British Astronomical Association – Past/Present/Future

UK Occultation Studies pre-2010

with some highlights from

Titan – 28 Sagittarii Event in 1989

+

First +ve UK Asteroid Occultation in 1996

Richard Miles

European Symposium on Occultation Projects, Guildford, UK

2016 August 20

Occultations - Early BAA History

BAA Journal: Index of Occultation-related articles, 1940 October to 1990 December

Occultations

Lunar Occultations

Occultation Newsletter

Volume VI, Number 7 Ju

1981 Tally of Lunar O

Table I, Part A

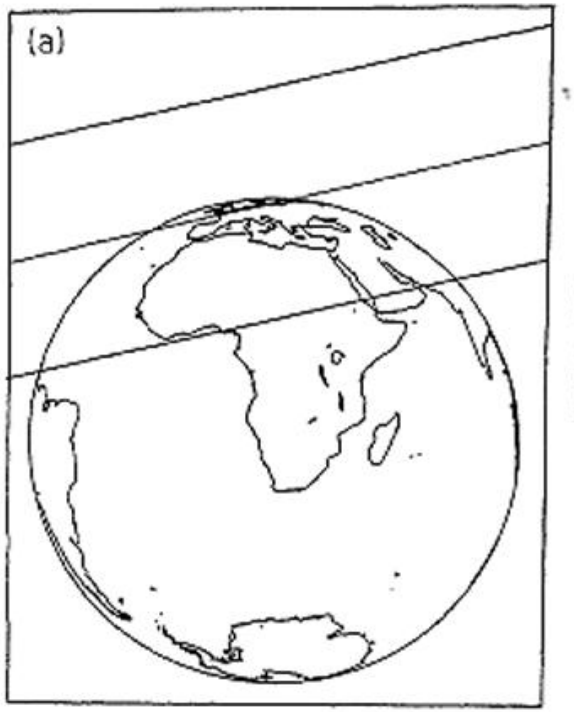
Value	Name	Country			
478.9	BRIAN LOADER	NEW Z			
398.0	B.F. SINCHESKUL	USSR			
366.4	ROBERT H. HAYS JR.	USA			
341.8	N.P. WEITH-KNUDSEN	DENM			
291.0	THOMAS W. LANGHANS	USA			
283.7	34 OBSERVERS	GDR			
239.3	PETER E. ANDERSON	AUST			
228.8	M. DANIEL OVERBEEK	SOUT			
213.4	NOEL T. MUNFORD	NEW ZEALAND	PALMERSTON NORTH	132	72
158.8	M. MATTHEWS	NEW ZEALAND	AUCKLAND	91	60
132.4	MIECZYSTAW SZULC	POLAND	TUCHOLA	77	49
121.6	ADRIANO FILIPPONI	ITALY	ROME	99	20
121.6	PAUL V. MCBRIDE	USA	GREEN FOREST, AK	99	20
114.4	JEAN BOURGEOIS	BELGIUM	FUROOZ	76	34
113.1	RICHARD W. LASHER	USA	CHINA LAKE, CA	60	47
104.0	RICHARD WAYNE BALDRIDGE	USA	MOUNTAIN VIEW, CA	95	8
86.0	HENK J.J. BULDER	NETHERLANDS	ZOETERMEER	69	15
76.0	ANDREW J. ELLIOTT	ENGLAND	LEEDS, W. YORKSHIRE	41	31
71.1	JAMES H. VAN NULAND	USA	SAN JOSE, CA	70	1
69.3	NEAL D. BLACKBURN	USA	KANSAS CITY , MO	49	18
67.2	LIONEL E. HUSSEY	NEW ZEALAND	CHRISTCHURCH	48	17
62.8	ROBERT L. SANDY	USA	KANSAS CITY, MO	47	14

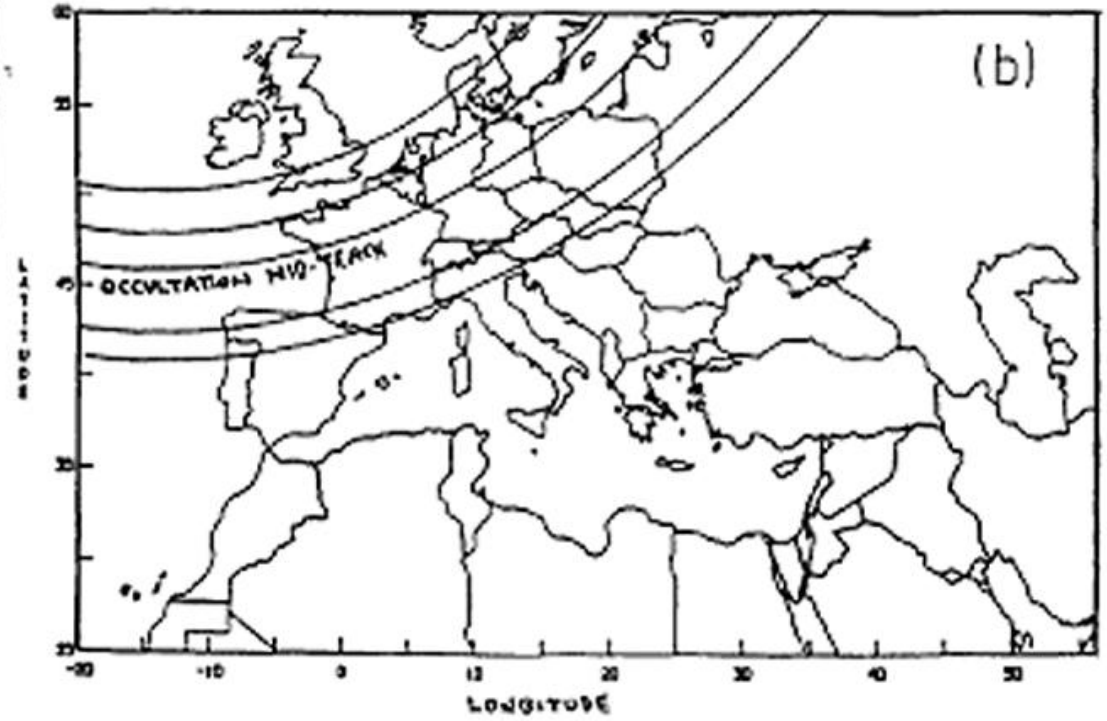
The occultation of 28 Sagittarii by Titan

Richard Miles & Andrew J. Hollis

A report of the Asteroids and Remote Planets Section (Director: A. J. Hollis)

A report is presented of the occultation of 28 Sagittarii by Titan on 1989 July 3. Visual, video and photoelectric observations, some depicting a central flash event, are reported. The optical characteristics of Titan's upper atmosphere (300–700km altitude) are derived. It is postulated that the distribution of light in the central flash pattern exhibits dispersion as a function of wavelength, and that one unfiltered CCD video recording contains features indicative of absorption by methane. An upper limit for the diameter of 28 Sgr is determined.





