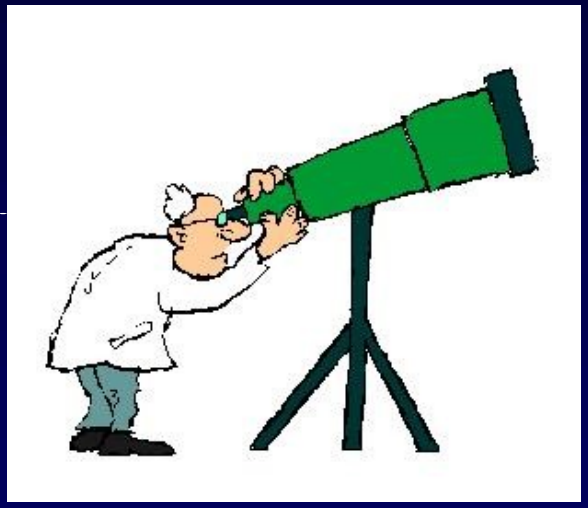
What's Up!

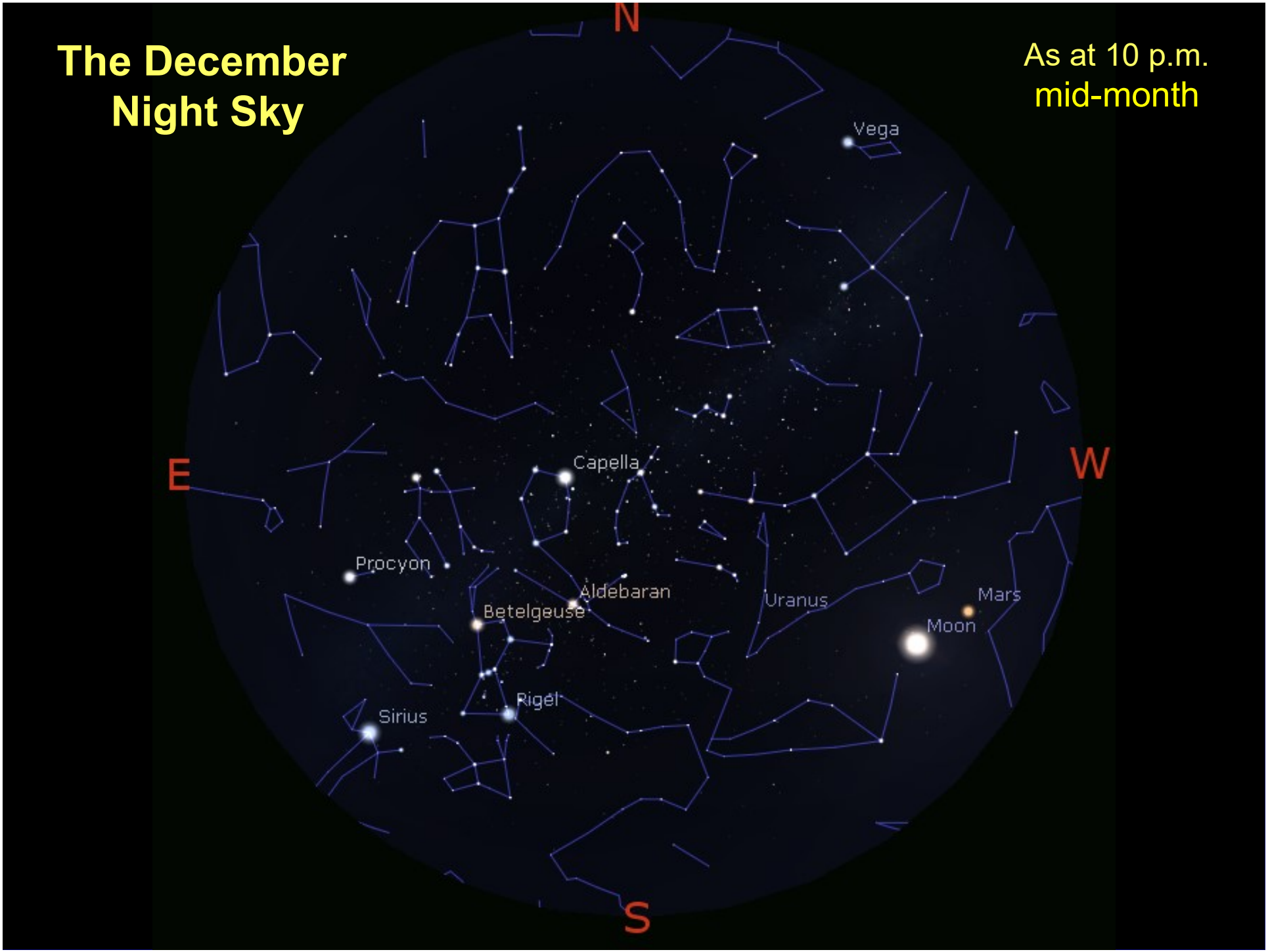
For December 2018



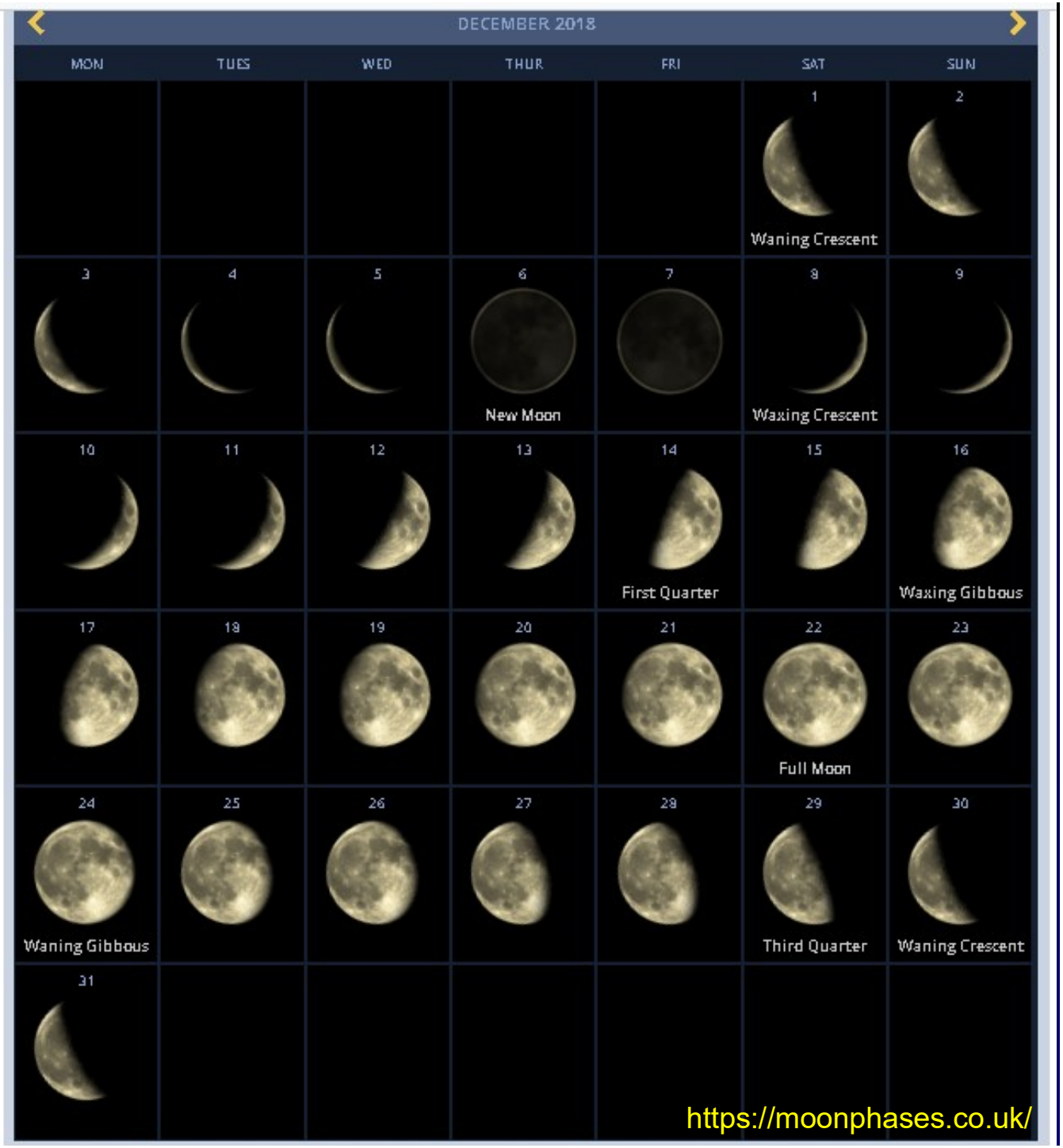
BROOKLANDSRADIO
ONLINE The Sound of Surrey

The December Night Sky

As at 10 p.m.
mid-month



The Moon in December



What's Up - Planets

- **Mercury**
  - A well placed but low morning object, brightening from Mag +0.8 to -1.6 as month progresses, rising 2 hours before sunrise mid month but just 1 hr by the end.
- **Venus**
  - Rises 4 hrs before sunrise, a brilliant object at Mag -4.5. Shows a crescent phase at start of month, half phase by end.
- **Mars**
  - Still a good object in the Southern skies throughout the month, its pinkish red colour and relative brightness (Mag 0.0) making identification easy. A little fainter now but higher in the sky, in Aquarius.

