

LEO ENRIGHT LOGBOOKS

Volume

9

July 17, 1993
to
May 25, 1994

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9.

FANCO



cahier **SCIENCE** book

PAPIER EPAIS — HEAVYWEIGHT PAPER — 100 PAGES

name. nom Leo Enright Observing Log

subject. sujet July 17, 1993 — May 25, 1994

49-1092

FANCO
606 De Courcelle,
Montreal, Qué. H4C 3L5



11" x 8.3/8" - 279 mm x 212 mm

URANOMETRIA 2000.0

Chart	Declination	# of Charts	Range
1,2	84 - 90	2	12 ^h 00 ^m
3-14	72 - 85	12	2 00
15-34	60 - 73	20	1 12
35-58	49 - 62	24	1 00
59-88	38 - 51	30	48
89-124	27 - 40	36	40
125-169	16 - 29	45	32
170-214	5 - 18	45	32
215-259	-6 - +6	45	32
260-304	-5 - -18	45	32
305-349	-16 - -29	45	32
350-385	-27 - -40	36	40
386-415	-38 - -51	30	48
416-439	-49 - -62	24	1 00
440-459	-60 - -73	20	1 12
460-471	-72 - -85	12	2 00
472,473	-84 - -90	2	12 00

Magnitudes

1.	Alpha	Dubhe	1.79
2.	Epsilon	Alioth	1.8v
3.	Eta	Alkaid	1.86
4.	Zeta	Mizar	2.09
5.	Beta	Merak	2.37
6.	Gamma	Phad	2.43
7.	Delta	Megrez	3.31

Observing Log

1993-1994

Code :

Year Day Date Time Place Sky Conditions: ^{S: Seeing} T: Transparency Instrument(s)
Object(s) Observed

e.g.:

~~1993~~ 1993 Su. July 18 18:25-18:35 UT SS

C-8, 32, 28, 20, 15.5

~~1993~~

Sun

Time:

UT = Universal Time

n = night

m = morning

f = forenoon

a = afternoon

e = evening

Place:

y = yard

oo = Oso Observatory

nd = north deck

sh = shore line of lake

SS = solar station

t = table at solar station

in = indoors, through window

r = on roof of house

Sky Conditions:

s = seeing

t = transparency

0-10 scale: 0 = nil or extremely poor

10 = absolutely

Superb.

cml = crescent moonlight

gml = gibbous moonlight

fm1 = full moonlight

tw1 = twilight

Instruments:

C-14 = Celestron 14

C-8 = Celestron 8

Ast = Astroscan

20x100b = 20x100 binoculars

11x80b = 11x80 binoculars

9x63b = 9x63 binoculars

7x35b = 7x35 binoculars

32 = 32mm Ocular

32-2 = 32mm 2" Ocular

K = Kellner

O = Orthoscopic

Ko = König

WA = Wide Angle

P = Plössl

ph = photography

p/b = piggyback

o/a = off-axis

Ba = Barlow lens

EG = Easy Guider

EGf = Easy Guider, lens forward

EGb = Easy Guider, lens back

Object(s):

PN = planetary nebula

GC = globular cluster

OC = open cluster

SG = spiral galaxy

EG = elliptical galaxy

D = double star

LPU = Long Period Variable

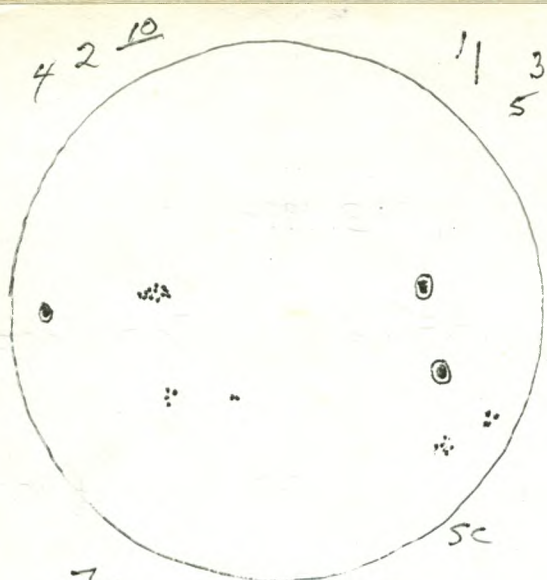
SR = Semi-regular Variable

Atlases:

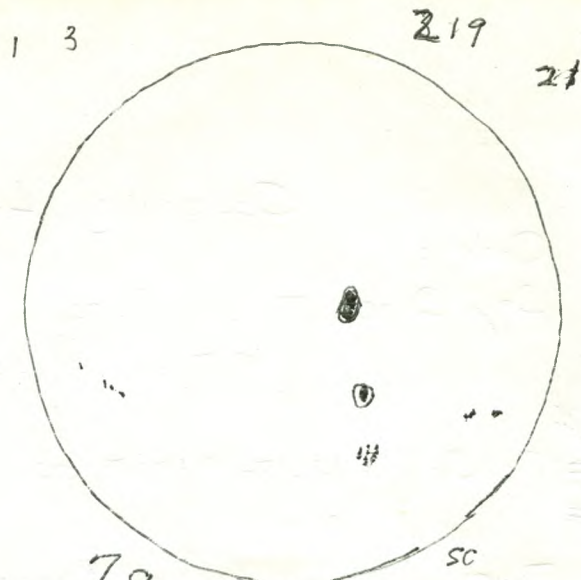
U = Uranometria

U210 = Uranometria Chart 210

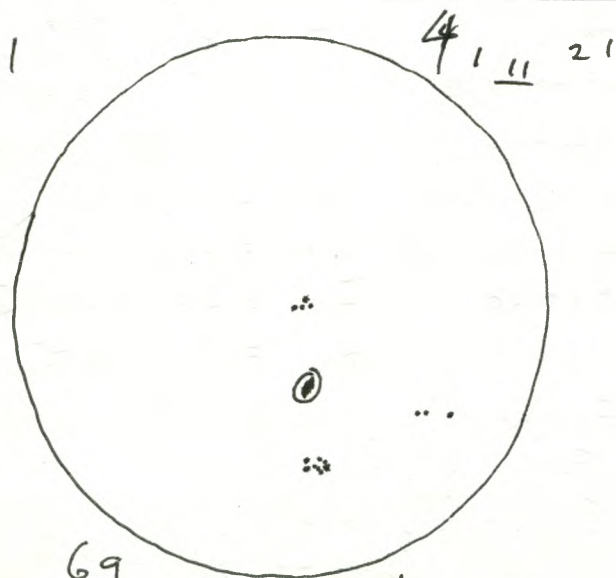
AAUSO = AAUSO Variable Star Atlas



79 July 18
265 18:25-18:35 UT
RSN 96



79 July 20
195 19:00-19:20 UT
RSN 89



69 July 21
205 20:05-20:10 UT
RSN 80

1993.

S.-S. July 17-18 02:00-03:15 UT ^{Bon Echo} Prov. Park Beach twilight ^{5-8?} 7:8:5 Ast, 15, 8

BCyg, Elyrae, M22, M13, Saturn

04:00-05:50 UT γ s-8(?) T9 20x100b

M31, M32, M110, Saturn, Uranus, Neptune, M22, M28, M8, M20, M5, M6, Barnard's Star, T Cor Bor, R Cor Bor, M1 and R Scuti

Su. July 18 18:25-18:35 UT SS C-8, 32, 28, 20, 15.5

sun 7g 26s RSN 96

Tu. July 20 19:00-19:20 UT SS C-8, 32, 28, 20, 15.5

sun 7g 19s RSN 89

T.-W. July 20-21 01:30-03:00 UT 00 ^{during late twi} s8(?) T9 until clouds came ne; 9x63b C-14
ne: constellations during twilight

9x63b: M11 and R Scuti area, Sagittarius - Scutum area, area of R Cor Bor and T Cor Bor, Uranus and Neptune, Cygnus area, U and EU Del.

Clouds moved in from the north about 3:00 UT (11:00 pm. E.D.T.)

C-14: Jupiter, M13, M57

W. July 21 20:05-20:10 UT SS

C-8, 32, 28, 20, 15.5

sun 6g 20s RSN 80

W.-Th. July 21-22 01:55-05:00 UT s-9(?) T 9.5 (!) ne; C-14, 32; 20x100

ne: summer constellations

C-14: Jupiter and 3 moons, III in Occultation - hoped to see the occultation reappearance at 02:55 UT, but the planet had disappeared behind trees in W, before the reappearance occurred.

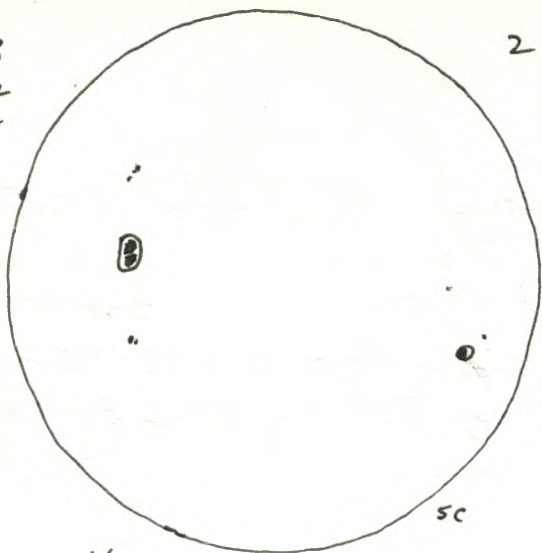
20x100b: V Boo - near γ Boo (U 77); U and EU Del

T Del (quite faint - perhaps mag. 11.7 - unless mistaken for another star - LPU - range 8.5-15.2 mag), DM Del

(range 8.6-8.9), CZ Del (range 8.0-9.2), area of Y Del; NGC 6934 GC in Del (See U 209) M15, M20, M21, M8, M28, M16, M17, M18, M29,

3
2
2

2



43
95
RSN 49

July 24

19:15-19:20 UT

M22, M6, M7, M11 and R Scuti, S U Sgr, area of TW Sgr,
Uranus and Neptune, Barnard's Star, R Cor Bor,
T Cor Bor, M31, M32, M110, R Cas, NGC 7789 in Cas-OC
(See U35), I4665-OC in Oph.

F.-S. July 23-24 01:15 UT y twl ne
Moon (4 day old crescent) and Jupiter in W about 12°
apart

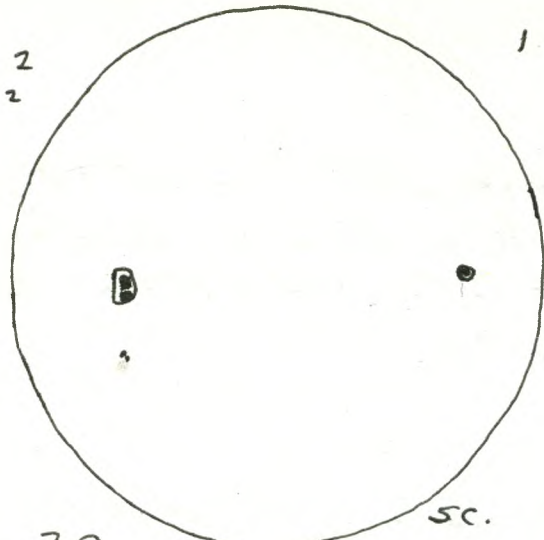
02:40 - 04:30 UT y s-8(?) T 9 intermittent cloud 20x100b
M16, M17, M18, M24, M8, M20, M21, M~~22~~, M80, M22, M28,
Uranus and Neptune, Saturn, R Cor Bor, T Cor Bor,
Barnard's Star

Clouds moved in at about 04:00 UT.

