

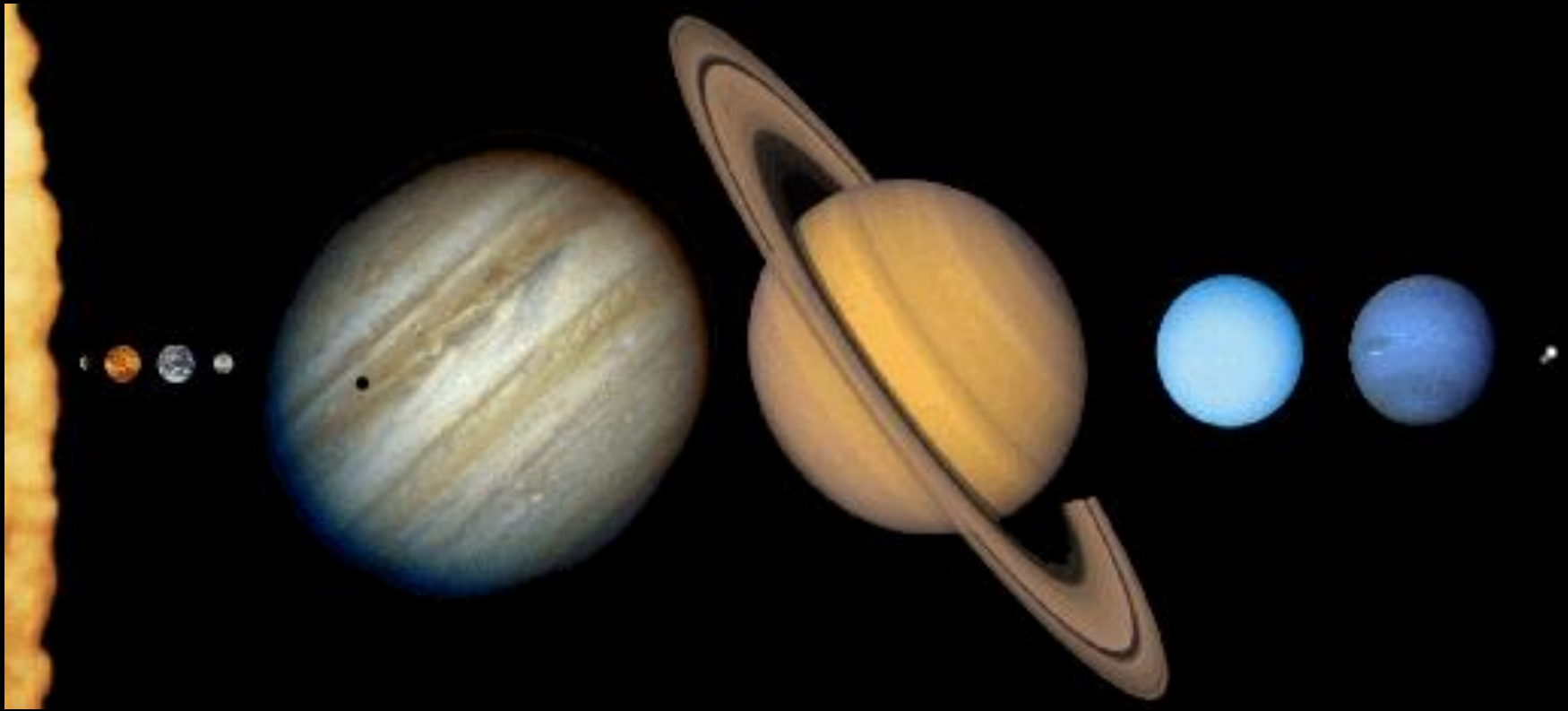
# Venus' legacy

Appeal-3  
9<sup>th</sup> June 2012

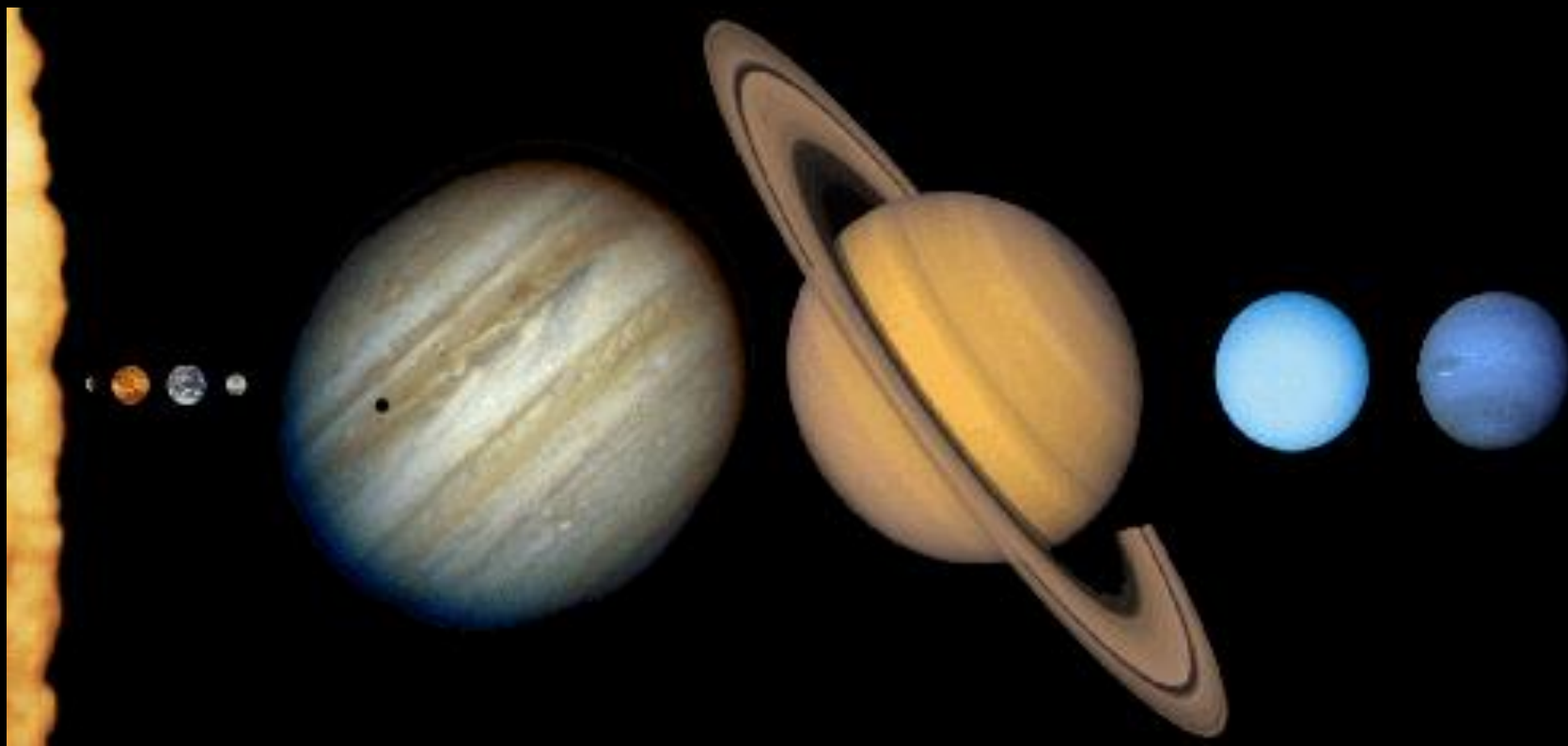
C. Barclay FRAS  
Blackett Observatory Marlborough College  
GreenTempleton College and Oxford Astrophysics