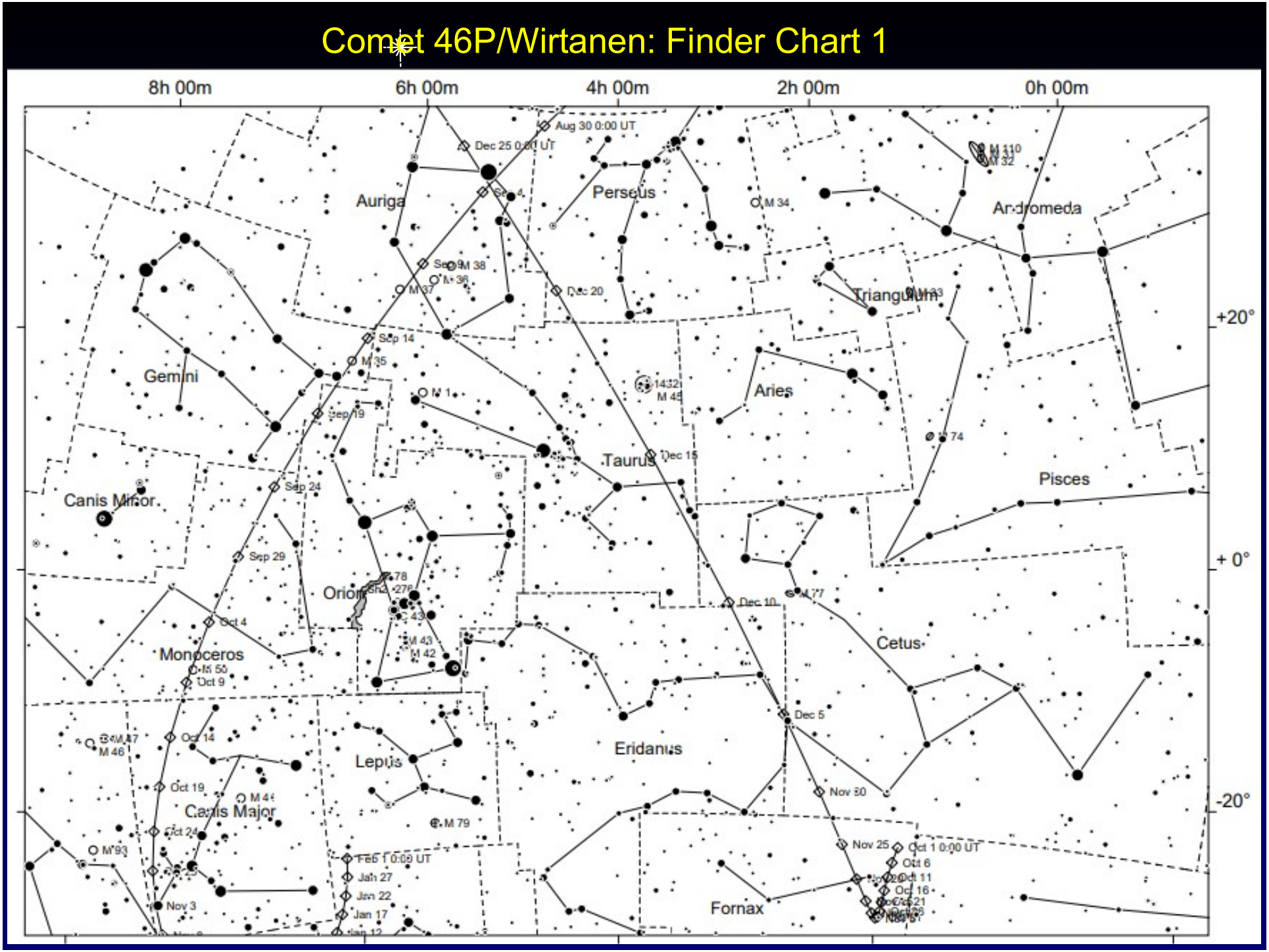
What's Up - Planets

- **Jupiter**
  - Becoming visible again this month as a morning object, low in the South East, rising about an hour before the Sun. Shining at Mag -1.6 so easy to find.
- **Saturn**
  - Effectively not visible this month.
- **Uranus**
  - Visible all night at Mag +5.8, well placed in Pisces
- **Neptune**
  - Telescopic object at Mag +7.9 in Aquarius, best around midnight