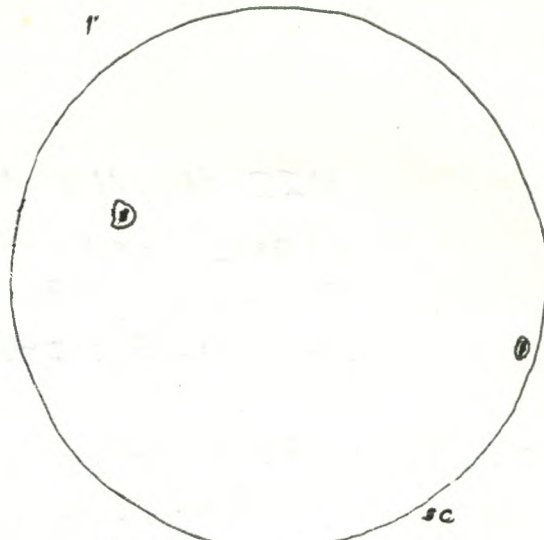
Sa. July 24 19:15 - 19:20 UT ss some haze c-8, 32, 28, 20, 15.5
sun 4 g 9 s • RSN 49

Sa: Sa. July 24-25 01:33 - 05:20 UT 00 s-9(?) T 9.5 (1) c-14-32, 20x100b.
c-14; Jupiter and 4 moons - seeing good for bands;
M13 (!)

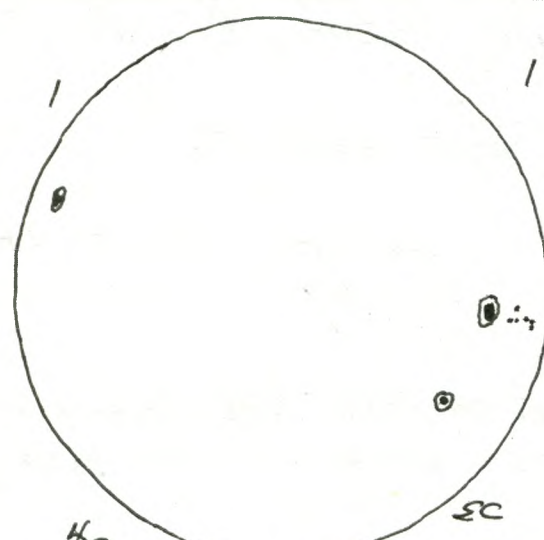
20x100 b: W Scuti (Mag.: 9.4-10.5) CV Ser (mag.: 9.9-10.2
wolf-Rayet type; Ec. Binary), XX Sagittarii (mag.:
8.5-9.2, Cep) NGC 6596-OC, W Ser (mag.:
8.5-10.0, Ec. Binary) - all of which are
on U294 near M16 and M17, also
FO Ser - not listed in Burahem but near
M17; NGC 6544 and NGC 6553 - two
GC SE of M8; Y Sgr (mag.: 5.3-6.0, Cep)
U Sgr (6.3-7.1 Cep) in M25, V Sgr - Not M25,
M16, M17, M25, M18, M24, M22, Uranus and
Neptune, with Uranus very near 7.0 mag
star SAO 188112 which is shown on U341 and
U342 about 1° S. of 50 Sgr at about
RA. 19^h 26^m Dec. - 22.5, M15, U and EU Del,
M31, M32, M110, Barnard's Star, V Boo,



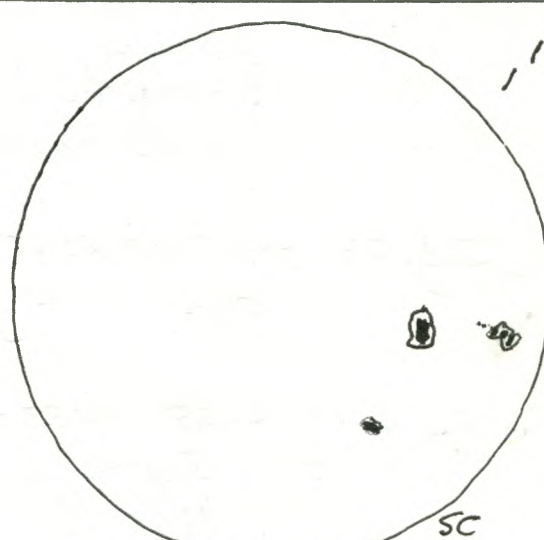
39
5S
RSN 35 July 25
17:50-18:00 UT



29 Aug. 1
25
RSN 22 18:00-18:10 UT



49
9S
RSN 49 Aug. 3
20:20-20:25 UT



39 Aug. 4
7S
RSN 37 20:10-20:15 UT

1993

M51, M33, M8, M20, M21, M6, M7, R Cor Bor, T Cor Bor,
S Cor Bor - about mag. 9. (6.0 - 14.. LPV 360^d period)
UU Cor Bor - near S Cor Bor; U Cor Bor - also
near S Cor Bor (7.6 - 8.8 Ec. Bin. 3.452^d per.
ne.: 2 or 3 meteors which might have been members of
the S Aquarid shower.

Su. July 25 17:50 - 18:00 UT ss C-8, 32, 28, 20, 15.5
sun 3g 5s RSN35

T.-W. July 27-28 01:55 - 02:10 UT y gml ne
and 04:10 - 04:45 UT
naked-eye observing to see S Aquarid meteors
which were to reach peak at 19^h on July 28
saw only a few and no very bright ones.

One was about 0 mag.
w.-Th. July 28-29 ^{at Sandbanks Provincial Park} 21:00 - 01:30 Moon, very hazy and cloudy - before talk. ^{Astroscon, 15.5}

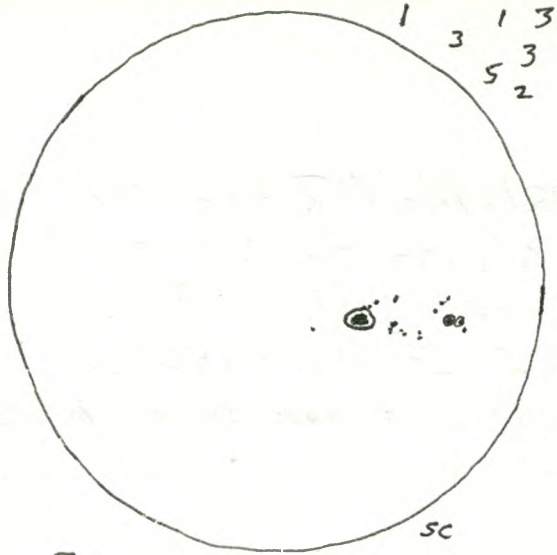
Su. Aug. 1 18:00 - 18:10 UT ss C-8, 32, 28, 20, 15.5
sun 2g 2s RSN22
- very hazy conditions.

T. Aug. 3 20:20 - 20:25 UT ss C-8, 32, 28, 20, 15.5
sun 4g 9s RSN49

W. Aug. 4 20:10 - 20:15 UT ss C-8, 32, 28, 20, 15.5
sun 3g 7s RSN37

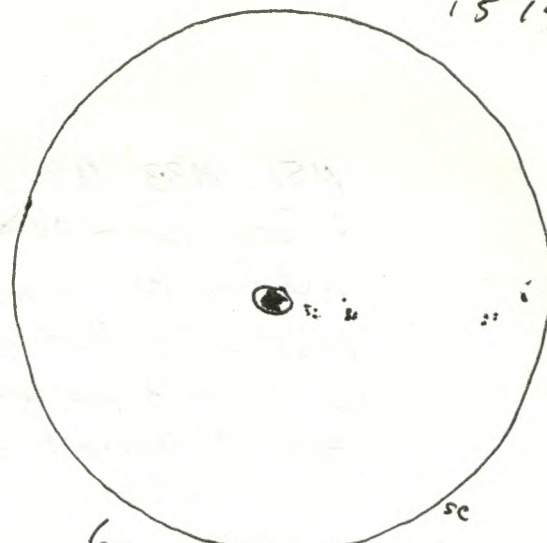
W.-Th. Aug. 4-5 02:55 - 03:55 UT y ne
Excellent Aurora in spite of large bright gibbous
moon, spikes, vertical bands up 50° or more, bright
glow up 20°, some flaming and some red and pink
colour. - from NW to NE. very intense with yellow
patches low at about 02:30 - 02:35 UT - saw 2
meteors (probably Perseids) one of them a "point meteor".

Th.-F. Aug 5-6 00:55 - 01:10 UT rd early twl C-8, 32, 19
Jupiter and 4 galilean moons - moments of good seeing



1 3 1 3
3 3
5 2

79 Aug. 6
185 RSN 88 19:55-20:05 UT



15 14 42

69 Aug. 8.
175 RSN 77 18:15-18:25 UT

1993

in which the N.E.B. ^{or N.T.B} appeared quite dark. good view starting less than $\frac{1}{2}$ hour after sunset.

Th.-F. Aug. 5-6 03:30-04:20 UT y gml ne
 - observing for Perseids, but saw only 1 or 2 faint ones; possibly some Auroral glow in N. but not bright.

F. Aug. 6 19:55-20:05 UT ss c-8, 32, 28, 20, 15.5
 sun 7g 18s RSN88

F.-S. Aug. 6-7 01:05-01:15 UT nd full c-8, 19
 Jupiter and 4 Galilean moons low in W. among the trees; several bands evident.

03:30-04:00 UT y gml ne
 observing Perseids, amid bright gibbous moonlight; saw only one or two.

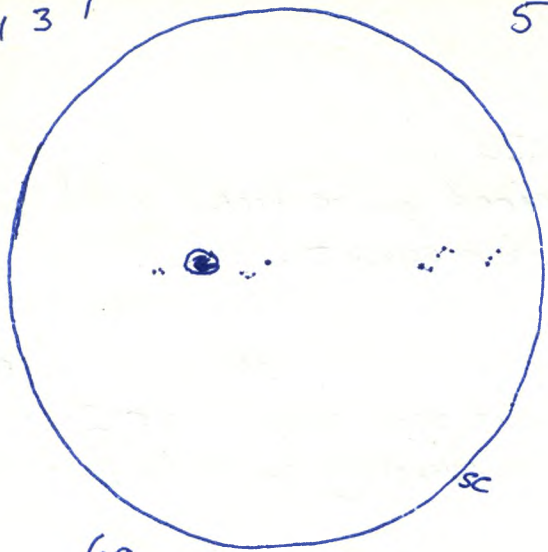
S.-S. Aug. 7-8 02:20-04:10 UT nd and y gml ne ^{with Walter Macdonald & Cathy Hall}
 observing Perseids amid some cloud and bright gibbous moonlight - saw about 8, several as bright as mag. 3 or 2 and two as bright as mag. 1 or 0 - apparent evidence that the shower seems to be good - about 4 days before predicted maximum or peak.