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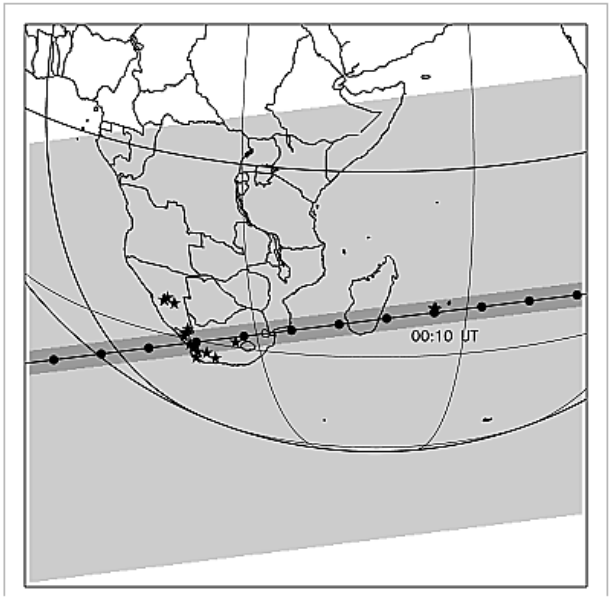
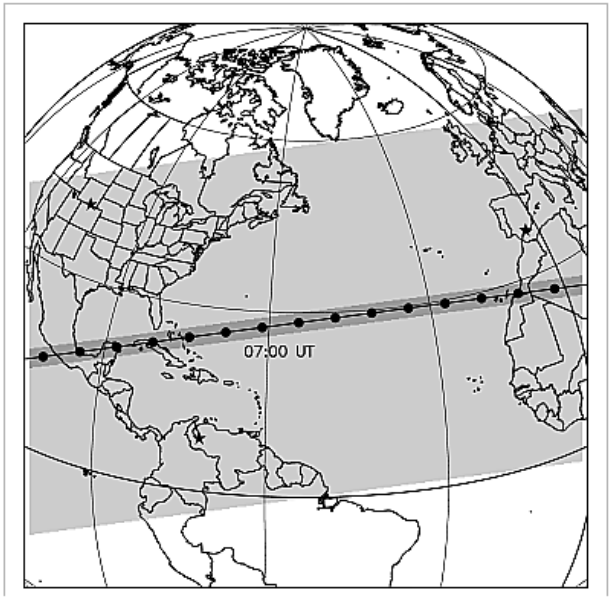
The two Titan stellar occultations of 14 November 2003

B. Sicardy, F. Colas, T. Widemann, A. Bellucci, W. Beisker, M. Kretlow, F. Ferri, S. Lacour, J. Lecacheux, E. Lellouch, S. Pau, S. Renner, F. Roques, A. Fienga, C. Etienne, C. Martinez, I. S. Glass, D. Baba, T. Nagayama, T. Nagata, S. Itting-Enke, K.-L. Bath, H.-J. Bode, F. Bode, H. Lüdemann, J. Lüdemann, D. Neubauer, A. Tegtmeier, C. Tegtmeier, B. Thomé, F. Hund, C. deWitt, B. Fraser, A. Jansen, T. Jones, P. Schoenau, C. Turk, P. Meintjies, M. Hernandez, D. Fiel, E. Frappa, A. Peyr[illegible], T. Payet, R. R. Howell, M. Kidger, J. L. Orti[illegible], M. Rapaport

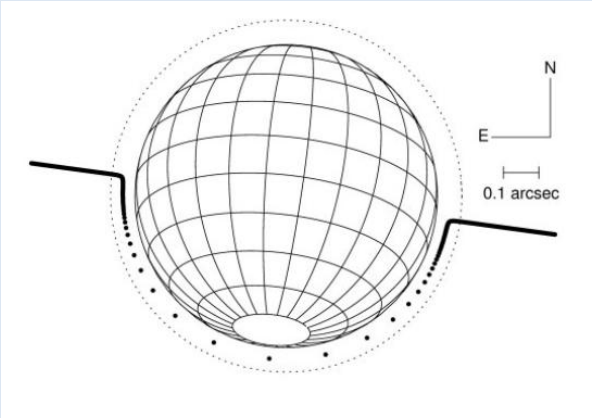
View issue TOC
Volume 111, Issue E11
November 2006

On 14 November 2003, Titan occulted two bright stars of the Tycho catalog: TYC 1343-1615-1 (V = 8.6) and TYC 1343-1865-1 (V = 10.7). The first occultation was visible right after midnight (UT) from the Indian Ocean and the southern half of Africa, while the second one was observable about seven hours later from western Europe, the Atlantic Ocean, and northern and central Americas; see Figures 1, 2, and 3.