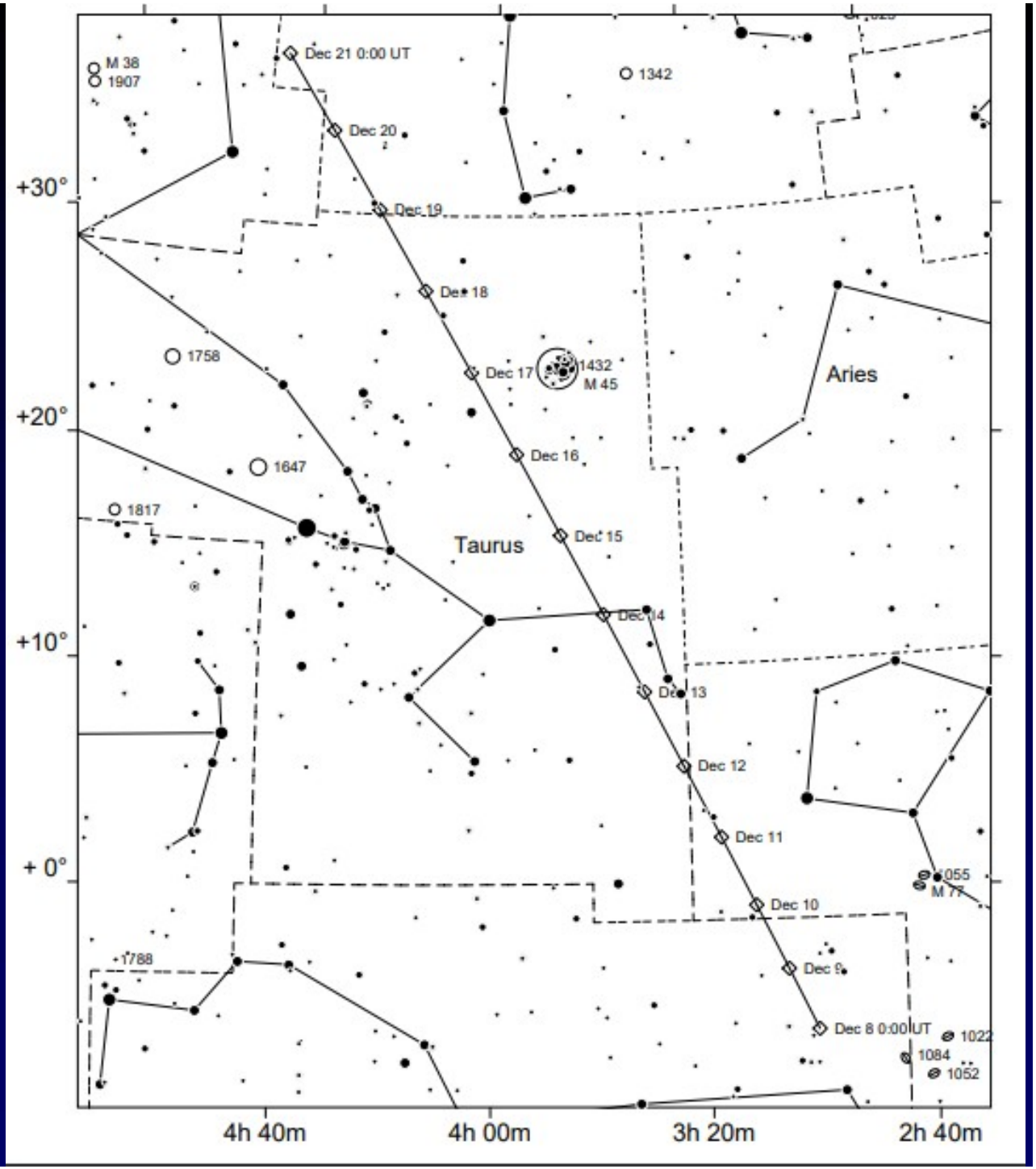
Events of Interest in December

- 3rd Waning crescent Moon near Venus from 5 a.m. forming right angled triangle with Spica (α Virginis)
- 4th Waning crescent Moon just 6° west of Venus
- 7th Mars just 8' (arc minutes) from Neptune (below right) 
- 12th Comet 46P/Wirtanen is at perihelion 
- 13th Mars just 5° north of Moon
- 13th Peak of Geminids meteor shower, favourable Moon
- 20th - 22nd Mercury & Jupiter 1° apart, 1 hr before sunrise
- 21st Moon central in Hyades cluster in Taurus at 5 a.m.
- 22nd Peak of Ursid meteor shower
- 25th Moon just 1° below M44, Beehive Cluster 

Comet 46P/Wirtanen: Finder Chart 1



Comet 46P/Wirtanen: Finder Chart 2 (day by day 8th-21st)



ISS Passes

Date	Brightness (mag)	Start			Highest point			End			Pass type
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.	
26 Nov	-1.6	17:24:38	10°	S	17:26:20	13°	SE	17:27:10	12°	ESE	visible
26 Nov	-1.0	18:59:05	10°	SW	18:59:50	16°	SW	18:59:50	16°	SW	visible
27 Nov	-2.8	18:07:11	10°	SW	18:09:54	34°	SSE	18:09:54	34°	SSE	visible
28 Nov	-2.3	17:15:31	10°	SSW	17:18:13	24°	SSE	17:19:53	16°	ESE	visible
28 Nov	-1.5	18:51:07	10°	WSW	18:52:33	24°	WSW	18:52:33	24°	WSW	visible
29 Nov	-3.7	17:59:03	10°	WSW	18:02:16	57°	SSE	18:02:30	55°	SE	visible
30 Nov	-3.0	17:07:04	10°	SW	17:10:09	40°	SSE	17:12:24	16°	E	visible
30 Nov	-1.9	18:43:14	10°	W	18:45:03	30°	W	18:45:03	30°	W	visible
01 Dec	-3.9	17:51:03	10°	WSW	17:54:19	82°	S	17:54:55	56°	E	visible
01 Dec	-0.2	19:27:34	10°	W	19:27:35	10°	W	19:27:35	10°	W	visible
02 Dec	-3.6	16:58:55	10°	WSW	17:02:09	64°	SSE	17:04:46	15°	E	visible
02 Dec	-2.3	18:35:21	10°	W	18:37:26	36°	W	18:37:26	36°	W	visible
03 Dec	-3.9	17:43:07	10°	W	17:46:24	84°	N	17:47:16	46°	E	visible
03 Dec	-0.4	19:19:39	10°	W	19:19:56	12°	W	19:19:56	12°	W	visible
04 Dec	-3.8	16:50:53	10°	WSW	16:54:10	87°	SSE	16:57:07	12°	E	visible
04 Dec	-2.8	18:27:24	10°	W	18:29:46	45°	W	18:29:46	45°	W	visible
05 Dec	-3.9	17:35:09	10°	W	17:38:25	84°	N	17:39:39	36°	E	visible
05 Dec	-0.6	19:11:40	10°	W	19:12:18	15°	W	19:12:18	15°	W	visible

