



WAS NEWS

Monthly Newsletter of the Worthing Astronomical Society

Official website: www.was.org.uk

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Number 149

January 2002

ALMANAC

All times U.T.

Jan. / Feb.

LUNAR

January	Date	Time	rise	set
Last Quarter	6th	03.55	** **	12.00
New moon	13th	13.29	08.19	15.59
First Quarter	21st	17.46	11.15	** **
Full Moon	28th	22.50	15.55	07.50
February				
Last Quarter	4th	13.33	00.28	10.44
New moon	12th	07.41	07.58	17.09
First Quarter	20th	12.02	10.16	01.09
Full Moon	27th	09.17	17.44	07.25

EARTH

January	Sunrise	Sunset
6th	08.05	16.08
13th	08.01	16.17
21st	07.54	16.30
28th	07.45	16.42
February		
4th	07.34	16.55
12th	07.20	17.10
20th	07.05	17.24
27th	06.50	17.37

PLANETS (as at January 30th.)

Constellation	Rises	Sets	Mag.
<u>Mercury</u> Capricornus	07.05	16.28	+3.3
Unfavourable			
<u>Venus</u> Capricornus	08.01	17.04	-3.9
Unfavourable			
<u>Mars</u> Pisces	09.36	22.14	+1.0
Visible in the Southwest			
<u>Jupiter</u> Gemini	13.42	06.08	-2.6
Visible most of the night			
<u>Saturn</u> Taurus	12.00	03.42	-0.1
Visible most of the night			
<u>Uranus</u> Capricornus	08.19	18.01	+5.9
Unfavourable			
<u>Neptune</u> Capricornus	07.38	16.37	+8.0
Unfavourable			
<u>Pluto</u> Ophiuchus	03.34	13.28	+13.9
Early morning object			

PHENOMENA

January

Day	Hour	Phenomenon
12th	00	Mercury at greatest elongation E. 19°
13th	13	Venus 1° N. of moon
14th	12	Venus in superior conjunction.
15th	05	Mercury 4° N. of moon
18th	21	Mercury at stationary point
19th	03	Mars 5° N. of moon
24th	16	Saturn 0.06° S. of moon
26th	12	Venus 4° S. of moon
26th	19	Jupiter 0.9° S. of moon
27th	19	Mercury in inferior conjunction
28th	14	Neptune in conjunction

February

8th	02	Saturn at stationary point
8th	17	Mercury at stationary point
10th	07	Mercury 5° N. of moon
12th	23	Venus 3° N. of moon
13th	17	Uranus in conjunction
17th	04	Mars 5° N. of moon
21st	00	Saturn 0.2° S. of moon
21st	16	Mercury at greatest elongation W. 27°
23rd	02	Jupiter 0.9° S. of moon

Minima of Algol

Jan. 19th 04.36 22nd 01.24 24th 22.12 27th 19.00.

Lunar Occultations Times as at W.A.S. Observatory

Date	U.T.	S.A.O.No	Mag	Phase
Jan	h. m. s.			
17th	17.32.50	165504	7.6	diss
19th	20.06.44	128869	8.9	diss
19th	20.21.35	128877	8.2	diss
19th	21.00.01	128876	9.2	diss
19th	21.09.13	128889	8.3	diss
19th	21.37.36	128899	8.9	diss
20th	18.24.10	109815	8.7	diss
20th	18.56.08	109819	9.1	diss
20th	21.00.53	109855	8.9	diss
20th	21.39.41	109873	7.7	diss
20th	22.50.17	109895	6.4	diss
21st	18.16.57	110321	8.9	diss
21st	18.30.13	110325	6.5	diss
21st	18.58.39	110324	8.7	diss
21st	19.19.50	110339	8.9	diss
21st	20.58.13	110363	8.9	diss
21st	22.24.13	110383	8.4	diss
21st	22.59.16	110390	5.7	diss
22nd	21.44.01	93192	8.5	diss
23rd	19.21.13	93565	8.1	diss
23rd	22.16.50	93608	8.4	diss
24th	18.26.52	94021	7.2	diss
24th	18.27.40	94022	6.5	diss
25th	23.21.50	77420	6.4	diss
31st	22.22.39	119035	4.2	reapp
Feb.				
2nd	02.41.58	138973	8.3	reapp
2nd	05.09.56	139010	7.8	reapp
4th	04.58.32	158677	6.2	reapp
5th	03.48.50	159280	5.9	reapp
15th	18.56.54	128739	7.6	diss
16th	18.57.51	109684	8.4	diss
17th	18.55.02	110164	8.5	diss
17th	19.17.22	110165	8.7	diss
18th	19.13.52	93027	8.6	Diss

This is only about 20% of the predictions for the W.A.S. Observatory.

