth is a just a myth and I prefer to ignore them.

Despite this, I enjoyed Bob Bee's talk at the June meeting, "Mapping the Constellations with Mythology". This is because Bob made a very fundamental point that to learn your way around the constellations, it is necessary to find your own method of linking adjacent constellations.

So Bob has sparked a thought that I may not be too old to improve my inadequate knowledge of random star patterns. I just need to work out a method of mentally linking the adjacent constellations together - but in my case it won't be by mythology. I wonder how other members memorise adjacent constellations?

I liked Editor Geoff Young's new presentation of *'Prime*

(Continued on page 3)

Secretary's Column: Roger Powell

Focus' last month and in particular his introduction of the 'Observing List'. This handy table of what's observable is full of potential targets which go beyond the Messier objects and I will be referring to it regularly if Geoff continues with it.

I mentioned in last month's column that Professor Bryan Gaensler's presentation at our May meeting is available on our website. Of course, that was only the pictures, not the talk. Anyone interested in revisiting the actual content of Bryan's talk should also go to our Guest Speaker website page and look for the link at the bottom of Bryan's May 2009 entry. This goes to an excellent article he wrote for *Australasian Science* Magazine, called 'The Magnetic Universe'.

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The number of MAS/UWS public observing nights that were scheduled for *2009: International Year of Astronomy*.

I hope members will continue to support the remaining MAS public outreach activities for 2009. There are now five 'open night' dates left: 1st August; 29th August; 26th September; 24th October; and 28th November. All will be held at the UWS Rotary Observatory.

So far this year, only one 'open night' has been cancelled due to the weather and the other three events went ahead very successfully.

So maybe we have been 'lucky' after all.

A slightly longer Note from the editor: Geoff Young

Thankyou to John, Roger and those others who have expressed complimentary comments on my attempts to become an editor and contributor.

The current issue of Prime Focus is a bit smaller than my first last month. I am sure that there are many MAS members who have something to contribute. I have a lot of white space to fill on this page, and the lack of members' contributions means I have to come up with something to put here (not to mention the rest of the Journal).

A group I belong to on Yahoo (SkyTools) had a reference to the article on Neptune on p 7. Following on from David Jones article (Who Invented The Telescope?) in the June issue, I thought this report of an address by Professor David Jamieson, Head of the School of Physics , University of Melbourne, was an appropriate follow up to David's article.

Of course, if more members contributed, I would not need to pilfer articles from other sources! If you are not careful, the journal of the Sutherland Astronomical Society has pages and pages of possibilities that could be used. Unfortunately, this would also guarantee that noone would read beyond the front page!

Now for my next request. On our website, there is a provision for members to have a photo of themselves as an avatar. This displays when a member posts in the Forum. A number of people either have no avatar, or a picture of something that does not bear any resemblance to that person.

With the average age of our membership increasing each year, a realistic photo of the member assists others with their identification of that member. Could those people without photos of themselves as avatars, please consider this request? (One exception—Michael—the dog can stay if you wish).

The weather. There are good nights, and there are our Observing Nights. I am sure their is a direct link between my telescope being outside and clouds. My wife and I have a caravan on-site about 150km west of Sydney. The nearest major town is barely a glow on the horizon. The area is still declared as being in drought—not for much longer!

On a recent visit, with telescope packed in the car, clouds; followed by torrential rain. I did not even have to set up to cause this. A suggestion was made many meetings ago that we hire ourselves out to drought-afflicted areas. I don't think we all need to go—just me and my telescope. Members may like to think about giving me financial encouragement to leave my telescope in the garage and me inside the house—good viewing nights for everyone else a certainty!!!

Prime Focus
Article Submission

Deadline for article submissions for the August edition of Prime Focus is

Monday 10th August 2009

All Articles can be submitted via email editor@macastro.org.au

Or via snail mail to the MAS Postal address

PLEASE NOTE THE CHANGE OF EMAIL ADDRESS FOR SUBMISSIONS!!!