Image: NASA APOD



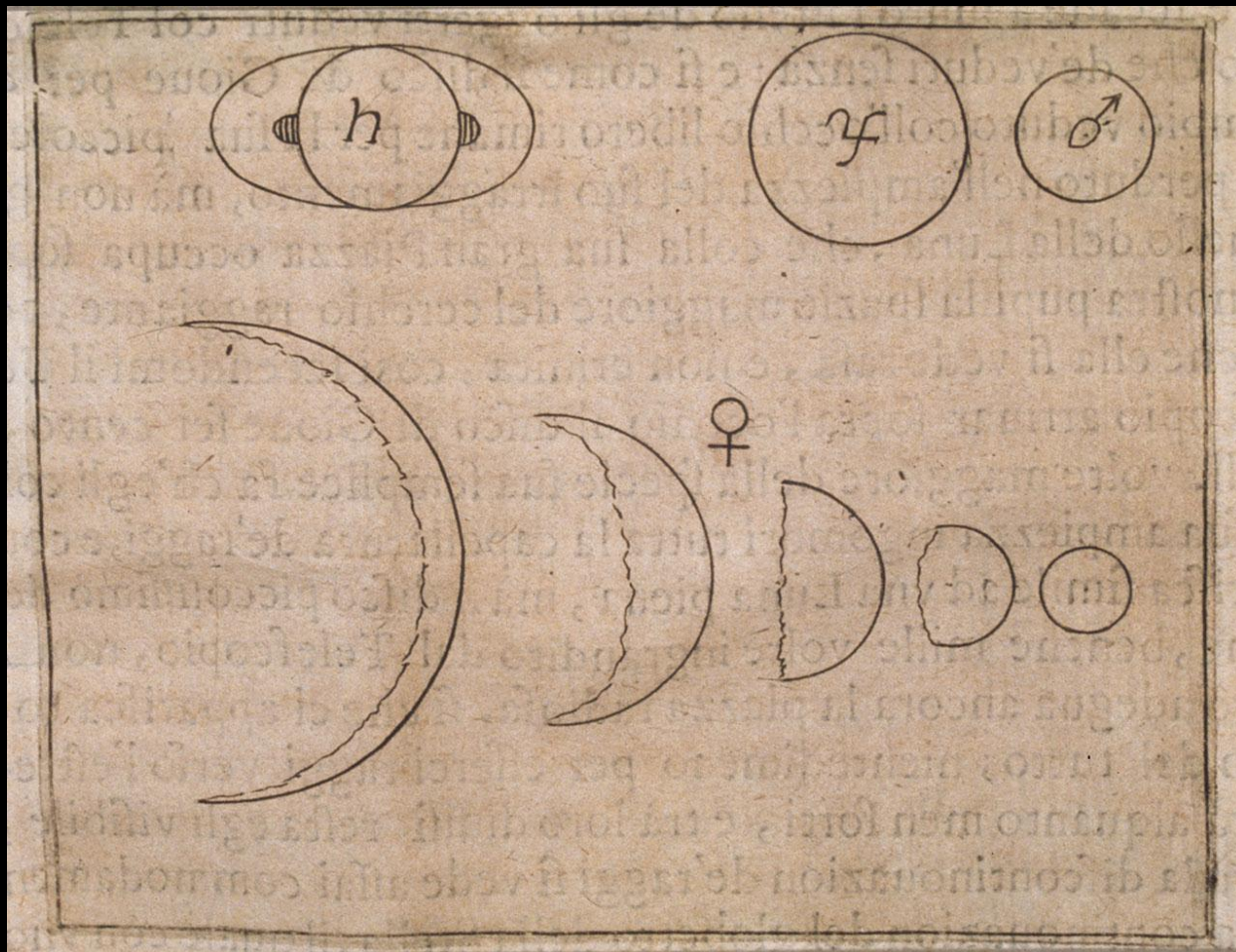
The Solar System's major planets to scale (diameters)

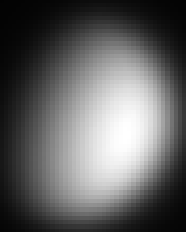


The Solar System's major planets to scale (diameters)



Image: CEB

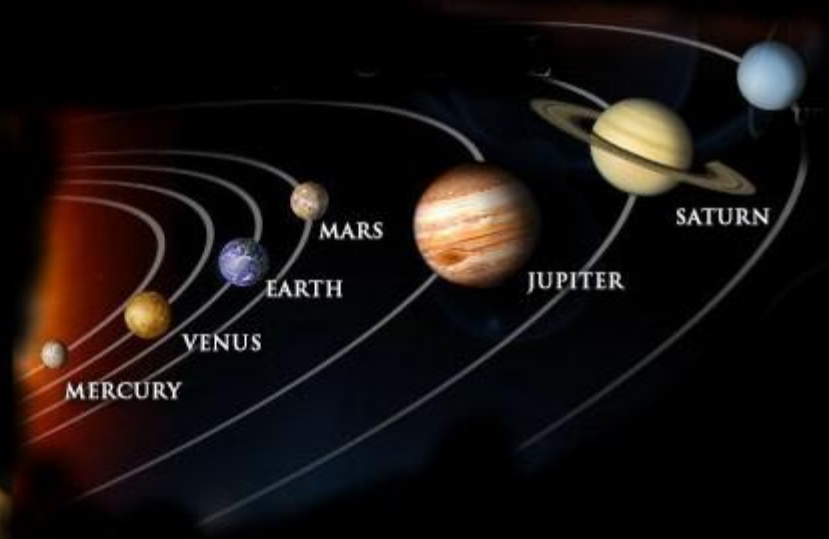




Movie from the Liverpool Telescope on la Palma thanks to Andy Newsam (LJM Uni)







Johannes Kepler 1571-1631



Jeremiah Horrocks 1618-1649

Oh! Then farewell, thou beauteous queen!

Thy sway may soften natures yet untamed,

Whose breast, bereft of the native fury,

Then shall learn the milder virtues.

We, with anxious mind, follow thy latest footsteps here,

And far as thought can carry us;

My labours now bedeck the monument for future times

Which thou at parting left us. Thy return

Posterity shall witness; years must roll away,

But then at length the splendid sight

Again shall greet our distant children's eyes.



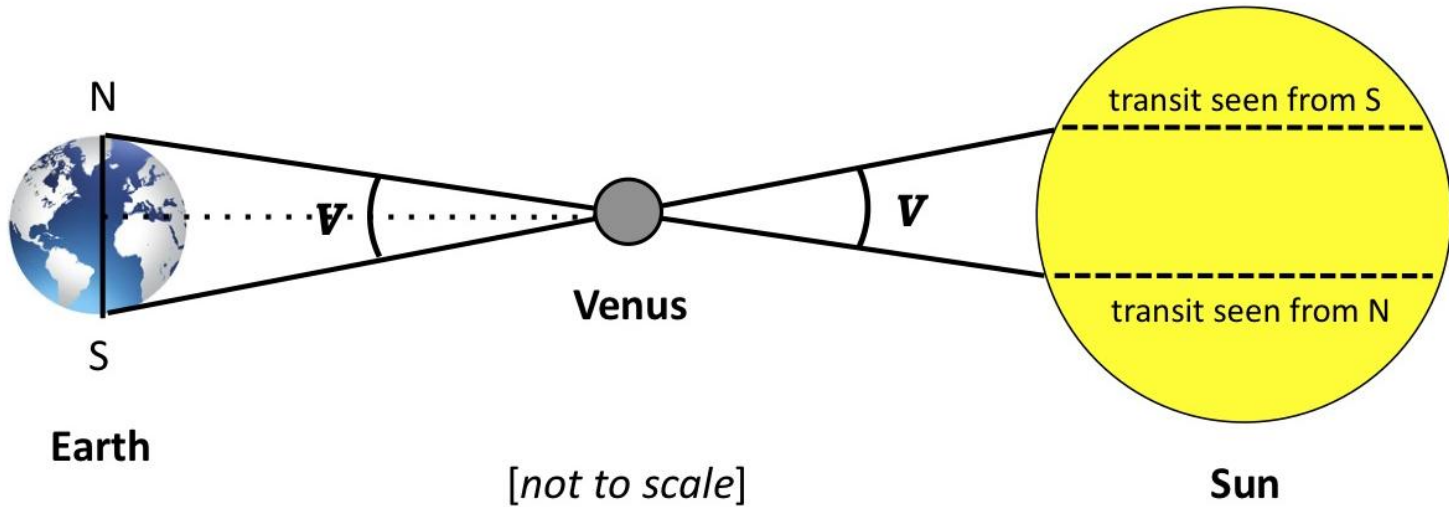
Sir Edmond Halley  
1656 -1743

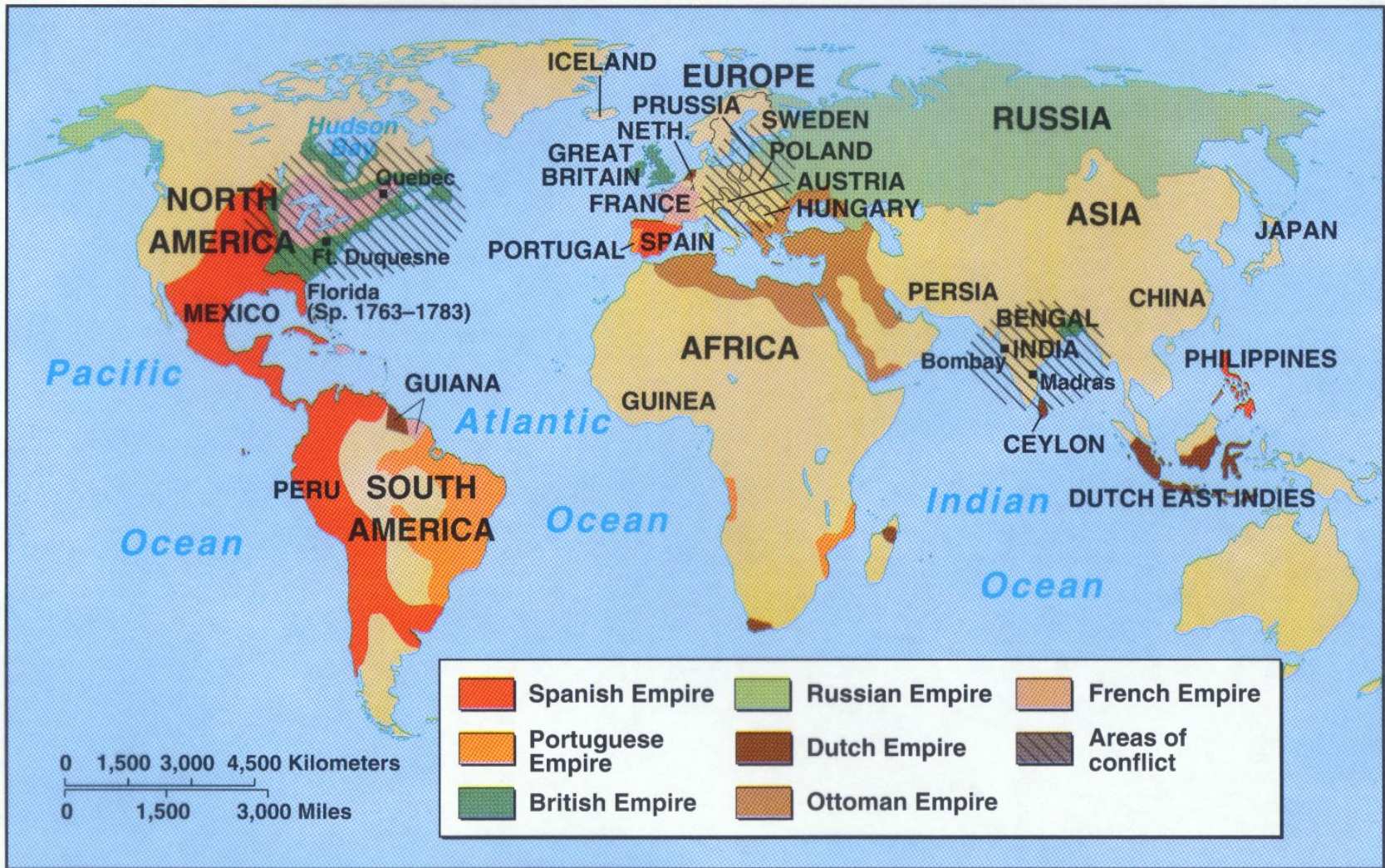
# Transit of Mercury 7<sup>th</sup> May 2003