Please note the change to **Smithsonian Astrophysical Observatory** star catalogue = S.A.O. I hope this will be of more use to members.

Editors Note

Hello to you one and all and a very Happy New Year.

Space (no pun intended) is at a premium this issue, so I done the only sensible thing and edited most of my waffle out of this issue!

Rob

Dates for your Diary

January 2002

- Jan 11 - Comet Mrkos Closest Approach To Earth (1.702 AU)
- Jan 11 - 215th Anniversary (1787), William Herschel's Discovery of Uranus Moons Titania and Oberon
- Jan 12 - Mercury At Its Greatest Eastern Elongation (19 Degrees)
- Jan 23 - Asteroid 2001 OB36 Closest Approach To Earth (0.967 AU)
- Jan 24 - HESSI Pegasus XL Launch
- Jan 24 - Moon Occults Saturn
- Jan 25 - Venus Passes 1.3 Degrees From Neptune
- Jan 26 - Moon Occults Jupiter
- Jan 26 - Mercury Passes 4.4 Degrees From Venus
- Jan 26 - Mercury Passes 3.2 Degrees From Neptune

February 2002

- Feb 07 - Venus Passes 0.7 Degrees From Uranus
- Feb 12 - Chinese New Year
- Feb 16-17 - Croxteth Park Star Party Weekend, Liverpool, England.

Reports

Stellar & Deep Sky Section Report

Graham L. Boots - Stellar & Deep Sky section director

We successfully observed all the five objects in Serpens Cauda that were contained within my last article appearing in the May 2001 edition of WAS News.

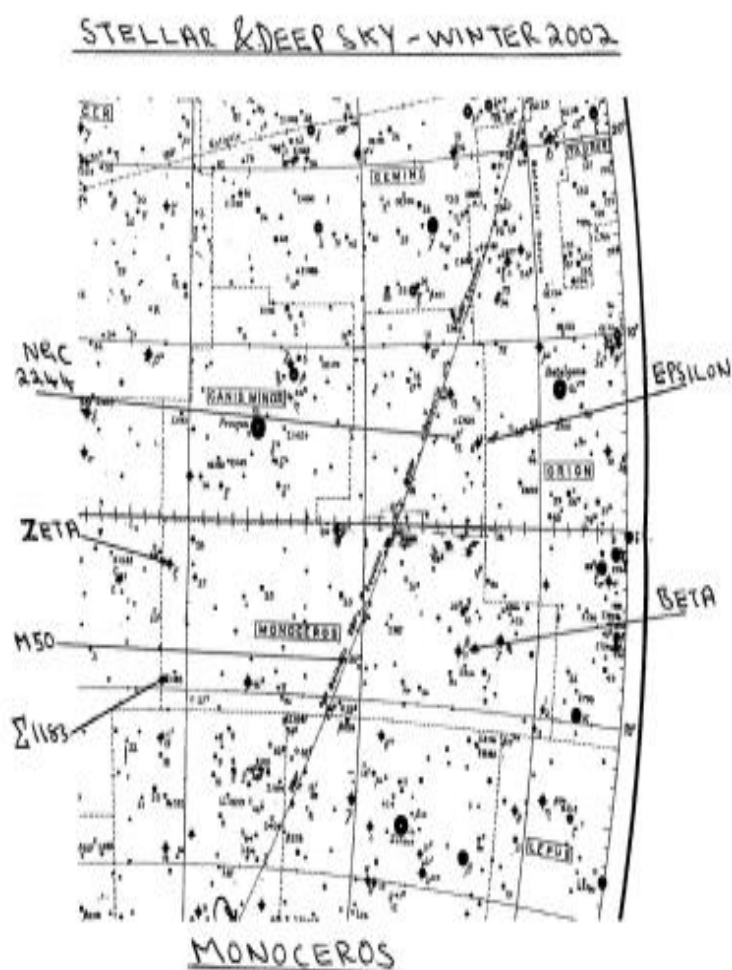
The double star Theta q Serpentis was observed by Alex Vincent and myself, we agreed the colours stated both being silvery white.