OBSERVING JULY 2009

Sun, Moon and Planets Observing List, evening of 2009 Jul 18 at Stargard, The Oaks, NSW
Sunset 17:11, Twilight ends 18:36, Twilight begins 05:32, Sunrise 06:56, Moon rise 03:53, Moon set 12:50
Completely dark from 18:36 to 03:53. Waning Crescent Moon. All times local (GMT+10).
Listing All Classes visible above the perfect horizon and in twilight or moonlight after 18:01 and before 06:37.
The minimum visual difficulty is: detectable.

Cls	Primary ID	Con	RA (Ap)	Dec (Ap)	Mag	Size	Begin	Optim	End
MSS	Saturn	Leo	11h19m02.9s	+06°35'28"	1.1	17"x 15"	17:52	18:26	18:39
MSS	Jupiter	Cap	21h51m41.6s	-14°01'51"	-2.8	48"x 45"	21:51	2:03	6:15
MSS	Neptune	Cap	21h52m59.7s	-13°17'16"	7.8	2.3"	21:54	2:04	6:13
MSS	Uranus	Psc	23h48m24.2s	-02°06'26"	5.8	3.6"	0:22	3:57	6:15
MSS	Mars	Tau	04h11m17.8s	+20°37'03"	1.1	5.1"	4:08	5:45	6:16
MSS	Venus	Tau	04h55m40.8s	+20°22'23"	-4.1	16"	4:36	5:48	6:21
MSS	Moon	Tau	04h35m38.2s	+26°49'50"	-6.6	32.9'	4:21	6:20	6:49

And	Andromeda	Lac	Lacerta	Cir	Circinus	Pup	Puppis
Ant	Antlia	Leo	Leo	Col	Columba	Pyx	Pyxis
Aps	Apus	LMi	Leo Minor	Com	Coma Berenices	Ret	Reticulum
Aqr	Aquarius	Lep	Lepus	CrA	Corona Austrina	Sge	Sagitta
Aql	Aquila	Lib	Libra	CrB	Corona Borealis	Sgr	Sagittarius
Ara	Ara	Lup	Lupus	Crv	Corvus	Sco	Scorpius
Ari	Aries	Lyn	Lynx	Crt	Crater	Scl	Sculptor
Aur	Auriga	Lyr	Lyra	Cru	Crux	Sct	Scutum
Boo	Boötes	Men	Mensa	Cyg	Cygnus	Ser	Serpens
Cae	Caelum	Mic	Microscopium	Del	Delphinus	Sex	Sextans
Cam	Camelopardalis	Mon	Monoceros	Dor	Dorado	Tau	Taurus
Cnc	Cancer	Mus	Musca	Dra	Draco	Tel	Telescopium
CVn	Canes Venatici	Nor	Norma	Equ	Equuleus	Tri	Triangulum
CMa	Canis Major	Oph	Ophiuchus	Eri	Eridanus	TrA	Triangulum Australe
CMi	Canis Minor	Ori	Orion	For	Fornax	Tuc	Tucana
Cap	Capricornus	Pav	Pavo	Gem	Gemini	UMa	Ursa Major
Car	Carina	Peg	Pegasus	Gru	Grus	UMi	Ursa Minor
Cas	Cassiopeia	Per	Perseus	Her	Hercules	Vel	Vela
Cen	Centaurus	Phe	Phoenix	Hor	Horologium	Vir	Virgo
Cep	Cepheus	Pic	Pictor	Hya	Hydra	Vol	Volans
Cet	Cetus	Psc	Pisces	Hyi	Hydrus	Vul	Vulpecula
Cha	Chamaeleon	PsA	Piscis Austrinus	Ind	Indus		

Best and Brightest 200 Observing List, evening of 2009 Jul 18 at Stargard, The Oaks, NSW
Sunset 17:11, Twilight ends 18:36, Twilight begins 05:32, Sunrise 06:56, Moon rise 03:53, Moon set 12:50
Completely dark from 18:36 to 03:53. Waning Crescent Moon. All times local (GMT+10).
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The minimum visual difficulty is: detectable.