Photo: CEB MCBO

## B. *Measuring a distance:*





## The Battlefields of the Seven Years' War

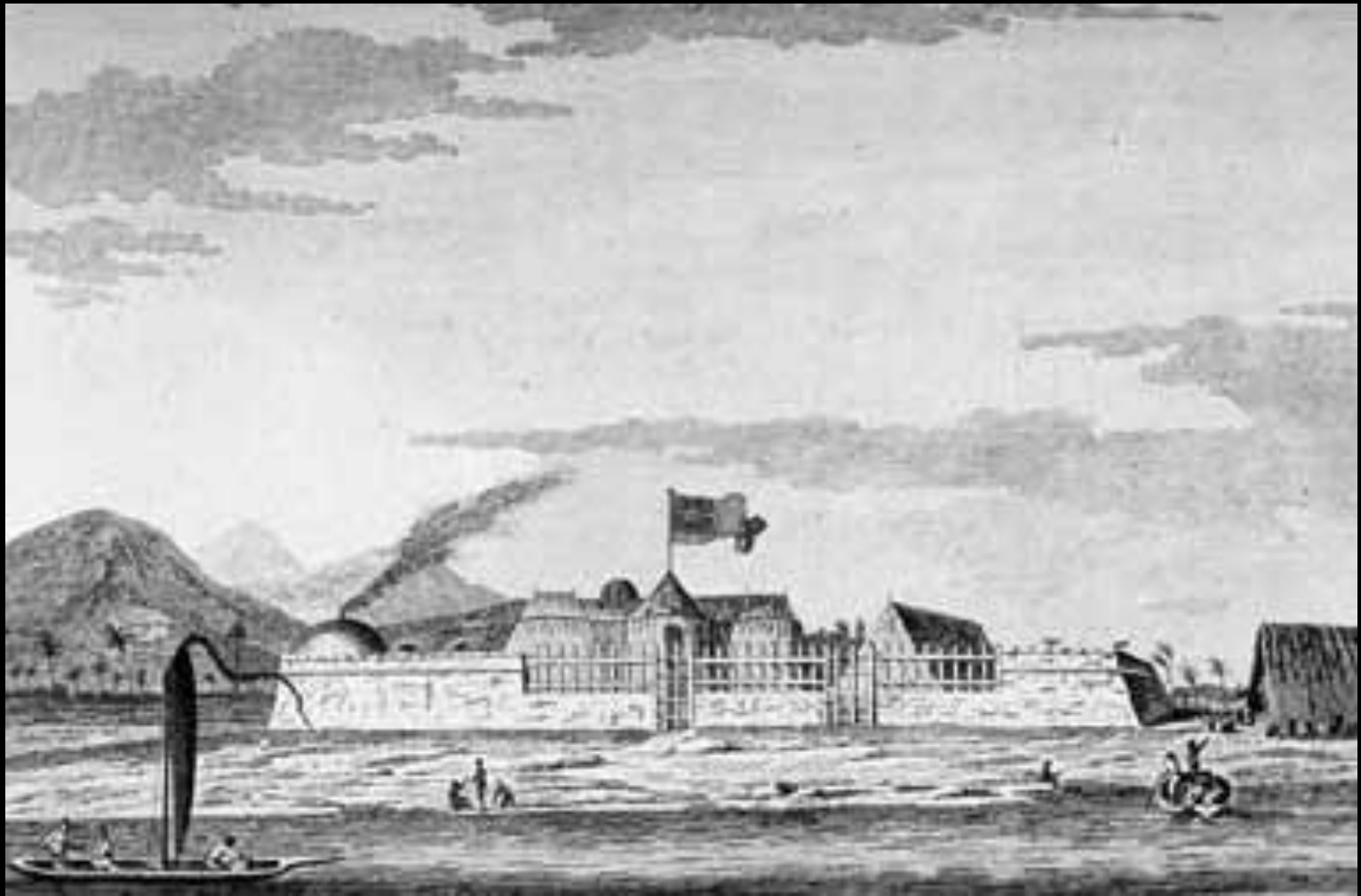


Replica Endeavour



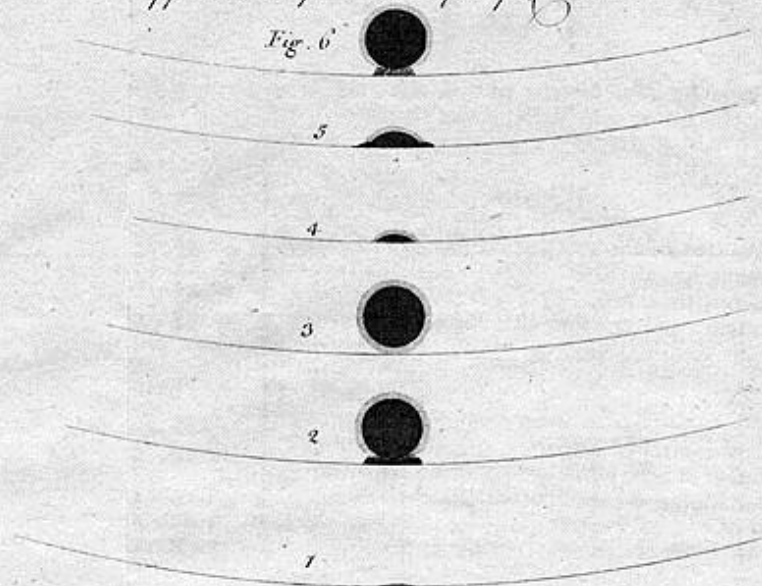
James Cook 1728-1779





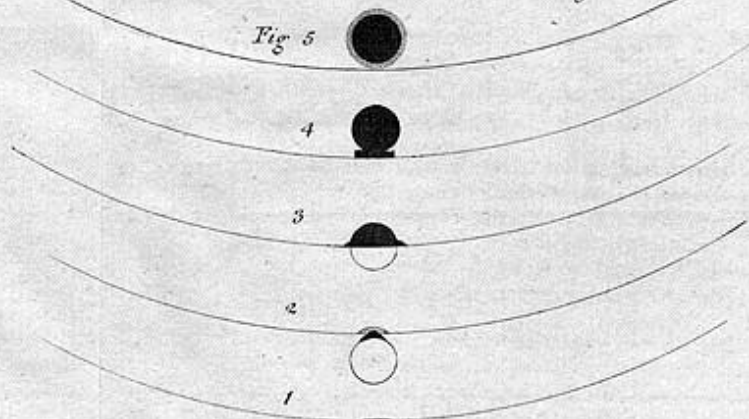
*Appearances of Venus by Cap. Cook.*

Fig. 6



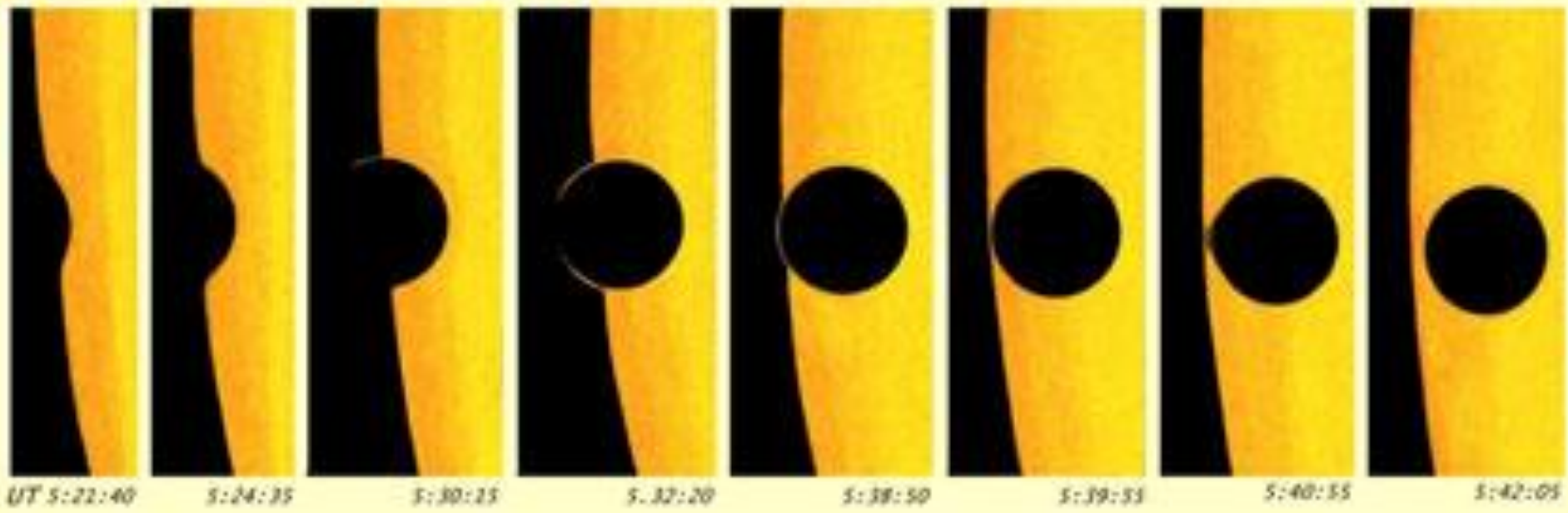
*Appearances of Venus by M. Charles Green.*

Fig. 5





[transitofvenus.org](http://transitofvenus.org)



Fred Espenak



VIEWING THE TRANSIT OF VENUS.

*Published Dec: 16<sup>th</sup> 1769 by Rob<sup>t</sup> Sayer & C<sup>o</sup> Fleet Street, London.*



Thomas Hornsby 1733-1810

Picture thanks to Hornsby family

Log bet. with ♀ Or6 at Kola at 1<sup>st</sup> Int. Contact

9 42 07 145 31 0	R	60 17 07 54	0.8781826
5 20		60 24 09 14	0.8208964
34 37 20 145 22 40		60 24 09 14	0.9412016
		60 31 56	0.9688079
		4 54 23	0.9321029
11 51 21	S	84 09 14	0.9983357
7 5 40			0.8016643
18 37 01	S	17 37 54	0.4812945
81 31 0	S	24 37 20	0.8391174
62 34 0	S	11 51 21	0.3220762

Log bet. with ♀ Or6 at Kola at 2<sup>nd</sup> Int. Contact

15 35 25	R	60 12 45 56	0.8786646
8 24 55 126 8 45		60 40 11 56	0.2010326
13 40		60 52 56	0.5868998
54 05 0 125 55 0		12 45 56	0.3551878
		67 26 0	
		80 11 56	0.9906145
			0.8063855
17 12 05	S	12 45 56	0.3443180
2 0 0		54 5 0	0.1400679
10 12 05	P	17 12 05	0.4907714
29 29 0			
88 16 55			

at Orenburg at 2<sup>nd</sup> Int. Cont.

17 5 10 126 17 30	R	60 10 44 27	0.8072048
103 42 30		60 77 50 27	0.3265164