On an Observer's Night in August three of us tried to split the suspected double star Eta h Serpentis. We used very high magnification but without success. Some books state this star is a double while some do not but we did not know the separation or magnitude of any companion. Two observers suspected a very close pair while I remained unsure.

I was on my own in the Observatory when I observed the double star Nu n Serpentis last August. Not knowing the details I estimated the separation between 40" and 50", the magnitude of the companion at 9, the position angle (PA) as being northwards and the colours as yellow and blue. The very next day I finally found reference to this double in "The Visual Atlas of Double Stars" by Mike Ropelewski published by The Webb Society.

This star was listed at the back of this volume as a double star with a separation of 46.3", the magnitudes at 4.33 and 9.18 and the PA at 28°, north being 0°/360°. I was very pleased at being so close with my estimates but I was out in respect of the colours, which were stated as 'a pure white pair' This observation brought its own rewards by testing my limited observational skills.

Using the 12" Newtonian we observed M17 the Omega and M16 Eagle emission nebulae HII regions on many observer's nights throughout the summer. The Omega nebula appeared as a right-handed tick mark and responded beautifully when viewed with the Lumicon ultra high contrast filter. M16 is a rich open star cluster but it was very necessary to use this filter in order to see the associated gas. I managed obtain a reasonable photograph using a 135 mm lens which enabled both M17 and M16 to be captured in the same field of view.



For the winter months I have chosen the constellation of Monoceros the unicorn. It lies on the celestial equator, contains no really bright stars but the Milky Way runs straight through the middle. It is east of Orion and south of Gemini.

I have chosen four double stars. First Zeta z Monocerotis, which is an optical triple star of primrose yellow with two pale blue attendants, magnitudes 4, 7 and 10. I do not know the separation or the PA but a low power eyepiece is suggested. When a low power is used this star is seen in a rich star field.

Epsilon e also known by its Flamsteed number 8 is a double star of magnitudes 4.5 and 6.5 and the colours are described as pure white and bluish or mauve. The PA is 27° and the separation as 13.4". Again this star is seen in a rich star field when viewed with a low power. From another source of information the colours are described as deep red and greenish (by contrast), which is in such conflict we really must check this out.

Beta b or 11 Monocerotis is another triple star of magnitudes 5, 5.5 and 6. They are all described as white with separations of 7.3" and 2.8" with PAs of 132° and 106°. Norton's 18th edition gives brighter magnitudes, which I think are more exact.

S 1183 Monocerotis is a double star of magnitudes 5 and 7 and are described as an open pair but I do not know the separation nor the PA. Again the star is in a rich star field. The colours are described as blue white and emerald green (by contrast). The Webb Society in their journal the Deep Sky Observer No.125 summer 2001 edition published my article 'Why Not Green Hot? – Why there are no green stars' in which members of our society are acknowledged for their help in determining visual star colours.

If any members are able to answer any of the unknowns such as separation or PAs from their own libraries I would be pleased to hear from you. In particular what star catalogue does the symbol S represent?

M50 is a 6th magnitude open star cluster, which is described as undistinguished. I think we should pay it a visit just to cheer it up, perhaps Alex could tell it a joke or two or three.

NGC 2244 also known as H.V112 is described as a beautiful large elongated open star cluster visible to the naked eye made up of 7th to 14th magnitude stars. It includes the 6th magnitude yellow giant star 12 Monocerotis, which is probably a lot closer. The cluster is surrounded by a faint ring of nebulosity known as the Rosette nebula NGC 2237 1° in diameter which is said to be visible in binoculars under a dark sky. I once

photographed this object using a long exposure from the back garden but all I got was the star cluster. We will use a wide field eyepiece fitted with the Lumicon ultra high contrast filter to see if we can see the nebulosity.