Su. Aug. 8 18:15-18:25 UT c-8, 32, 28, 20, 15.5
 sun 6g 17s RSN77

S.-M. Aug. 8-9 02:30-04:00 UT y ne and 20x100b
 ne: observing Perseids - saw about 6 or more two of which were as bright as mag. 1
 20x100b: Uranus, Neptune, M22, M28, RCor Bor.

3 1 3 1

5 3



69
165
RSN76 Aug. 9.
16:45-16:50 UT

1993.

M. Aug. 9 16:45-16:50 UT ss

e-8, 32, 28, 29, 10, 15

sua 6g 16s RSN. 66

w.-Th. Aug. 11-12 03:15-05:15 UT parking near ^{Niagara-On-The-Lake} Pillar and Post Inn - ^{haze} mag. 3.5 ^{c. Denise} stars ne

- On night of predicted maximum of Perseid Meteor Shower in first year following the appearance of Comet Swift Tuttle in 1992, Denise and I observed from open field near The Pillar and The Post Inn in Niagara-On-The-Lake where we were vacationing. After the theatre performance we observed from 03:15 (11:15 pm E.D.T. to 1:15 pm E.D.T.) for two hours. We probably saw meteors only brighter than mag. 3.5 because of haze and light pollution. We counted 25 in first hour and 15 in the second hour. Many left trains for 1 to 3 seconds. Evidently an excellent shower! Considering the conditions, a superb shower! Moonrise was scheduled for about (12:30 pm E.D.T.) 4:30 UT, but the moon was not seen because of trees or clouds.

Th.-F. Aug. 12-13 01:30-05:00 UT y s-8(?) T 9.5!

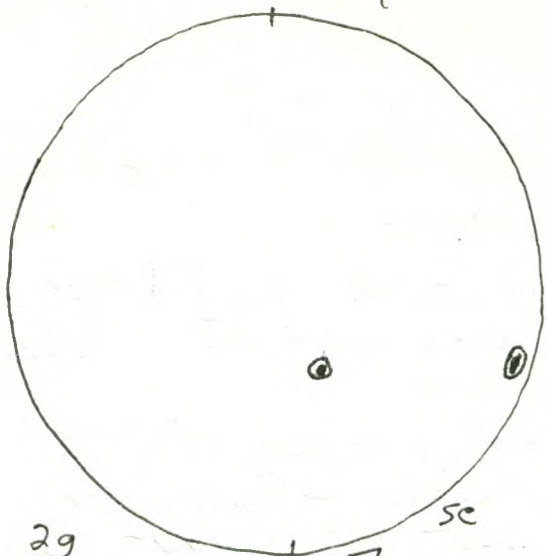
c. Denise
ne

- Under superb skies we observed the Perseid Meteor Shower again. A large proportion of those seen were brighter than mag 2. There was one fireball (-5 mag. seen by Denise, but not by me.) Between 03:33 and 04:15 we counted 25 Perseids and a few sporadic meteors. Several left trains of a second or more. I photographed several areas of the sky.

F.-S. Aug. 13-14 05:30-07:00 UT intermittently y s8(?) T 9

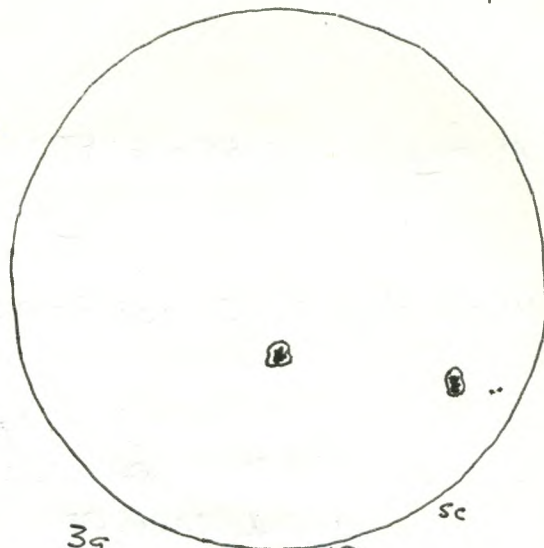
ne

-looking for Perseids in observing session after



29
25
RSN 22

Aug. 17.
17:20-17:25 UT



35
45
RSN 34

Aug. 18
19:15-19:20 UT



Titan

Aug. 18-19 Saturn C-14

Aug. 19: 3^h

Opposition: Aug. 19 23^h

1993

RASC. - Kingston Centre meeting, but occasionally fell asleep in lawn chaise for extended periods - saw 2 or 3 Perseids and 2 or 3 sporadic meteors.

Sa.-Sun. Aug. 14-15 02:30-05:00 UT 00 s-8(?)T9 20x100b.

Uranus and Neptune, Saturn and Titan, RCor Bor,
T Cor Bor, RU Her (very faint ^{LPN} 7.0-14.0 mag.)
SX Her (7.8-7.5 mag.) (See U155), Barnard's Star
M25, U Sgr, V Sgr, dark regions B92 and B98 near M24,
Y Sgr, W2 Sgr, XX Sgr (at about mag ~~10.5~~ 9 - in
Buraham listed as a Cepheid mag. 8.5-9.2 and
period of 6.4243 days.), M17, M18, M31, M32,
M110, M33, M101, NGC 6596 - OC in Sgr.

Several fairly bright Perseids were seen during
the session.

T. Aug. 17 17:20-17:25 UT

c-8, 32, 28, 20, 15.5.

T.-W. Aug. 17-18 02:30-04:00 UT y
sun 2g 2s RSN22

s-8(?)T 7-8 very hazy 20x100b.

Uranus and Neptune, Saturn, M16, M17, M18, M8, M20,
M21, M22, M28, M25, M11 and R Scuti area,
T Cor Bor, R Cor Bor, M31, M32, M33, M15.

w. Aug. 18 19:15-19:20 UT ss

c-8, 32, 28, 20, 15.5.

sun 3g 4s RSN34

w.-Th. Aug. 18-19 02:30-05:00 UT 00 s-8-9T8-6 ^{decreasing} because of haze c-14, 32, 19, 13 20x100b

c-14: M13, M57, Saturn and 3 moons - Cassini Division
visible in moments of good seeing.

20x100b: Uranus and Neptune, M22, M28, M8,
M15, R Cor Bor, Barnard's Star, Saturn

Increasing haze and cloud made observing
increasing difficult.

Th.-F. Aug. 19-20 03:00-04:00 UT y

s-8(?)T 8.5

9x63b

Uranus and Neptune, M22, M11 and R Scuti area,
Saturn, Cygnus Milky Way area, Col 399,
several Perseids seen re.

1993

F.-S. Aug. 20-21 02:00 - 02:30 UT ^{Darling Hill} Vesper, NY. 5-(?) T8 - ^{until} clouded out 20x100b

- Uranus and Neptune and some stars in Sagittarius
- Very frustrating because repeated cloud cover prevented serious observing for more than a few minutes at a time. We left early (about 02:30 UT or 10:30 p.m. E.D.T.)

S.-S. Aug. 21-22 01:30 - 03:30 UT ^{Darling Hill} Vesper, NY. 5-8-9 T8-9 20x100b

- at Syracuse Summer Seminar after bright, sunny, clear day - a generally good and transparent sky except for some cloud in the S.

Uranus, Neptune, T Cor Bor, R Cor Bor, Barnard's Star, M11 and R Scuti area, M16, M17, M25, M22, Double Cluster, M31

- Veil Nebula in Gershon Blackmore's 17" Newtonian
- M27 in SAS 16" Telescope

S.-M. Aug. 22-23 01:30 - 03:30 UT ^{Charleston Lake after moonset} Provincial Park 5-7-8 T9 20x100b

- after Terry Dickinson's talk, among group of Kingston Centre members who had brought telescopes M22, Uranus and Neptune - each of which were shown to many people - perhaps 30 or 40 people for each. - also briefly Saturn.
- also Saturn through Terry Dickinson's 6.1" Starfire refractor.

T.-W Aug. 24-25 ^{00:30-01:00 and} 01:45 - 03:15 UT ^{twil,} Sandbanks Provincial Park T8-9 Ast, 15, 8

Before slide show and talk by Denise, I showed people lunar craters on First Quarter Moon.

After the slide show I showed people β Cyg, lunar craters, M13, Alcor and Mizar.

Also in attendance were several other amateur astronomers: Frank Hitchins who used a Meade 10" SCT to show Saturn, Ken Chisolm who used a 6" f-6 Newtonian, Paula who used

1993

11x80 binoculars. The weather was very good, and it was an interesting and interested group of campers who came to look through the telescopes.

Car problems with Denise's car after the talk meant that we had to stay in Wellington overnight and stay there the next day until the car was repaired. It was a "computer" problem.

W.-Th. Aug. 25-26 (1:30-6:10 am EDT) S-879-9.5! ^{ne} C-8, 32, 5
05:30 - 09:10 UT 00 ~~G~~ C-14, 32, 13, 9, 40
20x100b

C-14: Saturn and 3 or 4 moons, M33, M31, Double Cluster in Perseus, Veil Nebula, γ Arietis, NGC 247, NGC 253 (!)

20x100b: (U 306) NGC 247, NGC 253 - two very large galaxies S. of β Ceti; interesting to note a star within NGC 247

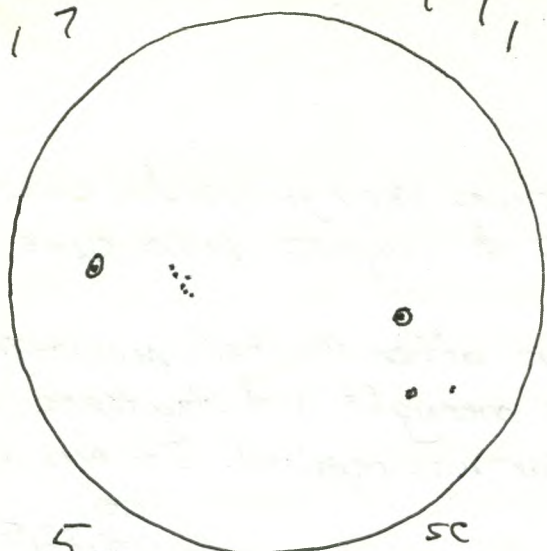
- on U 210 - M15, R Equ (LPV, 8.7-15.0 mag.) too faint to be seen though the area was examined, T Equ (S-R, 9.2-10.9), RV Equ - not far from T Equ, AM Peg (SR, 9.0-11.0)

- on U 256 - area of α Agr, β Agr - a variable, M2, EP Agr (not listed in Burnham)

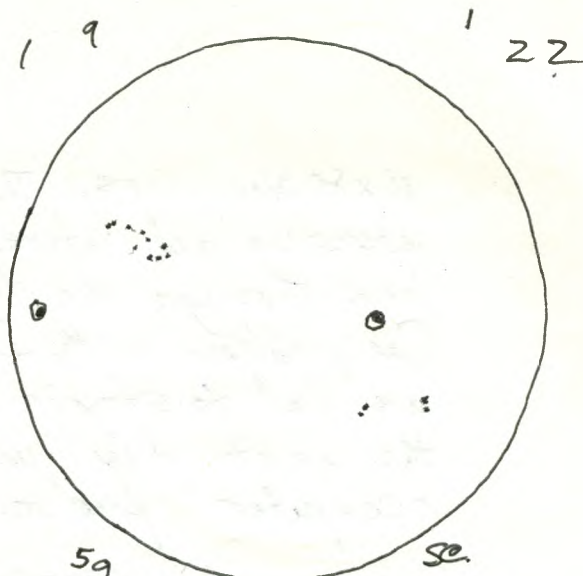
- on U 257 - the Water Jar in Aquarius; i.e., the stars γ , δ , η , (and π) and in the field near η the stars: C γ Agr (RR Lyrae type, period $1^h 26^m$ (!) if 0.06d per. is true, or 88 min in David Levy's Variable Star book, page 159; 10.4-11.6 mag.) According to Burnham, p. 184, the star with the second shortest period known - up to 1965. (See chart in Burnham, p. 185.) C X Agr (RR Lyrae type mag. 10.4-11.2 (See AAUSO Chart 100.) M35 and nearby cluster, M36, M37, M38, M1, M42, M43, area of R Lep, ~~ER~~ RX Eri, Hyades, Plerades including nebulosity.