13 45		62 51 45 57	0.8464647
76 31 10 103 28 50		10 24 47	0.2640356
		67 26 0	
		77 50 27	0.9901462
57 37 40	S		0.8098538
2 0 0		10 24 27	0.2569329
30 37 40	S	76 31 10	0.6202960
88 24 0		37 37 40	0.8869827
67 31 20			

Log bet. with ♀ Or6 at Orsk at 2<sup>nd</sup> Int. Contact

17 18 25	R	60 79 49 53	0.2468333
6 41 35 103 20 40		60 51 52 0	0.9252672
13 40		4 42 0	0.1521005
79 49 103 100 10 08		67 26 0	
		38 58 56	0.9850646
		7 0 0	0.8740354
		31 55 56	0.4243147
		48 29 0	0.7495517
		66 30 24	0.4155744
		38 58 56	0.9080938

Log bet. with ♀ Or6 at Cambridge Amer. at 1<sup>st</sup> Int. Cont.

2 47 30 41 52 30	R	60 41 44 10	0.8728662
8 20		60 42 25 0	0.8392158
41 44 10		24 14 25	0.9120820
		67 21 20	
		50 8 05	0.6732566
		7 5 40	0.3267434
		57 13 45	0.8011061
		81 31 0	0.414410
		24 17 45	0.9504129
		50 8 05	0.0782624

at Stockholm 1<sup>st</sup> Int. Cont.

8 41 47 130 26 50	R	60 49 41 30	0.8108376
8 20		60 28 20 30	0.7728687
49 41 30 130 18 30		78 58 48	0.8372463
		67 21 20	
		22 03 30	0.4988167
		7 5 40	0.8011887
		29 09 40	0.205848
		81 31 0	0.494100
		84 37 50	0.21330

Hornsby's calculations from the 1769 transit – MHS Radcliffe M7





Radcliffe Observatory now Green Templeton College

Image: CEB

F 1  
8 2

**1882 Transit**  
(USNO)









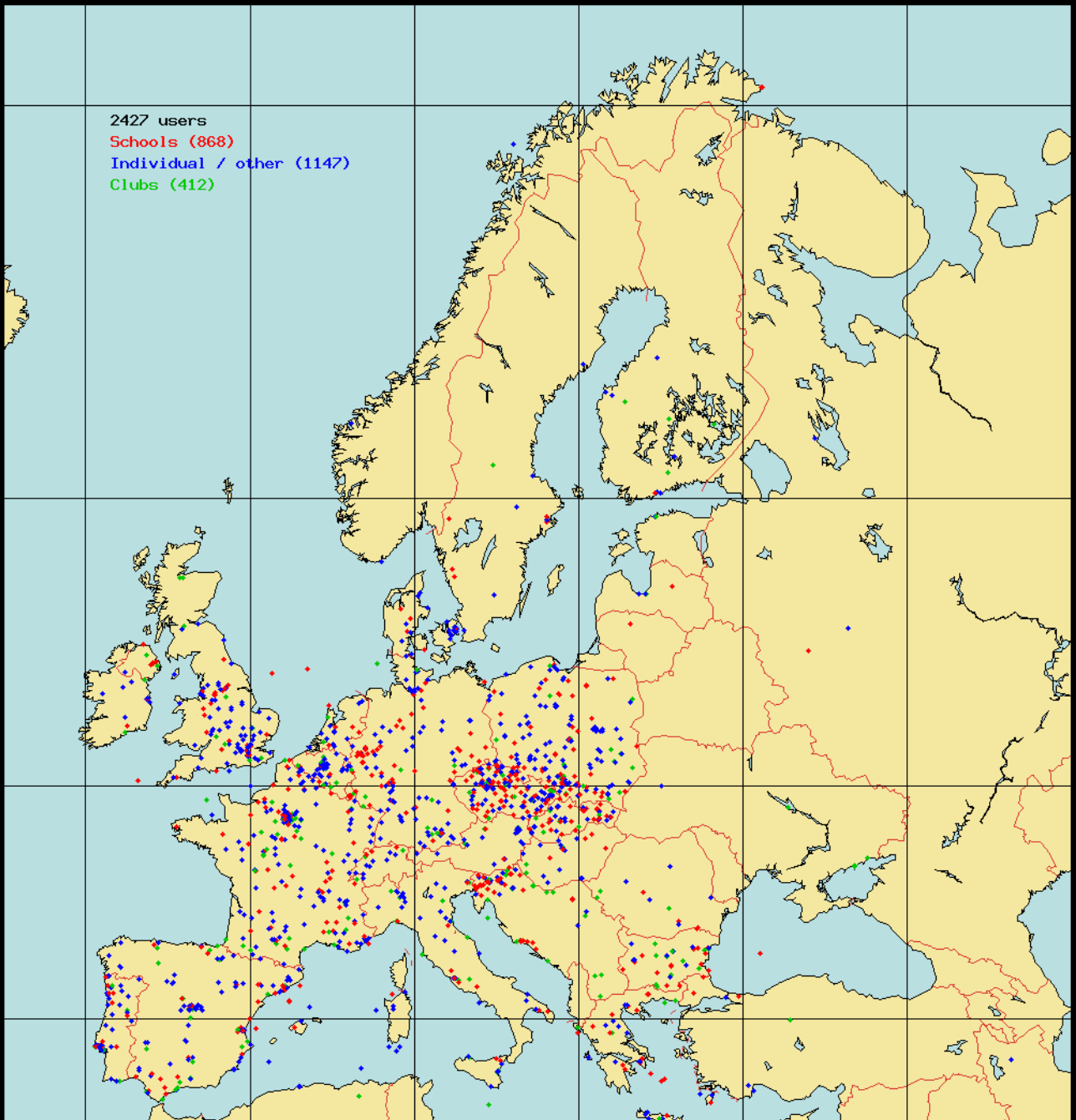
05.37UT image CEB

The sixth witnessed transit of Venus  
June 8<sup>th</sup> 2004



06.00UT image CEB

2427 users  
Schools (868)  
Individual / other (1147)  
Clubs (412)