I recently purchased a set of five Meade Super Plössl series 4000 multi-coated eyepieces which have already given me views of the Moon, Saturn and the double star cluster the Sword Handle in Perseus like I have never seen before, they are fantastic. I look forward to shocking and amazing you too.

Please read up from your own sources the objects I have written about above, as this will aid discussion on Observer's Nights that are held at the Observatory every Friday apart from Bank holidays and occasional holidays.

Solar Section Report - December 2001

Brian Halls - Section Director

During December, solar activity increased when compared with November. Sunspot activity as just one solar phenomena, also increased as well.

E and F class sunspot groups were prominent in their appearance on nearly every day of the month, however the quality of these classes were much less than at sunspot maximum.

At sunspot maximum, these groups (which cover anything between 120 of solar longitude for an E class spot to 150 plus for an F class) would normally comprise of a very large spot surrounded and followed by many numerous smaller spots – the E and F class spots visible now no longer comprise very large 'central' spots but consist of one or two smaller but, still very active spots with a trailing retinue of smaller spots spread across many tens of thousands of kilometres of solar surface.

All the same, the spots are very active and a number of solar storm alerts were generated through the month as solar matter was spewed into space by violent activity, the latest being December 30.

Nick Quinn reported two naked eye sunspot groups at the start of the month – a northern group on December 1 (Region 9715 N050 L=1380 , area 0890, type Ekc and described as being very magnetically active) and a southern group on December 9 (Region 9718 S060 L=0860 , area 0470, type Dki).

Members of the society observed the Sun on 16 days in the month – the Mean Daily Frequency (MDF) of sunspot groups was 9.5 (northern solar hemisphere = 5.0; southern solar hemisphere 5.75). The society sunspot number for the month was R= 146.5.

Members reporting solar observations this month were Graham Boots, Nick Quinn and the Director.

The Beginnings of Astronomical Knowledge

Norman Walker

Norman started the lecture by asking the audience to consider a moth flying against a light bulb, why do moths do this? They do it because they have evolved, they know they need to fly towards a bright light but this realisation has taken millennia to develop. Similarly think of man, our really distant ancestors must have also been aware of the night sky & taken many thousands of years to develop this knowledge.

When did astronomy start? Bones have been found in Africa dating to approximately 60 thousand years BC, they are known as the Ishango bones. There are 27 to 28 lines scratched on the bones, which have been filled with ochre, is it possible that someone was trying to keep a record of the moon cycle?

Anyone who lives in the country side knows that the moon makes a huge difference to how we move around, certainly if we consider the very beginnings of man 3 & a half to 5 million years ago the moon's phases would have been even more crucial. In the last 10 to 20 year's scientists have discovered that part of the female DNA is identical in all women across the world & this commonality can be linked to one female ancestor who lived 80 thousand years ago. It seems there was a genetic bottleneck & most of the creatures that should have evolved died out, possibly leaving only one family from which we have all descended.

This all leads us to Neolithic observatories such as Stonehenge. Why is Stonehenge so important? It is only one of approximately 2000 Neolithic circles in Europe. It is an extremely well preserved example. It was started in about 2000 BC built in 3 phases over at least 500 years, the stones were dragged 150 to 200 miles to the site, this was an awesome undertaking especially compared to the projects man undertakes now. In northwest France there is an arrangement of stones in straight lines rather than a circle, the largest stone is 400 tons in weight. The sheer effort that went into the construction of these observatories proves how important they were.

The observatories definitely have astronomical alignment, the sun rises & sets in different places throughout the year, Stonehenge has two alignments, mid-summer & mid-winter, we think the former is associated with birth & the latter with death. However despite all of this knowledge we know nothing about the people who built these monuments. How long would these people have

needed to keep accurate records of the sky before they were sure enough of their observations in order to have commenced such a major engineering feat?

A group of sponge divers in 1900 found a boat sunk in about 50BC. They discovered an object in the boat, which was coral encrusted & it has taken the last 100 years to figure out what the object is. It is a geared mechanism, which was so fragile a copy, was made of it to work out how it operates. It actually has a differential gear, winding a handle shows the position of the moon & planets even though the 28-day cycle of the moon varies.