C-8: Venus, a gibbous phase object - very bright and rising in Gemini.

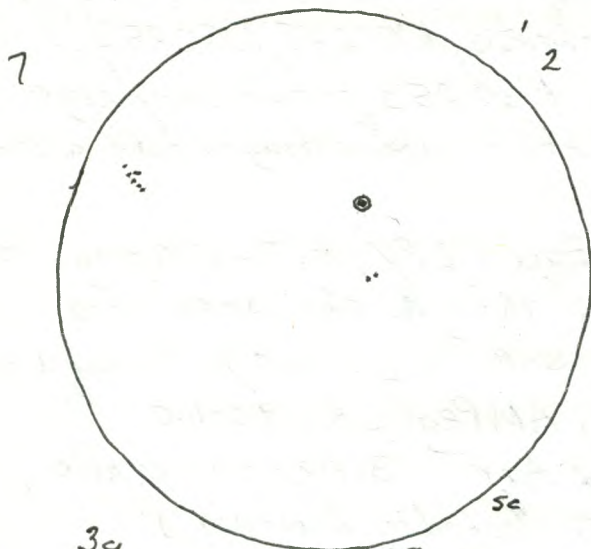
88 min = 1^h 28^m



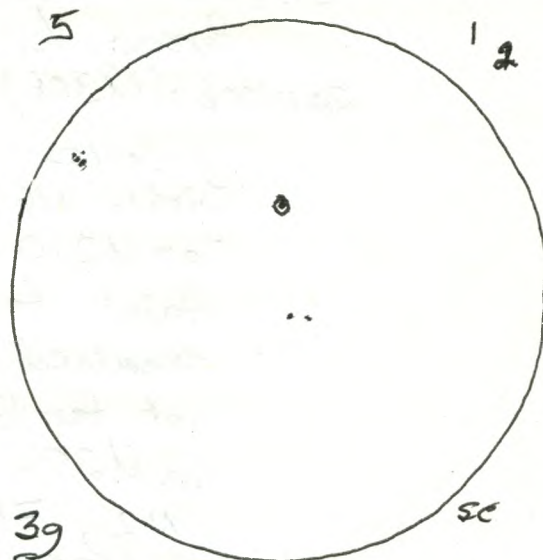
5g
11s
RSN 61
Aug. 26
19:30-19:35 UT



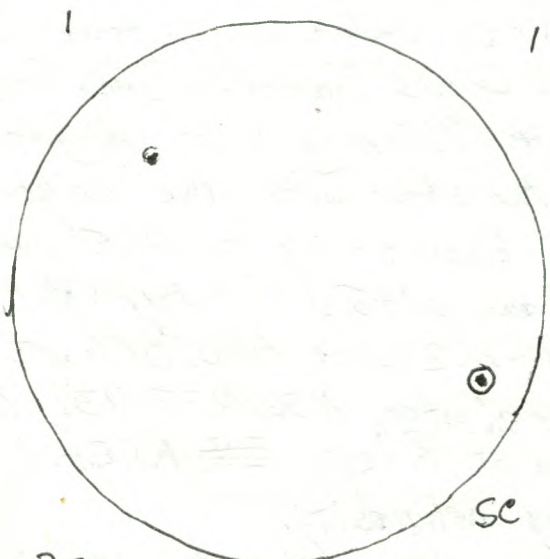
5g
15s
RSN 65
Aug. 28
18:30-18:35 UT



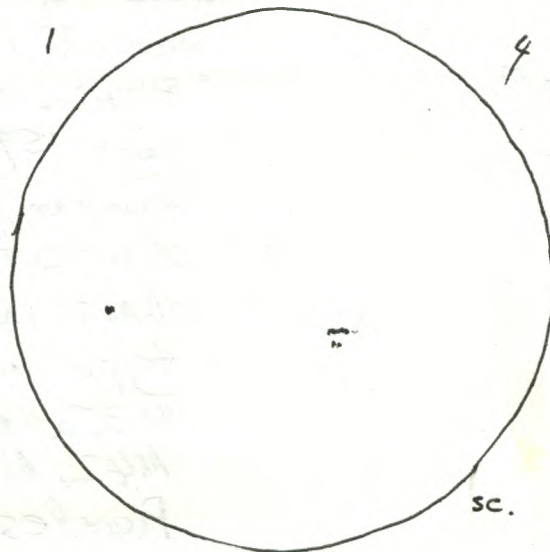
3g
10s
RSN 40
Aug. 29
19:25-19:30 UT



3g
8s
RSN 38
Aug 30
20:20-20:25 UT



29
25
RSN 22
Sept. 1
18:25-18:30 UT



29
5s
RSN 25
Sept. 4.
21:00-21:05 UT

1993

ne.: many summer, fall, and winter constellations;
the Zodiacal Light very bright from
07:45 UT to 08:34 UT when the end of
astronomical twilight occurred. It was bright in
Gemini and up into the Auriga-Taurus area.

Th. Aug. 26 19:30-19:35 UT ss c-8, 32, 28, 20, 15.5
sun 5g 11s RSN 61

Sa. Aug. 28 18:30-18:35 UT ss c-8, 32, 28, 20, 15.5
sun 5g 15s RSN 65

Sa.-Su. Aug. 28-29 02:00-02:15 t gml Ast, 19, 8
lunar craters, Saturn, M13.

Su. Aug. 29 19:25-19:30 UT ss c-8, 32, 28, 20, 15.5
sun 3g 10s RSN 40
- some haze during observations

M. Aug. 30 20:20-20:25 UT ss c-8, 32, 28, 20, 15.5
sun 3g 8s RSN 38

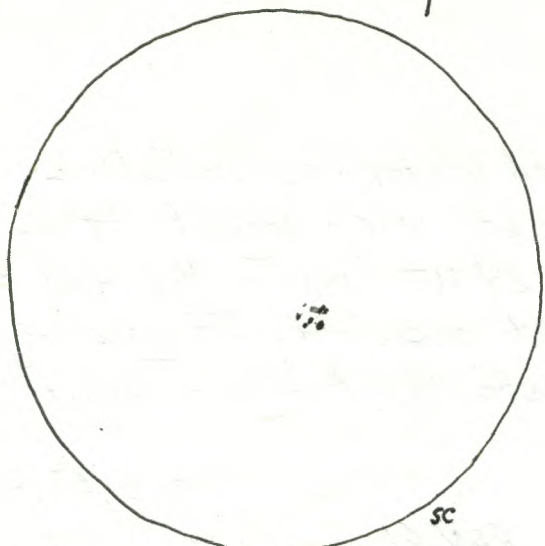
W. Sept. 1 18:25-18:30 UT ss c-8, 32, 28, 20, 15.5
sun 2g 2s RSN 22

W.-Th. Sept. 1-2 02:30-03:00 UT t gml c-8, 19, 15.5, 7.6
Saturn, Titan and another Saturnian moon, Mizar, Polaris and
its companion star (mag. 2 and 9; separation 18."4
as compared to Mizar's 14."4)

Sa. Sept. 4 21:00-21:05 UT ss c-8, 32, 28, 20, 15.5
sun 2g 5s RSN 25

Sa.-Su. Sept. 4-5 02:40-03:20 UT y gml ne
constellations of the northern sky.

9

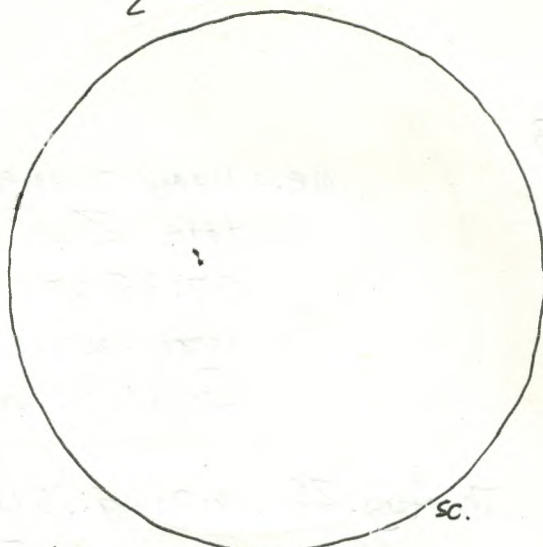


1g
9s
RSN19

Sept. 5
18:00-18:05UT

sc

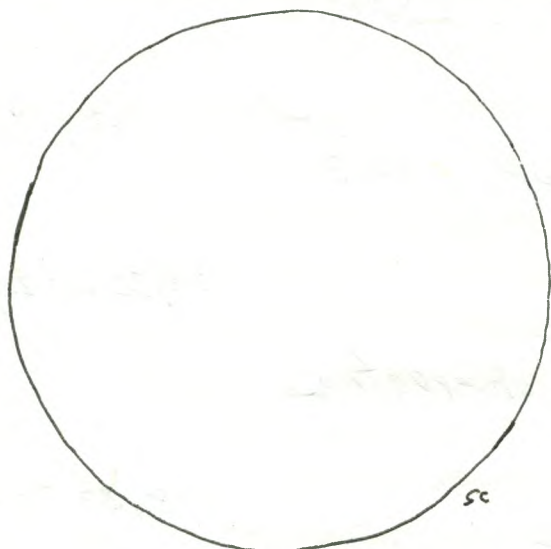
2



1g
2s
RSN12

Sept. 7

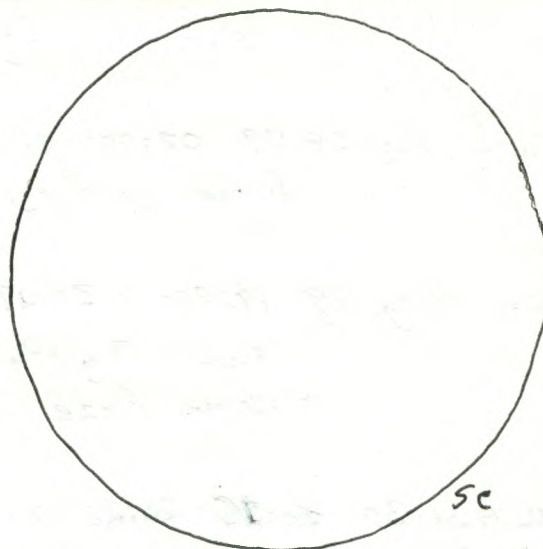
sc.