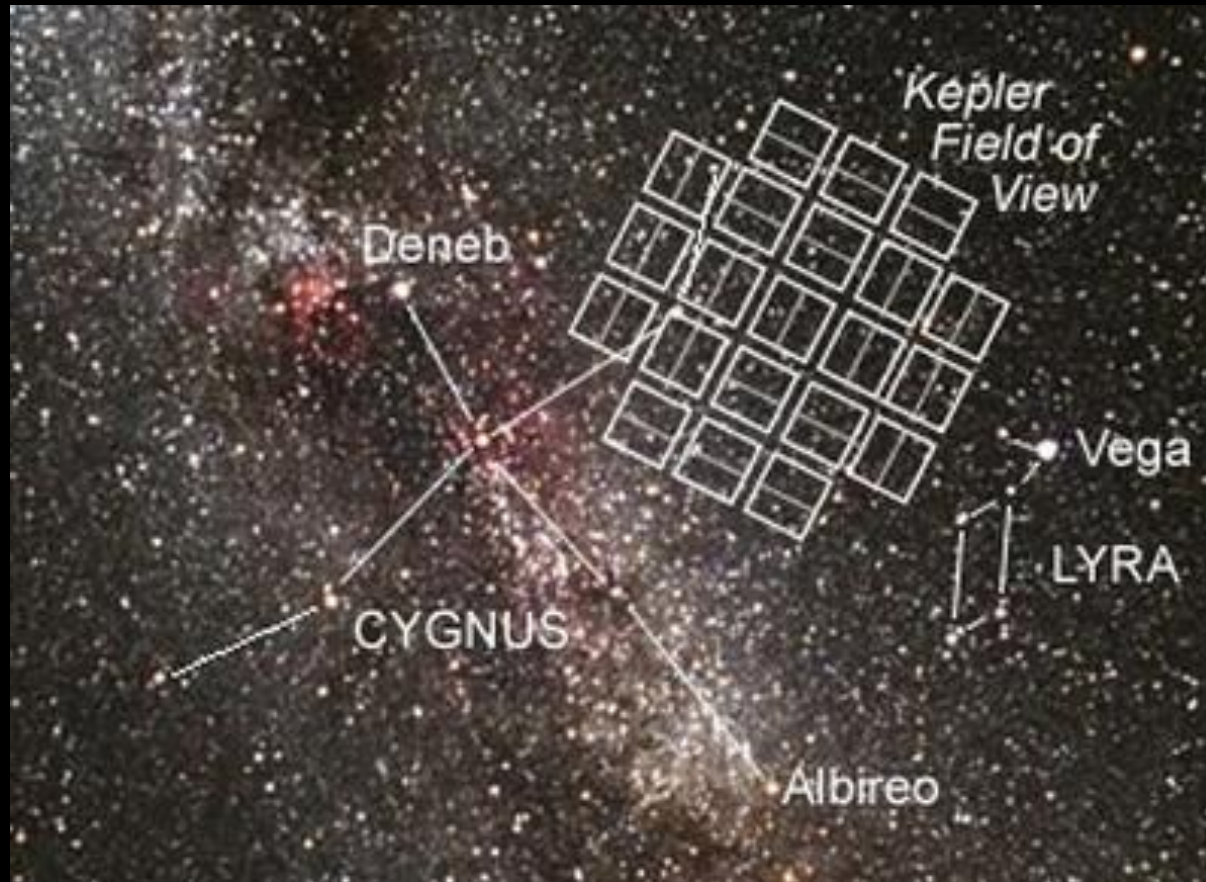


Calculated value of 1 AU

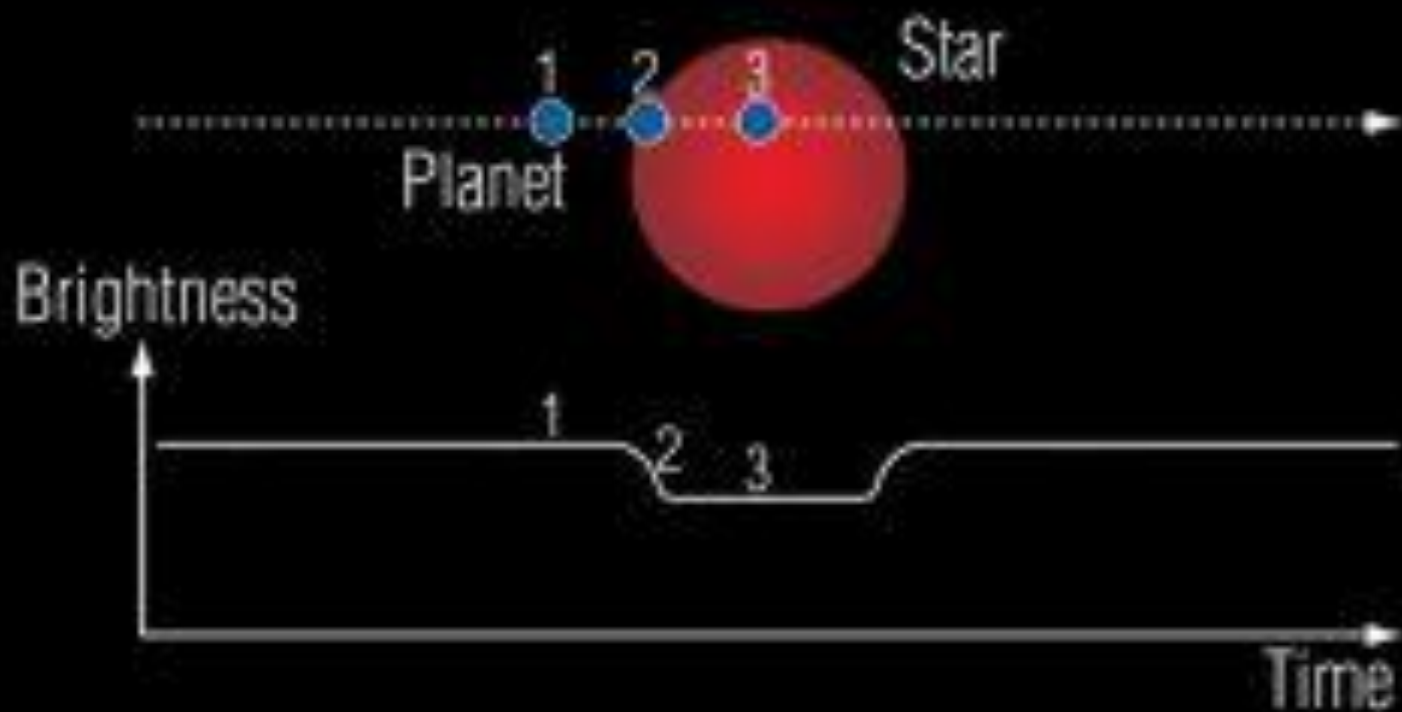
Blackett Observatory timings gave  
149, 527, 922 km

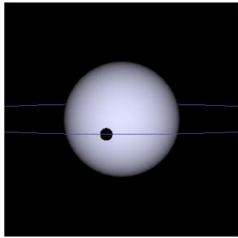
1 AU = 149 597 871 km  
(accepted value from RADAR measurements)

