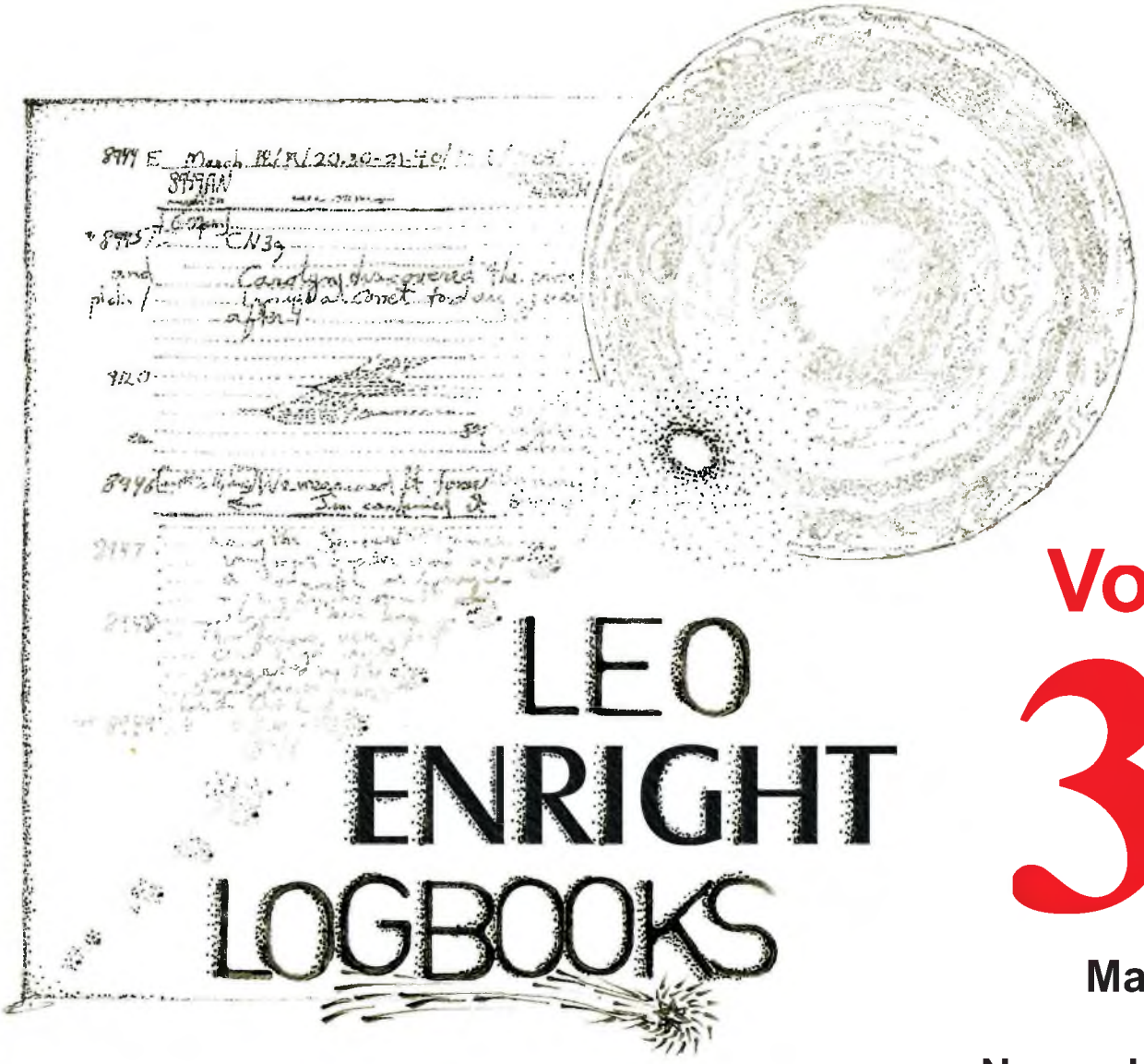

LEO ENRIGHT LOGBOOKS

Volume 31

May 10, 2008
to
November 1, 2008

Hilroy

31

- Heavyweight paper
- Papier épais

Leo Enright
Observing Log

2008 May 10 –
2008 Nov. 1.

80 Pages

26.7 x 20.3 cm

MATHS/SCIENCES

MADE IN CANADA
FABRIQUÉ AU CANADA ™

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2008

JANUARY | JANVIER

SUN | DIM	MON | LUN	TUE | MAR	WED | MER	THU | JEU	FRI | VEN	SAT | SAM
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27	28	29	30	31		

FEBRUARY | FÉVRIER

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MARCH | MARS

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APRIL | AVRIL

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JUNE | JUIN

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JULY | JUILLET

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AUGUST | AOÛT

SUN | DIM	MON | LUN	TUE | MAR	WED | MER	THU | JEU	FRI | VEN	SAT | SAM
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31						

SEPTEMBER | SEPTEMBRE

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OCTOBER | OCTOBRE

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NOVEMBER | NOVEMBRE

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30						

DECEMBER | DÉCEMBRE

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7	8	9	10	11	12	13
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21	22	23	24	25	26	27
28	29	30	31			

Observing Log

Code:

Year	Day	Date	Time	Place	Sky Conditions S=Seeing T=Transparency	Instrument(s)

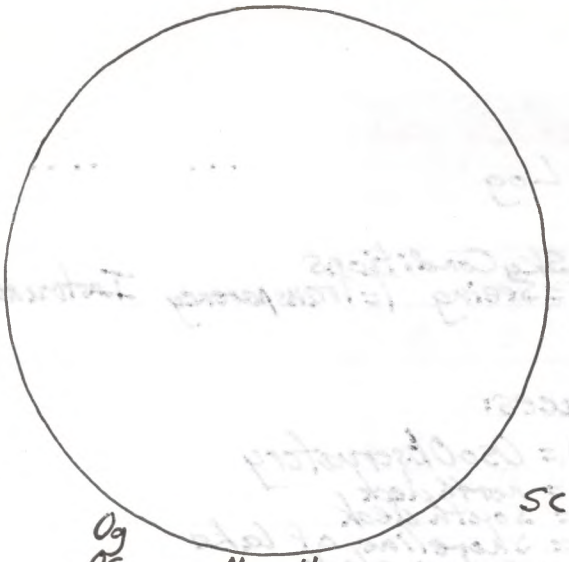
Time:
UT = Universal Time

Places:
OO = Oso Observatory
nd = north deck
sd = south deck
sh = shoreline of lake
ss = solar station
t = table at solar station
in = indoors
r = roof of house
ice = ice on lake
y = yard
wa = taneway
by = backyard
FL = Florida
pl = pool

Instruments:
C14 = Celestron 14 - 35.5cm SCT
C8 = Celestron 8 - 20cm SCT
Ast = Astroscan 2001 - 10.5cm RFT
12½" = Denise's 32cm Meade Dobsonian
20X100b = Celestron 20X100 binoculars
11x80b = 11x80 binoculars
9X63b = 9X63 binoculars
7x35b = 7x35 binoculars
18X50ISb = Canon 18X50 IMAGE STABILIZED binoculars
P.S.T. = Coronado Personal Solar Telescope
32 = 32mm ocular
32-2 = 32mm 2" ocular
E = Erfle
K = Kellner
O = orthoscopic
Ko = König
WA = Wide Angle
R = Rössl
ph = photography
p/b = piggy back
o/a = off axis
Ba = Barlow
A.P.F = Astrophysics Solar Filter
T.O.F. = Thousand Oaks Solar Filter

Objects:
PN = Planetary Nebula
GC = Globular Cluster
OC = Open Cluster
SG = Spiral Galaxy
LPV = Long Period Variable
DS = Double Star

Atlases:
U = Uranometria 2000.0
U210 = Uranometria 2000.0 Chart 210
AAVSO = AAVSO Variable Star Atlas
Cam = Cambridge Star Atlas (2000.0)
MSA = Millennium Star Atlas
USDA = Uranometria 2000.0 Deep Sky Atlas
USDA210 = Uranometria 2000.0 Deep Sky Atlas Chart 210.

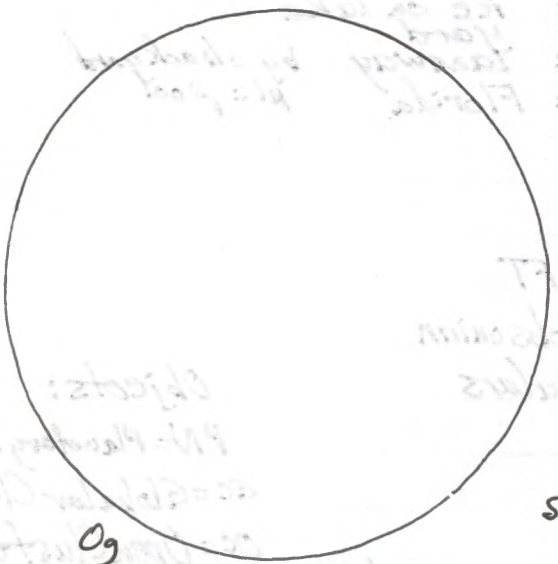


Og
Os
RSNO

May 11
17:40 - 17:45 UT

Og
Os
RSNO

May 12
17:45 - 17:50 UT



Og
Os
RSNO

May 13
16:30 - 16:35 UT

C-8, 32, 15.5
Beach (fqm); l/p) 18x50 ISb; ∧

2008 Sa-Su. May 10-11 00:10-02:45 UT Sharbot Lake ∧ S?T7 ∧ ne; ∧

ne: As an Astronomy Day activity, I went to Sharbot Lake Beach for observing, arriving before sunset, and I watched stars appear during twilight. Attendance was sparse. Two people showed up. The Crescent Moon - 1 day short of First Quarter was high in the South and to the left of Mars and Castor and Pollux. To the left of the moon was Regulus and then Saturn. There was a bright -2 mag. meteor seen in the ENE sky.

18x50 ISb: moon, Vega, ε Lyrae, looked for Kemble 2 in Draco.

C-8, 32, 15.5: lunar craters, Saturn and Titan and 1 or 2 other moons, Mars.

Su. May 11 17:40-17:45 UT t — C-8, 32, 28, 20, 15.5
Sun Og Os RSNO — T.O.F.

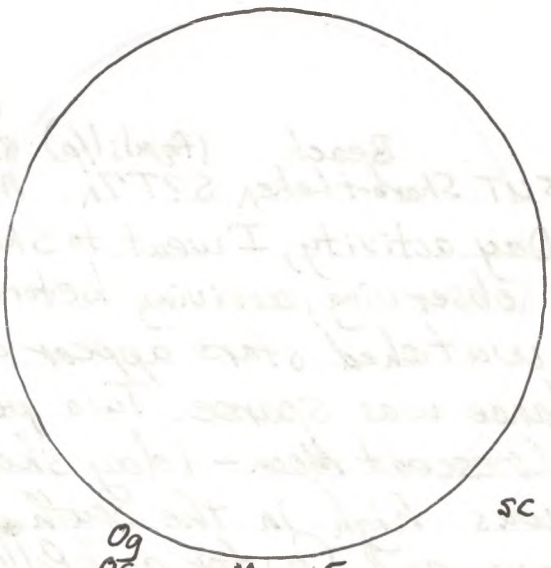
Su. May 11 17:50-17:55 UT nd — P.S.T., 20, 28, 20E, 16.5
sun in Hα - hints of prominences on the disk.

M. May 12 17:45-17:50 UT t — C-8, 32, 28, 20, 15.5
Sun Og Os RSNO — T.O.F.

M. May 12 17:50-17:55 UT nd — P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the solar disk

Tu. May 13 16:25-16:30 UT t — C-8, 32, 28, 20, 15.5
sun Og Os RSNO — T.O.F.

Tu. May 13 16:30-16:35 UT nd — P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the solar disk



SC

Og
05
RSNO

May 15
18:05-18:10 UT

2008 T.-W. May 13-14 03:00-03:30 UT nd+y S?T4(gml) ne; 18x50 15b
ne: Mars, Castor, and Pollux in the NW, Saturn and Regulus in the W, gibbous moon high in the W.; Arcturus and Spica in the SE part of the sky, Big Dipper near the zenith; Vega and Deneb in the ENE.
18x50 15b: bright stars of Corona Borealis, M13, M92, Taurus Poniatowski, IC4665, area of Barnard's Star, lunar craters.

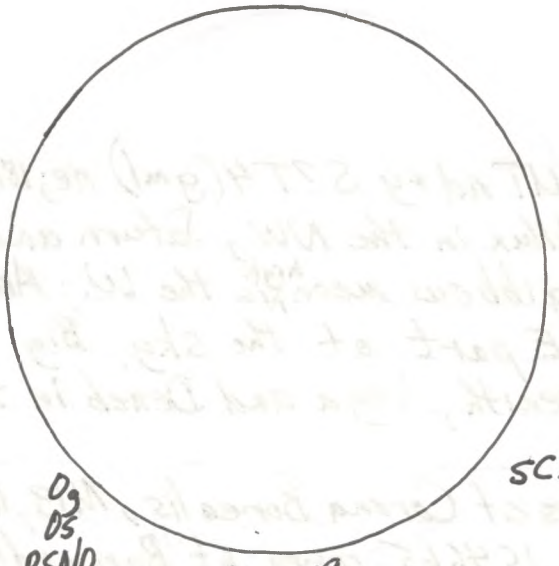
Th. May 15 18:05-18:10 UT t C-8; 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Th. May 15 18:10-18:15 UT nd P.S.T. 20, 28, 20E, 15.5
sun in Hα - hints of prominences around the solar disk.

Th.-F. May 15-16 01:25-01:30 UT nd+y twl ne
- bright gibbous moon high in the SSE, Regulus and Saturn high in the WSW, Mars and Castor and Pollux high in the WNW.

F.-S. May 16-17 03:30-03:35 UT nd+y S?T4(gml; some cloud N) ne
- Big Dipper near the zenith, Polaris and Kochab in the N.; Vega in the E., Mars and Castor and Pollux in the NW; bright gibbous moon in the S.

S.-S. May 17-18 03:20-03:35 UT nd S?T4(gml) ne; 18x50 15b
ne: Big Dipper near the zenith, Polaris and Kochab, Vega in the E., Mars, Castor and Pollux in the NW; Saturn and Regulus in the W.; bright gibbous moon in the S..
18x50 15b: Saturn and Regulus and area, M44, ε Lyrae.



SC.

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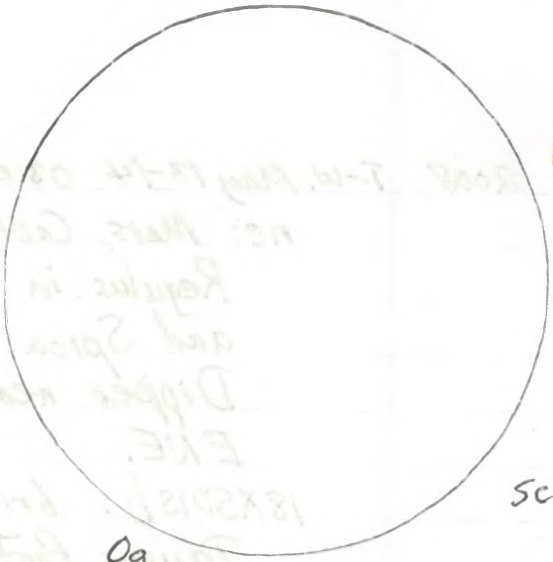
May 19
19:~~30~~-19:25UT



SC

Og
Os
RSNO

May 22
17:15-17:20UT

SC

Og
Os
RSNO

May 23
17:55-18:00UT

2008 M. May 19 19:20-19:25 UT t C-8, 32, 28, 20, 15
sun Og Os RSNO T.O.F.

M. May 19 19:30-19:35 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the solar disk

Th. May 22 17:15-17:20 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F

Th. May 22 17:30-17:35 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the solar disk.