0g
0s
RSN0

Sept. 8
20:45-20:50UT

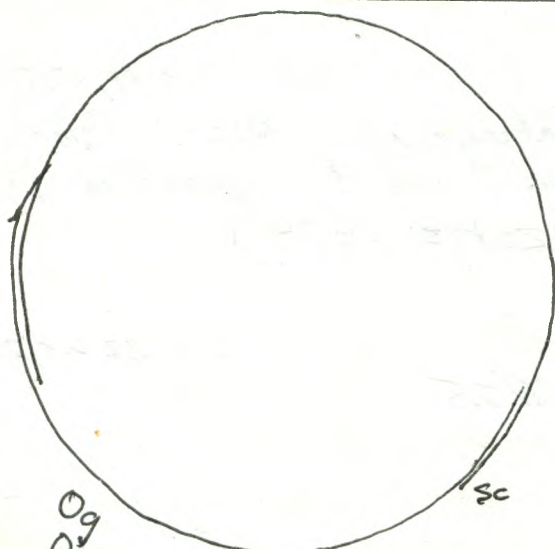
sc



0g
0s
RSN0

Sept. 11
19:55-20:00UT

sc



0g
0s
RSN0

Sept. 12
15:00-15:03UT

sc

1993

Su. Sept. 5 18:00-18:05 UT ss c-8, 32, 28, 29, 15.5
sun lg 9s RSN19

S.-M. Sept 5-6 00:10-00:20 UT r twl 9x63b
Jupiter and Mars about 1° apart and about
 8° above the horizon between the WSW and W
points on the horizon (Actual time given for the
conjunction is 24^h hence at 00 hours on Sept. 7.)
Saturn in SE.
02:30-03:15 UT y gml ne and 9x63b
northern constellations.

T. Sept. 7 18:45-18:58 UT ss c-8, 32, 28, 20, 15.5
sun lg 2s RSN12

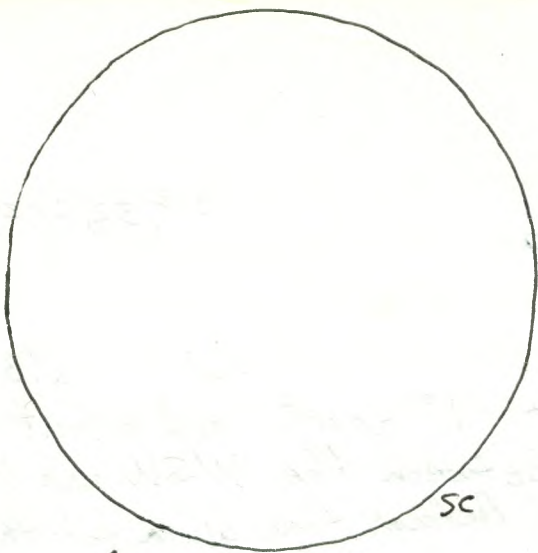
T.-W. Sept. 7-8 02:40-03:20 UT y s-8T9 but some cloud 20x100b
Uranus and Neptune about $1\frac{1}{2}^\circ$ apart in Sagittarius,
M22, M28, M16, M17, M25, M8, M20, M6, M7, M15,
Barnard's Star, R Cor Ber, T Cor Ber, M1 and R Souti,
M31, M32, M110.

W. Sept. 8 20:45-20:50 UT ss c-8, 32, 28, 20, 15.5
sun Og Os RSNO

Sa. Sept. 11 19:55-20:00 UT ss with Paul Ferguson
c-8, 32, 28, 20, 15.5 n
sun Og Os RSNO

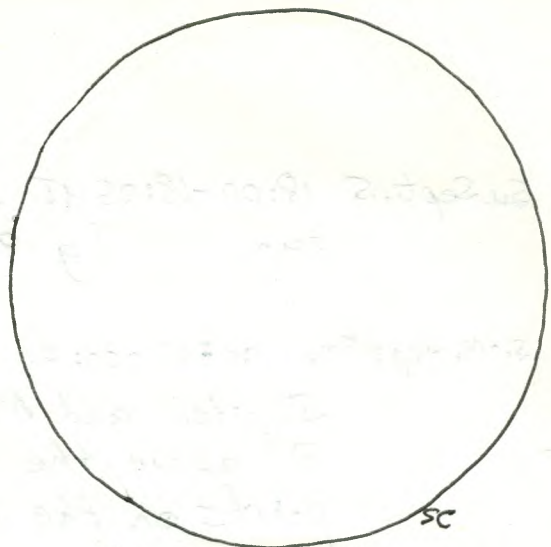
Su. Sept. 12 15:00-15:03 UT ss c-8, 32, 28, 20, 15.5
sun Og Os RSNO

S.-M. Sept. 12-13 00:50-03:30 UT y s-8(?) T8-9 but for Aurora 20x100b, ne
ne: Very bright and unexpected Aurora (unexpected because
of paucity of sunspots) - noticed after phone call from
Paul Ferguson before end of astronomical twilight - large
patch in NNE, then bright glow lasting most of the



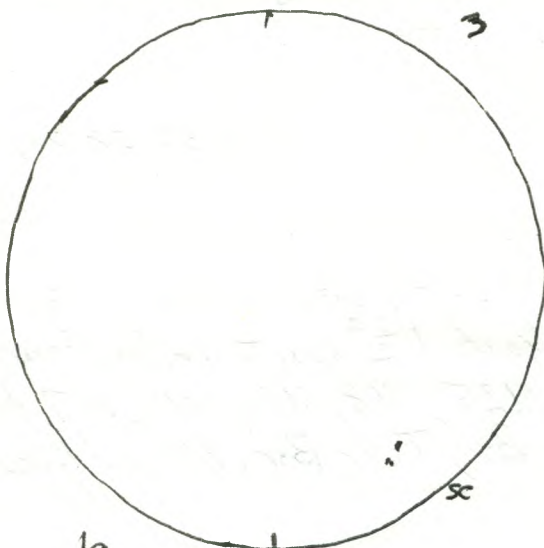
Og
OS
RSNO
Sept. 13
20:15-20:18 UT

sc



Og
OS
RSNO
Sept. 14
21:25-21:30 UT

sc



1g
3s
RSN13.
Sept. 16
18:15-18:20 UT

sc

3

1993

session, then arc and later two arcs, and several spikes up 45° , at one point several cloud-like wisps very high-west of the zenith, large patches in Wand NW for a while, and for a while 2° wide band from W to E, but little coronal activity and almost no flaring. The glow showed only slight red colours for a while - not much colour altogether - an excellent display overall - bright enough to see my shadow against the house! also, 2 or 3 meteors one of which may have been a Perseid

20x100 b: M28, M16, M17, M18, M25, M22, M8, M21, M20, Saturn, Uranus and Neptune only about 1.5° apart, R Sgr, bright - about mag. 8, S Sgr. - about mag. 9.5, area of RW Sgr and RX Sgr, Barnard's Star, R Cor Bor, T Cor Bor.

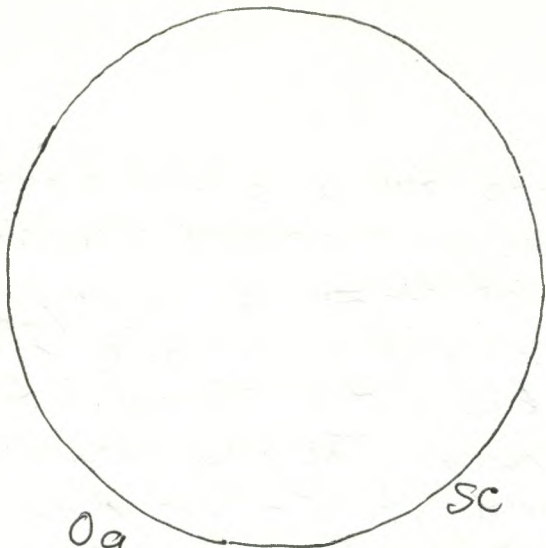
M. Sept. 13 20:15 - 20:18 UT ss C-8, 32, 28, 20, 15.5
Sun Og Os RSNO

M.-T. Sept. 13-14 01:50 - 02:06 UT nd T-7 (some haze) ne
- strange, bizarre Aurora as a large circular spot in constellations Bootes and Ursa Major near handle of the Big Dipper - white and quite bright and a fainter spot closer to the W. horizon. The very bright spot had one or two horizontal dark lines in it.

T. Sept. 14 21:25 - 21:30 UT ss C-8, 32, 28, 20, 15.5
Sun Og Os RSNO

Th. Sept. 16 18:15 - 18:20 UT ss C-8, 32, 28, 20, 15.5
Sun 1g 3s RSNO 13.

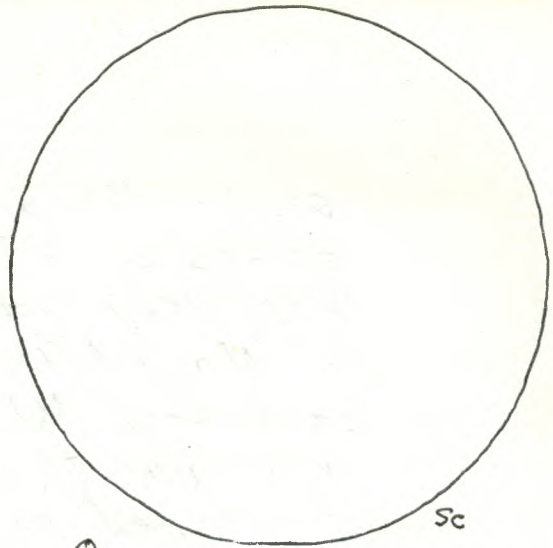
S.-M. Sept 19-20 02:00 - 03:34 UT y S-8(?) T9. 20x100b
- looked for recently discovered nova at R.A.: $18^h 12^m 50^s$,
Dec.: $29^\circ 29.1'$ but this area between γ Sgr and δ Sgr