## Kepler – search field



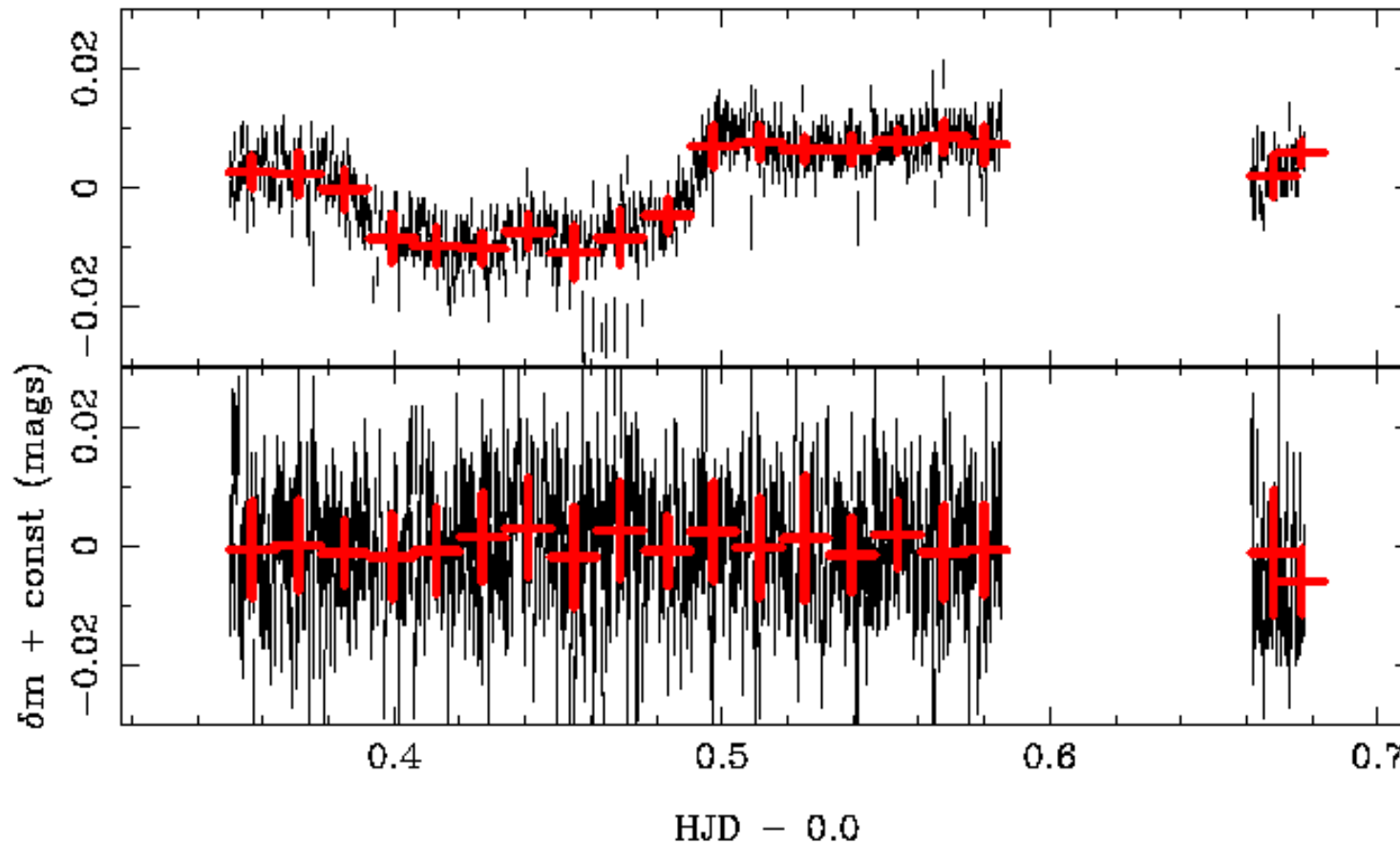
## Transit dimming



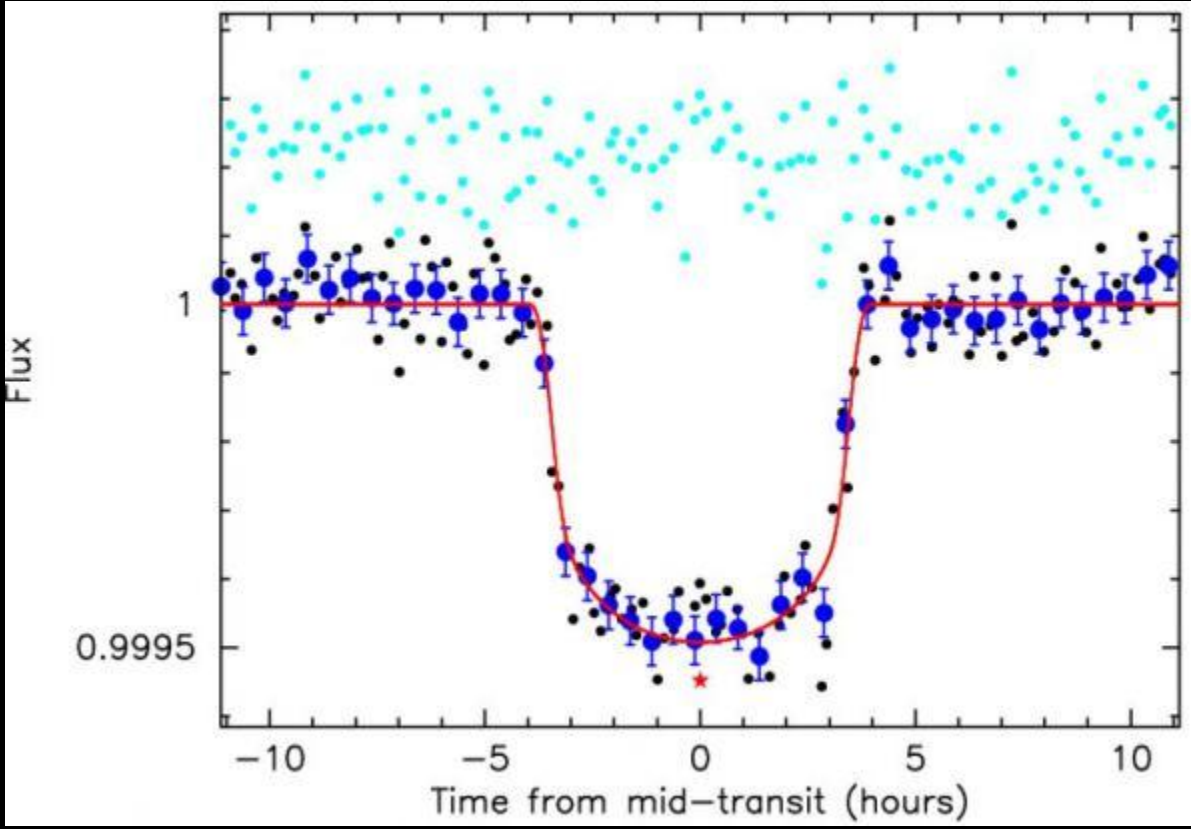


Period: 1.22 Earth days  
Orbit radius: 0.0256AU  
Mass: 1.11 Jupiter masses  
Radius: 1.56 Jupiter radii

`/Users/clarke/Data/Wetton/2010-10-20/quick.lc`



Transit light curve by Wasp 33b (discovered April 2010) across an A5 star  
Philip Wetton Telescope, Oxford Astrophysics. Dr Fraser Clarke, 20<sup>th</sup> October 2010



# Kepler Planets

As of December 5, 2011



[nasa.gov](http://nasa.gov)