In about 450BC a Greek called Dudoxes possessed spheres showing the night sky, the spheres no longer survive but we can work out what they looked like from a poem describing them written by Aratus. We don't see the whole sky, as we are in the Northern Hemisphere, of course this all changes due to procession. Every 26 thousand years the pole star changes, this is actually shown by the spheres. The average school child or adult now would not know what procession is although this is nature on a huge scale.

When Christianity came along it effectively stifled any scientific advance in Europe for 1500 years. Primitive religions were generally animistic, they believed that every tree, stream etc has a spirit & those objects in the night sky such as planets were essentially gods & by definition were perfect creations. Christianity although it was never acknowledged, was also essentially an animistic religion; the sun for example was a perfect unblemished object, the planets moved in perfect circles etc.

During this time Arab astronomers carried on building better & more advanced instruments, a Danish astronomer built an instrument using Arab designs & from his observations realised that the planets were not moving in circles at all, it was soon realised that they actually moved in ellipses. Galileo then saw spots on the sun & that Jupiter had moons of it's own. These discoveries were very disturbing for Christianity. From 1550 to 1650 there were dramatic advances in astronomy, reflecting & refracting telescopes were built, the spirit of free enquiry was born. Almost everything we understand about astronomy & our place in the universe has occurred in the last 300 years.

The invention of photography was obviously very important, prior to photography almost all observation was subjective, but photography meant a permanent record & much fainter objects than can be seen with the naked eye were recorded. We now have CCD's, a gadget which you can buy for about £1000, hold in your hand &

record a huge amount of data. An amateur astronomer prepared to spend between £1000 to £2000 can buy a telescope & CCD & carry out real science. Forty to fifty years ago even professionals could not do this.

If we think about the earliest humans scratching marks on bones to record moon cycles, we really did not advance that much until about 400 years ago when we suddenly made huge leaps in astronomical observation.

It is very hard to predict the future, we will obviously have bigger telescopes but if we invent something completely new, which will have a major impact, then it will probably involve new physics such as dark matter.

The lecture was fascinating & very thought provoking, Norman Walker certainly captivating the audience with the sheer enormity of the subject matter & reminding us of the fantastic leaps & sheer effort man has made to observe & record the universe around him.

Notices

Free public lecture by Sir Patrick Moore

Victoria O'Sullivan - Alumni & Development Officer
University of Portsmouth

I am writing to you with regards to a free public lecture to be held at the University of Portsmouth on Wednesday 23rd January at 6pm to which we would like to invite members of the Worthing Astronomical Society.

The lecture will be given by Sir Patrick Moore and is entitled "Beyond The Moon"

I'm sure the lecture will be of interest to your members and I would be grateful if you could maybe include details on your website or in a newsletter. If members are interested in attending I would be grateful if they could reserve their place as this will help with our administration.

If you have any queries regarding the lecture or to reserve places, please contact me on 023 9284 2726 or email victoria.osullivan@port.ac.uk

Society Property available to loan for Members

Graham L. Boots

We have recently been given by member Andrew a Philips Planisphere for latitude 32 degrees north which is suitable for use in the USA, Middle East, North Africa

and Southern Japan etc., It is also useful when on holiday in the Mediterranean or the Canary Islands. This item can be borrowed from our library, which is open at all monthly meetings.

At the Observatory we have the first five volumes of the Astronomical Register, which have recently been rebound. The Astronomical Register was the earliest journal to be published for amateur astronomers in this country. The Register appeared every month from January 1863 to 1886.

The loss must have been considerable and four year later in 1890 the British Astronomical Association was formed. Our five volumes cover the period from January 1863 to November 1872. Contributions were made by astronomers of the day including some well known names. The contents comprise of meeting reports, correspondence, articles, reports, all areas of the science and obituaries.

It was a medium of communication for amateur astronomers and all others interested in the science of astronomy. It is of great value to historians. A paper written by Peter Johnson about the Register appeared in the journal of the British Astronomical Association volume 100 No 2 April 1990.