0g
05
RSN 0

Sept. 21
18:05-18:15 UT

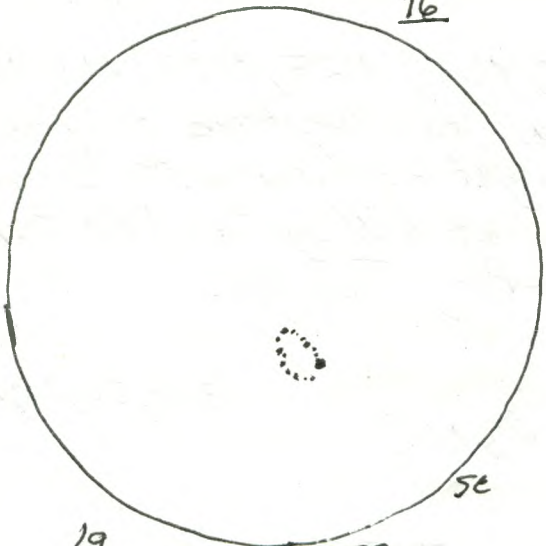
sc



0g
05
RSN 0

Sept. 22
17:35-17:38 UT

sc

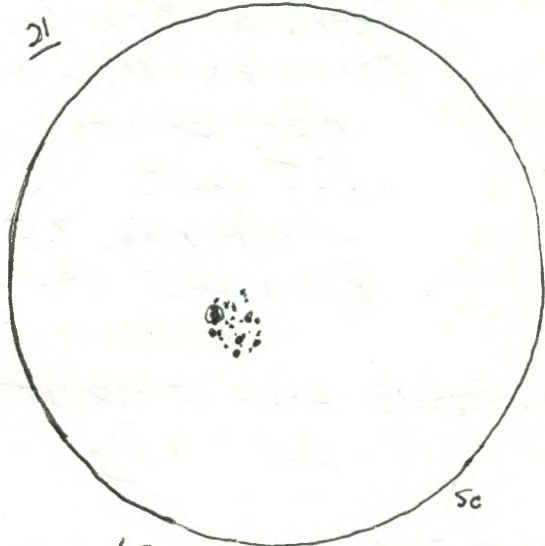


16

19
165
RSN 26

Sept. 23
18:35-18:40 UT

sc

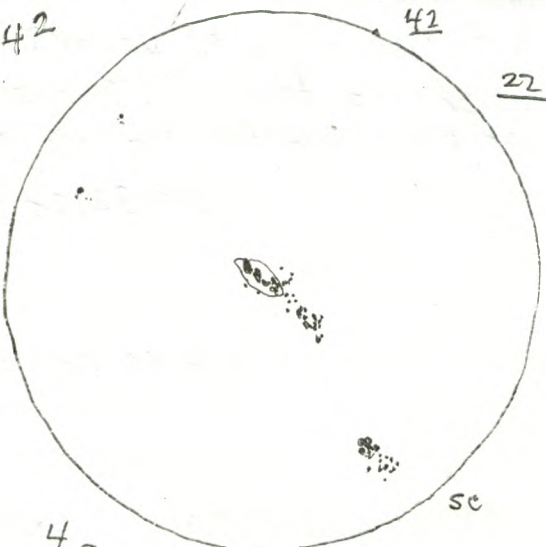


21

19
215
RSN 31

Sept. 24
18:15-18:20 UT

sc



42

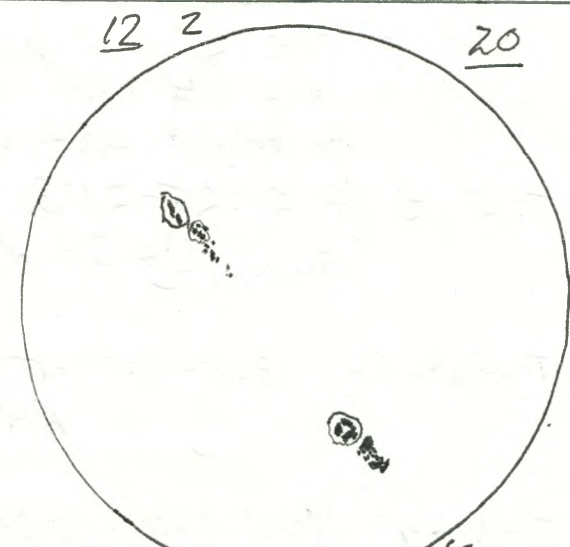
42

22

4g
705
RSN 110

Oct. 3
19:50-20:00

sc



12 2

20

3g
345
RSN 64

Oct. 5
19:40-19:45 UT

sc

1993.

was low in the SW behind trees, M8, M20, M46, M17, M18, M21, M22, M28, R Sgr, Uranus and Neptune, Saturn, R Car Bor, T Car Bor, Helix Nebula (NGC 7293) and asteroid Vesta which was about 1.5° to the W. (S. & T. Sept. '93, p. 66, 67), also the stars EE Aqr and X Aqr (See U 347); area of the high-energy variable AE Aqr (mag 9.7 to 11.7) (See S. & T. Sept. '93, p. 68) though the star was very difficult and perhaps seen, if at all, only with averted vision, Pleiades.

Tu. Sept. 21 18:05 - 18:15 UT ss C-8, 32, 28, 20, 15.5
Sun Og Os RSN 0

W. Sept. 22 17:35 - 17:38 UT ss C-8, 32, 28, 20, 15.5
Sun Og Os RSN 0

Th. Sept. 23 18:35 - 18:40 UT ss C-8, 32, 28, 20, 15.5
Sun Og 16s RSN 26

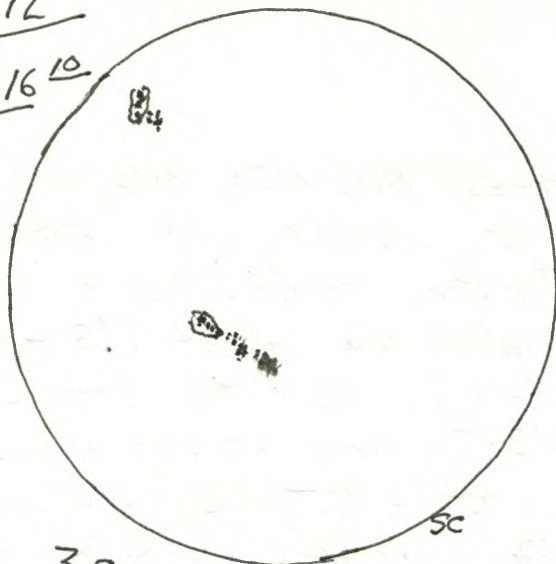
F. Sept. 24 18:15 - 18:20 UT ss C-8, 32, 28, 20, 15.5
Sun 1g 21s RSN 31

Sa. Oct. 3 19:50 - 20:00 UT ss C-8, 32, 28, 20, 15.5
Sun 4g 70s RSN 110

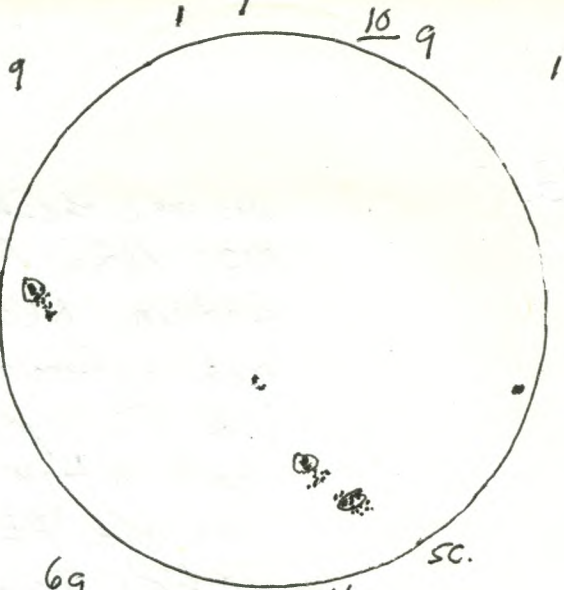
Tu. Oct. 5. 19:40 - 19:45 UT ss C-8, 32
Sun 3g 34s RSN 64

T.-W. Oct. 5-6 01:10 - 02:35 UT y + ~~ss~~ ^t gnl 20x100b + Ast, 15.5, 11.8
20x100b: Uranus and Neptune (at about R.A. $19^h 20^m$ Dec $-22^\circ 39'$ and $19^h 19^m$ Dec $-21^\circ 32'$; See U 341), R Sgr, S Sgr - barely seen at about mag. 11.5, as was Z Sgr also at about mag. 11.5 - See U 341, Saturn, ~~and~~ M2, M15, β Cyg, M22, M13.

12
16 10

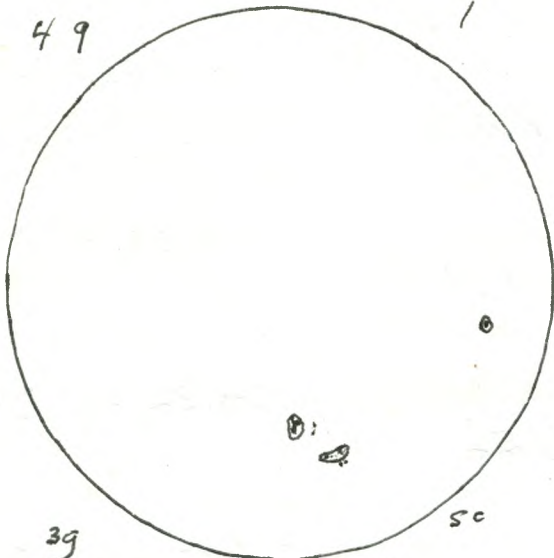


39
38s
RSN 68
Oct. 7.
18:50-18:55



69
31s
RSN 91
Oct. 11
18:40-18:45 UT

49



39
14s
RSN 44
Oct. 12
19:20-19:25 UT

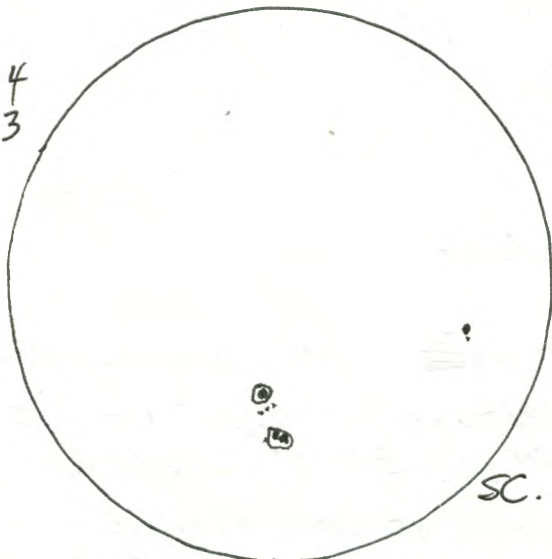
Venus



Venus and Crescent Moon 7° apart

Oct. 12-13 m 10:00 UT
6:00 a.m. E.D.T.

4
3



39
9s
RSN 39
Oct. 13
18:30-18:35 UT

1993.

Ast: Saturn and Titan, M2, Mizar, Double Cluster,
looked for companion of Polaris, γ Arietis-split,
M57, Elyrae, M27.

- a glow in the N. during part of the observing session
which may have been Aurora.