Cls	Primary ID	Alternate ID	Con	Mag	Size	Distance	Rise	Transit	Set
Open	NGC 2547	Collinder 177	Vel	5	25.0'	1500 ly	2:40	12:24	22:04
Open	IC 2395	Collinder 192	Vel	4.6	18.6'	2600 ly	3:25	12:56	22:24
Open	IC 2391	Collinder 191	Vel	2.6	60.0'	570 ly	2:12	12:54	23:33
Open	NGC 2516	Collinder 172	Car	3.3	30.0'	1300 ly	-	12:12	-
PNe	Ghost of Jupiter	NGC 3242	Hya	8.6	40"	2800 ly	7:37	14:38	21:36
Open	Collinder 256	Melotte 111	Com	2.9	120.0'	310 ly	11:46	16:38	21:27
Glob	NGC 2808		Car	6.2	14.0'	26000 ly	-	13:26	-
Open	NGC 3228	Collinder 218	Vel	6.4	5.0'	1800 ly	4:17	14:35	0:49
PNe	Eight Burst	NGC 3132	Vel	8.2	1.4'	3600 ly	5:48	14:21	22:50
PNe	Eight Burst	NGC 3132	Vel	8.2	1.4'	3600 ly	5:48	14:21	22:50
Open	NGC 3114	Collinder 215	Car	4.5	35.0'	3000 ly	-	14:16	-
Open	IC 2581	Collinder 222	Car	5.3	5.0'	8000 ly	-	14:41	-
Open	IC 2602	Collinder 229	Car	1.6	100.0'	520 ly	-	14:56	-
Open	NGC 3766	Collinder 248	Cen	4.6	9.3'	7200 ly	-	15:50	-
Open	NGC 3532	Collinder 238	Car	3.4	50.0'	1600 ly	-	15:19	-
Glob	M 68	NGC 4590	Hya	7.3	11.0'	39000 ly	9:24	16:53	0:18
Gal	Sombrero Galaxy	M 104	Vir	9.1	9.1'x 5.6'	60.0 Mly	10:13	16:53	23:30
Glob	NGC 4372		Mus	7.2	5.0'	20000 ly	-	16:39	-
Open	Jewel Box	NGC 4755	Cru	5.2	10.0'	6400 ly	-	17:07	-

OBSERVING JULY 2009

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The minimum visual difficulty is: detectable.