I thank Bob Turner for bringing this article to my attention. Those interested should contact me

Articles

Christmas Star's twist gives solar insight

Stuart Clark – New Scientist (24th December 2001)

Christmas observations of a peculiar "twisting" star have provided a crucial insight into why the Sun's 11-year sunspot cycle is so unpredictable, according to European astronomers working at the Anglo-Australian Telescope in New South Wales.

The star, AB Doradus, is best viewed over the festive period and for the last 10 years Andrew Collier Cameron, from St Andrews University, and his collaborators have spent the holidays watching its starspots.

Like sunspots, starspots are created when magnetic fields break through a star's surface. But in the case of AB Doradus, 1000 times more of its surface is covered by spots than on our own Sun. This is because AB Doradus is young and whizzes round about every 12 hours, creating a strong magnetic field.

Stars are made of gas; meaning different latitudes of a star rotate at slightly different velocities. Analysis of Doppler shift effects in the spectrum from AB Doradus shows that the starspots appear in three main bands, each moving at different speeds.

With 10 years of data, Cameron thought he could pin down the velocity difference between the bands. But he was in for a surprise, because each year's records did not tally with the next. "I came to the conclusion that the differential rotation was changing from one year to the next," he says. In other words, the star was 'twisting' back and forth.

This is the first direct evidence for something that has long been suspected - that the magnetic field affects the gas flow inside the star, which generates the field in the first place, creating a feedback loop.

On AB Doradus, the feedback is so strong that it actually arrests the star's rotational rate until the magnetic field no longer drags on the star. The effect is non-linear and could explain some of the unpredictability of stars' behaviour.

For an older and slower star, such as the Sun, which rotates about once a month, the effects are subtler. For example, in 2001, the Sun stubbornly refused to end one cycle and begin a new one.

Cameron believes magnetic feedback, albeit on a smaller scale, disrupts the regular cycling of the system. "It introduces that little element of chaos into everything," he says.

Hoping for more insights, Cameron and his team will be observing again this festive season. "We're on the telescope from 21 December through 2 January, so we wipe out both Christmas and Hogmanay this year," he says bravely.

We're all suffering from a serious bout of exaggeration

Robert Mathews – Sunday Telegraph 9th December 2001

We are now well into the season of cold remedies, flu jabs and that wearisome contradiction of people who declare, despite their still being vertical, "I've got the flu". What they do have, of course, is a bad cold and a tendency to exaggerate. Anyone with influenza is incapable of doing much more than praying for its end.

The death toll inflicted by "the flu" over the centuries should give anyone pause before taking its name in vain.

In the Spanish flu pandemic of 1918, 29 million people died – double the number killed fighting the World War that ended that same year.

The viral cause of influenza was identified 70 years ago; quite why it rears its head when it does remains a mystery, however. In his engagingly provocative new book *Cosmic Dragons* (Souvenir Press £18.99), the distinguished astrobiologist Professor Chandra Wickramasinghe revives a centuries-old explanation – one that is echoed in the Italianate name of the infection.

As early as the 15th century people believed that influenza was linked to an astral effect or "influence", whence it derives its name. For many years, Prof. Wickramasinghe has worked on the idea that there may be a grain of truth in this age-old belief, the cosmic connection being provided by comets.

The mere suggestions that comets can bring microbes to the Earth would have been regarded as ludicrous not so long ago. During the 1970s Prof. Wickramasinghe and Sir Fred Hoyle, the late astrophysicist, attracted derision for suggesting that microbes were mixed in with the dust on comets.

Subsequent studies of the light from a number of comets – including Halley's Comet – has revealed clear evidence that these giant snowballs do harbour complex biochemicals with spectra identical to those of microbes.

To support the case for comets being responsible for conveying flu to the Earth, Prof. Wickramasinghe focuses on two odd features of influenza epidemics: their timing, and their subsequent spread.

In temperate Northern latitudes such as ours, flu outbreaks tend to peak in winter. In the tropics, they strike at any time. Oddly, for a disease supposedly spread by person-to-person contact, however the advent of mass travel has failed to smooth out these regional differences.

Such persistent seasonality, say Prof. Wickramasinghe is simply the result of the annual patterns of mixing between the upper and lower atmospheres. This allows dust dumped into the atmosphere by comets to reach ground level.