Th.-F. May 22-23 03:00-03:40 UT y 5?T8½-9 ne; 18X50 15b
ne: I finally had a good night for observing after several days and nights with cloudy and rainy weather and also with a bright moon. With the end of astronomical twilight at 02:52 UT and moonrise at 03:29, there was only 37 minutes between those two times. I saw the stars of spring with Castor and Pollux and Mars in the NW and Regulus and Saturn in the W.
18X50 15b: M10, M12, M5, T Cor Bor and the area of R Cor Bor, Saturn and Regulus and area, M65 and M66, β Cyg, M27, Kemble 2 in Draco, μ Cep - the Garnet Star, δ Cep and area, M13, M92, area of α Oph and α Her, IC4665, Barnard's Star and area, area of Taurus Poniatowski.

F. May 23 17:55-18:00 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

F. May 23 18:00-18:05 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the solar disk.

SC

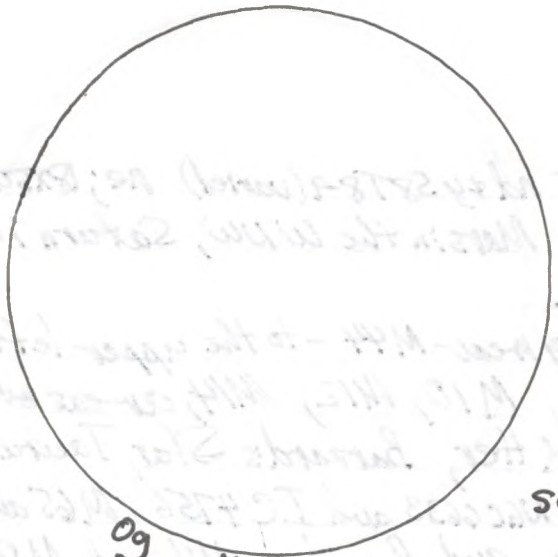
09 May24
0s
RSNO 17:25-17:30UT

2008 F.-S May 23-24 03:00-04:20UT nd+y S8T8-9(varied) ne; 18X50sb
ne: stars of spring; Mars in the WNW, Saturn in the W. near Regulus.
18X50sb: Mars very near M44 - to the upper left of its centre, M10, M12, M14, areas of α Oph and α Her, Barnard's Star, Taurus Poatiowski, NGC 6633 and IC 4756, M65 and M66, Saturn and Regulus, M4 and M80, M107, "the diamond ring near Polaris, M57, μ Cep - "the garnet star", M27, β Cyg, M27, M5.

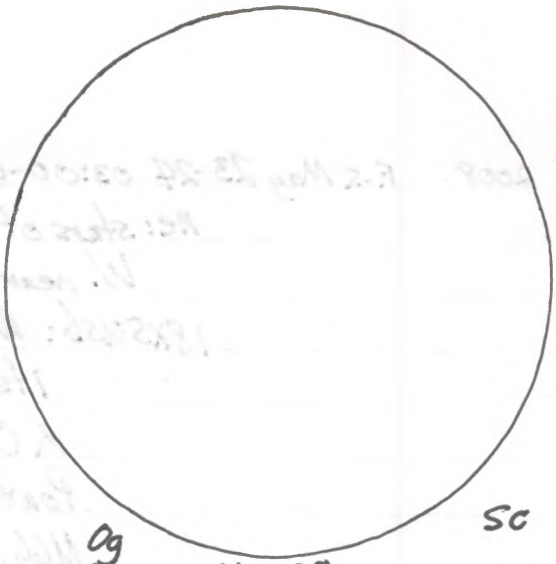
Sa. May 24 17:25-17:30UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Sa. May 24 17:35-17:40UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the solar disk.

Sa.-Su. May 24-25 03:10-03:40UT y S8T9 ne; 18X50sb
ne: Prior to the observing session I observed a passage of the International Space Station at about 02: UT and was a passage of over 4 minutes, going from NW to ENE, and at about mag. 0. From the information on www.heavens-above.com, I also expected to see an Iridium Flare at 03:12 UT in the WSW, but I did not knowing see it. During the session, I observed the stars of spring with Saturn in the W. near Regulus. Mars had been seen earlier in the WNW
18X50sb: M5, M10, M12, M107, M57, M13, M92, M4, M80, M27, T Cor Bor, R Cor Bor area, Kemble 2 in Draco, Saturn, R Leonis - very faint - perhaps at mag. 9.0, M65, M66, area of M95 and M96, μ Cep - the Garnet Star, the Polaris diamond ring asterism,



Og
Os May 27
RSNO 18:30 - 18:35 UT



Og
Os May 28
R&NO 16:55 - 17:00 UT

2008 δCep and its area.

M.-T. May 26-27 05:10-05:15 UT nd 8T7 (water vapour) ne
Under very clear skies with mediocre transparency because of high water vapour content, I observed the stars of late spring and early summer with the Summer Triangle well up in the E.

Tu. May 27 18:30-18:35 UT t C-8, 32, 28, 20, 15.5
sun 0g 0s RSNO T.O.F.

Tu. May 27 18:35-18:40 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the solar disk

T.-W. May 27-28 03:30-04:30 UT y 8T9 ne; 18X501Sb
ne: stars of spring; Saturn near Regulus in the W.
18X501Sb: M5, M10, M12, M14, area of α Her and α Oph, Barnard's Star, NGC6633, IC4756, M4, M80, T CorBor, area of R CorBor, M13, M92, M51, M27, M71, Brocchi's Cluster (A Sutfi's Cluster) M39, area of North America Nebula, β Cyg, Ktauble 2 in Draco, δ Cephei, μ Cephei - the Garnet Star, the Engagement Ring associated with Blaris, M81, M82, Barnard's E in Aquila, M57, IC4665, Double Cluster in Perseus, Stock 2.

W. May 28 16:55-17:00 UT t C-8, 32, 28, 20, 15.5
sun 0g 0s RSNO T.O.F.

W. May 28 17:00-17:05 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the solar disk

Og
Os
RSNO May 29
20:02-20:07 UT

Og
Os
RSNO May 31
17:12-17:17 UT

Og
Os
RSNO June 2
19:15-19:20 UT

2008 W.-Th. May 28-29 03:44-03:54 UT nd 5.T9 ne; 18x50 15b

ne: stars of spring; Saturn near Regulus in the W.

18x50 15b: M5, M10, M12, area of Saturn and Regulus, Kemble's Cascade, Double Cluster in Perseus, Stock 2, Brocchi's Cluster, area of Sagitta, M27.

Th. May 29 20:02-20:07 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Th. May 29 20:10-20:15 UT nd P.S.T.; 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the solar disk.

Th.-F. May 29-30 03:20-04:15 UT y t nd 5 8T9.5 (Very Good!) ne; 18x50 15b.

ne: stars of spring Mars in the WNW among the trees, Saturn near Regulus in the W.

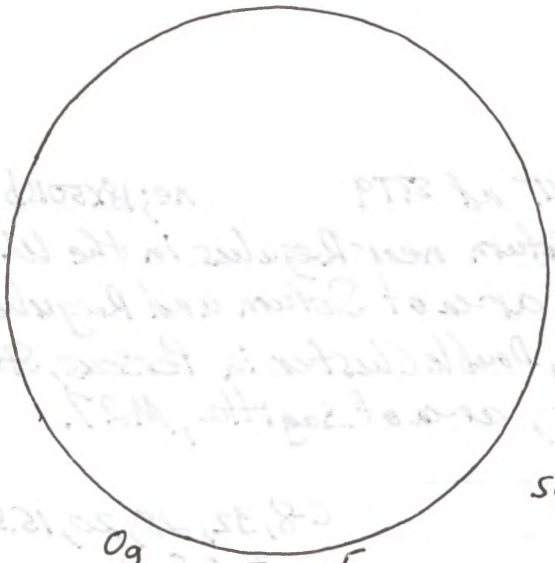
18x50 15b: M5, M10, M12, M4, M80, areas of α and β Librae, M16, M17, M18, M24, M25, M13, M92, M57, ε Lyrae, M39, β Cyg, North America Nebula area and other areas of Cygnus, δ Cephei and μ Cephei, Kemble's Cascade, Double Cluster in Perseus, Stock 2, M51, M101, M65, M66, Saturn, M107, Kemble 2.

Sa. May 31 17:12-17:17 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Sa. May 31 17:52-17:57 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - some hints of prominences on the disk

M. June 2 19:15-19:20 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

M. June 2 19:20-19:25 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - some hints of prominences on the disk



Og
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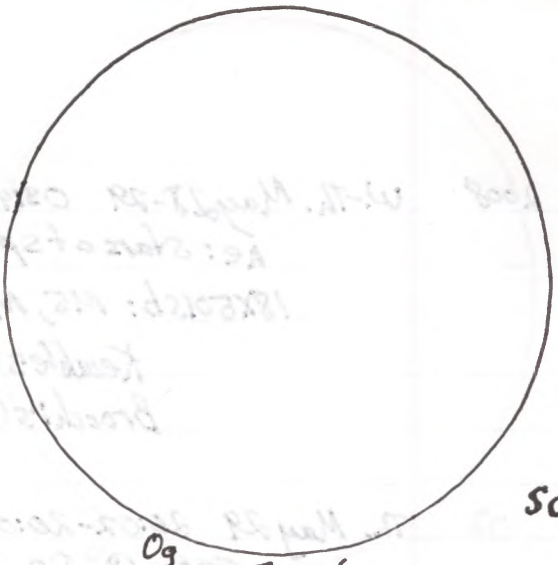
RSNO June 5
19:00-19:05 UT



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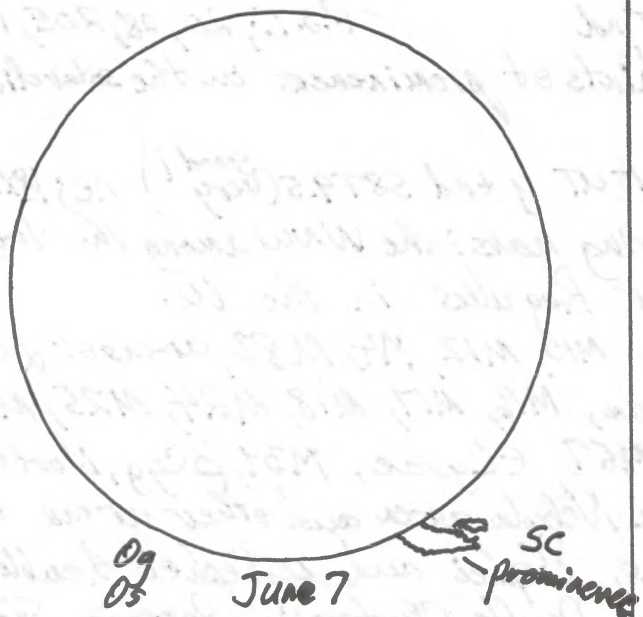
Os
RSNO June 6
19:00-19:05 UT



Og
Os
RSNO June 7
17:18-17:23 UT

2008 Th. June 5 19:00-19:05 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Th. June 5 19:05-19:10 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

F. June 6 19:00-19:05 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

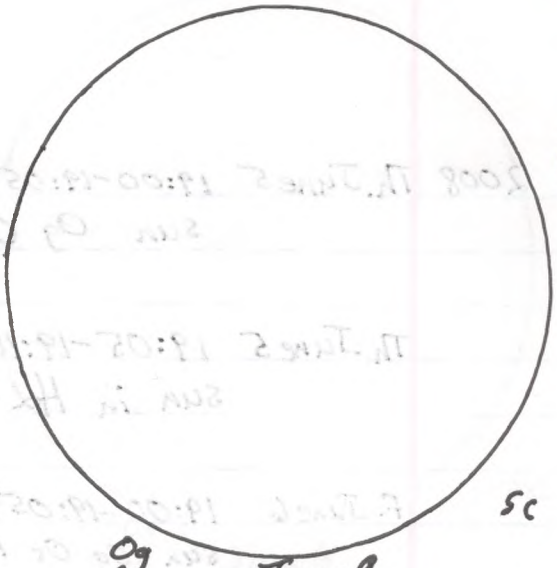
F. June 6 19:05-19:10 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

F-S June 6-7 03:55-05:15 UT y S8T9 ne; 18X501Sb
ne: Prior to the observing session I had seen the 3-day old crescent moon in the NW sky. I observed the stars of early summer and the planet Jupiter in the SE.
18X501Sb: M4, M80, M11 and R Scuti and the cluster Bas 1 in the trapezium of stars to the right of M11 - seen with averted vision, M16, M17, M8, M8, M20, M21, M28, M22, M23, M24, M25, M26, Jupiter in the SE and two of its moons - Ganymedeand Callisto, M71, M27, Col 299, M3, areas of α Lib and β Lib, M5, M10, M12, areas of α Her and α Oph, IC4665, Barnard's Star and area, NGC6633, IC4756, Tweedledee and Tweedledum, M13 and M92.

Sa. June 7 17:18-17:23 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Sa. June 7 17:25-17:30 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - definite, distinct prominence at 5 o'clock position on disk.

Og
05
RSNO June 8
16:45-16:50 UT



Og
05
RSNO June 9
18:05-18:10 UT

2008 S-S. June 7-8 03:15-04:40UT 00 S?T3-8(varied) ne; 18x50lsb

ne: I opened the observatory at about 00:00 UT (8:00 p.m. E.D.T) which was fairly close to 12:00:00 Local Mean Sidereal Time, being 6 months later than the date when LMST was the same as UTC. During the observing session the sky transparency improved from quite poor to quite good as the haze seemed to dissipate. Many more of the stars of early summer could be seen.

18x50lsb: M5, M10, M12, M13, M92, area of α Her and α Oph, IC4665, Barnard's Star and area, NGC6633, IC4756, Tweedledee and Tweedledum, M4, M80, M107.

Su. June 8 16:45-16:50UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

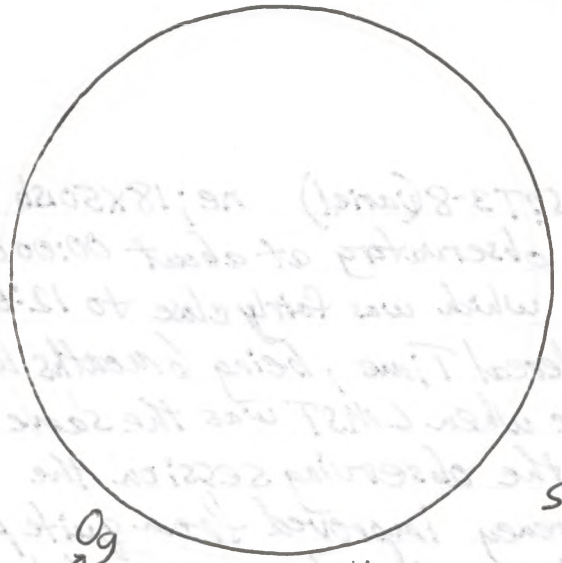
Su. June 8 16:50-16:55 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

M. June 9 18:05-18:10UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

M. June 9 18:10-18:15 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

T.-W. June 10-11 02:35-02:40UT nd twl ne

During twilight I observed Castor and Pollux low in the NW with Mars now over 20° to the left and up from Castor and up and to the left from Mars were Saturn and Regulus with Saturn now about 2° up and to the left from Regulus.