(just a sample - see website on next slide for other ISS passes)

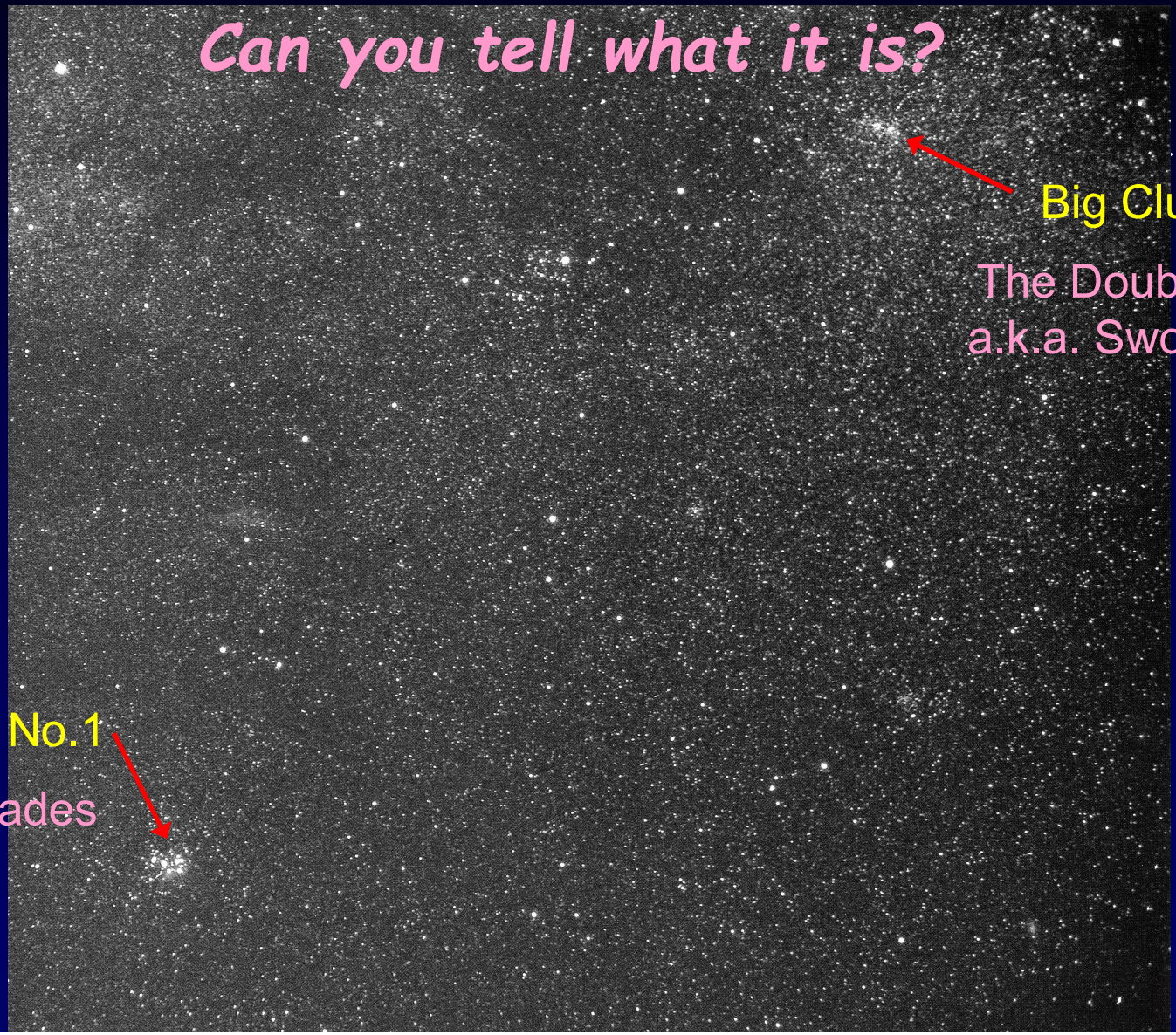
Iridium Flares

Time	Brightness	Altitude	Azimuth	Satellite	Distance to flare centre	Brightness at flare centre	Sun altitude
Nov 27, 06:18:27	0.4	23°	56° (NE)	Iridium 14	91 km (E)	-6.6	-12°
Nov 29, 17:29:57	1.0	13°	292° (WNW)	Iridium 54	178 km (W)	-5.7	-14°
Dec 1, 05:26:19	-5.8	13°	44° (NE)	Iridium 14	32 km (E)	-6.0	-21°
Dec 2, 05:06:01	-1.2	10°	39° (NE)	Iridium 64	146 km (W)	-5.8	-24°