Cls	Primary ID	Alternate ID	Con	Mag	Size	Distance	Rise	Transit	Set
Glob	Omega Centauri	NGC 5139	Cen	3.9	55.0'	16000 ly	8:14	17:40	3:02
Gal	Centaurus A	NGC 5128	Cen	7.8	27.5'x 18.2'	12.0 Mly	8:49	17:39	2:24
Gal	M 83	NGC 5236	Hya	7.8	14.1'x 13.2'	15.0 Mly	10:09	17:50	1:28
Open	NGC 5460	Collinder 280	Cen	6.1	35.0'	2200 ly	8:46	18:21	3:51
Glob	M 5	NGC 5904	Ser	5.7	23.0'	29000 ly	13:32	19:32	1:31
Glob	NGC 5986		Lup	7.6	9.6'	46000 ly	11:41	19:59	4:13
Open	NGC 6025	Collinder 296	TrA	6	14.0'	2500 ly	-	20:16	-
Open	NGC 6067	Collinder 298	Nor	6.5	14.0'	4600 ly	9:09	20:26	7:40
Glob	M 80	NGC 6093	Sco	7.3	10.0'	36000 ly	13:18	20:30	3:42
Open	NGC 6124	Collinder 301	Sco	6.3	39.0'	1700 ly	12:08	20:38	5:08
Open	NGC 6167	Harvard 11	Nor	6.6	7.0'	3600 ly	10:58	20:48	6:34
Open	NGC 6178	Collinder 308	Sco	7.2	5.0'	3300 ly	11:40	20:49	5:54
Open	NGC 6193	Collinder 310	Ara	5.4	14.0'	3800 ly	11:16	20:54	6:29
Glob	M 12	NGC 6218	Oph	6.1	16.0'	23000 ly	14:50	21:00	3:10
Glob	M 10	NGC 6254	Oph	6.6	20.0'	23000 ly	14:54	21:10	3:26
Glob	M 62	NGC 6266	Oph	6.4	15.0'	26000 ly	13:36	21:14	4:52
Glob	M 19	NGC 6273	Oph	6.8	17.0'	23000 ly	13:52	21:15	4:39
Open	NGC 6322	Collinder 326	Sco	6.5	5.0'	3200 ly	12:47	21:31	6:16
Open	NGC 6383	Collinder 335	Sco	5.4	20.0'	3200 ly	13:59	21:48	5:36
Glob	NGC 6388		Sco	6.8	10.4'	42000 ly	12:51	21:49	6:47
Glob	M 14	NGC 6402	Oph	7.6	11.0'	23000 ly	15:37	21:50	4:04
Glob	NGC 6397		Ara	5.3	31.0'	6500 ly	10:55	21:54	8:48
Open	Butterfly Cluster	M 6	Sco	4.6	20.0'	1600 ly	14:06	21:53	5:40
Open	M 7	NGC 6475	Sco	3.3	80.0'	980 ly	14:08	22:07	6:05
Open	M 23	NGC 6494	Sgr	5.9	29.0'	2000 ly	15:11	22:10	5:08
Neb	Lagoon Nebula	M 8	Sgr	5	17.0'x 15.0'	4100 ly	15:00	22:17	5:33
Open	M 21	NGC 6531	Sgr	7.2	14.0'	3900 ly	15:07	22:17	5:27
Open	M 20	NGC 6514	Sgr	5.2	28.0'	2700 ly	15:03	22:15	5:27
Glob	NGC 6541		CrA	6.3	15.0'	13000 ly	13:31	22:21	7:11
PNe	Blue Racquetball	NGC 6572	Oph	8	15"	3500 ly	16:39	22:25	4:11
Open	Star Queen	M 16	Ser	6.5	6.0'	5700 ly	15:48	22:31	5:14
Open	M 18	NGC 6613	Sgr	7.5	5.0'	4200 ly	15:40	22:32	5:25
Glob	M 28	NGC 6626	Sgr	6.9	13.8'	16000 ly	15:19	22:37	5:55
Open	NGC 6633	Collinder 380	Oph	5.6	20.0'	1200 ly	16:53	22:40	4:27
Open	M 25	IC 4725	Sgr	6.2	29.0'	2000 ly	15:45	22:44	5:43
Glob	M 22	NGC 6656	Sgr	5.2	32.0'	9800 ly	15:34	22:49	6:04
Open	IC 4756	Collinder 386	Ser	5.4	39.0'	1600 ly	17:02	22:51	4:41
Glob	M 70	NGC 6681	Sgr	7.8	8.0'	65000 ly	15:08	22:56	6:43
Open	Wild Duck Cluste	M 11	Sct	6.1	32.0'	6100 ly	16:42	23:03	5:25
PNe	Ring Nebula	M 57	Lyr	9.4	1.4'	2600 ly	18:44	23:06	3:28
Open	NGC 6716	Collinder 393	Sgr	7.5	10.0'	2600 ly	16:05	23:07	6:09
Glob	NGC 6723		Sgr	6.8	13.0'	33000 ly	15:05	23:12	7:20
Glob	Pavo Globular	NGC 6752	Pav	5.3	29.0'	20000 ly	-	23:24	-
Glob	M 55	NGC 6809	Sgr	6.3	19.0'	20000 ly	16:11	23:52	7:34
PNe	Little Gem	NGC 6818	Sgr	10	22"	7300 ly	17:12	23:56	6:40
Glob	M 71	NGC 6838	Sge	8.4	4.0'	16000 ly	18:54	0:06	5:18
PNe	Dumbbell	M 27	Vul	7.3	8.0'	1100 ly	19:12	0:12	5:11
PNe	Saturn Nebula	NGC 7009	Aqr	8.3	28"	3200 ly	18:40	1:16	7:52

These lists were produced using SkyTools v3. If members have any changes they would like made, please let me know at editor@macastro.org.au

Cool Site from Sleek Geeks

Bob Bee

We all know there are stacks of great websites out there on astronomy but I'd like to point out another I recently discovered. It's the site for the famous Sleek Geeks, Adam Spencer and Dr Karl Kruszelnicki, www.abc.net.au/science/sleekgeeks.

I discovered this by accident while researching something. I found if you go to the Sleek Geeks home page (as above), then click on the bottom left tab 'Space and Astronomy', it opens up a treasure trove of threads on our favourite subjects – space, astronomy and cosmology.