SC

Og
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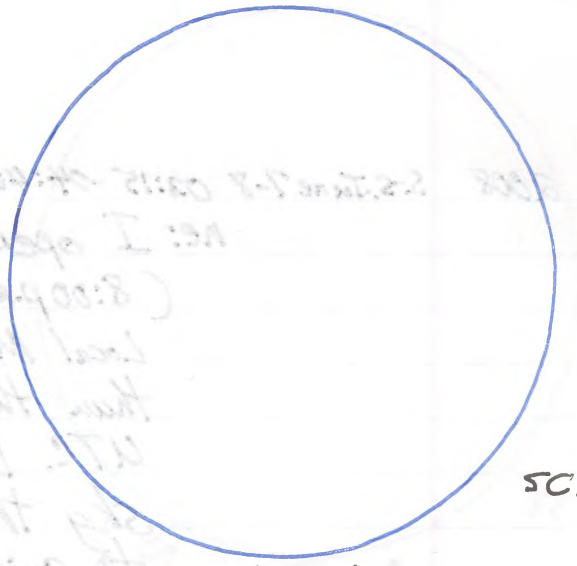
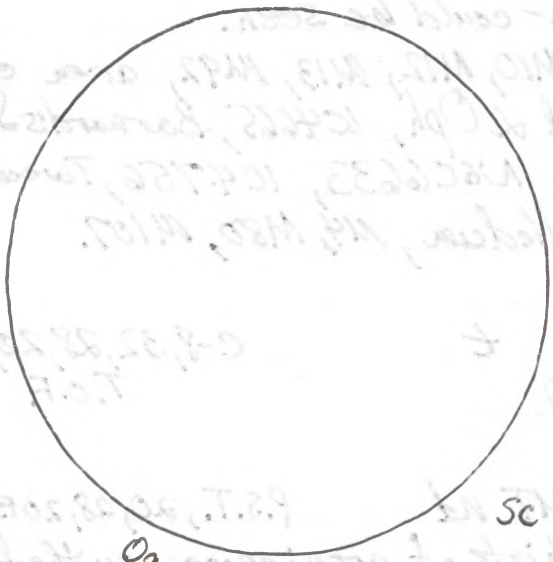
June 11
17:05-17:10 UT



SC.

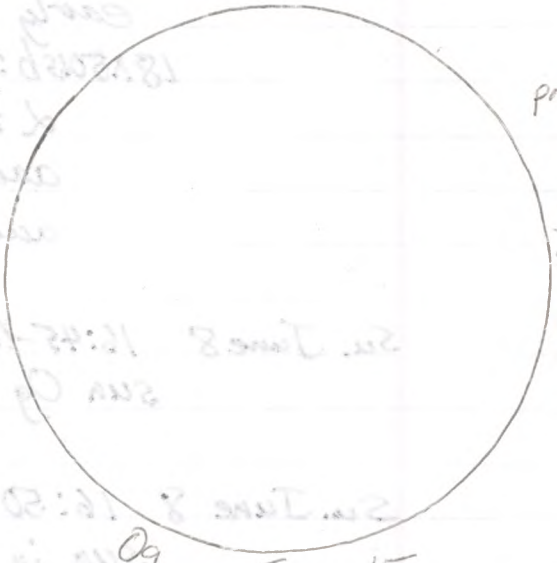
June 12
18:45-18:50 UT



SC

Og
Os
RSNO

June 13
18:30-18:35 UT



Og
Os
RSNO

June 15
18:05-18:10 UT

05:30 - 05:40 UT nd 58.5 T9.5! ne

Beginning shortly after moonset which was at 05:26 UT, I observed briefly under superb conditions with the summer Milky Way in the E. sky and very spectacular. I could see Al Sufi's Cluster (Col. 299) naked-eye and attempted to see MB near the zenith but was not sure of seeing it.

W. June 11 17:05 - 17:10 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T. O.F.

W. June 11 17:15 - 17:20 UT nd P.S.T., 20, 28, 20E, 15.5.
sun in Hα - hints of prominences on the disk.

Th. June 12 18:45 ~~18:50~~ UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O.F

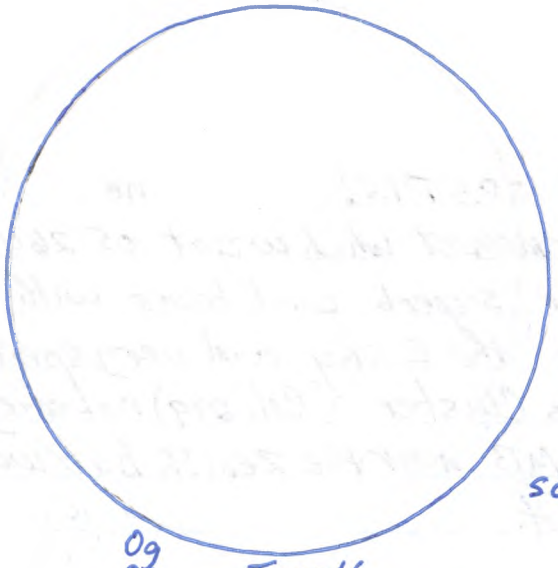
Th. June 12 18:50 - 18:55 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

F. June 13 18:30 - 18:35 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T. O.F.

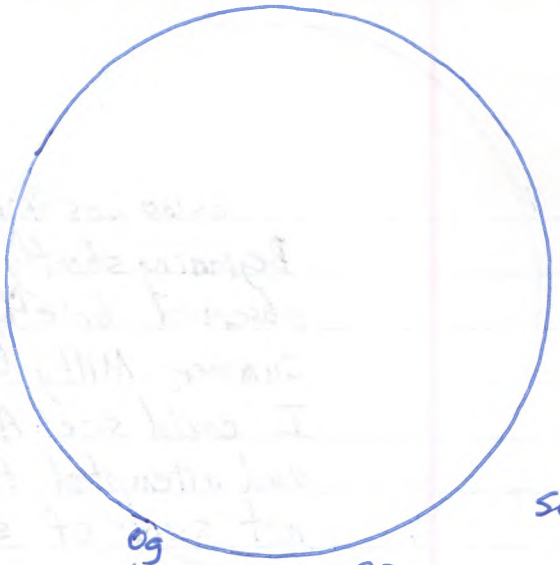
F. June 13 18:35 - 18:40 UT nd P.S.T. 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

Su June 15 18:05 - 18:10 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T. O.F.

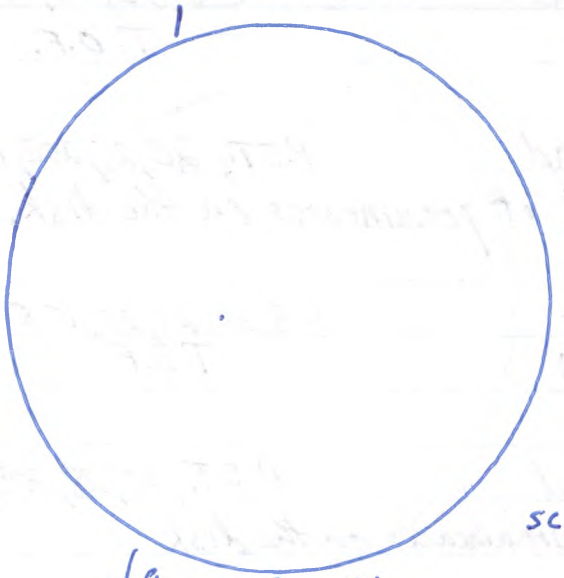
Su. June 15 18:10 - 18:15 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - 1 definite prominence at 3 o'clock position on disk



0g
0s
RSN0 June 16
14:50-14:55UT



0g
0s
RSN0 June 20
19:30-19:35UT



1g
1s
RSN11 June 21
17:45-17:50UT

2008 M. June 16 14:50-14:55UT ss C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

M. June 16 14:55-15:00UT nd P.S.T., 32, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

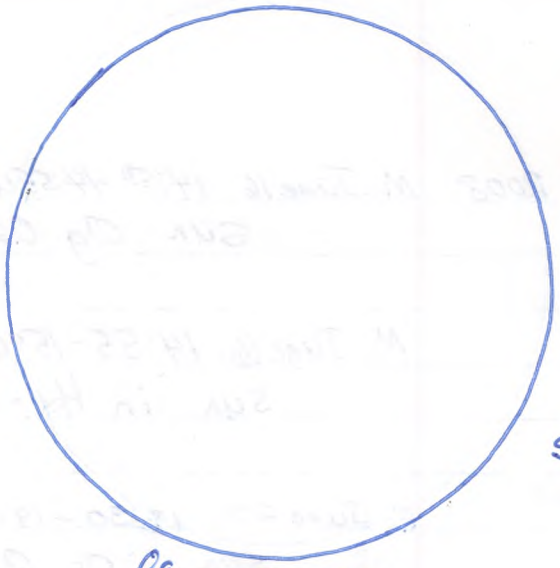
F. June 20 19:30-19:35UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Sa. June 21 17:45-17:50UT t C-8, 32, 28, 20, 15.5
sun lg ls RSNII T.O.F.

Sa. June 21 17:50-17:55UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

Sa-Su. June 21-22 03:00-03:30UT y twl; gml ne; 18X50 lsb
ne: I observed for ½ hour about 24 hours after the time of the June Solstice. The End of Astronomical Twilight was about at the end of the session and the Gibbous Moon (about 3 ¼ days after Full Moon) rose during the session (at 03:11 UT) and caused a brightness in the SE part of the sky. The Summer Triangle was bright in the E; Denebola was above the trees in the W, and part of Scorpius was seen in the S.. In the latter part of the session, Jupiter was seen low in the SE.
18X50lsb: M8, area of M20 and M21, M10, M12, M4, M80, Jupiter and 3 of its 4 Galilean moons, TCorBor, area of RCorBor, M71, M27, IC4665, Barnard's Star and area, NGC6633, IC4756, and nearby area of "Tweedledee and Tweedledum."

Og
Os
RSNO June 22
18:30:18:35 UT



Og
Os
RSNO June 24
19:00-19:05 UT

2008 Su. June 22 18:30-18:35 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O.F.

Su. June 22 18:45-18:55 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

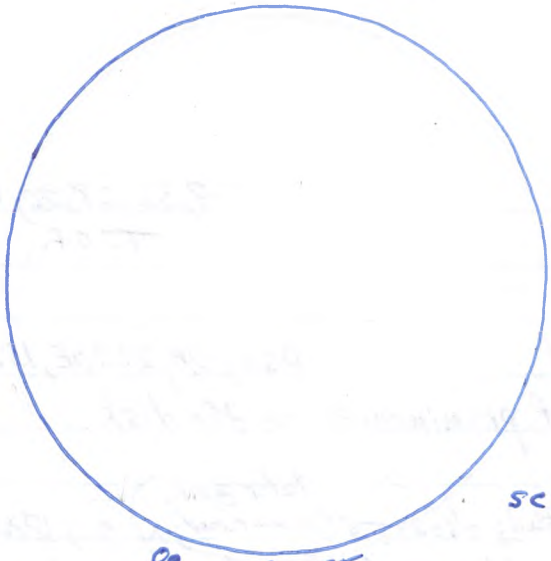
later gml
S.-M. June 22-23 03:00-04:00 y twl; also s?T8 (some cloud, N) ne; 18X50 15b
ne: I observed near the end of astronomical twilight which was due to end at 03:29 UT, and the moon rose in 5 minutes - at 03:34 UT, bringing a glow in the SE sky. I saw Jupiter in the SE and the stars of summer
18X50 15b: Jupiter, M4, M80, M11, M26, M16, M17, M5, M10, M12, T Cor Bor, area of R Cor Bor, area of α Her and α Oph, IC 4665, Barnard's Star and area, NGC 6633, IC 4756, Levy 98 (NGC 6709) - an Open Cluster in Aquila - quite bright and listed as mag. 6.7 (Sec 4205.). I attempted Levy 156 (NGC 6934) - a GC in Delphinus, bet because of the bright moon glow in the SE sky, I was not certain of seeing it clearly.

Levy 98 (NGC 6709)

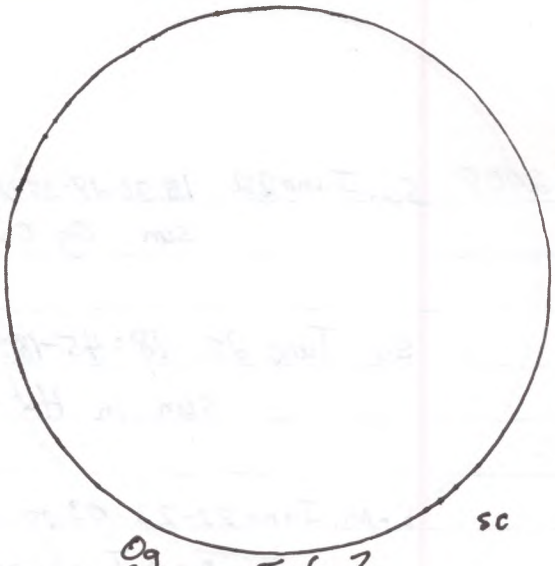
Tu. June 24 19:00-19:05 UT C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O.F.

Tu. June 24 15:05-15:10 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

T.-W. June 24-25 03:45-04:15 UT y s8T7 (haze) ne; 18X50 15b
ne: stars of summer, Jupiter in the SSE
18X50 15b: M8, M20, M21, M28, M23, M24, M25, M11, M4, M80, M13, M92, area of α Oph, IC 4665, area of Barnard's Star, NGC 6633, IC 4756, Levy 98 (NGC



Og
Os
RSNO June 25
18:40-18:45 UT



Og
Os
RSNO July 2
18:10-18:15 UT

Og
Os
RSNO July 3
20:50-20:55 UT

2008
Levy 156 (NGC 6934)
Levy 220 (NGC 6910)

6709), Levy 156 (NGC 6934) - a GC in Delphinus (4209) - surprisingly bright at mag. 8.9.; Levy 220 (NGC 6910) a cluster near γ Cygni and at mag. 7.4

W. June 25 18:40-18:45 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

W. June 25 18:45-18:50 UT nd P.S.T., 20, 28
Sun in Hα - hints of prominences on the disk

W.-Th. June 25-26 03:55-04:05 UT nd SST 8.5 ne
Stars of summer with Vega high in the ESE and Arcturus high in the W.

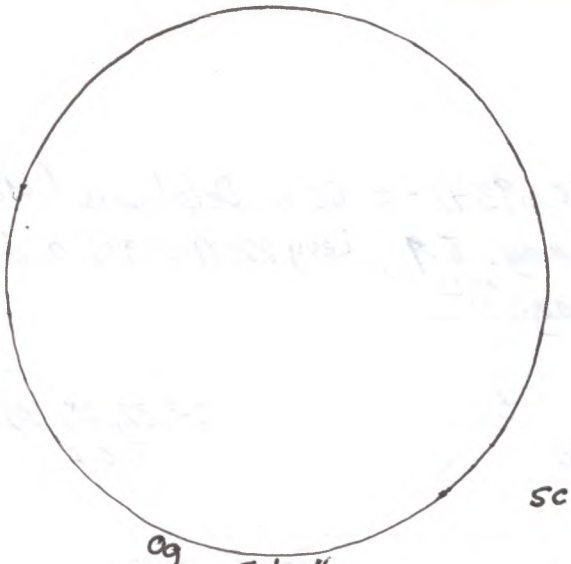
T.-W. July 1-2 05:10-05:15 UT nd SST 9 ne
I observed for a short while on the night after I returned from the 2008 RASC General Assembly in Toronto. Arcturus was bright in the W, Jupiter brilliant in the SSE, and Vega near the zenith.

W. July 2 18:10-18:15 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

W. July 2 18:15-18:20 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk

Th. July 3 20:50-20:55 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Th. July 3 20:55-21:00 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.



SC

CG
OS July 4
RSNO 18:20-18:25UT

2008 Th.-F. July 3-4 03:25-05:25 UT y SBT9.5(!) ne; 18X50156

ne: stars of summer; Jupiter very bright; in Sagittarius.