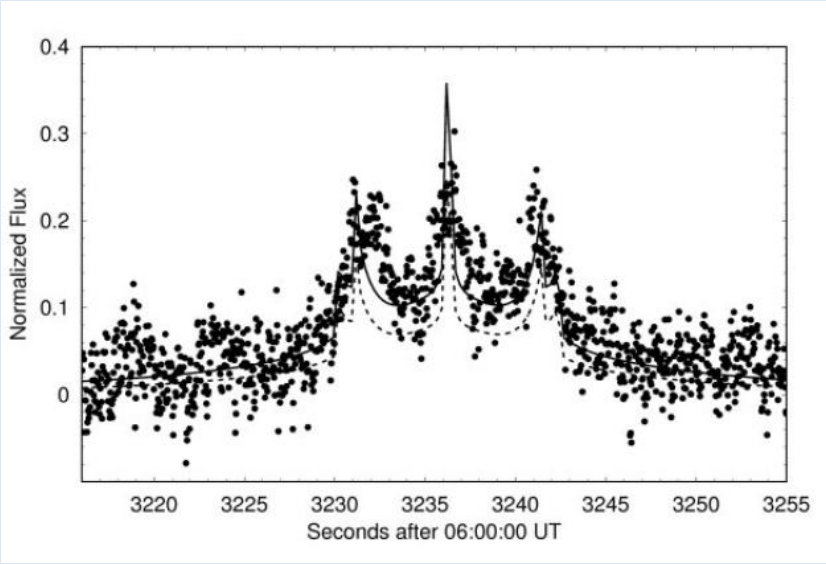


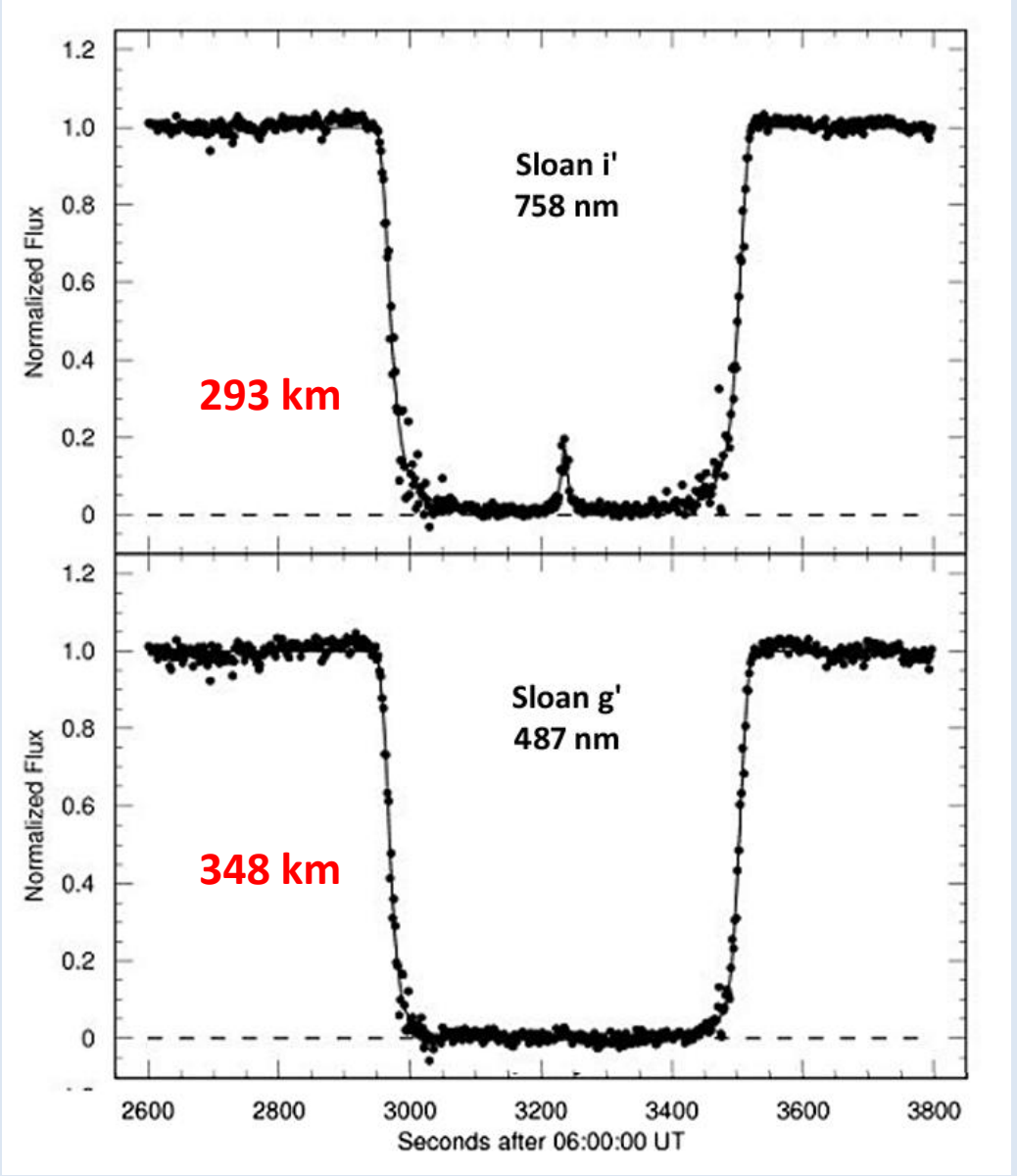


Titan Occultations: 2003 Nov 14

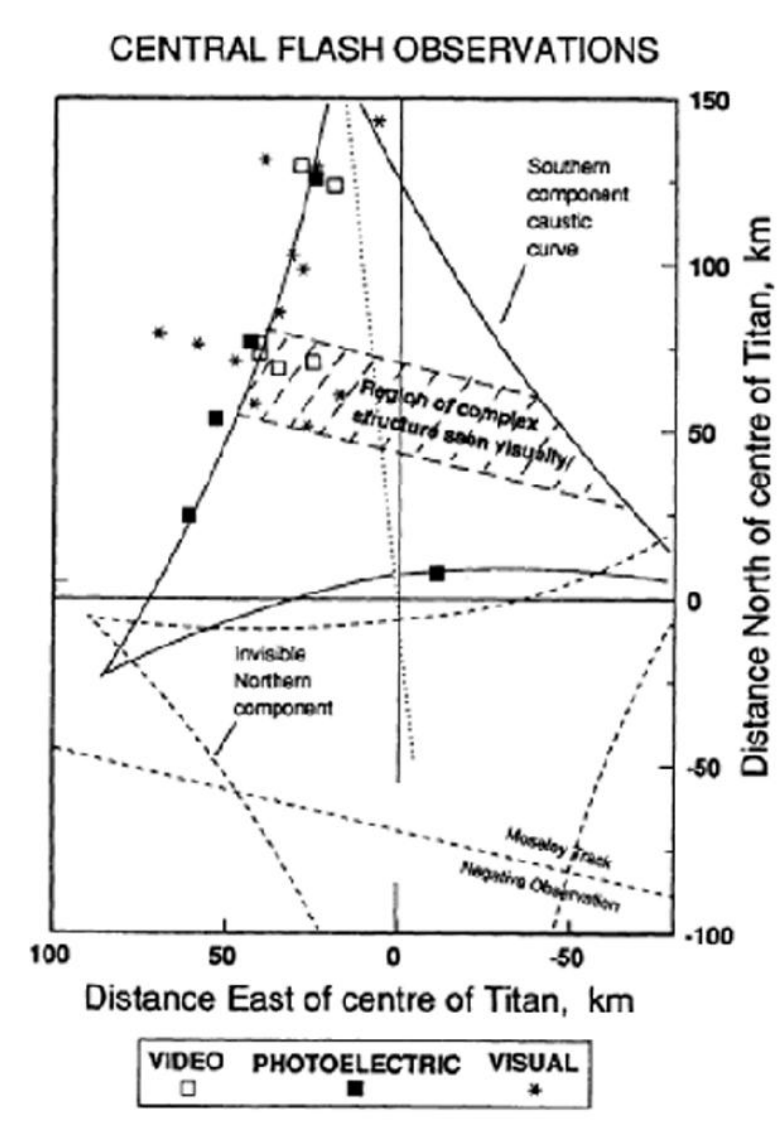


4.2-m WHT, La Palma

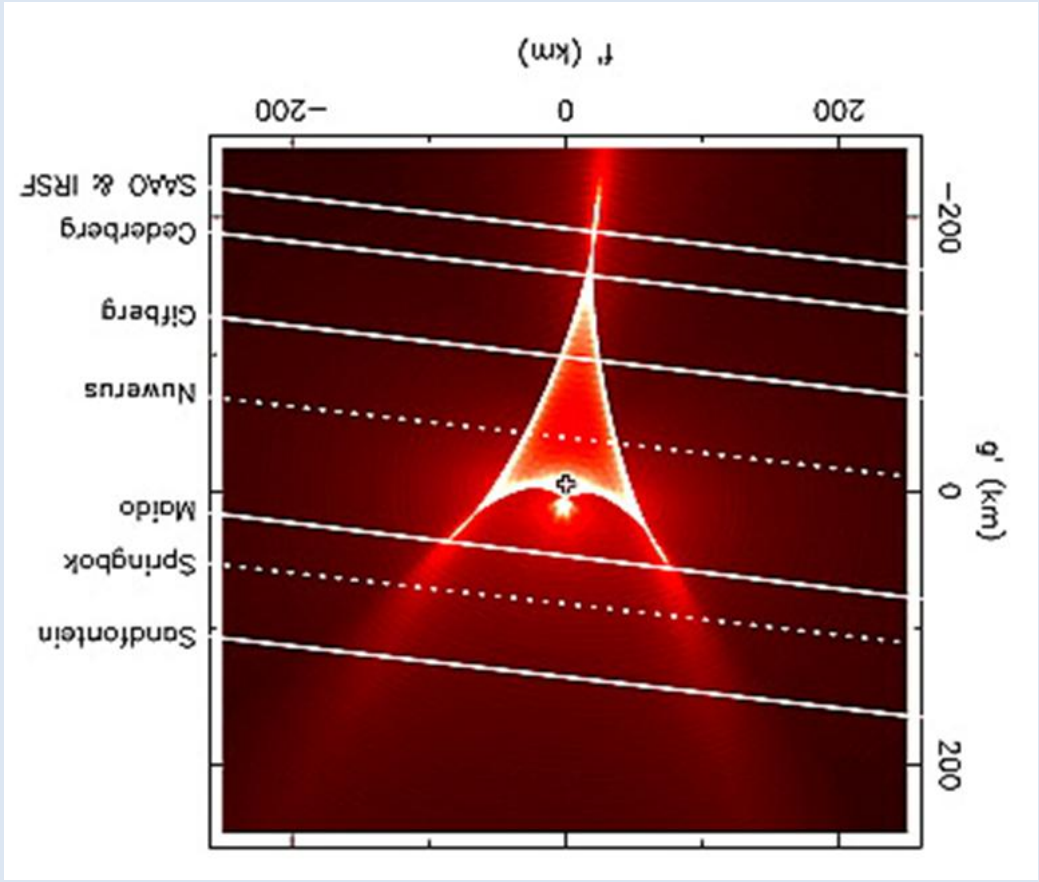




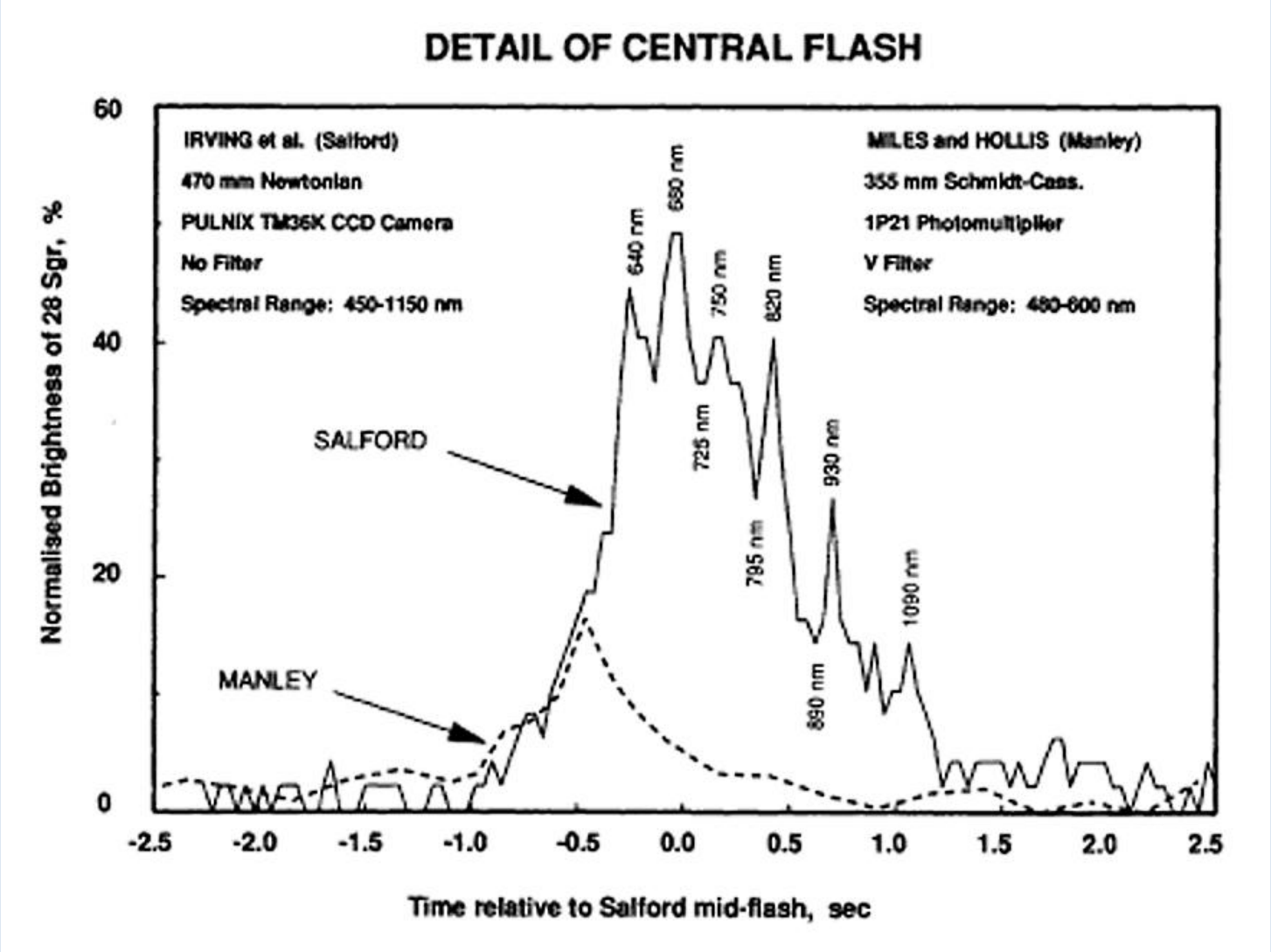
1989 Jul 03



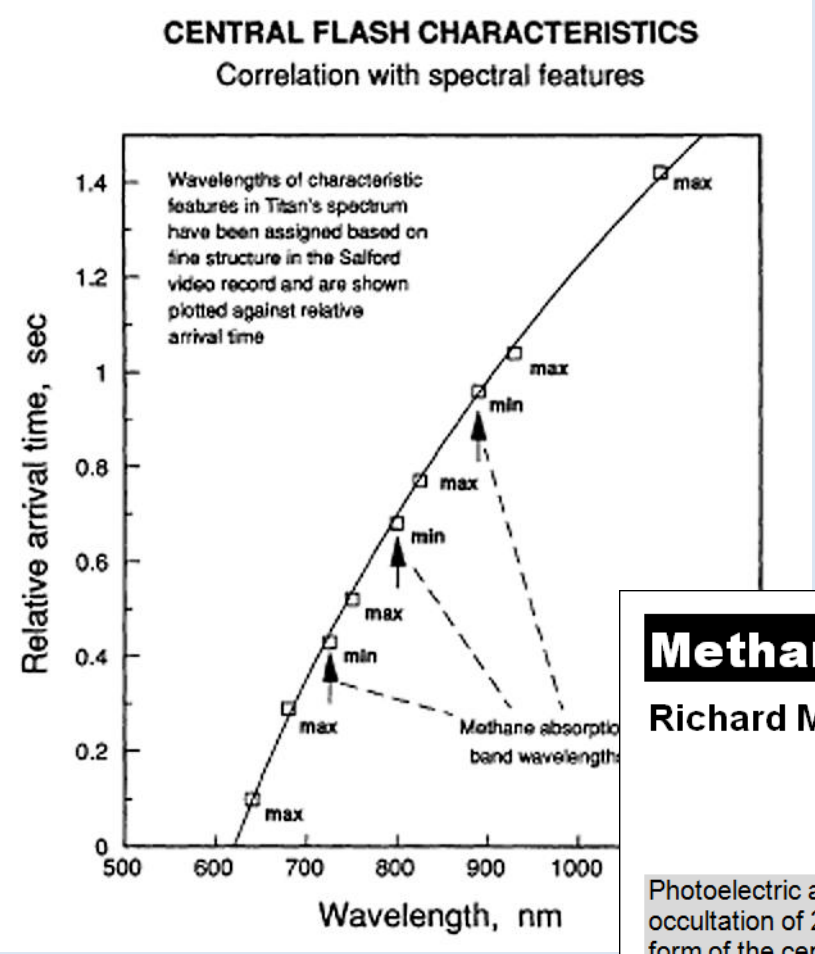
2003 Nov 14

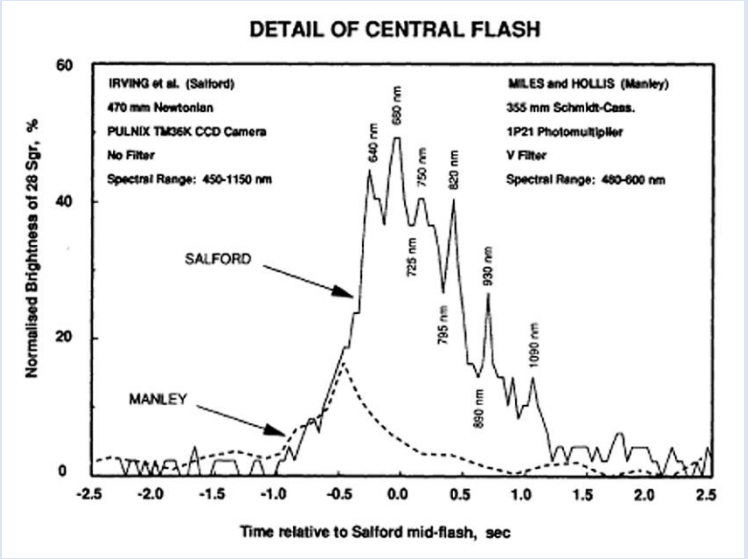


Titan Occultation: 1989 Jul 03



Titan Occultation: 1989 Jul 03





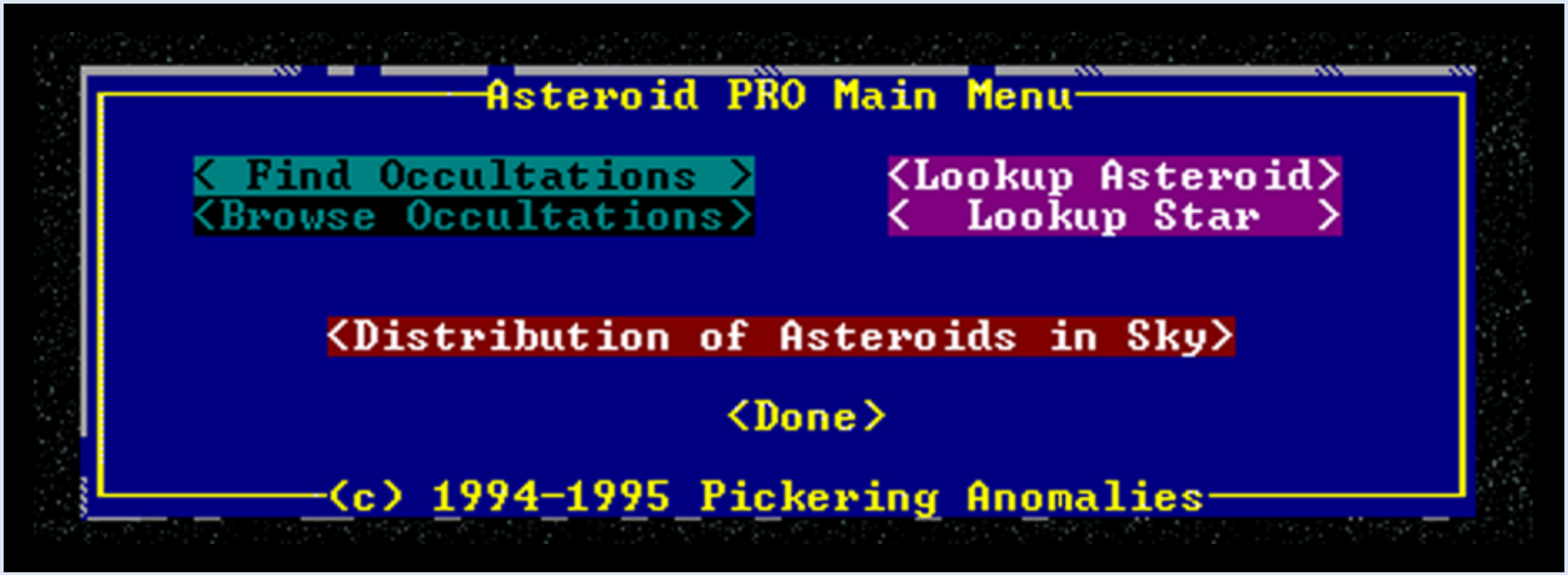
Methane abundance in Titan's stratosphere