W.-Th. Oct. 6-7 00:00 - 02:00 UT γ 5-8(p) T 8.5-9 20x100b
Nova Sagittarii 1993 located N. of a line
from γ Sgr to δ Sgr at R.A.: $18^h 12^m 50^s$,
Dec.: $-29^\circ 29.1'$ very faint at about
mag 10.5 and seen only with difficulty,
M8, M20, M21, M22, M28, M16, M17, M18,
M25, Uranus, Neptune, Saturn, M13,
M2, M15, M33, R Cor Ber, T Cor Ber,
Pleiades, M31

Nova
S.F.T. map
Nov. 1993 p. 8

Th Oct. 7 18:50-18:55 UT ss C-8, 32, 28, 20, 15.5
sun 3g 38s RSN 68

M. Oct. 11 18:40-18:45 UT ss C-8, 32, 28, 20, 15.5
sun 6g 31s RSN 91

T. Oct. 12 19:20-19:25 UT ss C-8, 32, 28, 20, 15.5
sun 3g 14s RSN 44

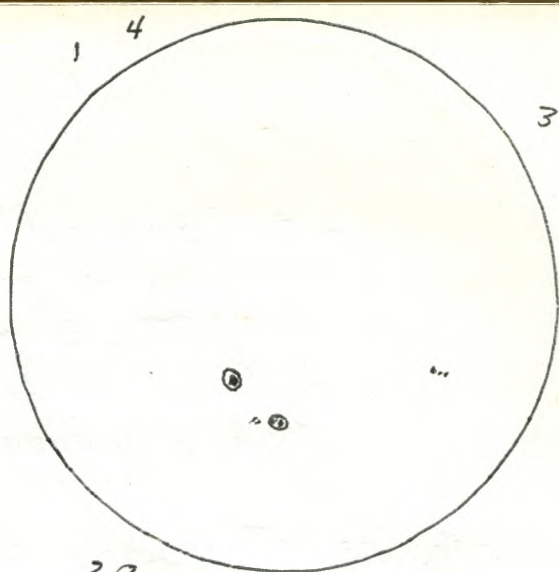
T.-w. Oct. 12-13 m 09:40-10:20 UT dock near sh. m twl ne
Venus and crescent moon 7° apart in E. about
 5° to 10° above horizon. - before and after
beginning of Ast. Twilight, photographed Venus and moon.
Zodiacal Light, Winter and Spring constellations

W. Oct. 13 18:30-18:35 UT ss C-8, 32, 28, 20, 15.5
sun 3g 9s RSN 39

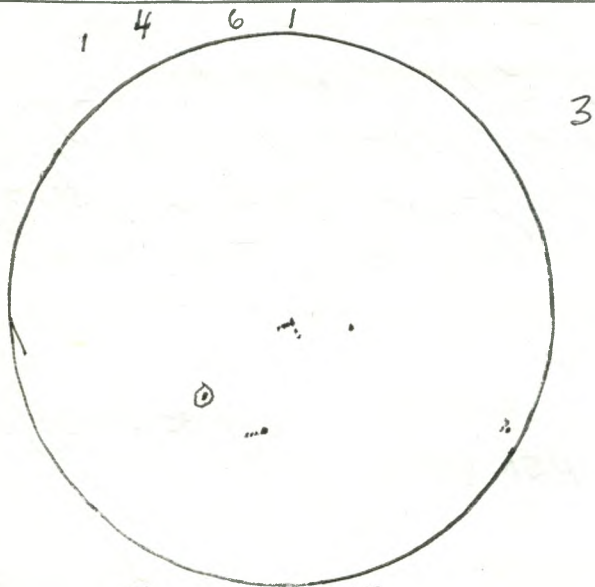
• Venus



morning Oct. 14: 10:35 UT: when moon
first seen (1); when later viewed
10:45 UT.



39
85
RSN 38 Oct. 14
20:15-20:20 UT



59
153
RSN 65 Oct. 15
18:35-18:40 UT

1993

W.-Th. Oct. 13-14 23:50-01:40 UT y S-8-8(F)F9 20x100b.

- Nova Sagittarids 1993 - seen faintly but at least as well as on Oct. 6-7., Saturn and Titan, Uranus and Neptune, S4 Sgr, R Sgr, S Sgr, M8, M20, M21, M13, M92, Helix Nebula - NGC 7293, M15, M2, M30, M31, M32, M110, M33, δ Cep, R Scor Bor, R Cor Bor, Comet Mueller - about mag 10.0 at R.A.: $12^h 48^m$ Dec.: $82^\circ 20'$ - less than 8° from the pole. (See map in S. & T. Oct. '93, page 71. and also (U9)) It was slightly E and a bit S from IC 3568 - observed later in the session and E motion was detected; Barnard's Star, M11 and R Scuti.

M. 10:15-10:45 UT y

m twl

9x63b & ne

- observed brilliant Venus and very slender crescent moon - detected first with binoculars at about 6:35 a.m. E.D.T. (10:35 UT) and then it could be seen naked-eye. This very old moon was less than 25 hours from New Moon.

New Moon is tomorrow at $11^h 36^m$. At 10:40 UT the moon was $24^h 55^m$ from New Moon. I could see it both ne and in the binoculars - admittedly with some difficulty ne.

Th. Oct. 14 20:15-20:20 UT ss

haze C-8, 32, 28, 20, 15.5

sun 39 8s RSN 38

Th.-F. Oct. 14-15 02:15-03:00 UT y

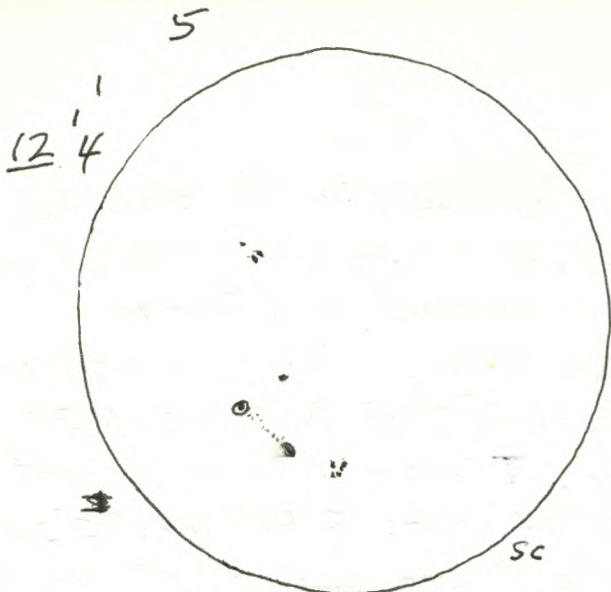
S8(F)T8.5-9 20x100b

Saturn and Titan, M2, M15, M30, M31, M32, M33, Comet Mueller - less than 8° from N.C.P. - very faint, barely seen in the binoculars, M45