18X50156: M4, M80, M11, M26, M16, M17, M18, M8, M20, M21, M23, M24, M25, M5, M10, M12, M15, M2, M22, M28; Levy 110 (NGC 6760) - GC in Aquila - (See U251.) - by star-hopping from δ Aquilae; Levy 6 (NGC 6229) - GC in Hercules - (See U80.) - by star-hopping from η Herculis and σ Herculis; Levy 207 (NGC 6384) - galaxy in Ophiuchus (See U203.) - by star-hopping from α Ophiuchi southward to 53 Ophiuchi and then further southward to the galaxy.

Levy 110 (6760)
Levy 6 (6229)
Levy 207 (6384)

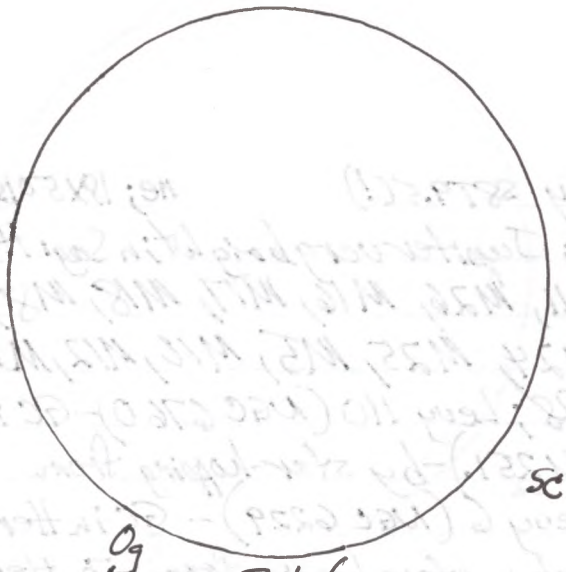
F. July 4 18:20-18:25 UT t C-8, 32, 28, 20, 15.5
T.O.F.
Sun Cg Os RSNO

F. July 4 18:25-18:30 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk

Sa. July 5 19:21-19:26 UT Kingston P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.
After the completion of the Kingston Centre display at The Sky Is The Limit Festival at the Kingston Memorial Centre, I observed the sun with the P.S.T. I also observed the sun with the P.S.T. periodically during the day as I showed people the image of the sun in Hydrogen Alpha. Our display was one of many, including the R.C.M.P. Musical Ride. The other participants from the Kingston Centre were Kevin Kell, Kim Hay, Stephen Sharp, and Hank Bartlett.

Sa.-Su. July 5-6 03:05-03:50 UT y STT9 ne; 18X50156

ne: stars of summer; Jupiter in Sagittarius.



Og
05
READ

July 6
17:15-17:20 UT

2008

BX501Sb: M8, M20, M22, M28, M21, M11 and R Sauti, M26, M16, M17, M18, M23, M24, M25, M10, M12, M5, M15, Levy 147 (NGC 6638) -GC near λ Sagittarii - seen faintly but with certainty (See U 340); area of Lagoon Nebula, including the area of NGC 6544 and Levy 149 (NGC 6553) and though they may have been viewed, especially the latter object, I did not wish to record officially having viewed those two objects because, if seen definitely, there was still some uncertainty.

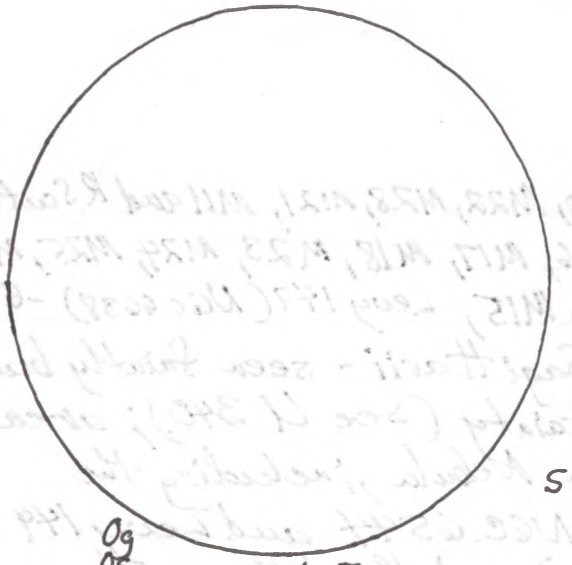
Levy 147 (NGC 6638)

Su. July 6 17:15-17:20 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Su. July 6 17:20-17:25 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk

S.-M. July 6-7 02:30-06:30 UT 00 S?T9 ne; 20x100b; C-14, 55, 40
ne: stars of scanner; Jupiter brilliant in the S.
20x100b: M11, M26, M16, M17, M18, M23, M24, M25, M22, M28, M8, M20, M21, M4, M80.
C-14, 55, 40: I searched carefully for Pluto in the area W. of δ Sagittarii using the map in Sky and Telescope I was certain of having the correct area from the star patterns, but was not certain of seeing Pluto. Jupiter and 3 of the Galilean moons, and later in the session Jupiter and 2 of the Galilean moons were seen.

Pluto search



Og
05
RSNO

July 7
17:10-17:15 UT

Og
03
RSNO

July 9
19:15-19:20 UT

2008 M. July 7 17:10-17:15 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

M. July 7 17:15-17:20 UT nd P.S.T., 20, 28, 20E, 15S
sun in Hα - hints of prominences on the disk.

M-T. July 7-8 03:20-04:20 UT y 5.8 T 9 ne; 18x50 15b
ne: stars of summer; Jupiter brilliant in the S.
18x50 15b: M11 and R Scuti, M26, M16, M17, M18, M26, M8, M20, M21, M4, M80, M2, M15, M71, M27, area of α Her and α Oph, IC4665, Barnard's Star, Taurus Fontiowsky, NGC6633, Tweedledee and Tweedledum"

W. July 9 19:15-19:20 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

W. July 9 19:20-19:25 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

W-Th. July 9-10 03:45-05:40 UT y 5.9 T 9.5 (!) ne; 18x50 15b
ne: stars of summer; brilliant Jupiter in the S. at opposition on this date; M31 seen easily naked-eye in latter part of the session. It was a session of good seeing and outstanding transparency.
18x50 15b: M11 and R Scuti, M26, M22, M28, M18, M20, M21, M23, M24, M25, M16, M17, M18, M2, M15, M15, M51, M31, M32, M110, M71, M27, M10, M12, area of α Her and α Oph, IC4665 Barnard's Star, M75, T Cor Bor, area of R Cor Bor, Mizar and Mizar, Levy 147 - GC in Sgr - (NGC 6638) near λ Sgr - seen faintly with averted vision;

Levy 147 (NGC6638)

O_2
O_3 July 10
RSNO 17:10-17:15 UT

O_2
O_3 July 12
RSNO 18:50-18:55 UT

O_2
O_3 July 13
RSNO 20:00-20:05 UT

2008

Levy 149 (NGC 6553)

Levy 149 (GC in Sgr) (NGC 6553) SE of M8 by 2°, seen faintly with averted vision; tried to see Levy 208 (NGC 6426) (GC in Oph near γ Oph) but was unable to see it with any certainty (4248)
I considered trying to see Levy 334 (NGC 6342), but found it down among the trees in the SW and was not sure of seeing it.

Th July 10 17:10-17:15 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Th. July 10 17:15-17:20 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

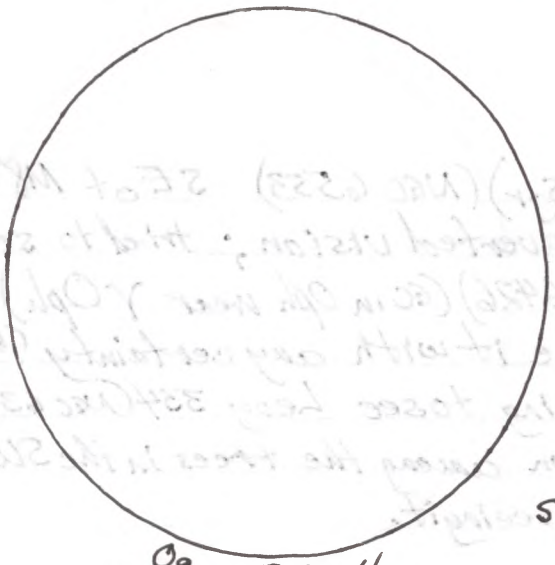
F.-S. July 11-12 03:55-04:10 UT ɣ ?T3 (clouds) ne; 18x50 15b
ne: many stars of summer among the numerous cirrus clouds; gibbous moon visible among the trees low in the W.; Jupiter brilliant in the SSE.
18x50 15b: Jupiter and all 4 Galilean moons - 2 on each side; M22, M28, M8, M20, M21, M23 M24, M25, β Cyg, Col 299, M71, M27, NGC 7789

Sa. July 12 18:50-18:55 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T. O.F.

Sa. July 12 18:55-19:00 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

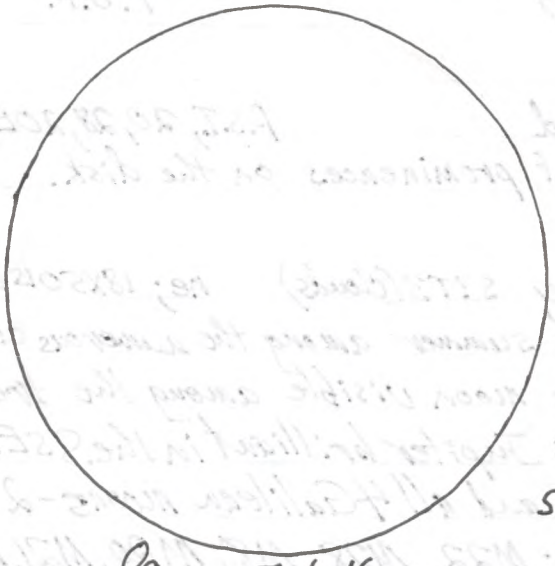
Su. July 13 20:00-20:05 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T. O.F.

Su. July 13 20:05-20:10 UT P.S.T., 20, 28, 20E, 15.5.
sun in Hα - hints of prominences on the disk.

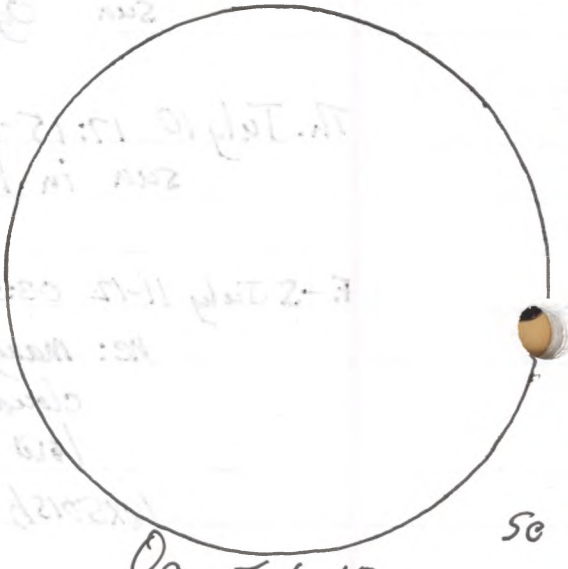


Og
Os
RSNO July 14
19:20-19:25 UT

Og
Os
RSNO July 15
15:25-15:30 UT



Og
Os
RSNO July 16
19:00-19:05 UT



Og
Os
RSNO July 17
19:10-19:15 UT

2008 M. July 14 19:20-19:25 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O. F.

M. July 14 19:30-19:35 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

M-T. July 14-15 03:25-03:30 UT nd s?T4(gml) ne
I observed briefly - with a very bright gibbous moon in the S. The Summer Triangle was high in the E, with Vega fairly near the zenith.

T. July 15 15:25-15:30 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

T. July 15 15:30-15:35 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

W. July 16 19:00-19:05 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

W. July 16 19:10-19:15 UT P.S.T., 20, 28, 20E, 15.5
Sun in Hα - some hints of prominences on the disk

W-Th. July 16-17 03:22-03:27 UT y+nd S?T3 (gml; clouds cirrus) ne
- Summer Triangle high in the E. with Vega near the zenith; 3 stars of the handle of the Big Dipper, Arcturus in the W.; Full Moon about 6° to the right of, and down slightly from Jupiter, in the SSE. The cirrus clouds were a problem.

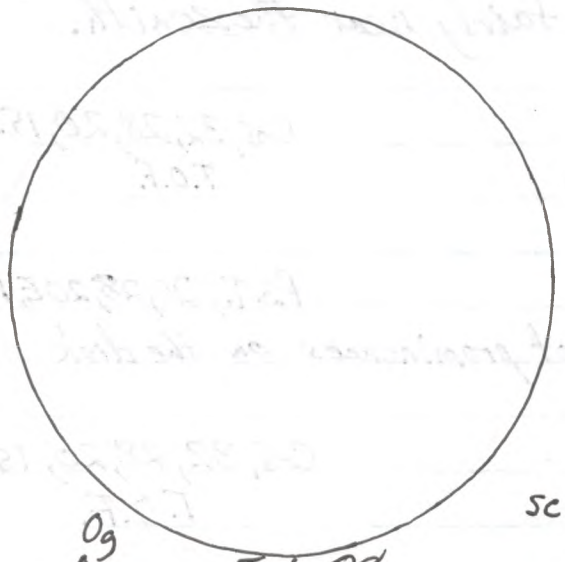
Th. July 17 19:10-19:15 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T. O. F.

SC

Og
Os
RSNO July 19
16:55-17:00UT

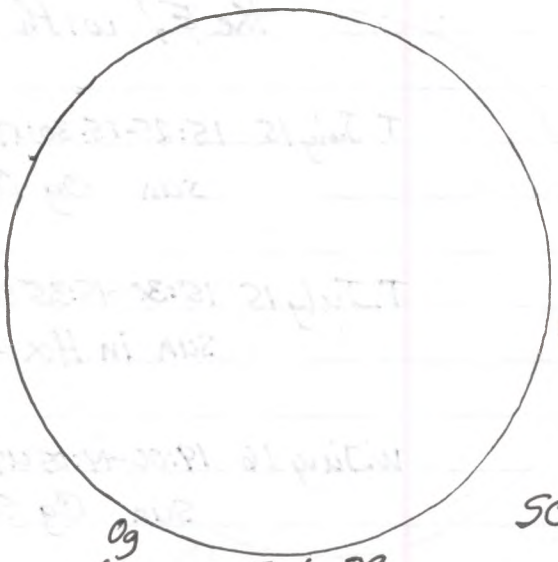
SC.

Og
Os
RSNO July 21
19:40-19:45UT



SC

Og
Os
RSNO July 28
18:05-18:10 UT



SC

Og
Os
RSNO July 29
17:35-17:40UT

2008 Th. July 17 19:15-19:20 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

F. July 19 16:55-17:00 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O. F.

F. July 19 17:00-17:05 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk

M. July 21 19:~~40~~-19:~~45~~ UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O. F.

M. July 21 19:45-19:50 UT nd P.S.T. 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

M. July 28 18:05-18:10 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O. F.

M. July 28 18:15-18:20 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

M.-T. July 28-29 05:00-06:10 UT y S8T9.5 ne; 18X50 l&b
ne: stars of summer; δ Aquarid meteors; one bright Perseid meteor; Jupiter brilliant in the S.
18X50 l&b: Uranus, Neptune, M2, M15, M31, M32, M110, M33, Double Cluster in Perseus, Stock 2, Kemble's Cascade, Kemble 2.

