



Number 141

WAS NEWS

Monthly Newsletter of the **Worthing Astronomical Society**

Official website: www.was.org.uk

Affiliated websites: www.observatory99.freemove.co.uk



April 2001

ALMANAC

All times U.T. for B.S.T. add one hour.

April / May. LUNAR

April	Date	Time	rise	set
Last Quarter	15th	15.31	02.02	09.55
New moon	23rd	15.26	05.14	18.58
First Quarter	30th	17.08	10.09	01.46
May				
Full Moon	7th	13.53	19.29	04.42
Last Quarter	15th	10.11	01.44	10.50
New moon	23rd	02.46	04.26	20.29

10th	19	Mars 2° S. of moon
11th	01	Neptune at stationary point
11th	16	Mars at stationary point
16th	11	Jupiter 3° S. of Mercury
19th	13	Venus 4° N. of moon

Minima of Algol

April.	13th 04.48	16th 01.36	18th 22.30	21st 19.18
May.	Unsuitably placed.			

EARTH

April	Sunrise	Sunset
15th	05.05	18.57
23rd	04.48	19.10
30th	04.34	19.22
May		
7th	04.21	19.33
15th	04.09	19.46
23rd	03.58	19.57

PLANETS

(as at April 23rd.)

	Constellation	Rises	Sets	Mag.
Mercury	Aries	04.56	19.10	-2.2
Unfavourable, superior conjunction today.				
Venus	Pisces	03.36	16.17	-4.5
Brilliant morning object				
Mars	Sagittarius	23.48	07.37	-0.8
Morning object getting brighter.				
Jupiter	Taurus	06.36	22.38	-2.0
Evening object				
Saturn	Taurus	06.09	21.29	+0.2
Early evening object				
Uranus	Capricornus	02.52	12.35	+5.8
Unfavourable				
Neptune	Capricornus	02.11	11.10	+7.9
Unfavourable				
Pluto	Ophiuchus	21.49	07.59	+13.8
Have you photographed it ! ?				

PHENOMENA

Day	Hour	Phenomenon
April		
13th	02	Mars 1° S. of moon
20th	05	Venus at stationary point
21st	03	Venus 9° N. of moon
23rd	09	Mercury in superior conjunction
23rd	16	Saturn 1° N. of moon
25th	16	Saturn 1° N. of moon
26th	13	Jupiter 2° N. of moon
May		
4th	18	Venus at greatest brilliancy
7th	06	Saturn 4° S. of Mercury

Lunar Occultations

Times as at W.A.S. Observatory

Date	U.T.	Z.C.No	Mag	Phase
April				
14th	03.06.07	2689	6.8	reapp
14th	03.42.59	2692	5.5	reapp
28th	22.20.43	1078	6.0	diss
May				
2nd	01.35.32	1491	8.6	diss
4th	23.13.34	1840	8.0	diss
5th	05.01.42	1848	7.7	diss
5th	20.20.23	1950	5.7	diss
11th	02.34.28	2630	5.0	reapp
14th	03.25.56	3046	7.1	reapp
25th	10.18.37	976	2.9	diss
25th	11.16.37	976	2.9	reapp

This is only about 15% of the predictions for the W.A.S. observatory. If you are interested there are some Occultations of Planets later in the year so get in some timing practise beforehand

Planetary Report

Mercury. Is at superior conjunction on April 23rd, but becomes favourable again in mid May.

Venus. Very low in the east

Mars. Morning object brightening as it moves from Ophiuchus into Sagittarius

Jupiter. Evening object in the west

Saturn. Low in the west, disappearing into the twilight towards the end of the month and being unsuitably placed throughout May

Uranus and Neptune. Are both unsuitably placed.

Editors Note

Please remember that WAS News is available electronically, email me at robertdavis@lineone.net to receive a copy on your desktop.

If any members wish TV listings of other than those already shown in 'What's on the box', please let me know.

Happy Easter and keep those articles coming in!!

Rob

As a PS - It's good to see the society mentioned in the March edition of Astronomy Now.

Reports

Solar Section Report

By Section Director, Brian Halls

Sunspot activity, which had been decreasing through January, began to rise a little in February.

There were a number of large E-class groups, which were visible during the month, but there was quite a number of other moderate size sunspot groups which were visible too, making the Sun moderately spottier than the previous month.