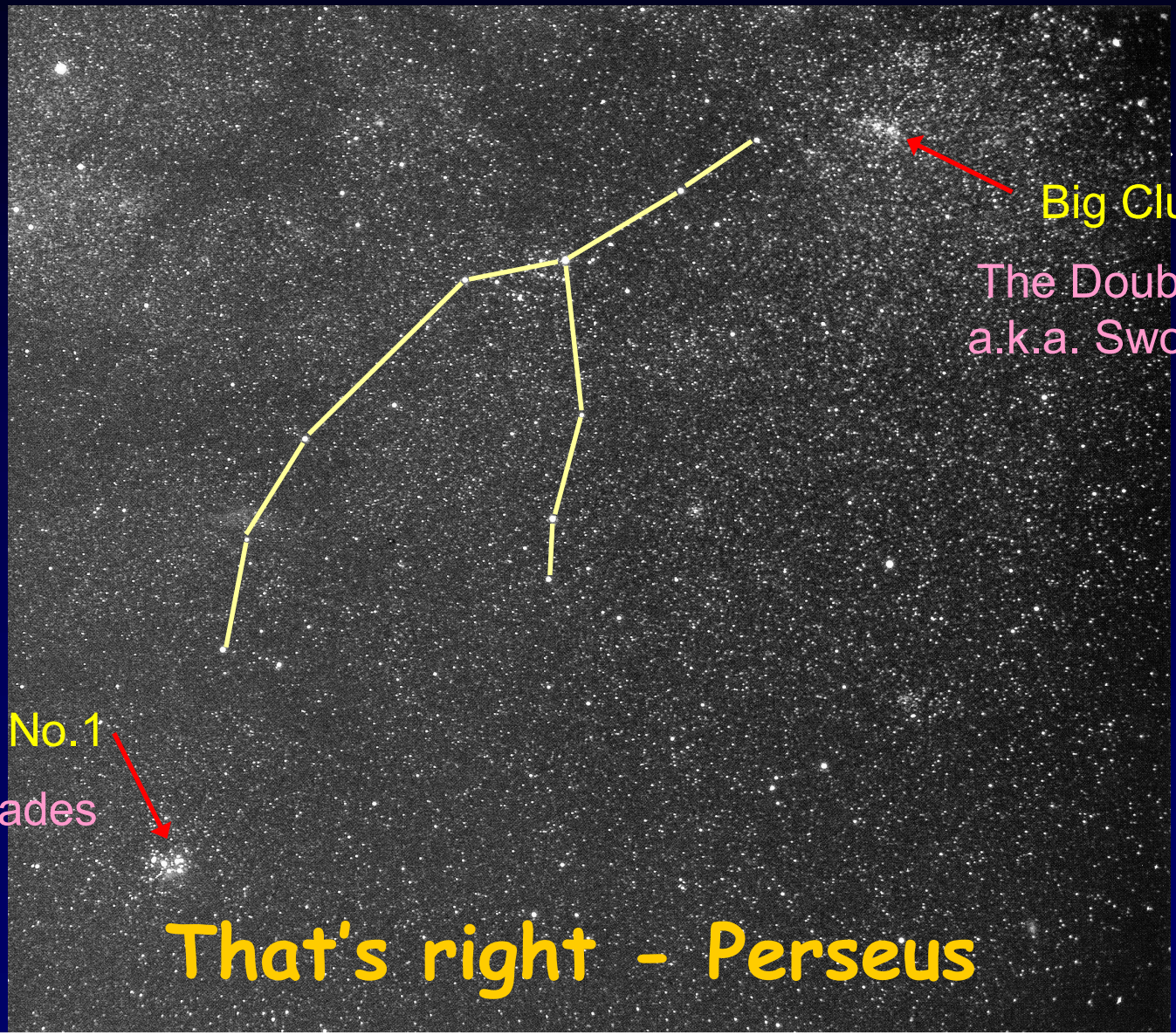
www.heavens-above.com
(for ISS, Iridium and other visible satellite passes
NB ensure you select Location)

December's Suggested Constellation - but which one?

Can you tell what it is?



December's Suggested Constellation - but which one?