Uranus
Neptune

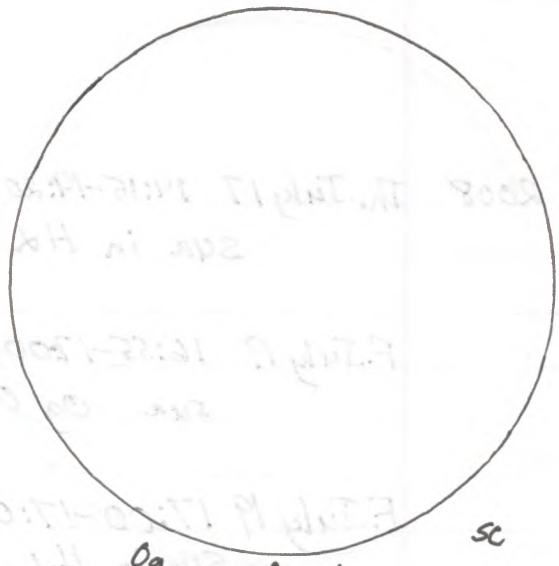
Tu. July 29 17:35-17:40 UT C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O. F.

Tu. July 29 17:40-17:45 UT P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk

Og
Os
RSNO

July 31
17:35-17:40UT

Sc



Og
Os
RSNO

Aug1
17:35-17:40UT

Sc

Og
Os
RSNO

Aug. 4
19:40-19:45UT

Sc

2008 T.-W. July 29-30 03:20-04:20UT y S?T5(haze) ne; 18X50lsb
ne: stars of summer; Jupiter in the S.
18X50lsb: M22, M8, M23, M24, M25, M11 and RS Cuti, M26, area of Barnard's Star, IC 4665, M31 seen poorly in the haze, M13, M92.

Th. July 31 17:35-17:40UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Th. July 31 17:40-17:45UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

Th.-F. July 31-Aug. 1 05:~~50~~-06:58 UT y S?T8.5-9 ne; 18X50lsb
ne: stars of summer; Jupiter brilliant in the S.
18X50lsb: Jupiter and 2 of its Galilean moons; Uranus, Neptune, M31, M32, M110, M33, Kemble's Cascade, NGC 7789, looked for Levy 112 (NGC 7023) in Cepheus but was not sure of seeing it; also looked for Levy 81 (NGC 147) in Cas (Sec 460.), but was not sure of seeing it; T Cephei - quite faint probably at about mag. 9.0 (Sec 4.33.)

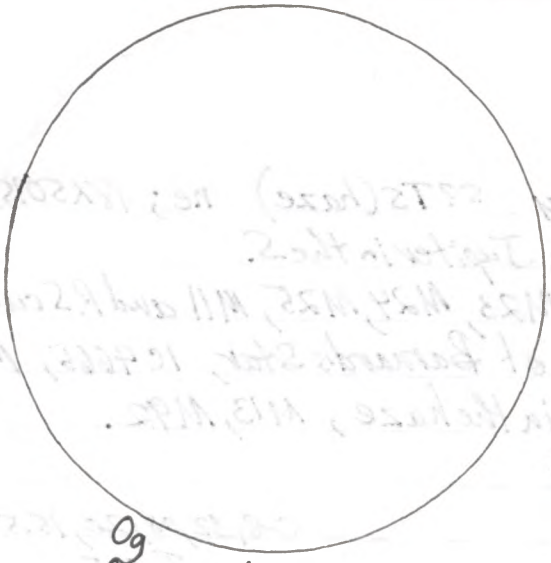
Uranus
Neptune

F. Aug. 1 17:35-17:40UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

F. Aug. 1 17:40-17:45UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

M. Aug. 4 19:40-19:45UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

M. Aug. 4 19:45-19:50 UT P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.



Og
Os
RSNO

Aug. 6
18:00-18:05UT

Og
Os
RSNO

Aug. 9
17:30-17:35UT

Perseid Night
Aug. 11-12, 2008

S.S.: 20:18
E.A.T.: 22:17
M.S.: 1:22
B.A.T.: 4:12
S.R.: 6:06

2008 W.Aug.6 18:00-18:05UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

W.Aug.6 18:05-18:10 UT nd. P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

F.-S. Aug. 8-9 05:15-05:40UT nd S8T9 ne; 18X50lsb
ne: stars of summer with Deneb near the zenith, 3 meteors with 1 of them being a Perseid of about mag. 2 and one possibly a Perseid
18X50lsb: Neptune in Cap., M15, M31, M32, M110, M33, Kemble's Cascade, M11, Double Cluster in Perseus, Stock 2.

Sa. Aug. 9 17:30-17:35 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Sa. Aug. 9 17:35-17:40 UT nd. P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

M.-T. Aug. 11-12 02:50-9:00UT V S8T7-9.5! (varied) ne; 18X50lsb
ne: It was the night for the peak of the Perseid Meteor Shower - with the peak according to the Observer's Handbook at 11:00 UT (7:00 a.m. EDT the following morning - Aug 12). Ken Kingdon came up from Kingston and used his small inflatable pontoon boat in the lake, and I had burgers on the barbeque before observing. We began observing well after the end of astronomical twilight, but for the first hour or more there was some cirrus cloud in the E and some other parts of the sky. Later the sky became generally very clear of clouds and also later very transparent. Ken and I

All-Night Perseid Observing Session.

Og
Os
RSNO

Aug. 12
19:16-19:21 UT

generally faced ENE in our reclining chairs, but saw meteors over a wide area of the sky. For the first 4 hours the numbers were not as high as I expected - averaging perhaps one every 4 or 5 minutes. Later about 8:00 UT (4:00 a.m. EDT) the numbers appeared to increase for a period of time - to perhaps 1 per minute. There were perhaps 3 or 4 meteors of magnitude - 4 to -7 - leaving trains that were visible for many seconds - and in one case, for about 1 minute in binoculars. The brightest one was of about mag. -7 to -8. We were especially happy with the clear skies - after so many days of cloud and rain. In the Observer's Handbook, there had been a statement about possibly increased activity in the hours prior to the peak, and I did seem to notice some increase, as mentioned, at about 08:00 UT. It was an enjoyable session. There were also a few meteors that were not Perseids.

Perseid Observing.

18X50156: M36, M37, M38, Pleiades, M57, NGC 7789, α Persei Cluster, areas of Cassiopeia, Double Cluster in Perseus, M31, M33, Coathanger (also seen naked-eye).

Tu. Aug. 12 19:16-19:21 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Tu. Aug. 12 19:23-19:28 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

T.-W. Aug 12-13 01:30-03:15 UT Long Bay, Bob's Lake Muslim Camp on tw l; s?TS-gu l ne; Ast, 15.5
ne: After doing a slide-show presentation for a large audience at the Muslim Camp at Long Bay on Bob's Lake, I led

Og
05
RSNO

Aug. 13
20:22-20:27UT

the group in observing the sky. I had gone there by myself since Fred Barrett did not go with me as in a couple of previous years. Plans had changed when it was found that the sky might be better than on the following night, and Fred was at work and could not be easily contacted. I observed the 11½-day-old gibbous moon in the S with Jupiter to its upper left. During the session I pointed out the constellation Pegasus and the constellation Andromeda. In my slide show I had shown slides of Comet Holmes, the Moon, Jupiter, Al Sufi's Cluster (the Coathanger) and Al Sufi's "Little Clouds" (the Double Cluster and M31), and also the Summer Triangle. Since I mentioned the Arabic names, Deneb, Al Tair, and Vega.

Muslim Camp Observing Session

Ast, 15.5: Jupiter and the 4 Galilean moons - all on the same side of the planet, the craters on the moon, Alcor and Mizar.

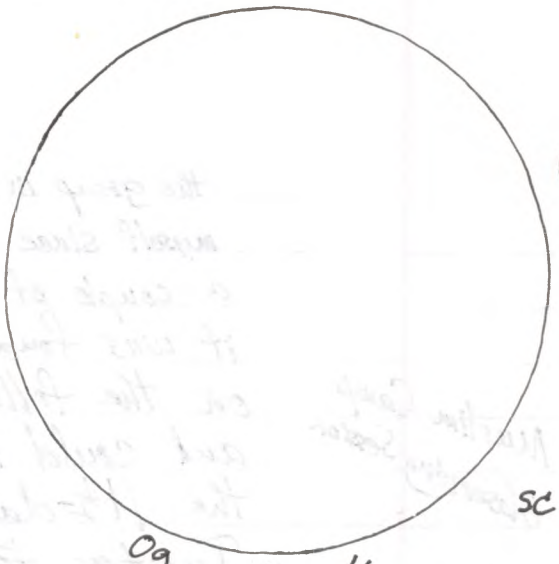
W. Aug. 13 20:22-20:27 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSN T. O. F.

W. Aug. 13 20:28-20:33 UT nd P.S.T., 20, 28, 20E, 15.5.
Sun in Hz - hints of prominences on the disk

W.-Th. Aug. 13-14 04:15-05:10 UT y SBT5(gml) ne
Under a very bright 12½-day-old gibbous moon, I observed with the hope that I might see some Perseid Meteors, but I saw very few, if any. I thought I might have seen one or two near the radiant, but was not certain. I saw one fairly long meteor - near the zenith and from the S - perhaps a member of the δ Aquarid Shower.

SC

Og
Os
RSNO Aug. 14.
17:58-18:02 UT



SC

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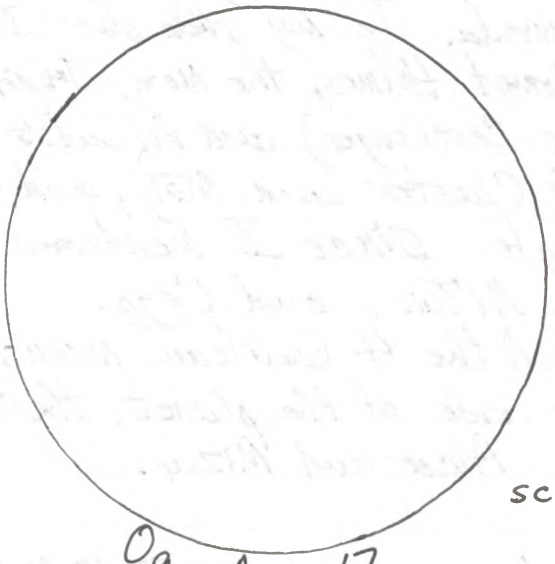
Os
RSNO Aug. 16
17:25-17:30 UT



SC

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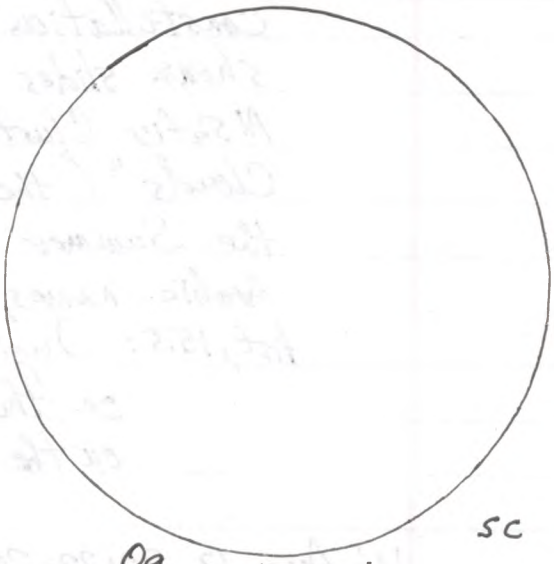
RSNO Aug. 17
18:00-18:05 UT



SC

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RSNO Aug. 18
17:57-18:02 UT

SC

Og
Os
RSNO Aug. 19
16:30-16:35 UT

2008 Th. Aug. 14 17:58-18:02 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO

Th. Aug. 14 19:53-19:58 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk

Sa Aug. 16 17:25-17:30 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Sa. Aug. 16 17:30-17:35 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

Sa.-Su. Aug. 16-17 03:30-03:40 UT nd S?T4(fml) ne
I observed for 10 minutes but did not see any Perseids, but under the light of the Full Moon in the SE, I saw brilliant Jupiter in the S., and the Summer Triangle w. of the zenith, some of the stars of the Big Dipper, and Polaris.

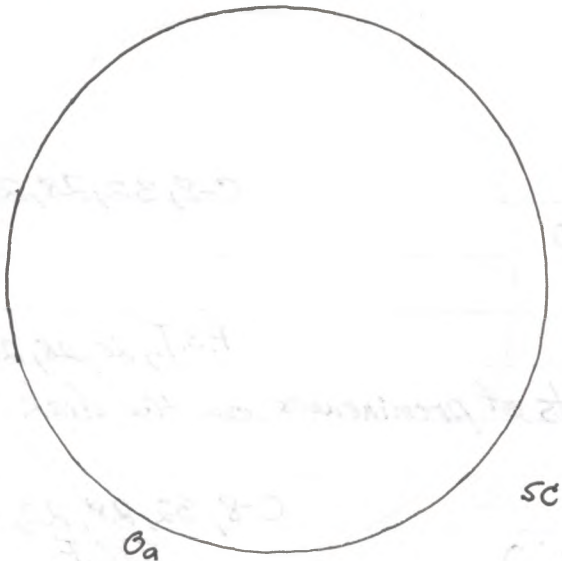
Su. Aug. 17 18:00-18:05 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Su. Aug. 17 : 18:10-18:15 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - numerous hints of prominences on the disk.

M. Aug. 18 17:57-18:02 UT t C-8, 32, 28, 20, 15.5
Sun Og Os KSNO T.O.F.

M. Aug. 18 18:05-18:10 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences around the disk.

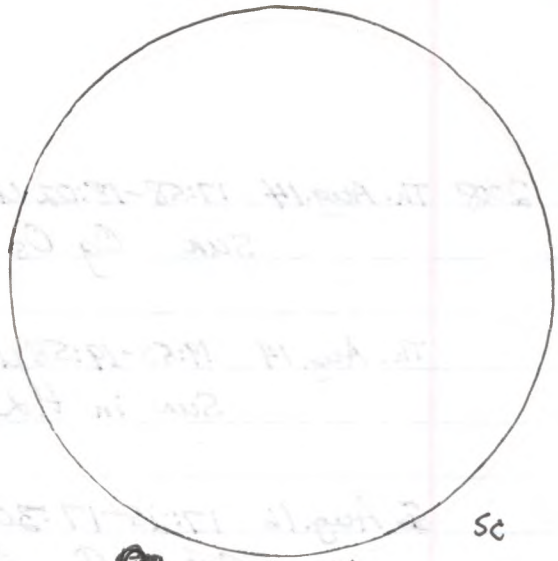
Tu. Aug. 19 16:30-16:35 UT C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.



Sc

Og
Os
RSNO

Aug 20
18:32-18:37UT



Sc

Og
Os
RSNO

Aug 21
17:42-17:47

2008 Tu. Aug 19 16:40-16:45 UT P.S.T., 20, 28, 20E, 15.5
Sun in Hα - some hints of prominences around the disk

T.-W. Aug. 19-20 01:55-02:00 UT nd 5"T7 (gm1) ne
Right about at the end of astronomical twilight, which was listed as being at 01:59 UT, I observed briefly seeing many of the stars of summer and some of the Milky Way in Cygnus, and Jupiter in the S. The glow of the bright gibbous moon which had risen already was seen above the trees in the SE. The Big Dipper was prominent in the N. and Arcturus was in the W.

W. Aug. 20 18:32-18:37 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

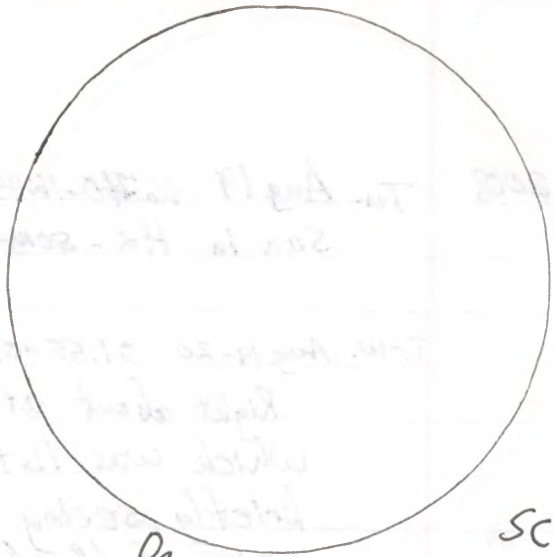
W. Aug. 20 18:37-18:42 UT nd P.S.T., 20, 28, 20E, 15.5.
sun in Hα - hints of prominences around the disk.