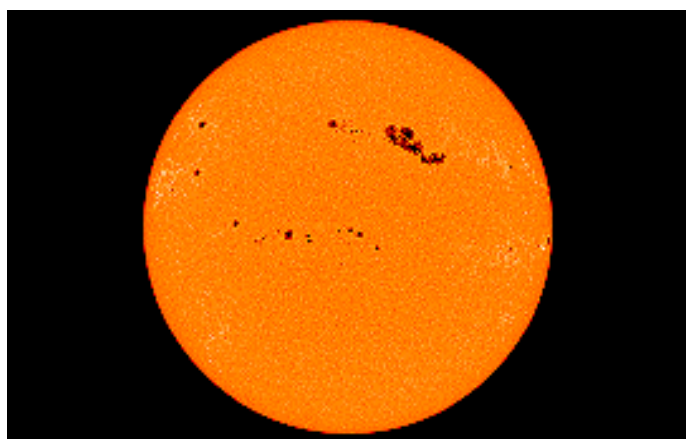
By the latter part of February, the number of sunspots had begun to drop off a little with 'simpler' type groups having taken the place of the large E-class groups that were visible at the beginning of the month.

This period of low sunspot activity followed into the start of March.

Spots that were visible comprised of C and D class groups, which were moderately active. Two of these groups were fairly active to evolve into E-class groups.

By mid-March the number of sunspot groups and the amount of spots within these groups began to increase.

Region 9393 first rotated into view on 24 March (N20° L=152° 700⁻⁶) already a very large and active group, and continuing to both grow in size and internal activity – it was a very magnetically complex group. By 26 March it was already a very large naked eye sunspot group, now just visible through a suitable no.14 welders glass. Not only was this group prominent and violently active, but sunspot activity on the rest of the Sun was also increasing – 15 separate sunspot active areas were also visible elsewhere.



Up until the close of March, 9393 (whose prominent spot mass measured 5⁰) was still active, producing coronal mass ejections that ultimately led to bright aurora which were seen as far south as Mexico and southern California. It was sufficiently large enough to make the news reports on the BBC and other news networks.

As I write this report, Region 9393 is still 2000⁻⁶ in size and very active (N17° L=154° on 31 March). By the time this report reaches the pages of WASNews, the group will have drifted out of view over the west limb, but by the end of April this sunspot bearing area will have once more rotated on the face of the Sun. I doubt if we have heard the last of this group.

Articles

March Lecture Reviewed - Report by Vanessa Wegner

Is the Universe Accelerating?

Professor Andrew Liddle

Professor Liddle started the talk by explaining that only 6 years ago astronomers had little idea about how much material there is in the universe & this is an important question as it helps us understand how the universe will end. Around 1995 two teams of astronomers set out to measure the density (how much matter) there is in the universe.

We know the universe is expanding but equally we know about the pull of gravity (gravitational attraction) so is the latter force affecting the former? By finding the answer to this we can then work out how much density there is & how fast the universe is accelerating.

A technique used in astronomy for such measurements is the standard candle technique. If for example we had a set of 60 watt light bulbs we can reasonably assume they all emit the same brightness, if we placed them at random in a garden & looked at them through a window some will be brighter than others. It would be reasonable to assume the bright ones are closer & we can measure objects in the sky in the same way. If object A appears 4 times brighter than object B & they are standard candles then object B is twice as far away. Stars are not standard candles though, many of them vary due to other factors. Also as the universe is expanding light coming towards us becomes brighter, to add a further complication light is stretched & loses energy (redshifting).

Therefore cosmologists decided not to use stars but rather supernova called Type 1a, this type is believed to be a standard candle. When observing distant supernova on the other side of the universe we are actually looking at the universe when it was much younger, comparing the expansion rate then with the expansion rate now gives the deceleration of the universe.

We believe that Type 1a supernova are the result of what happens at the end of the life of a large mass

star. Our sun will eventually simply peter out to become a white dwarf, however if it was in a binary system or in a large cloud of gas then it will gather more & more material. Astronomers know that white dwarfs can not continue expanding beyond a certain limit as it can not hold itself up against the force of gravity, this maximum limit for a white dwarf is known as the Chandrasekhar limit which is one & half solar masses, at this point it will explode. We know therefore that Type 1a supernova are standard candles.

Unfortunately supernova are very rare. In a typical galaxy there is perhaps only one supernova explosion every thousand years but for a month or so they can be as bright as all the other stars in the galaxy.

Professor Liddle then showed the audience a fascinating powerpoint animation of the night sky as seen through telescopes over the last 100 years. As technology has progressed we can see very faint objects but only a very small area of the sky - 1000 millionth of the sky! The Hubble has shown us an image of the faintest objects ever observed by a telescope, it is interesting that nearly everything in the image is a galaxy. In this 100 millionth of the sky there are about 1000 galaxies, therefore there are one million million galaxies in the universe, it is a curious coincidence that there are also one million million stars in our galaxy.