Do yourself a favour and check it out.

Star Hopping to the Messiers #14 Scorpius M4, M6, M7 & M80

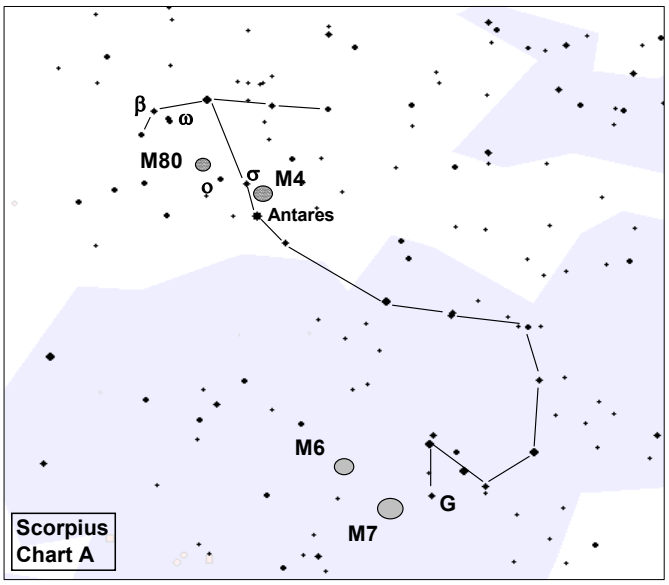
Bob Bee

Scorpius is high overhead this month of July, making for better seeing but also some interesting telescope tracking near the Zenith. Hey, you can't have it all your own way.

Scorpius is home to four Messier objects – two globular clusters and two glorious open clusters. Though most experienced observers will have no trouble finding Ms 4, 6 and 7 (and possibly also M80), we must remember that others are just starting out on the hobby. However, this will be one of the simpler star hopping exercises I've written in this series.

Messier No.	M4	M6	M7	M80
Type	GC	OC	OC	GC
Size (arc-min)	26.3	15	80	8.9
Magnitude	5.9	4.2	3.3	7.2

The Messier's details are as follows, with their location shown on Chart A to the right:



Starting with **M4**, which is easily visible in binoculars and should also be visible in your finder scope as a faint round smudge, first locate Antares, the bright reddish star in the scorpion's spine. Just 2° from Antares towards the head, you'll see a mag. 3 star σ Sco. Move your f/s to the point mid-way between Antares and σ and just 1° west. That should be very close to M4. (Ideally, you should be able to see M4 in your f/s FoV with Antares and σ.)

While we're at that end of the scorpion, let's find **M80** which is nowhere near as bright as M4. M80 is located (happily) exactly midway on the line between Antares and β Scopii. You can easily identify β as the 3rd mag. star behind that wide double star ω Sco. near the head. Even more happily, the mag. 4.5 star Omicron (ο) Scorpii is also on that line just 3° from Antares and M80 is 1.5° from ο. So, starting at Antares again, move your f/s 3° along to omicron and continue another 1.5°. That should land you right on top of M80. You won't see it in your f/s but it should be in your scopes main eye piece. Well done.

Now move to the sting in the tail. Finding **M6 and M7** is embarrassingly easy. First locate the end of the scorpion's stinging tail. You'll notice there is a sort of 'barb' at the end of the tail, marked by a 3rd magnitude star, G Scorpii. Start from there. If you now move North by 2.5°, (about half your f/s field of view) you'll land on M7, a huge open cluster, about twice the diameter of our Full Moon.

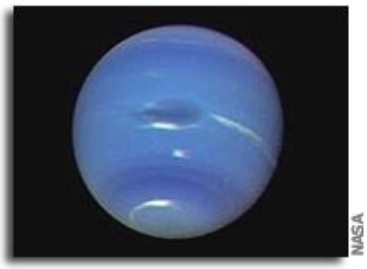
Happily (there's that word again), M6 should be in the same f/s field of view as M7, being only 3.5° away to the NW. So after you've enjoyed M7 in the main eye piece, check your f/s and move it easily on to M6. Too easy.