W.-Th. Aug. 20-21 02:00-04:50 UT 00 5"T4 (gm1) ne; C-14, 36
ne: bright stars of summer, with Jupiter brilliant in the S. and the gibbous moon about 4½ days after Full Moon up in the ESE. At first the moon was beyond the trees, but later it was well above the trees in the ESE. At about 3:17 UT there was a bright meteor (mag -4) near Altair
C-14, 36: Jupiter and the 4 Galilean moons, with Ganymede to the left and the others to the right.
ph.: I photographed Jupiter and lunar craters.

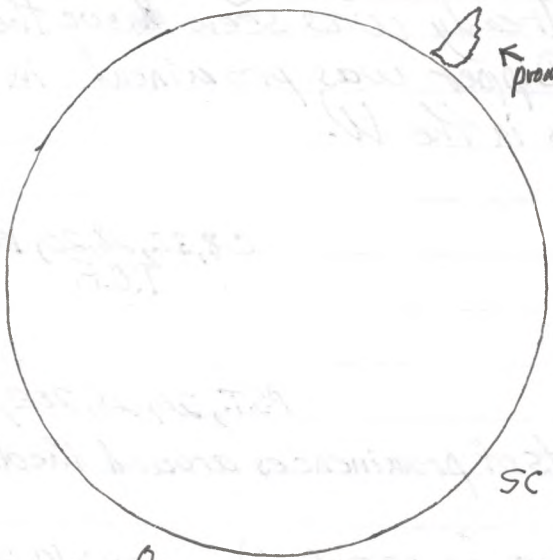
Th. Aug. 21 17:42-17:47 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T. O.F.

Th. Aug. 21 17:47-17:52 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - some hints of prominences around the disk.

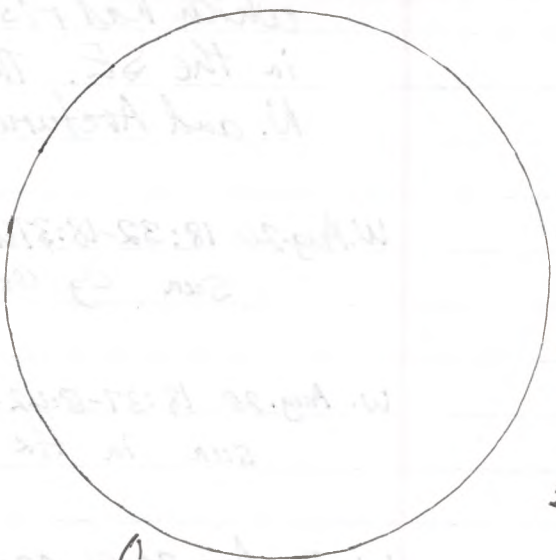
Og
Os
RSNO Aug. 22
17:57-18:02 UT



Og
Os
RSNO Aug. 25
21:20-21:25 UT



Og
Os
RSNO Aug. 26



Og
Os
RSNO Aug. 28
19:35-19:40 UT

2008 F. Aug. 22 17:57-18:02 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

F. Aug. 22 18:02-18:07 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences around the disk.

M. Aug. 25 21:20-21:25 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

M. Aug. 25 21:25-21:30 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences around the disk.

M.-T. Aug. 25-26 02:45-04:20 UT y S? T9-9.5 ne; 18X50ISb
ne: stars of summer; Jupiter in Sagittarius in the S.
18X50ISb: Uranus, Neptune, Jupiter and at least 3 Galilean moons, M2, M15, M31, M32, M110, M33, Double Cluster in Perseus, Stock 2, NGC 654, M103, M52, NGC 7789, Diamond Ring near Polaris, Kemble's Cascade, Kemble 2, M13, M92, M11, IC 4665, Barnard's Star, NGC 6633, IC 4756.

Tu. Aug. 26 17:30-17:35 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

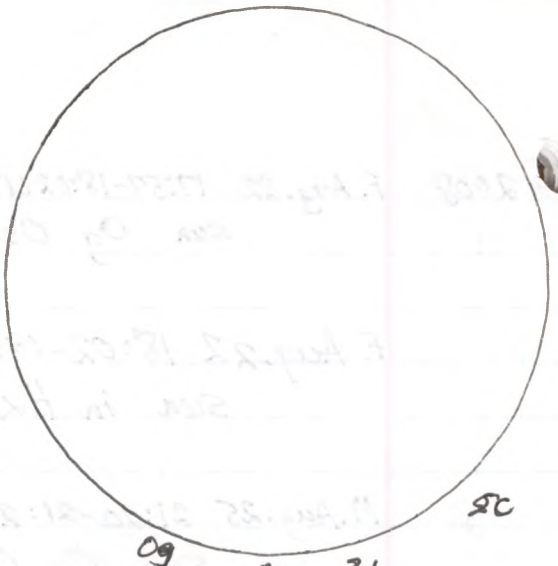
Tu. Aug. 26 17:35-17:42 UT nd P.S.T., 20, 28, 20E, 15.5.
sun in Hα - a notable prominence at the 1 o'clock position on the solar disk - as seen in the eyepiece.

Th. Aug. 28 19:35-19:40 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Th. Aug. 28 19:40-19:45 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences around the disk

Og
Os
RSNO

Aug. 30
17:54-17:59 UT



Og
Os
RSNO

Aug. 31
17:52-17:57 UT

2008 Th.-F. Aug. 28-29 00:00-01:35 UT y twlg - "cloudy" ne

- During twilight I setup the 20x100 binoculars and prepared for a possible binocular observing session in spite of heavy cloud. A "summer neighbour", Tim Smith, along with his daughter and son Nicholas, came over to observe if skies cleared, but it did not happen. The 4 of us just sat and talked. Occasionally I saw a star or two through the clouds - Vega, Deneb, and Altair and a star - probably in Cassiopeia. Eventually the Smiths left and I stopped observing.

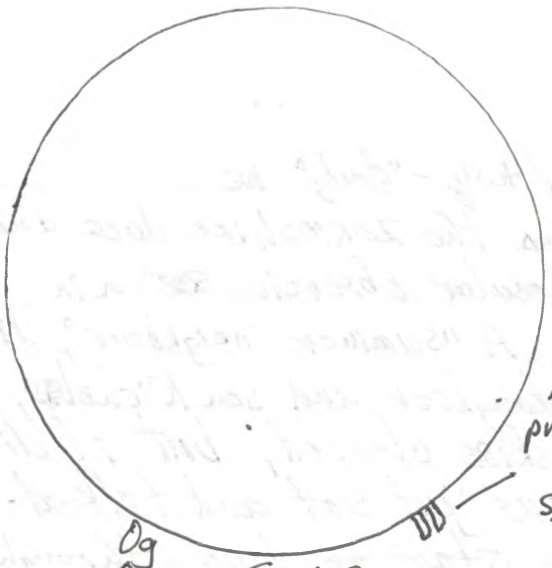
Sa. Aug. 30 17:54-17:59 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Sa. Aug. 30 18:02-18:07 UT nd P.S.T., 20, 28, 20E, 155
sun in Hα - hints of prominences around the disk.

Su. Aug. 31 17:52-17:57 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Su. Aug. 31 17:57-18:02 UT nd P.S.T. 20, 28, 20E, 15.5
sun in Hα - hints of prominences around the disk

S.-M. Aug. 31-Sept 1 01:00-04:40 UT oo S?T9 ne; 20x100; C-14, 15.5
ne: Because it looked like an exceptionally clear night and the forecast was very good, I opened the roof. I knew that Tim Smith and his family would come to observe. Tim, his wife and son and daughter and his wife's mother and perhaps father and another person (for a total of about 7 people) came to observe. I pointed out some of the constellations. We saw several satellites and a flare perhaps from Iridium, and



Dg
05
RSNO

Sept. 2
17:55 18:00UT

2008 several meteors.

20X100 binoculars: I showed them Jupiter and its 4 moons, and the planet Neptune. After some of the visitors had left, I showed Tim M15, M2, the Double Cluster, Stock 2, and Kemble's Cascade. I had also shown the group M31 and M110, and M33.

C-14, 15.5: Jupiter and its 4 moons. - a Galileo Moment for 7 people.

I attempted to find, or consider finding, a couple of Levy List objects, but did not find any. The sky was very cloud free, but transparency was not perfect because of water vapour in the air. Dewing was a severe problem.

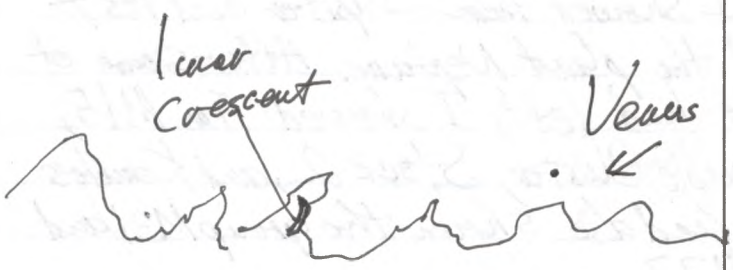
M.-T. Sept. 1-2 03:32-04:46 UT, S? T9-9.5 ne; 18X50 15b

ne: stars of late summer, 2 bright meteors possibly late Perseids.

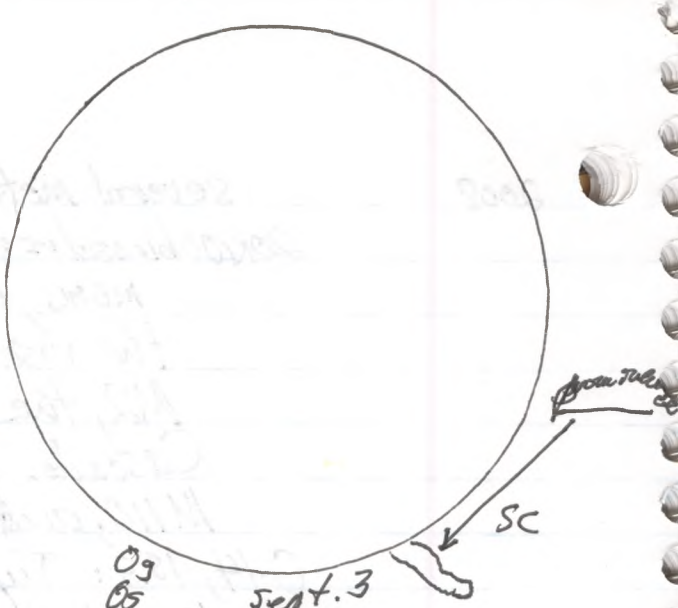
18X50 15b: Uranus, Neptune, M2, M15, M13, M92, M31, M32, M110, M33, Helix Nebula, Kemble's Cascade, Kemble 2, Double Cluster, Stock 2, NGC 654, NGC 663, M103, NGC 7789, M52, Pleiades rising amid the trees, K4665, Barnard's Star, NGC 6633, IC 4756, M57.

Tu. Sept 2 17:55-1800 UT t C-8, 32, 28, 20, 15.5
sun 0g 0s RSNO T. O. F.

Tu. Sept. 2 18:00-18:05 UT nd P.S.T., 20, 28, 20E., 15.5
sun in Hα - small, sharp "double prominence" at the 4½ o'clock position - in the normal visual orientation.



2008, Sept 3: 00:00 UT Venus seen first, and then the moon - among the trees - at John Vandenberg



2008 T.-W. Sept 2-3 23:55-00:05 UT John Vandesande's place tw/ ne; 18x50 l&b

Hoping to see the cluster of planets, Venus, Mercury, and Mars low in the W at about 30 min. after sunset, I walked over to John Vandesande's place, and I spoke to him and his wife, Jane, about observing on their dock. The crescent moon, slightly more than 3 days old was to be near the cluster of planets. I saw only one planet with binoculars - and the crescent moon with binoculars.

18x50 l&b: the planet Venus - seen above the trees, and later the lunar crescent among the trees. (See diagram.)

01:30 - 06:20 UT 00 S? T9.5 ne; 20x100 b; C-14

ne: stars of late summer; Jupiter in the S.; several bright meteors, including 1 or 2 that were probably late Perseids - from their speed and path.

20x100 b: While John Vandesande was at the observatory, between 01:45 and 02:45 UT, I showed him Uranus in Aquarius and Neptune in Capricornus, and M31, M32, M110, and Alcor and Mizar and Sidus Ludovici. He was pleased to see those objects.

C-14: I also showed John Vandesande Jupiter and its 4 Galilean moons using the 13mm ocular (300.8X), the 9mm ocular (434.4X) and the 19mm ocular (205.8X). He was pleased to be able to see several bands on Jupiter.

Levy 64 (NGC 404)

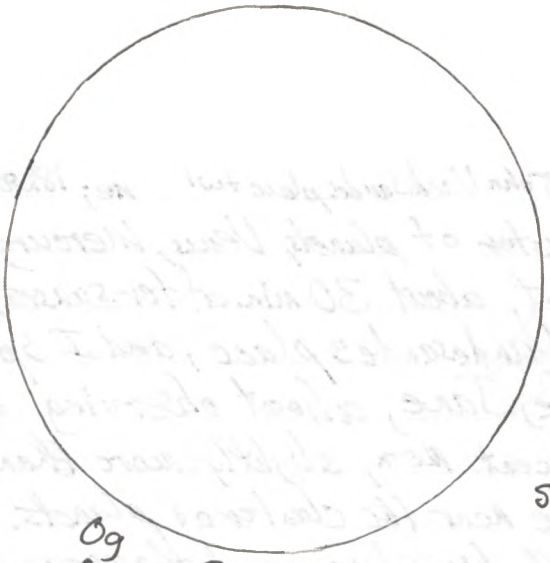
I observed Levy 64 (NGC 404), a galaxy near β And, using the 55mm ocular (71X), the 40mm ocular (97.8X) and the 32mm ocular (122.2X). I also collimated the finder scope on the C-14.

W. Sept 3 18:27-18:32 UT t

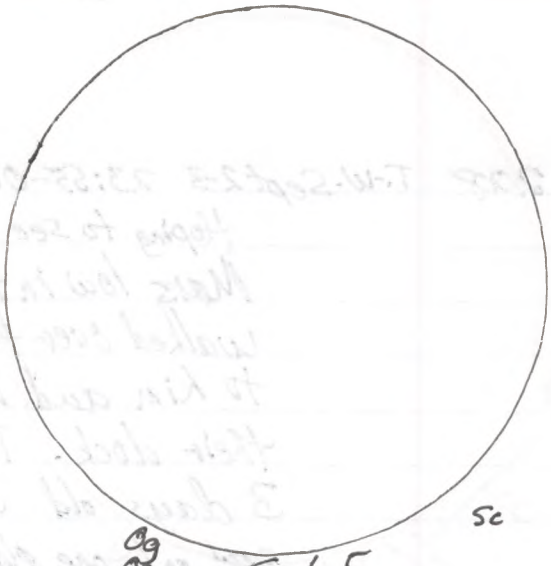
sun 0g 0s RSNO

C-8, 32, 28, 20, 15.5

T.O.F.



Og
Os
RSNO
Sept. 4
18:30-18:35 UT



Og
Os
RSNO
Sept. 5
16:55-17:00 UT

Og
Os
RSNO
Sept. 9
19:30-19:35 UT

Og
Os
RSNO
Sept. 10
19:00-19:05 UT

2008 W. Sept 3 18:32-18:37 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - long thin prominence at 5 o'clock position on the disk when viewed in normal orientation in eyepiece

Th. Sept. 4 18:30-18:35 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Th. Sep. 4 18:35-18:40 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences around the disk.