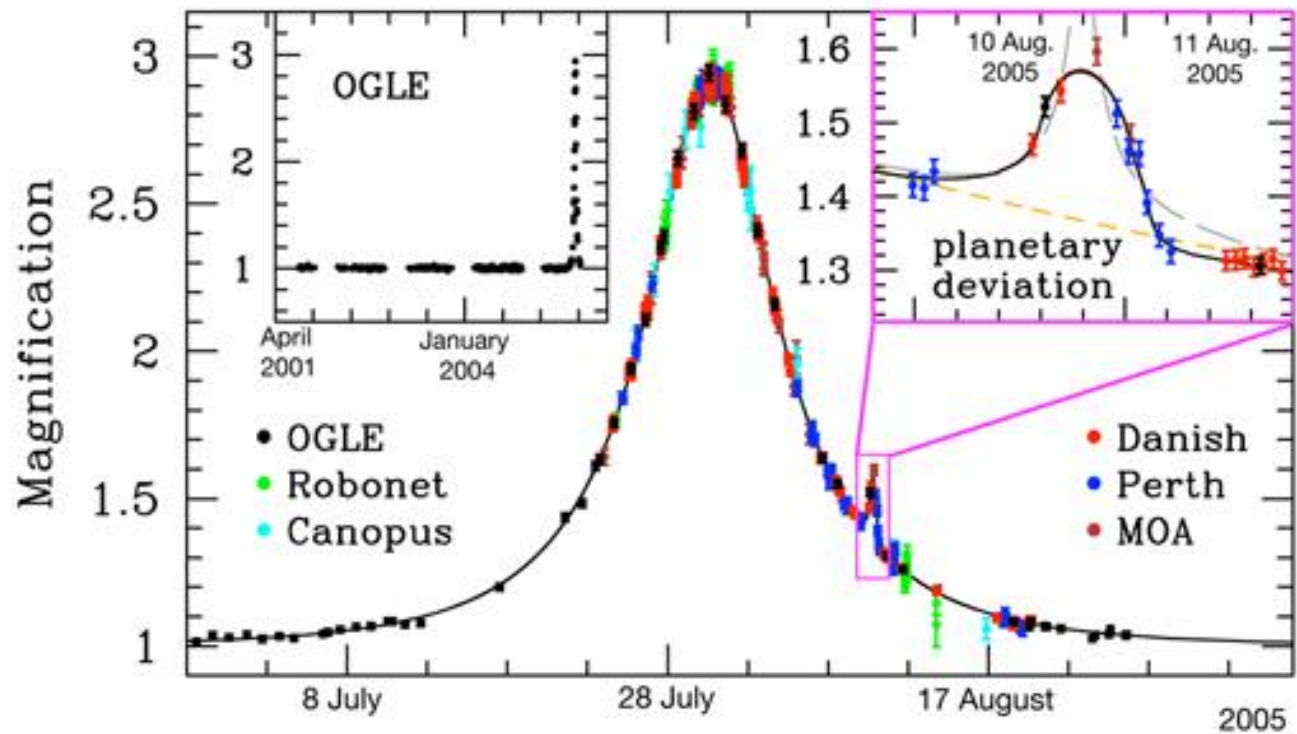


Image: CEB



Image: CEB





Light Curve of OGLE-2005-BLG-390

Planet Hunters

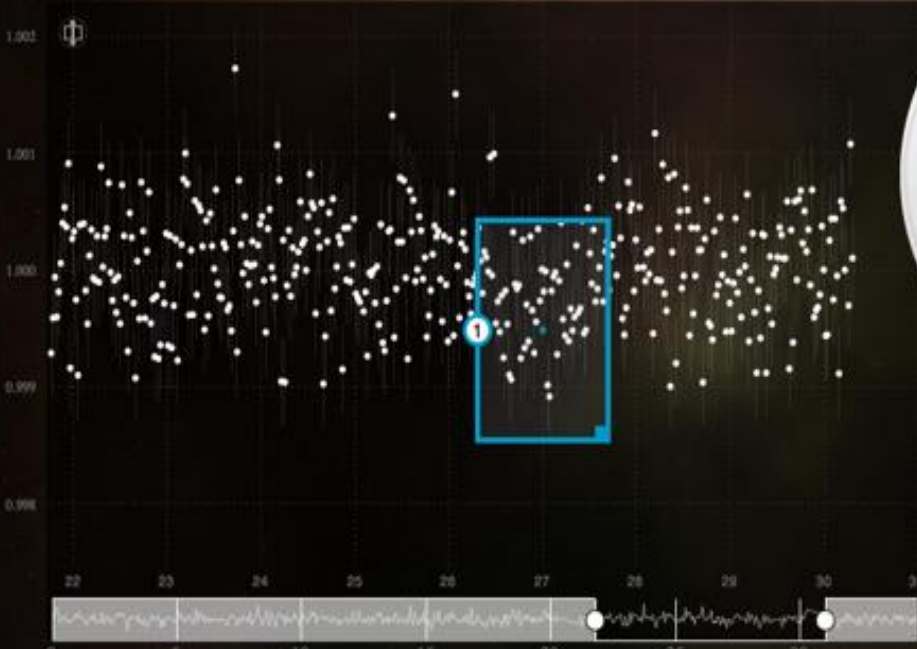
www.planethunters.org/?ticket=ST-1326035103r3A23D7B1CF90E41850

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### APH31142806



Would you like to discuss this star?

YES  NO

Type of star:	Dwarf
Apparent visual magnitude:	14.9
Temperature:	5440 (K)
Radius:	0.9x Sol