The key role of the atmosphere also resolves the second puzzle about flu epidemics: their spread across the globe. Even at the time of the Spanish flu pandemic, some doctors questioned whether person-to-person contact could be the whole story.

For example, the virus surfaced in Bombay and Boston on the same day, and yet took three weeks to get from

Boston to New York, despite the number of People travelling between the two places. In contrast, it rapidly infected those living in sparsely-populated Alaska, even though travel conditions were the worst in living memory. Other epidemics have thrown up similar anomalies. According to Prof. Wickramasinghe, they can all be explained as the result of the virus originating in the cometary dust lurking high in the atmosphere.

The appearance of flu simultaneously in widely different parts of the world is thus the result of clouds of the space-borne virus punching through the atmosphere, while its failure to cover far shorter distances is the result of the winds not carrying it there. Only after the winds have done their bit can person-to-person transmission begin.

The impact of comets has already been blamed for several mass extinctions that have occurred over the past one billion years, including the death of the dinosaurs 65 million years ago. If Prof. Wickramasinghe's theory is right, it means that, in the last century alone, we humans fell prey to these cosmic killers in our tens of millions.

What's on the Box

Thursday 10th January 2002

BBC RADIO 4

16.30 – 17.00 ~ The Material World
Science series. Simon Singh talks to Laurence Krauss and Ed Copeland about the 'dark energy' or 'quintessence' that cosmologists believe is stretching the fabric of space

Friday 11th January 2002

BBC TWO

00.30 – 01.00 ~ Final Frontier
The latest developments in the world of astronomy and space exploration with Dr Paul Roche and Alex Barnett

Saturday 12th January 2002

BBC TWO

11.50 – 12.10 ~ The Sky at Night
(The Signature for Life) The world of astronomy with Patrick Moore. Dr David Wynn-Williams talks about a miniature spectrometer that is about to be tested in Antarctica and which one-day may find evidence of Martian life

Monday 14th January 2002

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21.00 – 22.00 ~ Edge of the Universe
(Killers in Space) Three-part series investigating death-trap planets, lethal asteroids and comets, and extraordinary new discoveries about the shape and structure of the universe. This second programme looks at how our solar system is teeming with thousands of asteroids and comets

Tuesday 15th January 2002

BBC
KNOWLEDGE

08.50 – 09.40, 11.50 – 00.20, 14.50 – 15.20 ~ The Planets
(Different Worlds) Documentary series tracing mankind's exploration of our solar system. This programme examines how early space probes such as Mechta, named after the Russian word for 'dream', heralded the beginning of planetary exploration. Mechta was the first man-made object to join the nine planets orbiting the sun - but how could the probe help man's understanding of how the planets came to exist?

BBC TWO

21.00 – 21.50 ~ Challenger, Go for Launch
Documentary examining the circumstances surrounding the Challenger space shuttle tragedy in 1986. Including expert testimony from a senior NASA official, as well as eye-witness accounts from technicians and engineers who were present at the launch

Friday 18th January 2002

BBC TWO

00.30 – 01.00 ~ Final Frontier
The latest developments in the world of astronomy and space exploration with Dr Paul Roche and Alex Barnett

BBC RADIO 4

14.15 – 15.00 ~ Afternoon Play
(John Glen Stole My Space Suit) Louise Ironside's fictional play is based on the experiences of the 'Mercury Thirteen' - 13 top female pilots whom NASA trained as astronauts in the early 1960s

BBC
WORLD SERVICE

20.05 – 20.30 ~ Discovery
How serious is the risk of the Earth colliding with a body in space? Bill McGuire, professor of natural disasters, meets the scientists who search space for a rock coming our way

Diary

February 13 – *The Moon* by Peter Gill (Eastbourne Astronomical Society)

March 13 - *The Aurora* by Neil Bone (South Downs Astronomical Society, Astronomy Now)

All Meetings (bold) are held on the second Wednesday of every month unless otherwise stated, at Heene Church Rooms, Worthing at 7.30 p.m. Meetings include the latest astronomical work, reports and, photographs by members. For further information please call 01903 521205, on the Internet at www.was.org.uk or Email: worthing_astronomical_society@hotmail.com

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Note to Contributors

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

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