F. Sept. 5 16:55-17:00 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO

F. Sept. 5 17:00-17:05 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

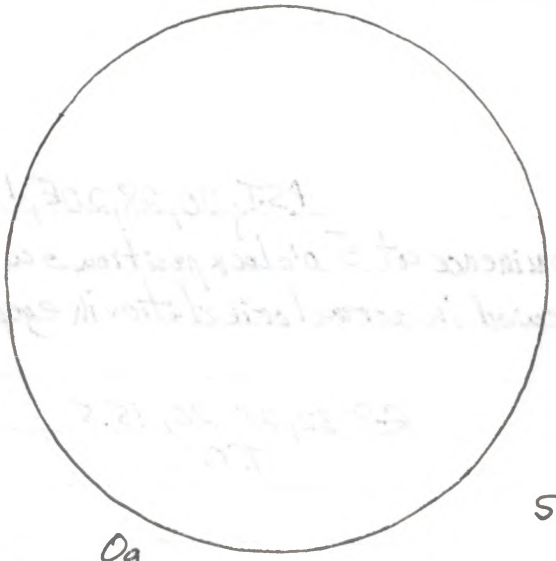
Tu. Sept 9 19:30-19:35 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Tu. Sept. 9 19:45-19:50 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences around the disk

T-W Sept. 9-10 02:00-02:05 UT nd SETS (gal) ne
- I observed briefly with a bright gibbous moon in the S just 5° from Jupiter in Sag; Harius. The Summer Triangle was very high with Deneb near the zenith. Andromeda and Pegasus were in the E., Cassiopeia in the NE and Arcturus in the W.

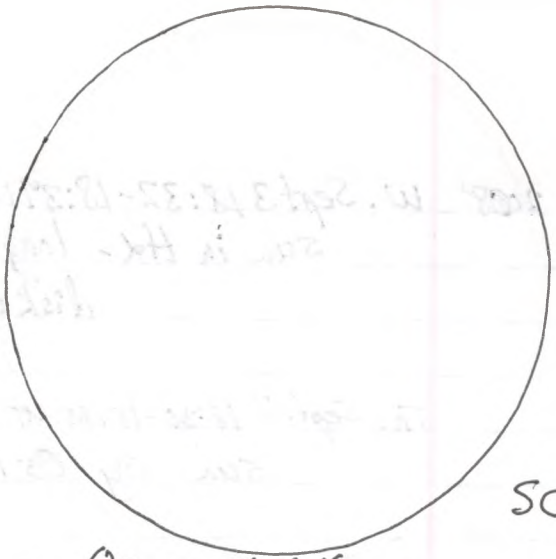
W. Sept. 10 19:00-19:05 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

W. Sept. 10 19:05-19:10 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences around the disk.



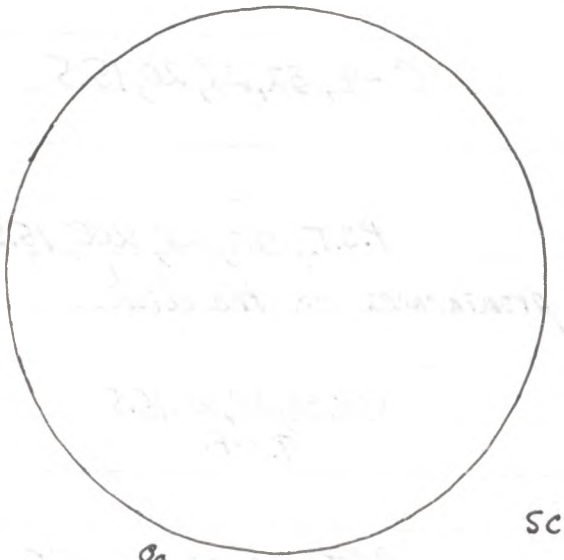
SC

Og
Os
RSNO Sept. 11
18:20-18:25 UT



SC

Og
Os
RSNO Sept. 16
17:50-17:55 UT



SC

Og
Os
RSNO Sept. 20
17:50-17:55 UT

2008 W.-Th. Sept. 10-11 ~~0h~~ 00-04:55 UT y S?T6(gml) ne; 18X50ISb

ne: I observed with a bright gibbous moon in the SW sky. The Pleiades rose in the E; Capella was visible above the trees in the NE.

18X50ISb: Uranus in Aquarius, Neptune in Capricornus, M31, M33, M15, Kemble's Cascade, M34, NGC 663, M103, NGC 7789, Double Cluster in Perseus, Stock 2, M45.

Th. Sept 11 18:20-18:25 UT t — C-8, 32, 28, 20, 15.5
Sun Og Os RSNO — T.O.F.

Th. Sept. 11 18:25-18:30 UT nd — P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences around the disk

Tu. Sept. 16 17:50-17:55 UT t — C-8, 32, 28, 20, 15.5
Sun Og Os RSNO — T.O.F.

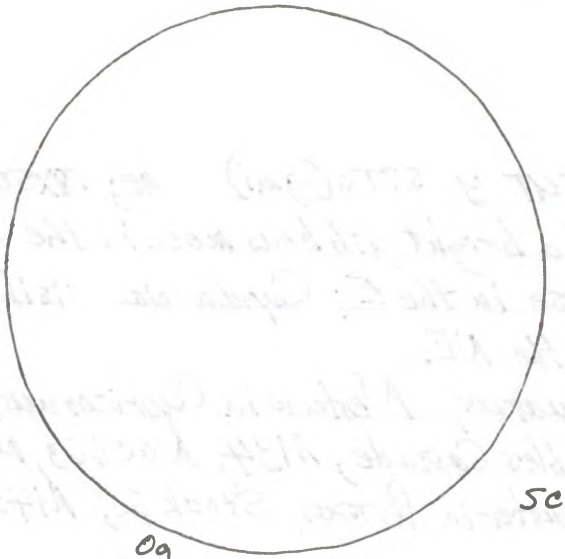
Tu. Sept. 16 18:05-18:10 UT nd — P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

Th. Sept. 18 17:45-17:50 UT t — C-8, 32, 28, 20, 15.5
Sun Og Os RSNO — T.O.F.

Th. Sept. 18 17:50-17:55 UT nd — P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences around the disk.

Sa. Sept. 20 17:50-17:55 UT t — C-8, 32, 28, 20, 15.5
Sun Og Os RSNO — T.O.F.

Sa. Sept. 20 17:55-18:00 UT nd — P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk



09
05 Sept. 21
RSN10 18:05-18:10 UT

SC

19
45 Sept 22
RSN14 19:10-19:15 UT

SC

2008 Su. Sept. 21 18:05-18:10 UT t C-8, 32, 28, 20, 15.5
sun 0g 0s RSNO T. O.F.

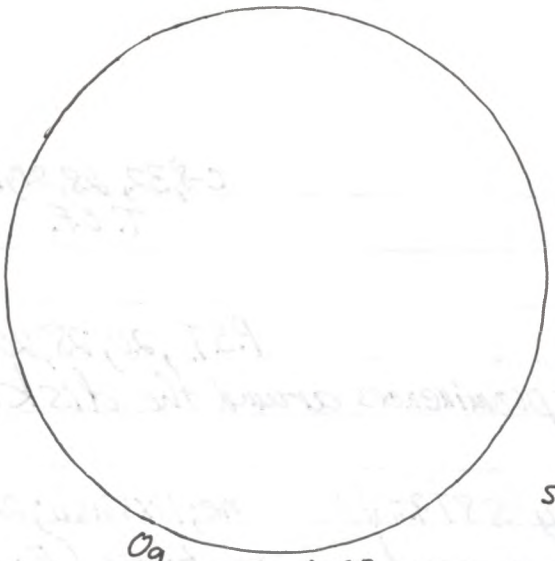
Su. Sept. 21 18:10-18:15 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences around the disk.

S.-M Sept. 21-22 01:15-02:45 UT y 5 8 T 9.5 (!) ne; 18x50 15b; 20x100b
ne: stars of late summer and early autumn (Equinox was later in the day at 15:45 UT.) Jupiter in the S.
18x50 15b: Jupiter and 3 Galilean moons, Uranus, Neptune, M2, M15, M31, M32, M110, M33, Double Cluster
20x100b: Jupiter and 3 Galilean moons; Uranus; Neptune; Double Cluster; Stock 2; looked for Levy 81 (NGC 147) but was not sure of seeing it (U 60); looked for IC 1795, a bright nebula in Cas (U 17), but was not sure of seeing it, though I saw the area; Keable's Cascade; Pleiades low in the trees to the E. Moonrise was to be at 2:50 UT.

M. Sept. 22 19:10-19:15 UT t C-8, 32, 28, 20, 15.5
sun 1g 4s RSN 14 (3 of the spots very tiny) T. O.F

M. Sept. 22 19:15-19:20 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk

M.-T. Sept 22-23 02:20-03:50 UT y 5? T 8-9 (varied) ne; 18x50 15b
ne: stars of autumn; two bright meteors about mag. −1.
18x50 15b: Uranus, Neptune, M30, M2, M15, M34, Pleiades, M31, M32, M110, M33, Levy 53 (NGC 752), Double Cluster, Stock 2, NGC 457, NGC 654, NGC 663, M103, NGC 7789, Keable's Cascade, Keable 2, "The Engagement Ring" near Polaris.



SC

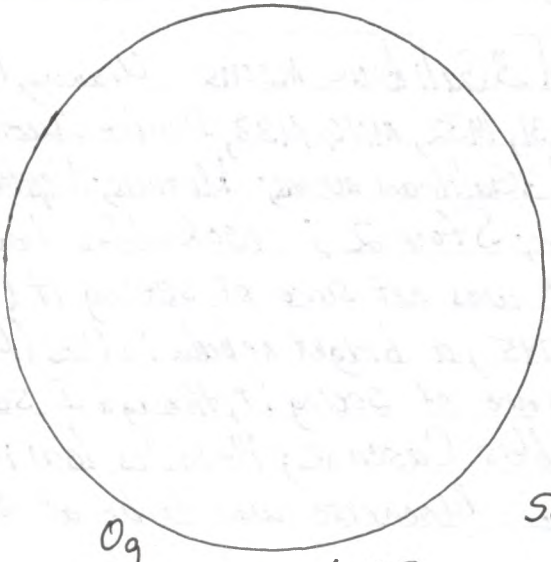
Og
Os
RSNO

Sept. 23
18:35-18:40 UT

SC

Og
Os
RSNO

Sept. 24
17:35-17:40 UT



SC

Og
Os
RSNO

Sept. 25
17:35-17:40 UT

2008 Tu. Sept. 23 18:35-18:40 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Tu. Sept. 23 18:40-18:45 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

T-W. Sept. 23-24 02:40-04:10 UT y S8? T 7-9 (varied; N poorer in S.) ne; 18X50ISb
ne: stars of autumn; One meteor - possibly "out of Perseus, and possibly from the "September Perseids" a shower I had heard of as being different from the "traditional Perseids
18X50ISb: Uranus, Neptune, M30, M2, M15, M31, M32, M110, M33, Levy 53 (NGC752), M34, NGC654, NGC 663, M103, NGC 7789, M52, α Persei Cluster, Kemble's Cascade, Kemble 2, NGC1528, Double Cluster, Stock 2.

W. Sept. 24 17:35-17:40 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T. O.F.

W. Sept. 24 17:40-17:45 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

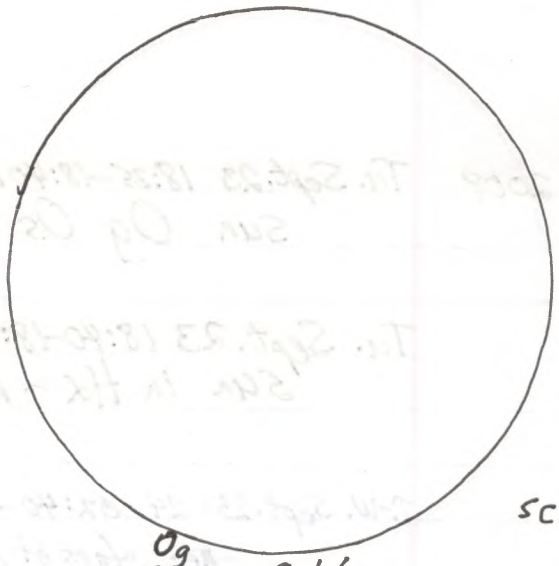
W.-Th. Sept. 24-25 02:20-03:30 UT y S8T 7-9 (varied poorer in S.) ne; 18X50ISb
ne: stars of autumn.
18X50ISb: Uranus, Neptune, M30, M2, M15, M71, M27, βCyg, M13, M92, Kemble's Cascade, Kemble 2, μ Cep, T Cep, Double Cluster, Stock 2, NGC663, IC4756, NGC663, M103, NGC 457, NGC7789, M52, Pleiades, M34, M31, M32, M110, M33, Levy 53 (NGC 752)

Th. Sept. 25 17:35-17:40 UT t C-8, 32, 20, 15.5
sun Og Os RSNO T. O.F.

SC

O_9
O_5
RSNO

Oct. 5
17:05-17:10 UT



SC

O_9
O_5
RSNO

Oct. 6
16:35-16:40 UT

2008 Th. Sept. 25 17:40-17:45 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

Th.-F. Sept. 24-25 02:15-02:35 UT y 5?T4-8(varied) ne; 18X50156
ne: Under skies that varied greatly in transparency I observed for a short while, mainly because of the increasingly poor transparency. At first transparency was fairly good in the E, but relatively poor in the SE and S.
I observed some of the stars of autumn and saw one bright meteor - about mag. 2.
18X50156: Uranus, Neptune, M31, M33, χ Persei cluster of stars, Kemble's Cascade, Double Cluster in Perseus, Stock 2.

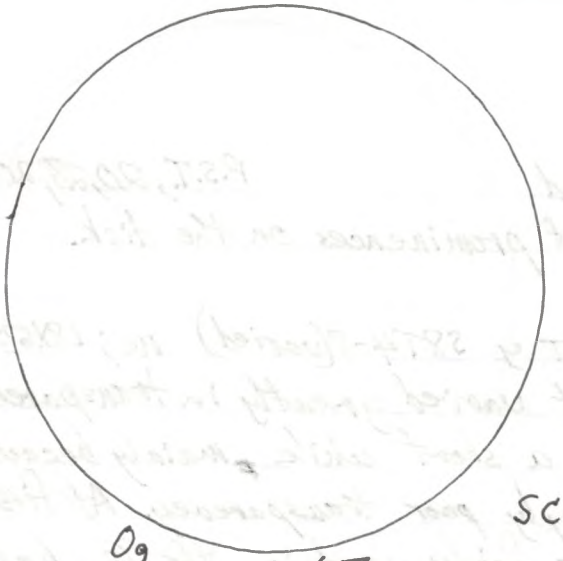
Sa.-Su. Oct. 4-5 03:15-04:00 UT y 5?T(varied) ne; 18X50156
ne: stars of autumn
18X50156: Uranus, Neptune, M2, M15, M31, M32, M110, M33, M34, χ Persei group of stars, Double Cluster in Perseus, Stock 2, NGC 7789, Pleiades, M36, M37, M38, Hyades, Kemble's Cascade, NGC 7789.