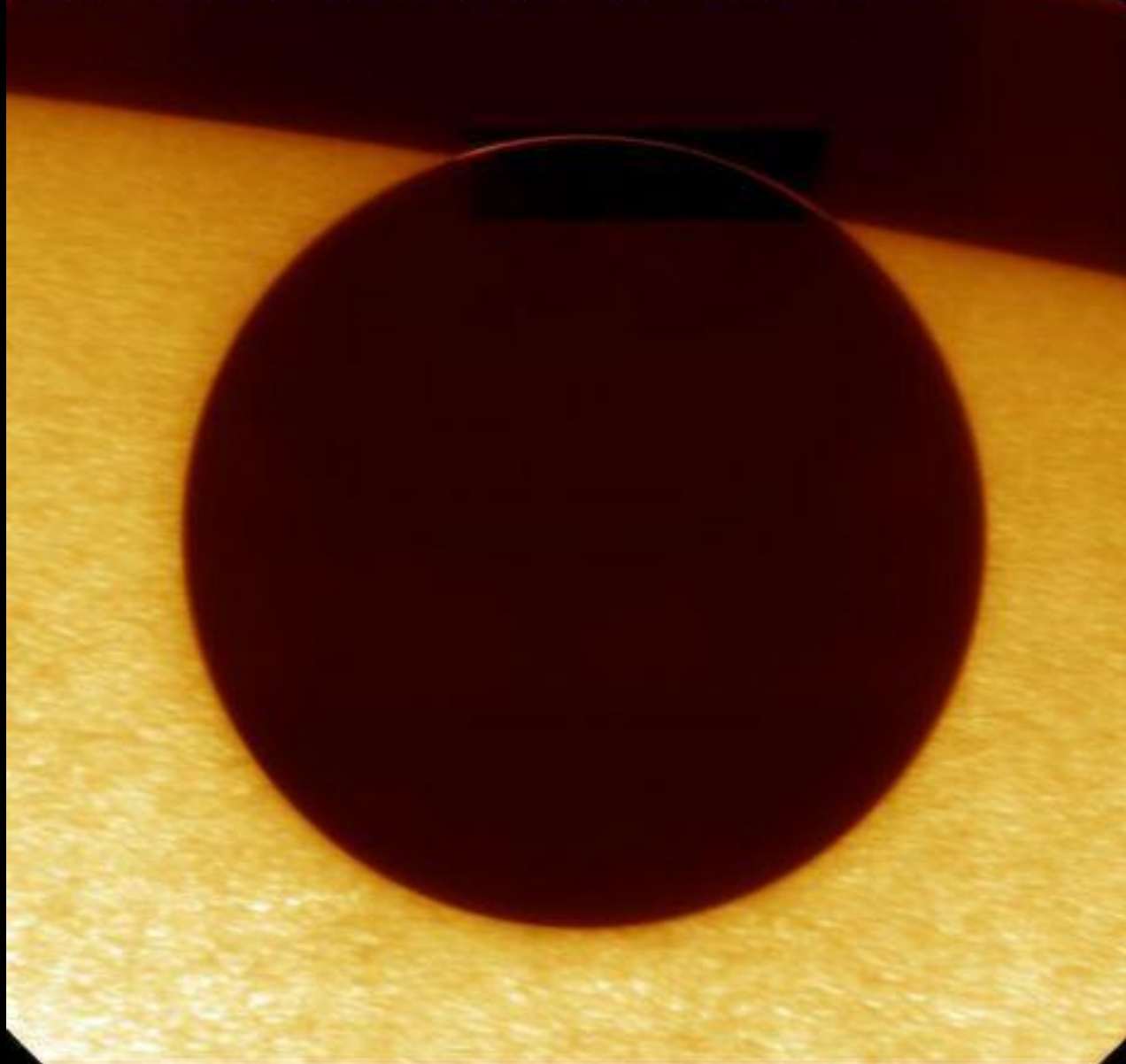
★ MARK AS FAVORITE DOWNLOAD DATA

DAYS FROM BEGINNING OF THE QUARTER

Mikhail Lomonosov 1711-1765



Swedish 1-m Solar Telescope, Venus transit egress, bright ring 9x enhanced





SDO/AIA 193 20120605\_221745.UTC

# Exoplanet searches

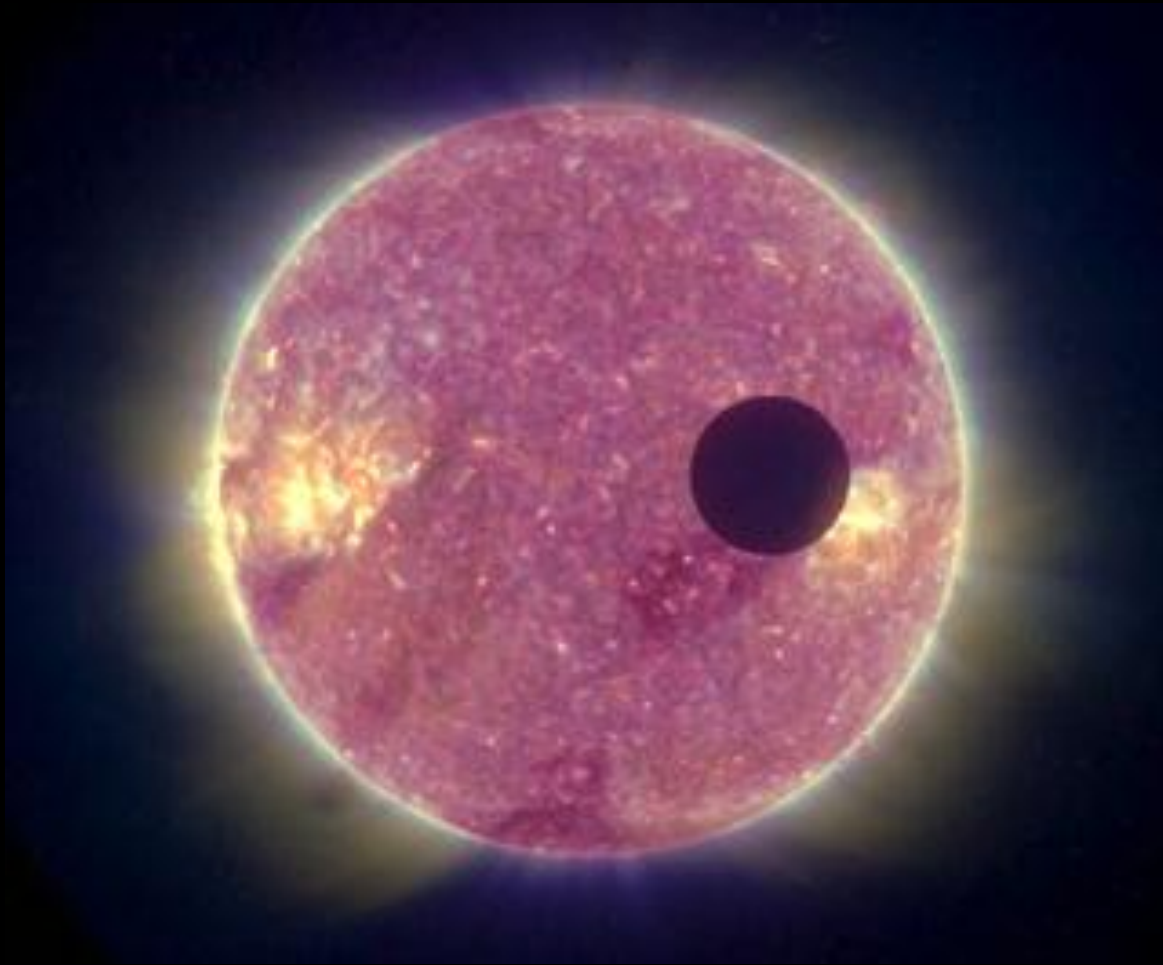
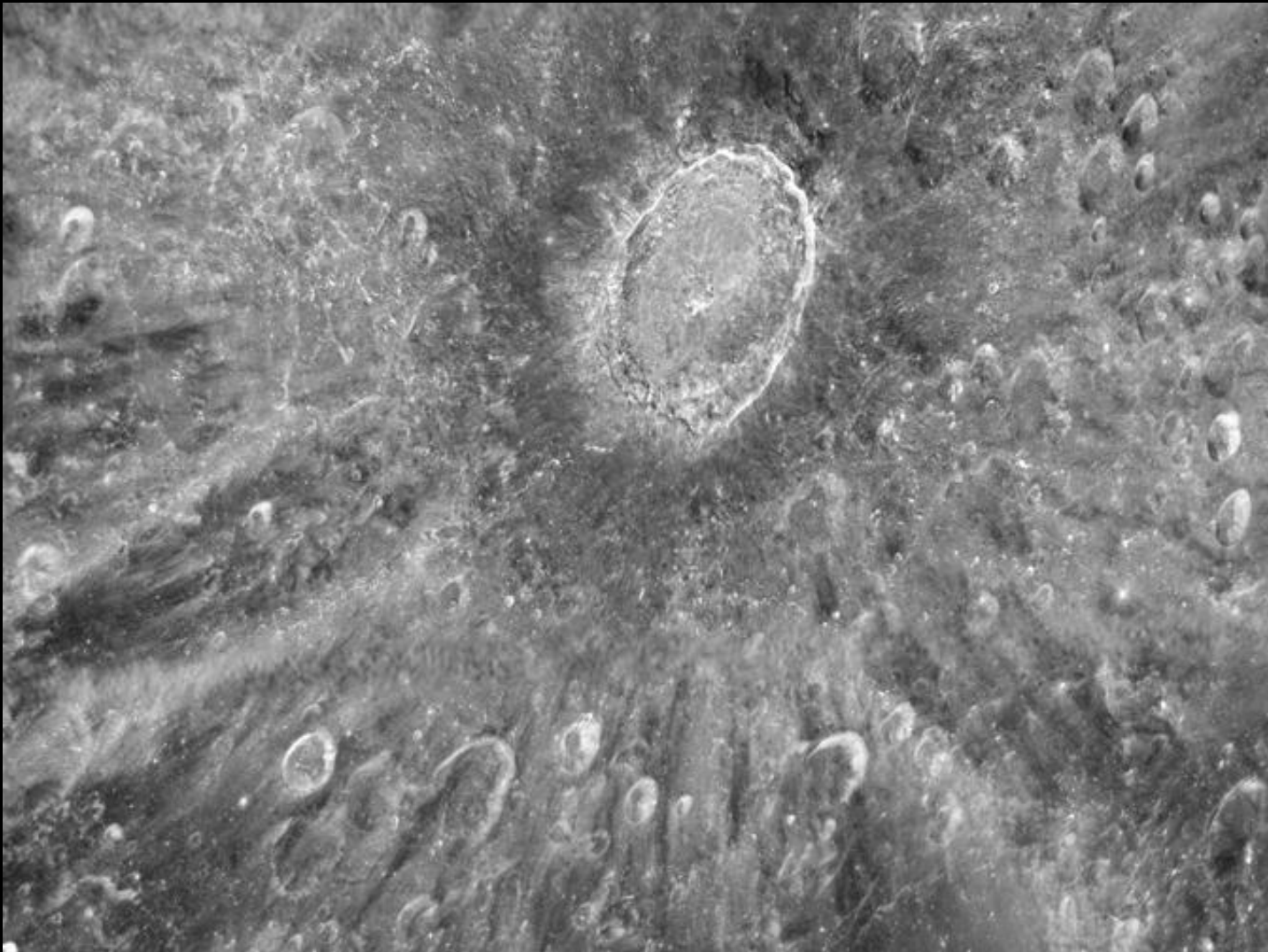
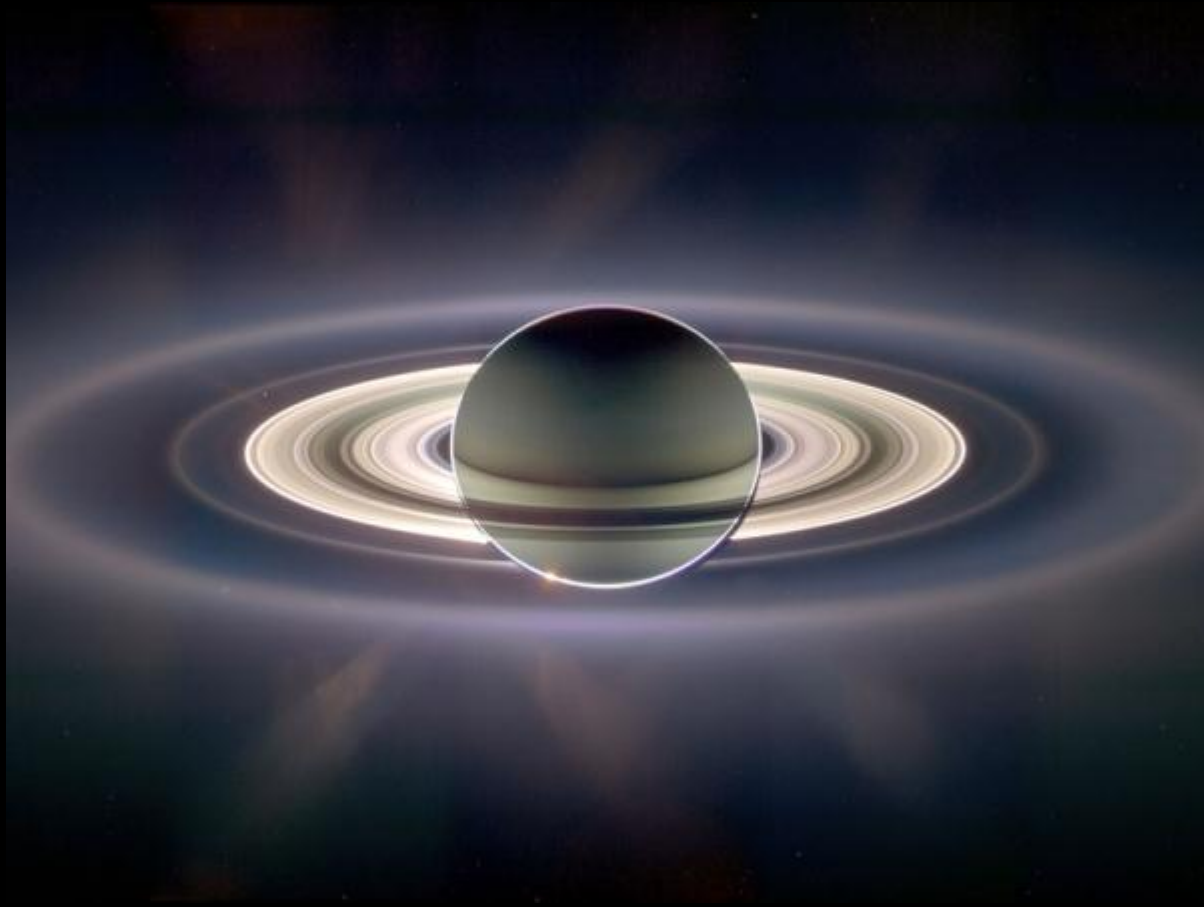


Image: NASA Stereo B



Moon 6/6, Jupiter 20/9 and Saturn 21/12  
Earth transit from Jupiter 5/1/14

Image: NASA/ESA/D. Ehrenreich



Earth transit from Jupiter 5/1/14

Image: NASA Cassini



**Any questions?**

**Further information:**

**[www.blackettobservatory.org](http://www.blackettobservatory.org)**

**and**

**'Transiting the Sun' – John Woodruff (2012). Huxley Scientific Press,  
Oxford**