The Supernova Cosmology project in their quest to find a supernova tried taking many images of different areas of the sky. One month later all the same regions were photographed again (supernova explosions last for about a month). With such a painstaking systematic technique the probability is high that a supernova would be found. Professor Liddle then showed another animation of what a supernova explosion would like. A complication with such observations is that we don't want to know the brightness of the galaxy & the supernova, only the supernova therefore astronomers have to wait a year or so after the observation for the brightness of the explosion to completely fade away then subtract the brightness of the galaxy from the original brightness of the supernova

Professor Liddle then moved on to talk about how

astronomers account for unlikely improbability in their observations. The audience was asked to consider if a coin was tossed 42 times & 32 times it was heads & 10 times tails what would be the most reasonable guess for the next toss? The audience said it would be a 50/50 chance. As Professor Liddle pointed out it would be very unlikely there would be such a statistical imbalance but if there was we should guess heads. In cosmology it we would need to find out why there is such a bias. Until recently scientific theory showed the universe's expansion would slow down caused by gravity but very distant supernova are dimmer than we would expect in a universe that's decelerating.

We know that gravity tries to pull things together but if the universe is accelerating there must be another force, Einstein actually predicted this & called it the "cosmological constant", i.e. there is the gravitational attraction but also the more dominant mysterious repulsive force.

If the theory is correct eventually the universe will be expanding so fast there will be nothing around us & the cosmos will be a very dark & lonely place.

Professor Liddle treated the society to a fascinating talk on an awesome subject which still leaves many questions to be answered.

Notices

Sagas Meeting

June 2 2001

Every few month's members of WAS meet with members of other astronomical societies at meetings of the Southern Area Group of Astronomical Societies (SAGAS). At these meetings, there are society reports from member societies and it is a forum for discussion and finding solutions to a variety of mutual problems, for example concerns like light pollution, society fund raising, etc.

Member Society's take turns in chairing these meetings, and in June the chairing society is the newly formed East Sussex Astronomical Society based in Bexhill. They propose departing from the normal

'round table' format that the SAGAS meetings usually take.

Instead of having an afternoon meeting at the normal venue near Chichester, they will be holding an all meeting and exhibition at Bexhill High School, where they have arranged a number of speakers.

The meeting is open to all society members of the SAGAS group (that includes all our members). The meeting opens at 11.00 and will go on to 17.00.

The High School is described as having ample parking, with the lecture theatre having seating for up to 300 people. There will be trade stands and exhibition space.

Lectures during the day will come from:

Paul Money – Up to date information on Mars
Peter Gill – Solar Observing

Harry Ford of the Royal Greenwich Observatory will be talking as well as John Mason who will talk on the subject of the Big Bang. These last two speakers are to be confirmed.

At the close of the meeting at 17.00, the meeting will transfer to the Herstmonceux castle Science Centre, where after a welcome from Science Projects director, Steve Pizzey, there will be a BBQ (facilities for inside or outside depending on the weather have been arranged). There will be a tour of the observatories and viewing through the 26" refractor. Other telescopes belonging to ESAS members will be also available.

So if you want to make a day of it, please see me for more details. It is expected to be a ticket admission event so, but the cost of these are as yet no known, but would be expected to be quite reasonable.

Sky and Telescope

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If members would like to subscribe to this monthly magazine at special society subscription rates, please let me know. At the moment, we are able to obtain this magazine at a special low rate, but there must be a minimum number of subscribers for WAS to get this facility; unfortunately we have

lost one of our subscribers. As a result the Society shall lose the special subscription rate it pays at the moment. So what we really need are one, or more, subscribers to this magazine. If you are ALREADY a *Sky & Telescope* subscriber and paying the individual subscriber rate, why not think about transferring your subscription to the WAS subscription and save yourself some money!!

Contact either the Chairman, Secretary or Treasurer for more details.

Do you have 'space for sale?' in a new semi-regular slot the WAS News editorial team are proud to present:

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 All with original transport cases and boxes,
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What's on the Box

Thursday 12th April



09.00, 12.00 & 15.00~Horizon Special
 (Destination Mars) Tantalising new evidence has emerged that life could exist on Mars. But for mankind the only way to find out for sure is to go there. Looking into the future, 'Horizon' tells the story of the first manned flight to the Red Planet and highlights the huge challenges which the astronauts will need to overcome.



01.30~Final Frontier
 The latest in the world of astronomy and space exploration. This edition features an early Irish telescope being rebuilt, an update on the Beagle 2 mission to Mars, and a profile of the space artist Julian Barbour.