Richard Miles

A report of the Asteroids and Remote Planets Section (Director: Andrew J. Hollis)

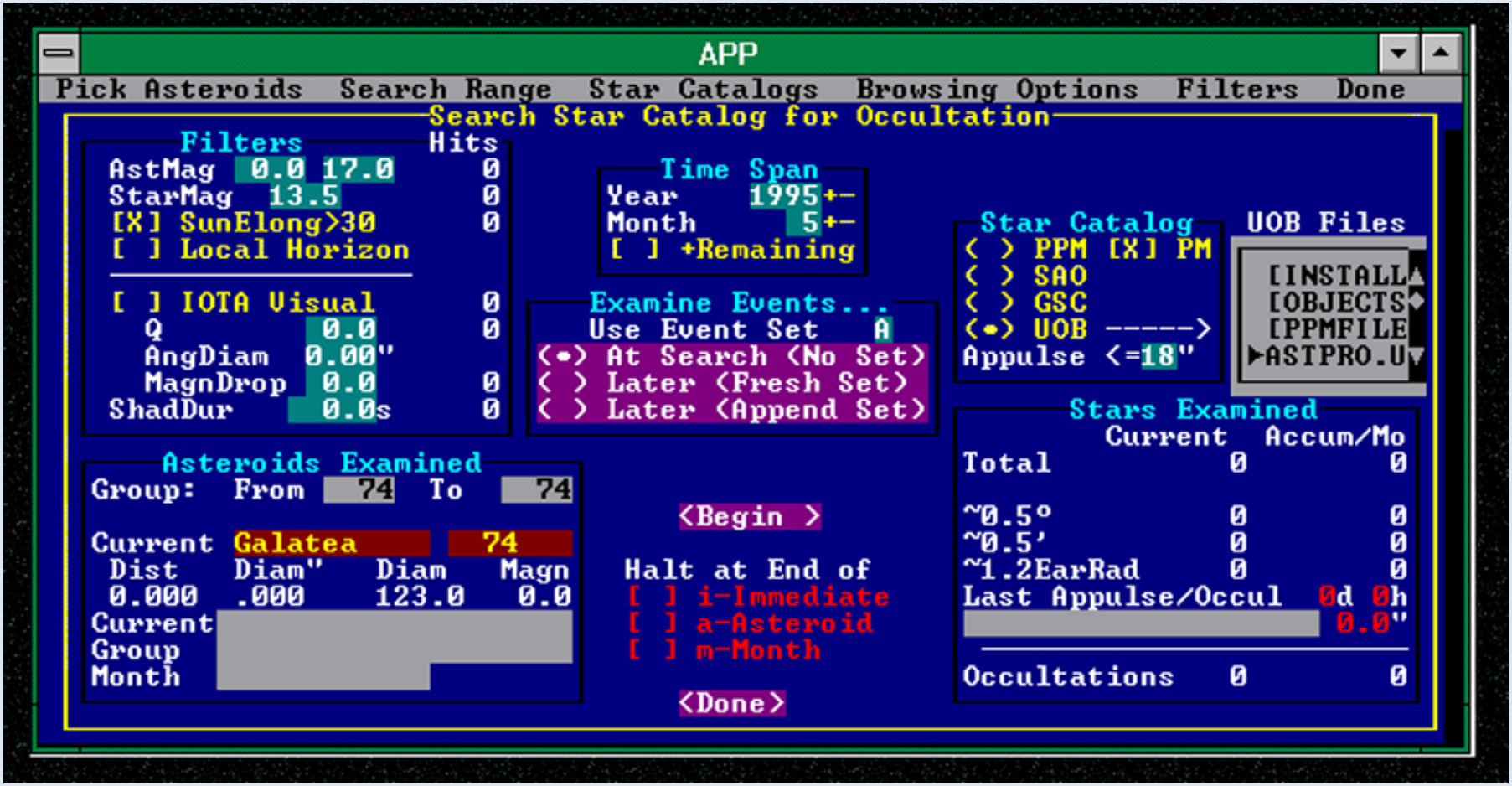
Photoelectric and CCD video observations of the central flash observed during the 1989 July 3 occultation of 28 Sgr by Saturn's largest satellite, Titan, have been analysed. By comparing the form of the central flash trace recorded from Salford with that from Manley, it has been shown that the flash exhibits chromatic dispersion and that features in the Salford trace can be assigned to characteristic spectral absorption bands of methane. Analysis of the relative intensity of the strong absorption band at 880-900 nm, when combined with the atmospheric pressure vs. altitude data previously derived from the analysis of the ingress/egress phase of the occultation published by Sicardy et al., has yielded a value of 7 mole-% for the methane concentration in Titan's upper atmosphere although values ranging from 5-10 mole-% also fit the observations within the experimental uncertainties.