And that's the Scorpius Messiers. If only Sagittarius (with its 15 Messier objects) was as easy. But that's next month.

Good Hopping.

Did Galileo Discover Neptune? www.spaceref.com/news

Galileo's Notebooks May Reveal Secrets of New Planet


NASA

Galileo knew he had discovered a new planet in 1613, 234 years before its official discovery date, according to a new theory by a University of Melbourne physicist.

Professor David Jamieson, Head of the School of Physics, is investigating the notebooks of Galileo from 400 years ago and believes that buried in the notations is the evidence that he discovered a new planet that we now know as Neptune.

A hypothesis of how to look for this evidence has been published in the journal Australian Physics and was presented at the first lecture in the 2009 July Lectures in Physics program at the University of Melbourne last week.

If correct, the discovery would be the first new planet identified by humanity since deep antiquity.

Galileo was observing the moons of Jupiter in the years 1612 and 1613 and recorded his observations in his notebooks. Over several nights he also recorded the position of a nearby star which does not appear in any modern star catalogue.

"It has been known for several decades that this unknown star was actually the planet Neptune. Computer simulations show the precision of his observations revealing that Neptune would have looked just like a faint star almost exactly where Galileo observed it," Professor Jamieson says.

But a planet is different to a star because planets orbit the Sun and move through the sky relative to the stars. It is remarkable that on the night of January 28 in 1613 Galileo noted that the "star" we now know is the planet Neptune appeared to have moved relative to an actual nearby star."

There is also a mysterious unlabeled black dot in his earlier observations of January 6, 1613, which is in the right position to be Neptune.

"I believe this dot could reveal he went back in his notes to record where he saw Neptune earlier when it was even closer to Jupiter but had not previously attracted his attention because of its unremarkable star-like appearance."

If the mysterious black dot on January 6 was actually recorded on January 28, Professor Jamieson proposes this would prove that Galileo believed he may have discovered a new planet.

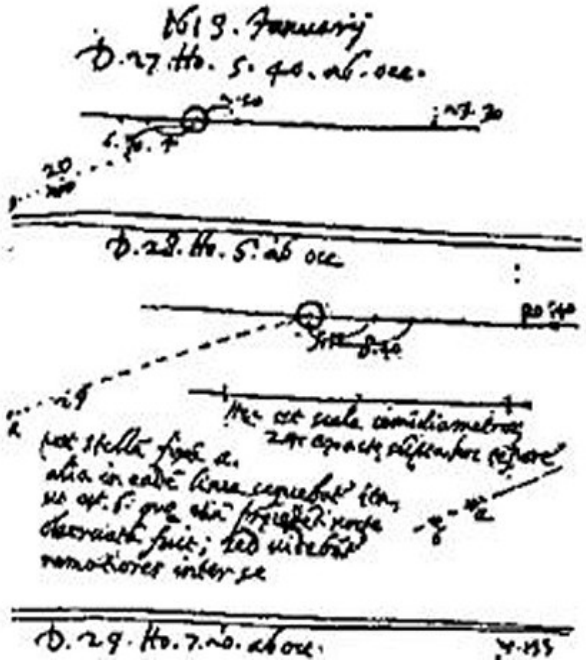
By using the expertise of trace element analysts from the University of Florence, who have previously analysed inks in Galileo's manuscripts, dating the unlabelled dot in his notebook may be possible. This analysis may be conducted in October this year.

"Galileo may indeed have formed the hypothesis that he had seen a new planet which had moved right across the field of view during his observations of Jupiter over the month of January 1613," Professor Jamieson says.

"If this is correct Galileo observed Neptune 234 years before its official discovery."

But there could be an even more interesting possibility still buried in Galileo's notes and letters.

"Galileo was in the habit of sending a scrambled sentence, an anagram, to his colleagues to establish his priority for the sensational discoveries he made with his new telescope. He did this when he discovered the phases of Venus and the rings of Saturn. So perhaps somewhere he wrote an as-yet undecoded anagram that reveals he knew he discovered a new planet," Professor Jamieson speculates.



Professor Jamieson presented at the first of a series of lectures in July, aimed at giving an insight into fundamental questions in physics to celebrate the 2009 International Year of Astronomy.