December's Suggested Constellation

A SERIES OF 50 No. 45

OUT INTO SPACE

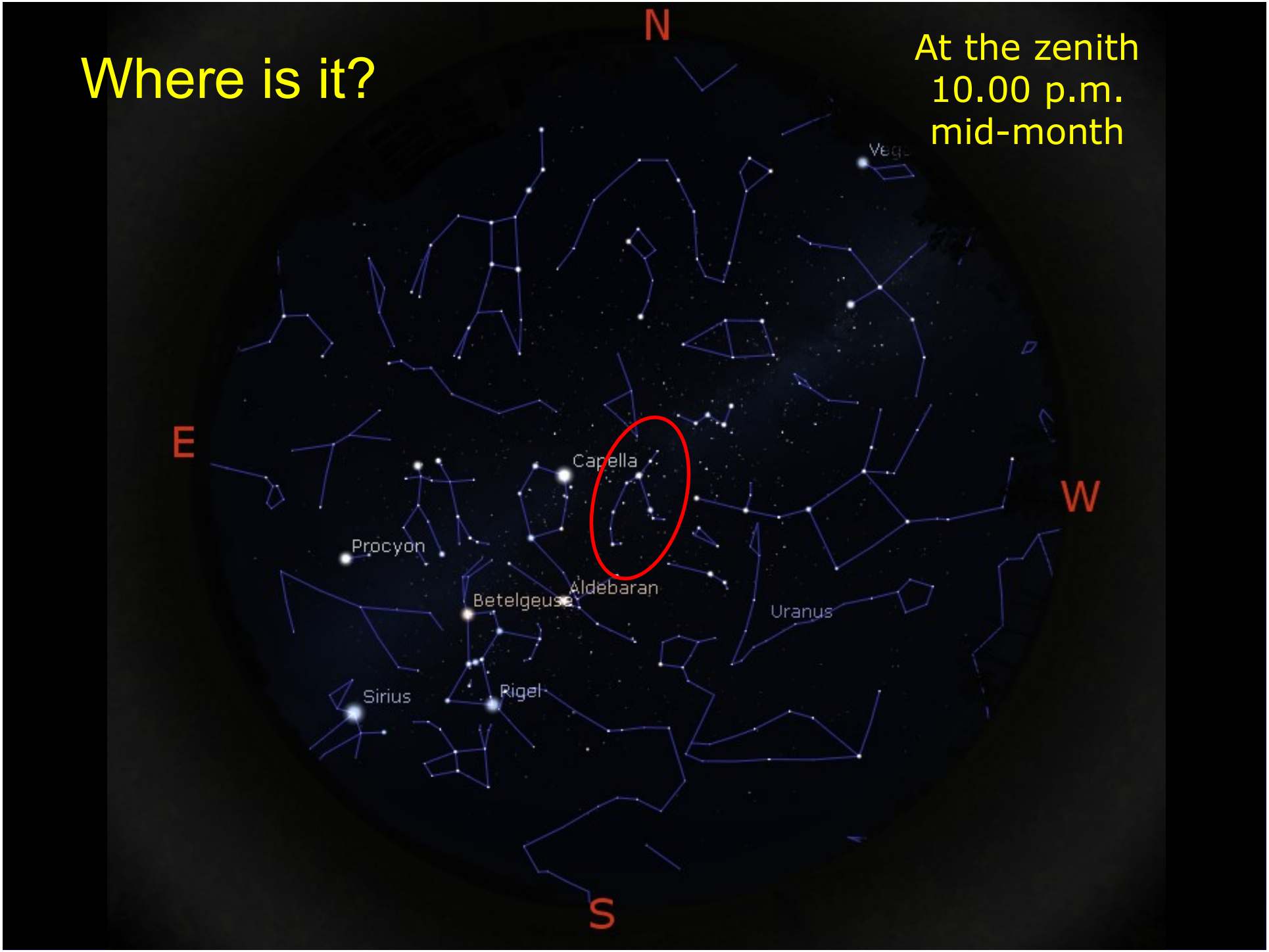
Approved by A. Hunter, Ph.D., Sec. Royal Astronomical Society