Occultation Monitoring in the 1990s
Asteroid Pro software

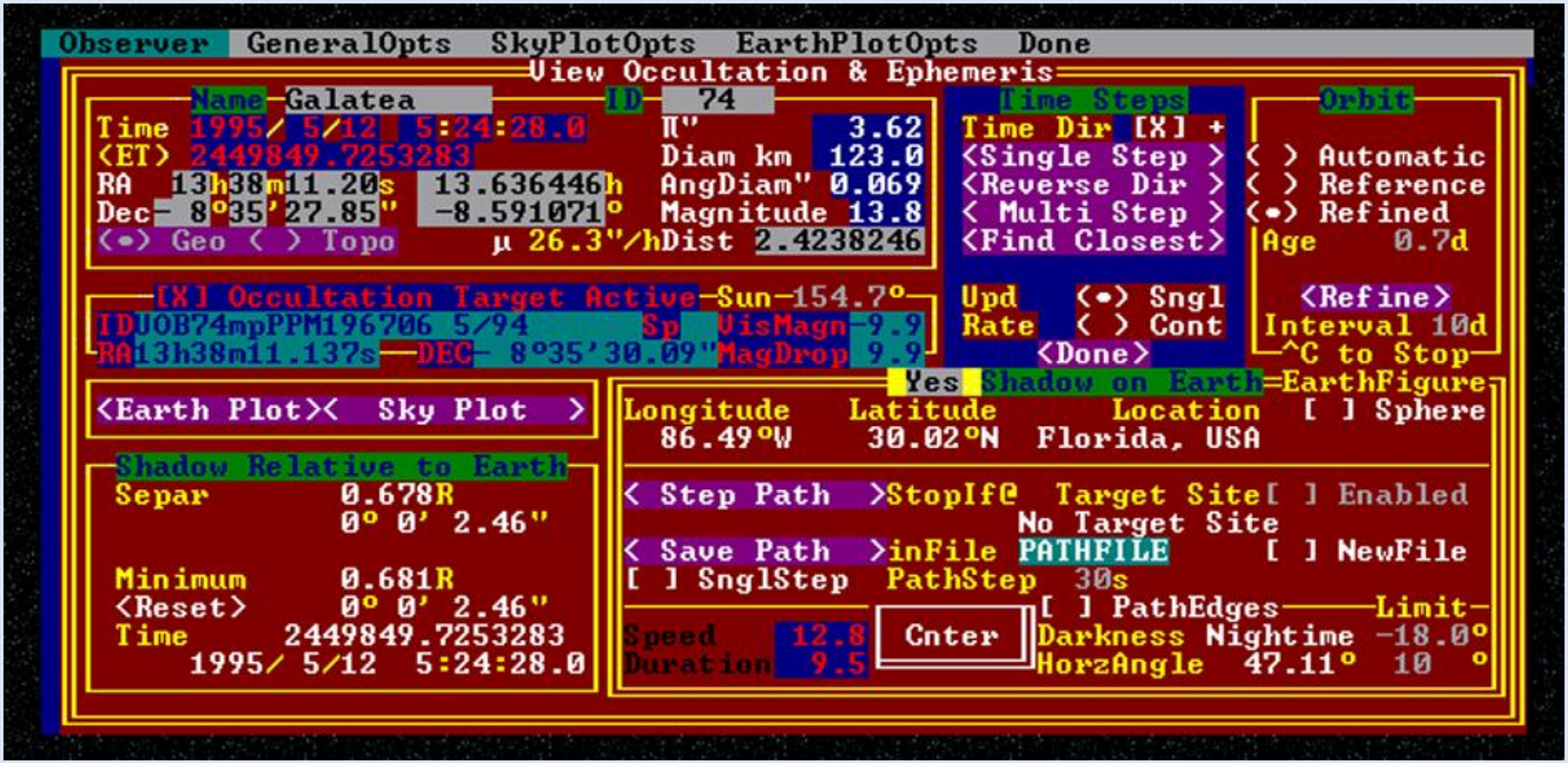


Installation requirements: **80386** or better, **3 MB RAM** minimum, **DOS 5.0** or better, **color** monitor, **40 MB** disk space,