Su. Oct. 5 17:05-17:10 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Su. Oct. 5 17:10-17:15 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα. hints of prominences on the disk

M. Oct. 6 16:35-16:40 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

M. Oct. 6 16:40-16:45 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.



SC

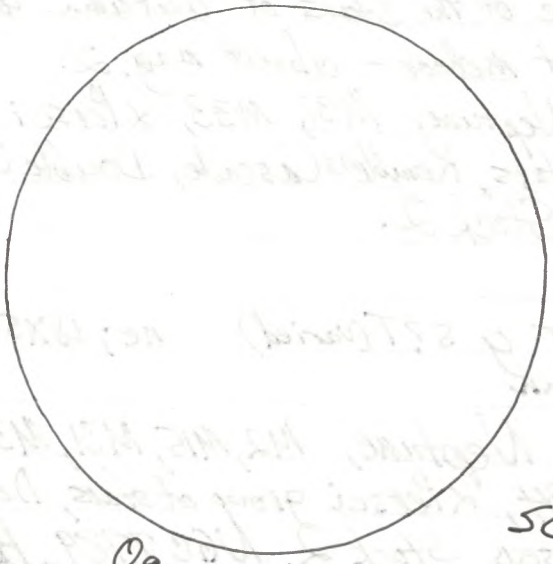
Og
O5
RSNO

Oct. 7
18:20-18:25 UT

SC

Og
O5
RSNO

Oct. 9
18:25-18:30 UT



SC

Og
O5
RSNO

Oct. 10
17:30-17:35 UT

2008 M.-T. Oct.6-7 03:15-04:15UT y S?T9-9.5(varied) ne; 18X501sb

ne: stars of autumn

18X501sb: Uranus, Neptune, Mira (o Cet.) near minimum probably about mag. 9; Pleiades, Hyades, M36, M37, M38, NGC 663, M103, NGC 7789, M52, M34, Levy 53 (NGC 752), ~~AGC~~ M31, M32, M110, M33, Kemble's Cascade, α Persei Cluster of stars, M2, M15, M1.

Tu. Oct.7 18:20-18:25UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Tu. Oct.7 18:25-18:30UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

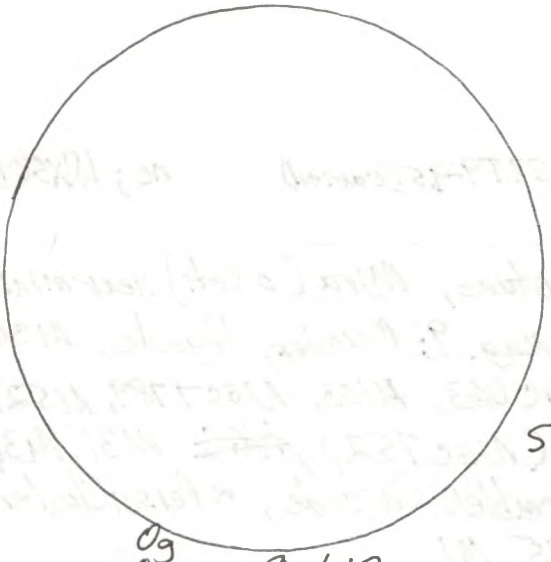
T.-W. Oct. 7-8 03:40-04:10UT nd+y S7-8T3-6 (varied haze, clouds) ne
- I observed briefly in spite of the glow of the setting moon for a while before it set at 04:00 UT and the clouds and haze. The Summer Triangle was seen in the W., and other bright stars, the Pleiades in the E and the bright stars of Cassiopeia in the NE.

Th. Oct. 9 18:25-18:30UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

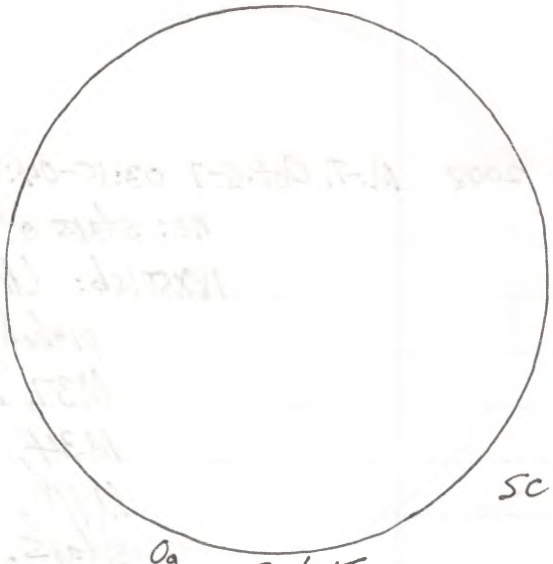
Th. Oct.9 18:30-18:35UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

F. Oct. 10 17:30-17:35UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F

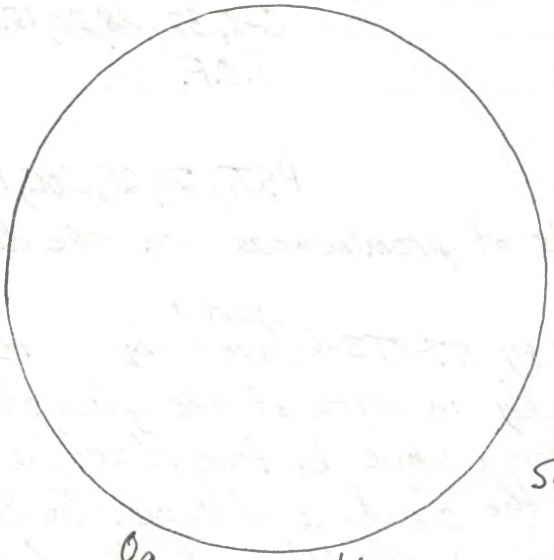
F. Oct. 10 17:35-17:40UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk



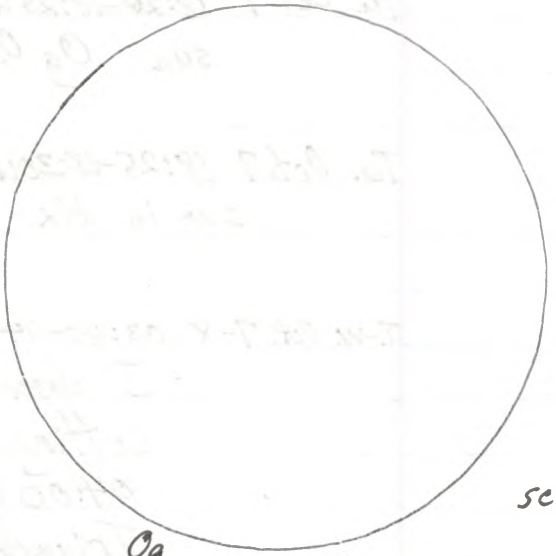
Og
Os
RSNO Oct. 12
19:45-19:50 UT



Og
Os
RSNO Oct. 15
17:20-17:25 UT



Og
Os
RSNO Oct. 16
17:55-18:00 UT



Og
Os
RSNO Oct. 18
17:40-17:45 UT

2008 Su. Oct. 12 19:45-19:50UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

Su. Oct. 12 19:50-19:55UT y P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk

W. Oct. 15 17:20-17:25UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T.O.F.

W. Oct. 15 17:25-17:30UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

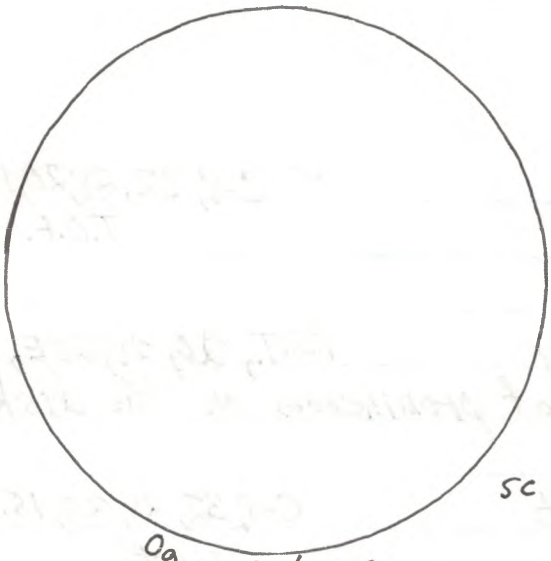
Th. Oct. 16 17:55-18:00 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO

Th. Oct. 16 18:00-18:05 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

Sa. Oct. 18 17:40-17:45 UT t C-8, 32, 28, 20, 15.5
Sun Og Os RSNO T. O.F.

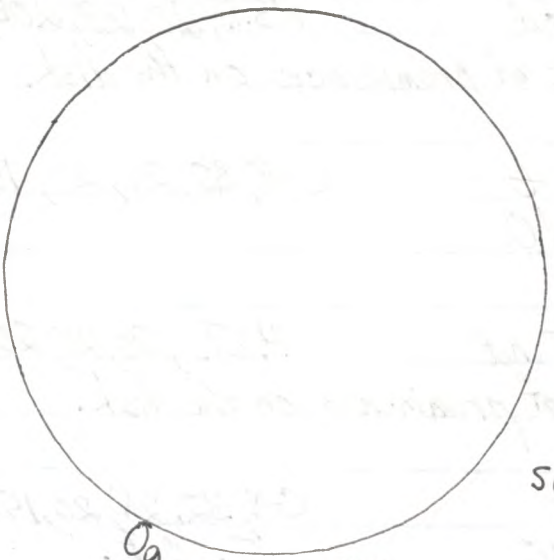
Sa. Oct. 18 17:45-17:50 UT nd P.S.T., 20, 28, 20E, 15.5
Sun in Hα - hints of prominences on the disk.

Sa.-Su. Oct. 18-19 00:05-00:15UT nd STT8.5-9 ne
A few minutes after the end of astronomical twilight and over a half-hour before local moonrise I started to observe for a brief while under clear and quite transparent skies with bright Jupiter in the S. and the Milky Way very clearly seen. Deneb was near the zenith. M31 was visible. One meteor of about mag. 3 to 4 was seen in Cassiopeia.



Og
Os
RSNO Oct 22
18:45-18:50UT

Og
Os
RSNO Oct. 23
17:20-17:25UT



Og
Os
RSNO Oct. 24
17:10-17:15UT

2008 W. Oct. 22 18:45-18:50 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

W. Oct. 22 18:50-18:55 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

W.-Th. Oct. 22-23 03:15-03:20 UT nd S?T9 ne
I briefly observed under skies that had cleared up nicely and saw many stars of autumn with M31 near the zenith, Auriga well up in the E, and the Summer Triangle in the W.

Th. Oct. 23 17:20-17:25 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

Th. Oct. 23 17:25-17:30 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

Th.-F. Oct. ~~23~~ 24 05:00-05:05 UT nd S?T9 ne
- The sky was very clear and transparent and the Milky Way swept from SE to NW with the Summer Triangle down in the NW. and Cassiopeia near the zenith.

F. Oct. 24 17:10-17:15 UT t C-8, 32, 28, 20, 15.5
sun Og Os RSNO T.O.F.

F. Oct. 24 17:20-17:25 UT nd P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk.

Sa.-Su. Oct. 25-26 02:55-03:05 UT nd S?T8.5 ne
Since the sky had cleared after a very rainy day, I observed briefly, seeing Auriga in the E, and the

Oct 30
17:40-17:45UT

Og
Os
RSNO

2008 Summer Triangle in the W, Cassiopeia near the zenith, and Cetus in the SE.

Su.-M Oct. 26-27 04:05-04:10 UT nd 5TT8 ne

I observed for a short while after a day that had been very cloudy, seeing the Pleiades and Hyades well up in the ESE with Auriga in the E, and Cassiopeia near the zenith, and Deneb and Vega in the NW.

W.-Th. Oct. 29-30 03:00-03:05 UT nd 5:TT4 ne

I observed briefly with skies that were cloudy in most areas, but there was a part of the E. sky that was clear with Auriga, Taurus, and Perseus visible. A bright meteor of mag. 2 was seen in Auriga. It was fast and may have been an Orionid - reported in the Astronomical Calendar as being active from Oct. 2 to Nov. 7. There was apparently some enhanced activity this year. It also might have been a Taurid - whose shower activity was predicted to include a "swarm" of meteors this year. The Taurids are associated with Comet Encke and sometimes have increased activity at 3-year intervals - last noted in 2005.

- possible Orionid or Taurid Meteor

Th. Oct. 30 17:40-17:45 UT t C-8, 32, 28, 20, 15.5
sun 0g 0s RSNO T.O.F.

Th. Oct. 30 17:45-17:50 UT y P.S.T., 20, 28, 20E, 15.5
sun in Hα - hints of prominences on the disk

Th.-F. Oct. 30-31 02:20-03:15 UT y 5:T8.5-9 ne; RX50150
ne: Having observed Jupiter earlier in the evening,

09
05
RSNO

Oct. 31
17:05-17:10UT

2008 I again observed under very clear skies, but skies with good, though not superb, transparency.

18X50 15b: M15, M2, o Ceti (Mira) at about mag. 8, Pleiades, Hyades, NGC 1746, Kemble's Cascade, NGC 663, NGC 654, M103, NGC 7789, Double Cluster, M34, Stock 2, χ Persei Cluster, μ Cep, area of δ Cephei, M36, M37, M38, Levy 53 (NGC 752), M31, M32, M110, M33, M1

F. Oct. 31 17:05-17:10 UT t C-8, 32, 28, 20, 15.5
sun 0g 0s RSN 0 T.O.F.

F. Oct. 31 17:10-17:15 UT y P.S.T., 20, 28, 20E, 15.5
sun in ~~Hg 0s RST~~ hints of prominences around the disk.

F.-S. Oct. 31-Nov. 1 22:55-00:15 UT y S?T8.5 ne; 18X50B6; 20X100

ne: stars of late summer and autumn with the Summer Triangle high in the W. and Jupiter in the S., before the end of astronomical twilight.

18X50 15b: Jupiter and 2 Galilean moons - Ganymede and Callisto, Neptune in Capricornus - very near the stationary point at the end of its retrograde motion (that point being on Nov. 2 at 7h UT), Uranus in Aquarius, M31, M32, M110, M33, M30 in Capricornus, Levy 53 (NGC 752), Double Cluster in Perseus, Stock 2,

20X100b: Jupiter and 3 Galilean moons - Europa, Ganymede, and Callisto - with Io being occulted, Neptune, Uranus

02:00-03:30 UT y S?T9 18X50 15b; 20X100b

18X50 15b: Kemble's Cascade, M36, M37, M38, M34, o Ceti (Mira) at about mag. 8.0, - asteroid Vesta (over)

Mira
Vesta

at about R.A 2h 30m Dec +39.5° (U220) – almost due W of the star γ Cefi, Plerades, Hyades, NGC1647 and NGC1746 – both in Taurus NW of Aldebaran, M1, μ Cep, area of δ Cephei – with δ Cephei estimated to be at mag. 3.6 – the same as that of ζ (Zeta) Cephei; NGC 663, M103, NGC 457, NGC 7789.

20X/006: At the end of the session I observed M42 in Orion using the 20X100 binoculars.

Relative Sunspot Numbers

Date 2008	My Observations
May 11	0
12	0
13	0
15	0
19	0
22	0
23	0
24	0
27	0
28	0
29	0
31	0
June 2	0
5	0
6	0
7	0
8	0
9	0
11	0
12	0
13	0
15	0
16	0
20	0
21	11
22	0
24	0
25	0
July 2	0
3	0
4	0
6	0
7	0
9	0
10	0
12	0
13	0
14	0
15	0
16	0
17	0
19	0
21	0
28	0
29	0
31	0
Aug. 1	0
4	0
6	0
9	0
12	0
13	0
14	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
25	0
Aug. 26	0
28	0
30	0
31	0
Sept. 2	0
3	0
4	0
5	0
9	0
10	0
11	0
16	0
18	0
20	0
21	0
22	14
23	0
24	0
25	0
Oct. 5	0
6	0
7	0
9	0
10	0
12	0
15	0
16	0
18	0
22	0
23	0
24	0
30	0
31	0

2637 — 2640 — 2650 — 2660 — 2670 — 2680 — 2700 — 2720 —