Thursday 19th April



20.00 & 23.50~Knowledge Talks: The search for Life
 Debate, in which a panel of experts, including Prof. Frank Drake, president of the Search for Extra-Terrestrial Intelligence (SETI), astronomer Dr Ian Crawford and astrobiologist Prof. Jack Cohen, explore the possibility that there may be other planets in our galaxy that harbour intelligent life.

WAS News News

NASA and military continue search for Mars Polar Lander

Jeff Foust

NASA said Monday that it would begin a joint review with a military mapping agency to

investigate images that may have pinpointed the location for the lost Mars Polar Lander spacecraft.

Officials with the National Imagery and Mapping Agency (NIMA) said last week that an analysis of images of the surface of Mars, taken by the Mars Global Surveyor (MGS) spacecraft orbiting the planet, turned up possible evidence for the spacecraft and associated components, including its aeroshell and parachute.

"NIMA researchers reviewed and assessed features seen in several images that they believe could be indicative of the lander and its protective aeroshell," NASA said in a statement Monday.

Both agencies provided few other details about the search, and did not release the images in question. In a separate statement, NIMA officials said they used "unclassified resources and techniques" to identify the lander in high-resolution MGS images taken between December 1999 and February 2000.

Finding the spacecraft in those images would be especially challenging, given its small size. The spacecraft is about two meters across, only slightly more than the 1.4-meter resolution of the sharpest MGS images. Thus, even in the best case the lander would appear as only a few off-color pixels, making a definitive discovery difficult.

NASA is skeptical of NIMA's claims, noting that the pixels thought to be the lander could be nothing more than noise. To resolve the issue, or at least come to a better understanding of the images, NASA and NIMA experts will continue their analysis of those images as well as others that MGS will take later in the year.

The spacecraft's discovery could answer the mysteries regarding its disappearance on December 3, 1999, the day the spacecraft was scheduled to land in the south polar regions of Mars. Communications with the spacecraft were halted as planned shortly before the spacecraft entered the Martian atmosphere, to resume shortly after landing. However, contact with MPL was never regained, and efforts to restore communications ended in February of 2000.

A review panel concluded last March that the most likely cause of MPL's failure to communicate were

spurious signals generated by sensors on the spacecraft's landing legs when the legs deployed during the spacecraft's descent. Those signals led the spacecraft's computer to believe that the spacecraft had landed, so it turned off the descent engine even though the spacecraft was still 40 meters above the surface. The spacecraft hit the surface at 22 meters per second, an unsurvivable speed, the panel concluded.

Finding the spacecraft on the surface largely intact, however, could cause some reconsideration of those conclusions. It could also bolster claims that signals picked up by a radio telescope in late December 1999 early January 2000 were from the lander. The possibility that the weak signals, detected by 45-meter antenna at Stanford University, rejuvenated the search for the lander in late January and early February of last year. NASA enlisted several radio telescopes to listen for any signals from the lander, but none were detected.



Artist's concept of Mars Polar Lander near the Martian south pole. Photo: NASA

NIMA officials said that they got involved with the search last year, when NASA supplied the agency with MGS images between January and May 2000 to conduct a joint search for the lander. A separate, independent search by NASA alone, taking place at the same time, failed to turn up any evidence for the lander.

NIMA was established by an act of Congress in 1996 to centralize several photointelligence groups within the Defense Department and Central Intelligence Agency. The agency describes its mission as one to provide "timely, relevant, and accurate imagery, imagery intelligence, and geospatial information in support of national security objectives." The agency is headquartered

in the Maryland suburbs of Washington, DC, with offices elsewhere in the Washington area as well as St. Louis, Missouri.

Diary

April 4 – Committee Meeting; at Chairman’s home.

April 11 – WAS Monthly Meeting – “Globular Clusters” by Bob Turner

April 12 – 40th Anniversary of first manned space flight

May 9 – WAS Monthly Meeting – “Observing Planetary Nebulae” by Owen Brazell.

May 19 – Webb Society AGM – 10.30; Rutherford Appelton Laboratory, Nr Oxford.

June 2 – SAGAS Meeting – Chaired by East Sussex Astronomical Society; Bexhill High School, and Herstmonceaux Science Centre in evening. (See article).

June 13 – WAS Monthly Meeting – TBA

June 21 – First total solar eclipse of the millennium.

*All monthly meetings (**bold**) are held at the Heene Church Rooms, Heene Rd, Worthing @ 7:30pm*

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Contributions to the **May** issue of WAS NEWS should be with the Editor by **May 1st**. All material for inclusion should be sent to the Editor.

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