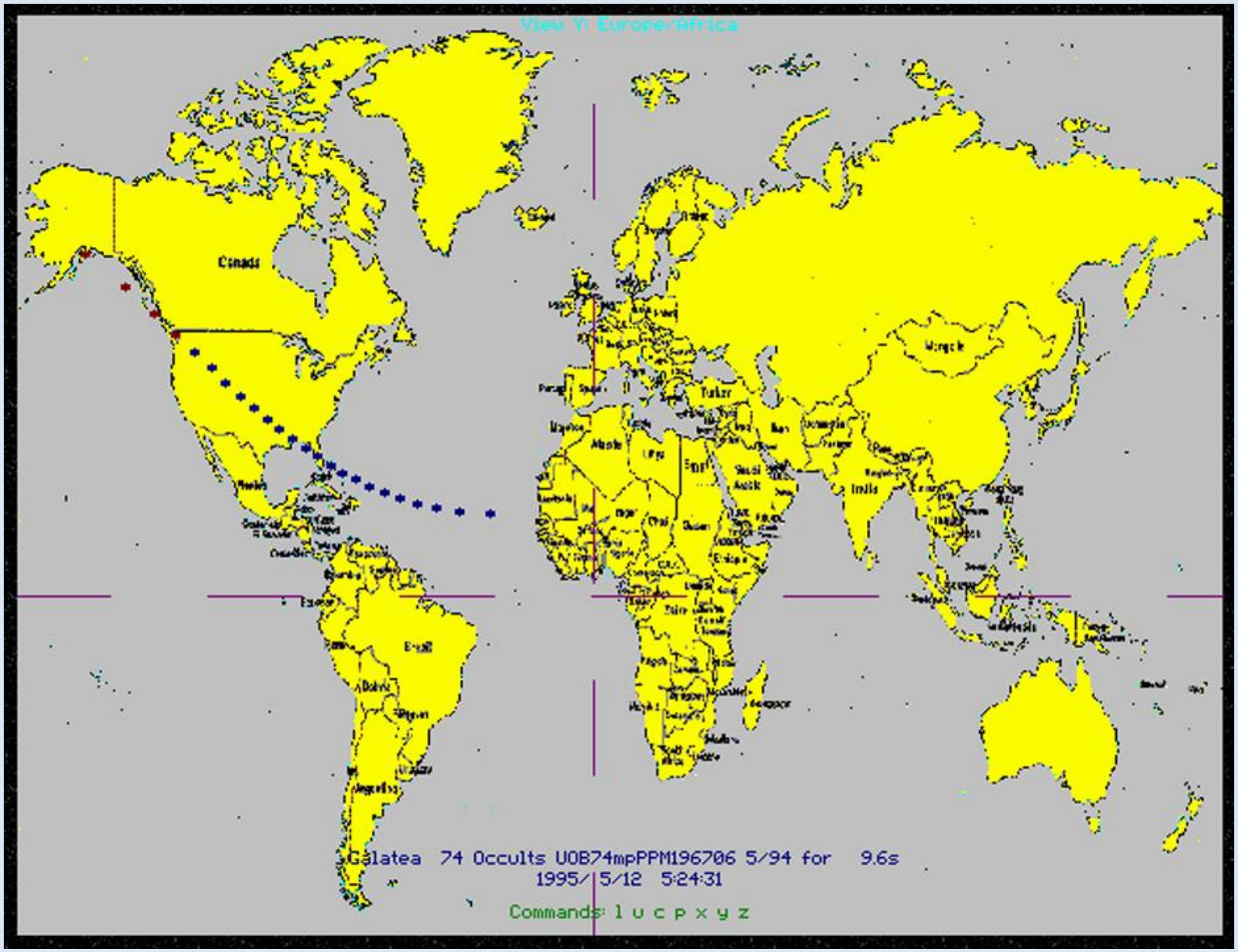
Asteroid Pro software
Search Screen



Asteroid Pro software Occultation Event



Asteroid Pro software - Shadow Track



BAA Asteroid Occultation Predictions 1995-1999

OCCULTATIONS OF STARS BY ASTEROIDS VISIBLE FROM THE UK
PREDICTIONS FOR THE PERIOD, NOV 1996

Predictions generated using ***Asteroid Pro Version 2.0*** and verified using ***Guide Version 5.0***

Dates given are as the 'double-date', e.g. the night of Oct 28/29
dm = drop in brightness of star in magnitudes
dt = approx. maximum duration of the main-body occultation
Alt = altitude above the horizon (for latitude 52deg North)
V = approx. combined magnitude of star + asteroid
Moon Phase = % illuminated, Moon Sep. = angular separation between the asteroid and the Moon
Stars are identified by name and J2000 coordinates

Double Date Nov	Time UT	Asteroid Name	Dimensions Diam. / Shadow	dm mag	dt	Alt (52(N)	Name
4/5	22:19-22:35	3224 Irkutsk	35 km / (45 km)	4.2	2s	51 deg	CMC 802883
5/6	04:36-04:56	467 Laura	48 km / (55 km)	4.0	5s	62 deg	GSC 1941 00254
8/9	**01:46-02:06**	**892 Seeligeria**	**79 km / (260 km)**	**3.6**	**7s**	**18 deg**	**GSC 4695 00543**
10/11	18:00-18:20	3596 Meriones	44 km / (90 km)	6.5	8s	29 deg	PPM 207237
10/11	23:13-23:43	112 Iphigenia	76 km / (170 km)	5.6	19s	27 deg	SAO 79765
15/16	22:54-23:14	131 Vala	43 km / (70 km)	3.4	8s	38 deg	GSC 1882 00432
15/16	23:53-00:13	84 Klio	83 km / (90 km)	1.7	12s	64 deg	GSC 2309 01381
24/25	00:48-01:04	260 Huberta	101 km / (130 km)	5.1	9s	51 deg	GSC 0729 00163
28/29	20:22-20:42	2307 Garuda	45 km / (80 km)	6.6	5s	36 deg	PPM 173829
30/31	21:50-22:10	752 Sulamitis	66 km / (90 km)	1.7	7s	50 deg	GSC 1273 00248

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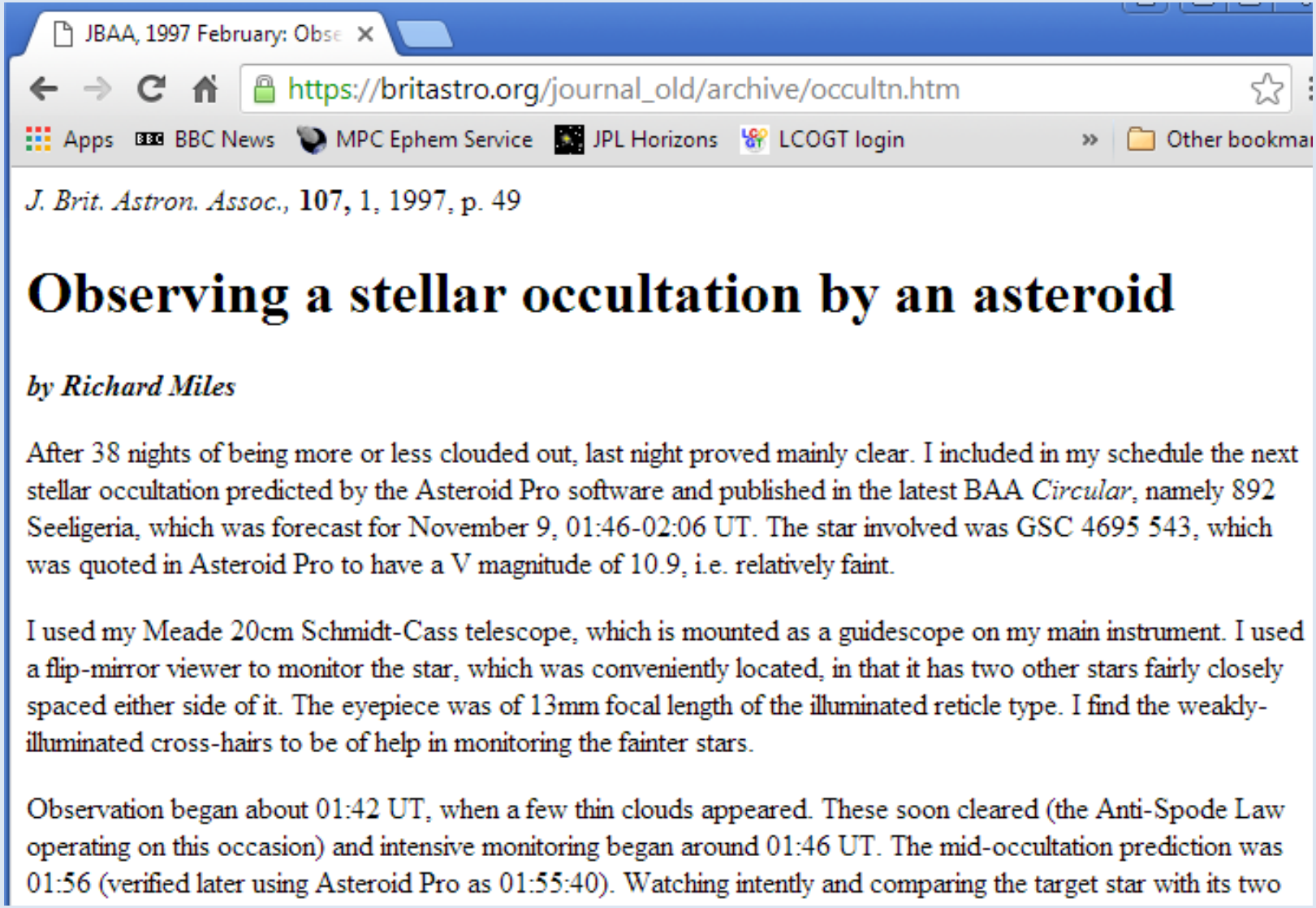
Double	STAR		MOON		
Date	RA	Dec	V	Phase	Sep.
Nov					
4/5	2h 48m 47s	+16deg420' 31"	11.8	35%	Set
5/6	8h 22m 36s	+24deg 33' 57"	11.5	24%	44 deg
8/9	**2h 2m 10s**	**-7deg 26' 08"**	**10.9**	**4%**	**Set**
10/11	23h 10m 48s	-5deg 11' 26"	10.2	0%	Set
10/11	7h 52m 49s	+23deg 29' 58"	8.7	0%	Set
15/16	6h 24m 59s	+25deg 11’ 58”	10.7	26%	Set
15/16	2h 07m 43s	+31deg 33’ 21”	10.4	26%	Set
24/25	6h 02m 25s	+14deg 47’ 14”	10.1	100%	48 deg
28/29	23h 10m 55s	+3deg 17' 54"	9.9	86%	120 deg
30/31	4h 30m 31s	+18deg 52' 56"	11.3	70%	65 deg