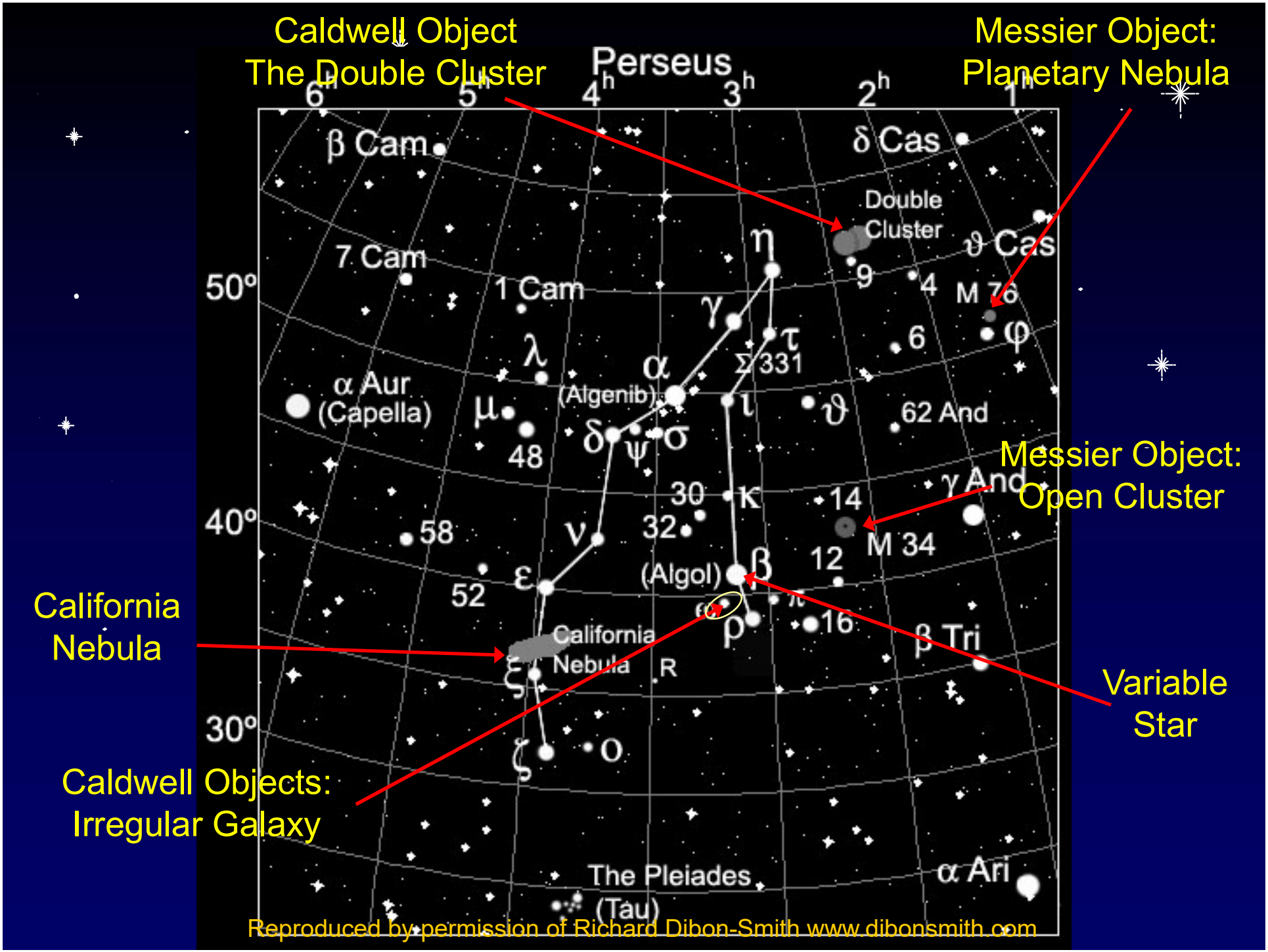
PERSEUS

This Northern Hemisphere constellation is called after the Greek legendary hero, Perseus, son of Jupiter, who rescued Andromeda, daughter of Cassiopeia, from the sea monster. Heis records 136 stars visible therein without telescopic aid. Its main stars are Mirfak, a navigational star, and Algol—a star which varies from second to fourth magnitude, then back to second in about seven hours, and remaining at its greatest lustre for nearly 3 days. Perseus is in the Milky Way, north of Taurus, south of Cassiopeia, east of Triangulum and west of Auriga.

Where is it?

At the zenith
10.00 p.m.
mid-month





Messier Objects in Perseus

M34 (NGC 1039)
Open Cluster
Distance 1,450 light years
Visual Brightness Magnitude 5.2
Apparent Dimension 25.0 arc mins
Discovered 1764 Charles Messier

M76 (NGC 650/651)
Little Dumbbell Nebula
Distance 3,900 light years
Visual Brightness Magnitude 10.1
Apparent Dimension 67 arc seconds
Discovered 1780 by Pierre Mechain

Caldwell Objects in Perseus

C14 (NGC 884/869)
The Double Cluster

Distance 7,300 light years
Visual Brightness Mag 5.3/4.5
Apparent Dimension 18.0 arc mins
Discovered known since antiquity

C24 (NGC 1275)
Perseus A Galaxy

Distance 230,000,000 light years
Visual Brightness Magnitude 11.9
Apparent Dimension 3.2x2.3 arc secs
Discovered 1867 by H.d'Arrest

Also in Perseus

NGC 1499

The California Nebula

Distance 1,000 light years

Visual Brightness Magnitude 5.3/4.5

Apparent Dimension 160 x 40 arc minutes

Meetings at Local Societies

- **Guildford AS** *Lecture Theatre L, Uni of Surrey*
  - Thursday 6th December, 7.30 p.m.
    - **Cosmology: Part 1**
      - » Dr Colin McGill
        - » Guildford AS member
        - » BP
        - » Formerly
          - » Oxford Uni
          - » Canadian Institute for Theoretical Astrophysics

Meetings at Local Societies

- **Farnham AS** *Aldershot Cricket Club*
  - Tuesday 11th December, 7.45 p.m.
    - **Annual General Meeting**
      - Closed meeting

Meetings at Local Societies

- **Croydon AS** *Royal Russell School, Coombe Lane, Croydon*
  - Friday 30th November, 19.45 hrs
    - Aurorae on Earth and Other Planets
      - Professor Alan Aylwards
        - » University College London
  - Friday 14th December, 19.45 hrs
    - Festival Xmas Meeting

Meetings at Local Societies

- **Ewell AS** *Nonsuch High School for Girls, Cheam*
  - Friday 7th December, 19.45 hrs
    - **Annual General Meeting**
      - Closed meeting

University of Surrey

- Department of Physics
  - Wednesday 19th Dec 19.15 hrs
  - Lecture Theatre D
    - Talk
      - title & speaker tbc
    - Stargazing (if clear)
      - or
    - Night Sky Talk
  - Free event, but booking required, via web site

- **Astronomy Evening**

Astronomy on TV

- **The Sky at Night**
  - *"Telescope On A Plane"*
    - The team looks atr SOFIA, a 17 tonne telescope mounted on a Boeing 747SP. SOFIA observes our galaxy from about 12km high and can peer through cosmic dust into the heart of the Milky Way to see how stars form. It may even be able to answer one of the most puzzling questions: why aren't more stars being created?

Sunday	9th December	BBC 4, 10.00 pm
Thursday	13th December	BBC 4, 7.30 pm

for exact times please check www.radiotimes.com or www.bbc.co.uk/skyatnight


"That's all Folks!"