First positive asteroid occultation timing
892 Seeligeria



J. Brit. Astron. Assoc., **107**, 1, 1997, p. 49

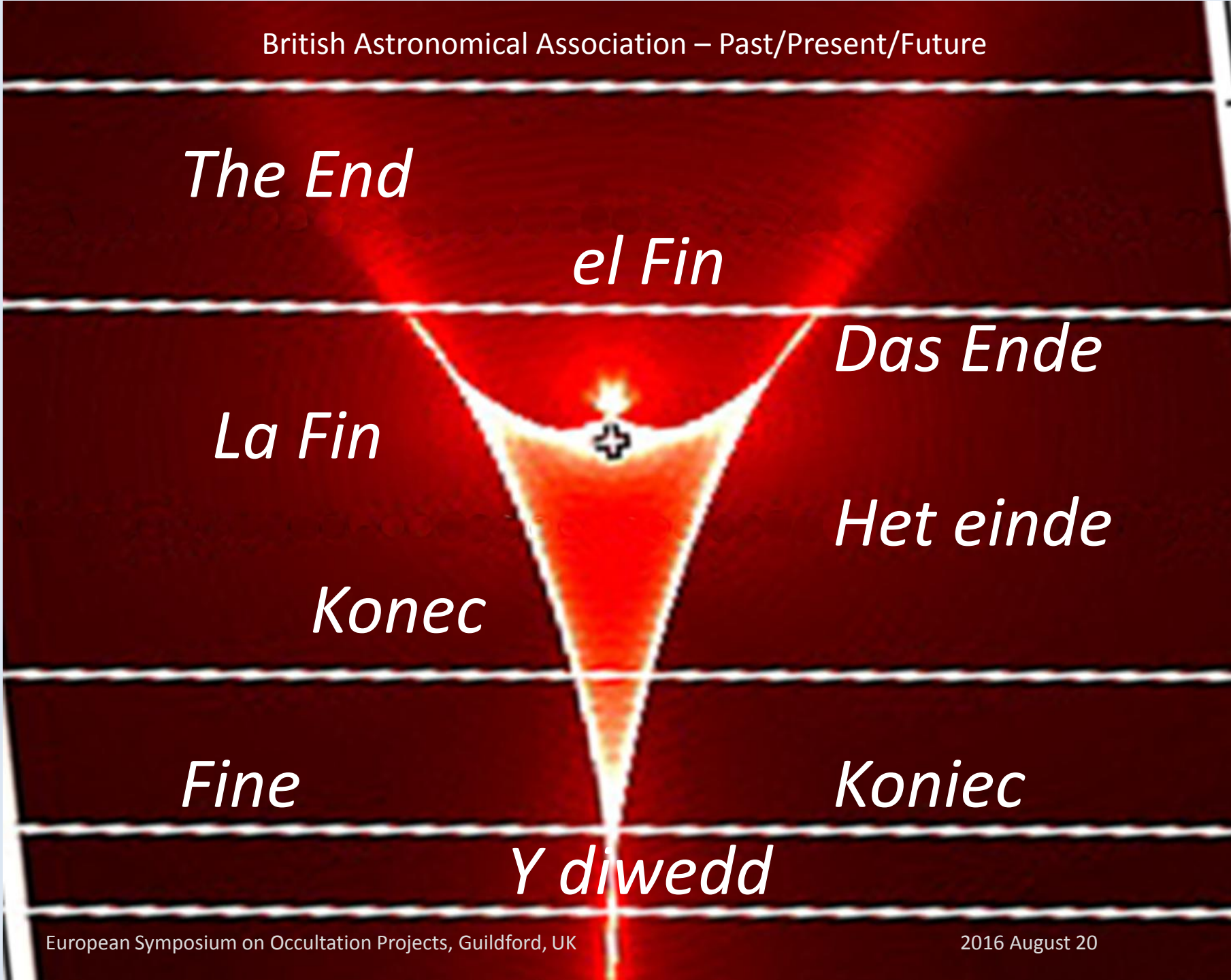
Observing a stellar occultation by an asteroid

by Richard Miles

After 38 nights of being more or less clouded out, last night proved mainly clear. I included in my schedule the next stellar occultation predicted by the Asteroid Pro software and published in the latest BAA *Circular*, namely 892 Seeligeria, which was forecast for November 9, 01:46-02:06 UT. The star involved was GSC 4695 543, which was quoted in Asteroid Pro to have a V magnitude of 10.9, i.e. relatively faint.

I used my Meade 20cm Schmidt-Cass telescope, which is mounted as a guidescope on my main instrument. I used a flip-mirror viewer to monitor the star, which was conveniently located, in that it has two other stars fairly closely spaced either side of it. The eyepiece was of 13mm focal length of the illuminated reticle type. I find the weakly-illuminated cross-hairs to be of help in monitoring the fainter stars.

Observation began about 01:42 UT, when a few thin clouds appeared. These soon cleared (the Anti-Spode Law operating on this occasion) and intensive monitoring began around 01:46 UT. The mid-occultation prediction was 01:56 (verified later using Asteroid Pro as 01:55:40). Watching intently and comparing the target star with its two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Das Ende
La Fin
Het einde
Konec
Fine
Koniec
Y diwedd