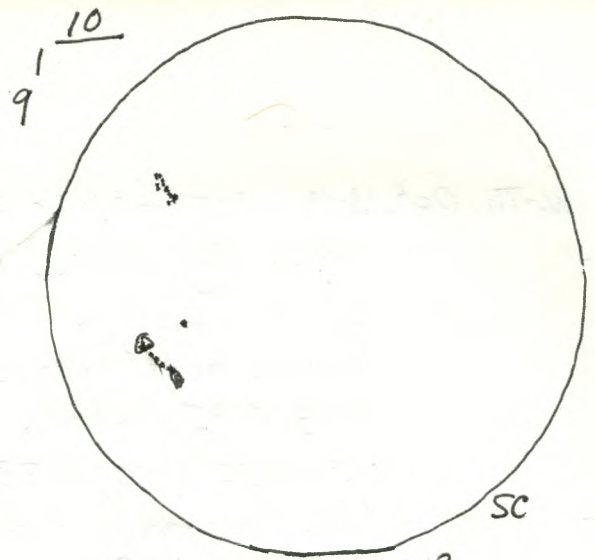
F. Oct. 15 18:35-18:40 UT ss

C-8, 32, 28, 20, 15.5

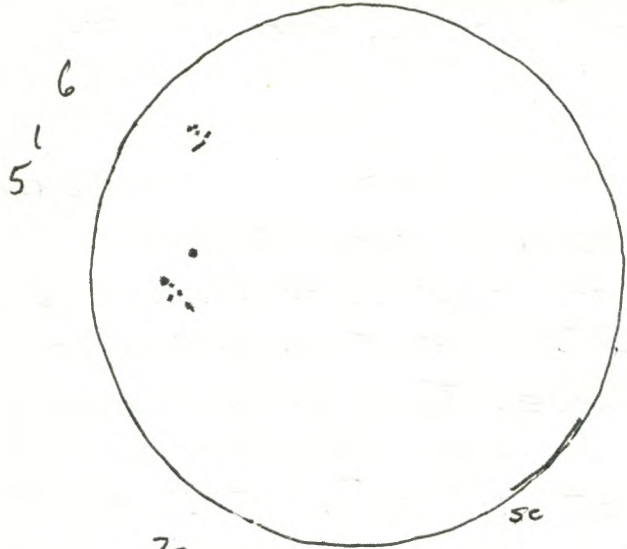
sun 5, 15s RSN 65



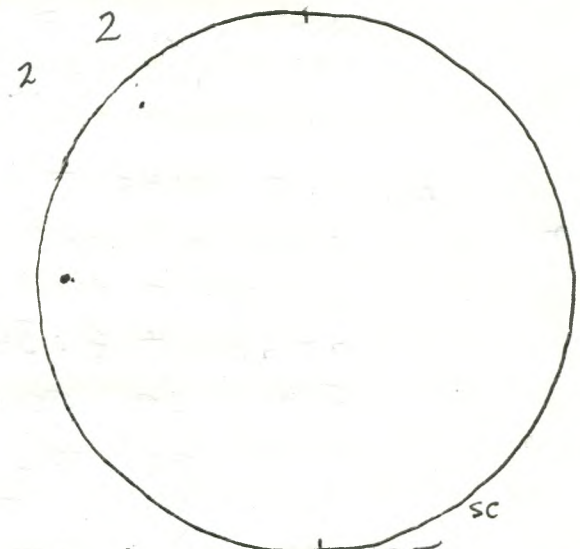
5g
23s
RSN73
Oct. 22
18:15-18:20 UT



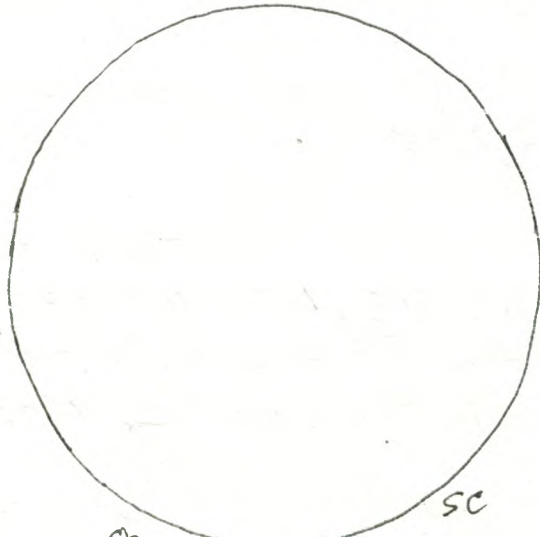
3g
20s
RSN50
Oct. 23
18:32-18:35



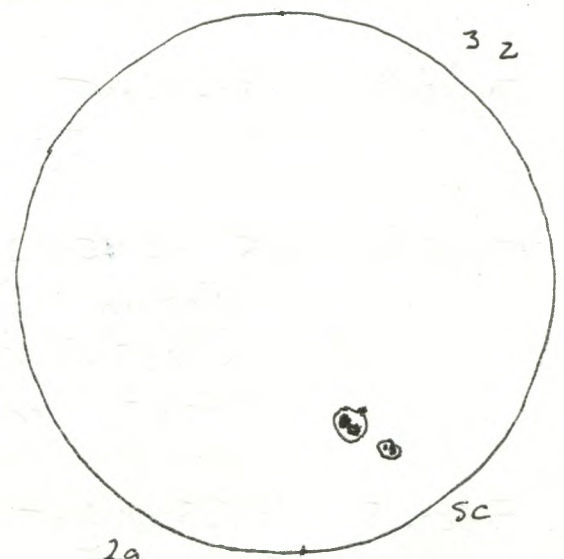
3g
12s
RSN42
Oct. 24
17:55-18:00 UT



2g
4s
RSN24
Oct. 25
18:20-18:25 UT



0g
0s
RSN0
Oct. 26
19:00-19:05 UT



2g
5s
RSN25
Nov. 2
19:45-19:50 UT

1993

F.-S. Oct. 15-16 23:00-00:00 ^{UT} S.L. High School Football Field twl 20x1006

- at public star party called by Paul Ferguson and advertised in North Frontenac News, attended by only about 20-25 people, telescopes brought by Paul Ferguson (school's RV6 Dynascope), Peggy Torney (6" reflector), Bob Lovelace (4" reflector) and another boy who had a very small (60mm(?) reflector).
observed Saturn, Alcor and Mizar-split, Double Cluster in Perseus, another area of Perseus around α Persei, M31, M33, in spite of the fact that it was still twilight and astronomical twilight did not end until about 00:00 UT. Heavy clouds moved in about 23:45 UT, and the session ended early when it became almost impossible to observe anything.

M.-T. Oct. 18-19 03:00-03:30 UT y S-8(?) T9 20x1006.
Saturn, M2, M31, Pleiades, M36, M37, M38, NGC 247, Mira (too faint to be seen naked-eye), M15, M1.

F. Oct. 22 18:15-18:20 UT ss C-8, 32, 28, 20, 15.5.
sun 5g 23s RSN 73

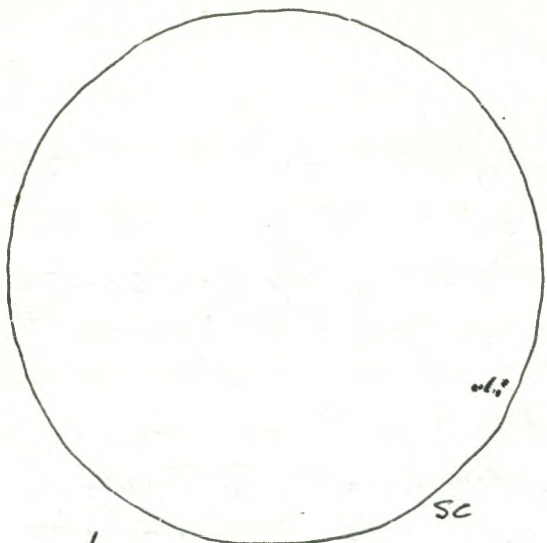
Sa. Oct. 23 18:32-18:35 UT ss C-8, 32, 28, 20, 15.5.
sun 3g 20s RSN 50

Su. Oct. 24 17:55-18:00 UT ss C-8, 32, 28, 20, 15.5
sun 3g 12s RSN 42

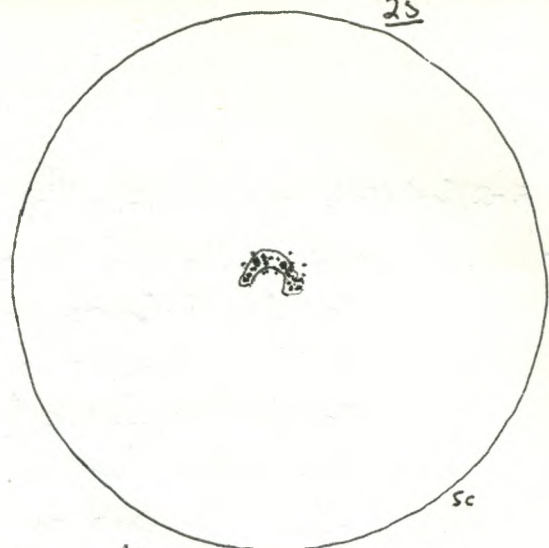
M. Oct. 25. 18:20-18:25 UT ss C-8, 32, 28, 20, 15.5
sun 2g 4s RSN 24

Tu. Oct. 26 19:00-19:05 UT ss C-8, 32, 28, 20, 15.5
sun 0g 0s RSN 0

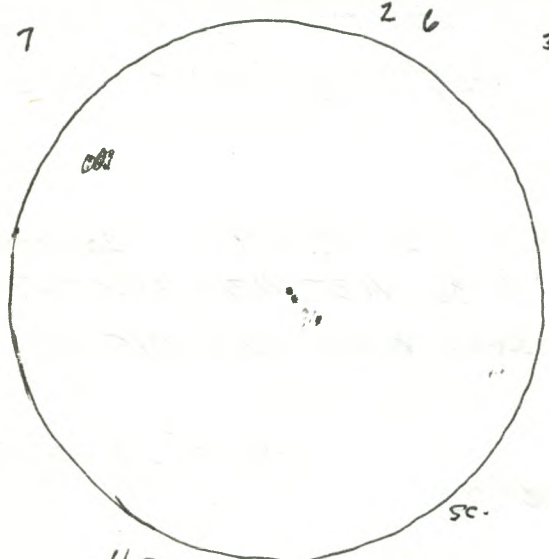
Tu. Nov. 2 19:45-19:50 UT ss C-8, 32, 28, 20, 15.5
sun 2g 5s RSN 25



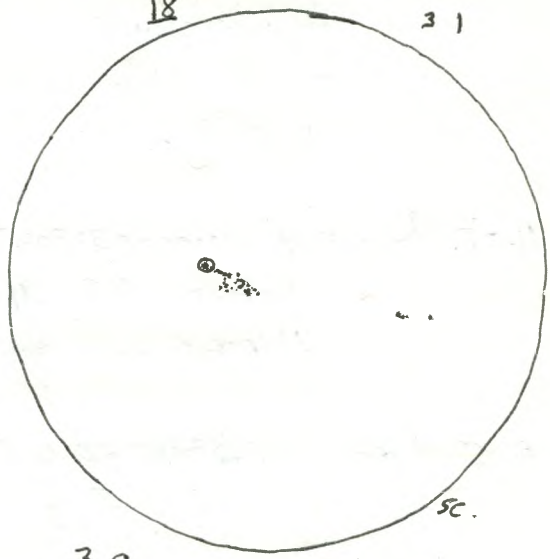
19
65
RSN16 Nov. 12
19:45-19:50 UT



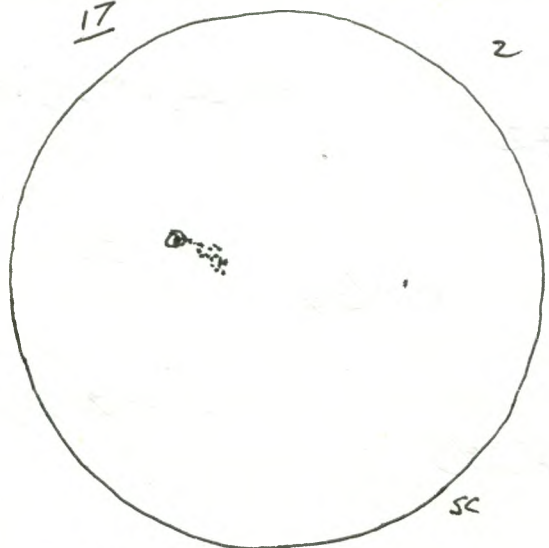
19
253
RSN35 Nov. 18
19:06-19:10 UT



49
185
RSN58 Nov. 22
18:55-19:10 UT



39
225
RSN52 Nov. 24
19:00-19:05 UT



29
195
RSN39 Nov. 25
19:00-19:05 UT

1993.

Su-M. Nov. 7-8 23:30-00:30 UT near Bedford Parish rectory intermittent cloud. Ast, 19th 8th
- M13, Saturn, M31. Observing could be done only briefly during breaks in the clouds. There were 2 major breaks - of about 5-10 minutes each. About 6 or 7 people attended the observing session.

Mo-Tu Nov. 8-9 02:35-03:15 UT 00 S-8(?) T 7-8 scattered cloud C-14, 32
M31, M110, γ And DS, β And and nearby NGC 404, γ Arietis DS, M33, NGC 869 and 884 - Double Cluster in Perseus, η Tauri in M45 and nearby "triangle" of stars, M42 and M43 in Orion in SE, Saturn fairly low in WSW.
- first test for new Byers Drive which seemed to work well and to be much smoother than previous drive.

F. Nov. 12 19:45-19:50 UT SS C-8, 32, 28, 20, 15.5
sun 1g 6s RSN 16

Th. Nov. 18 19:06-19:10 UT SS C-8, 32, 28, 20, 15.5
sun 1g 25s RSN 35

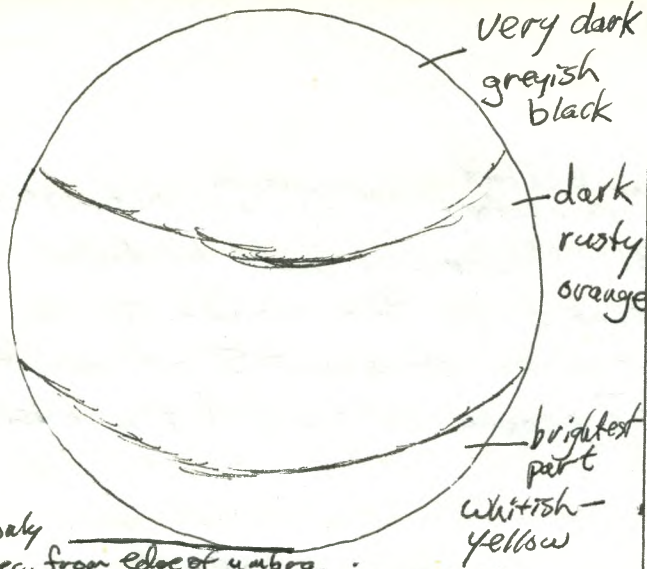
Sa-Sun. Nov. 20-21 05:55-06:05 UT γ S8(?) T 9 20x100b
M42, M43, area of R Lep, M44, M41, NGC 2244.

Mo. Nov. 22 18:55-19:10 UT SS hazy C-8, 32, 28, 20, 15.5
sun 4g 18s RSN 58

W. Nov. 24 19:00-19:45 UT SS C-8, 32, 28, 20, 15.5
sun 3g 22s RSN 52

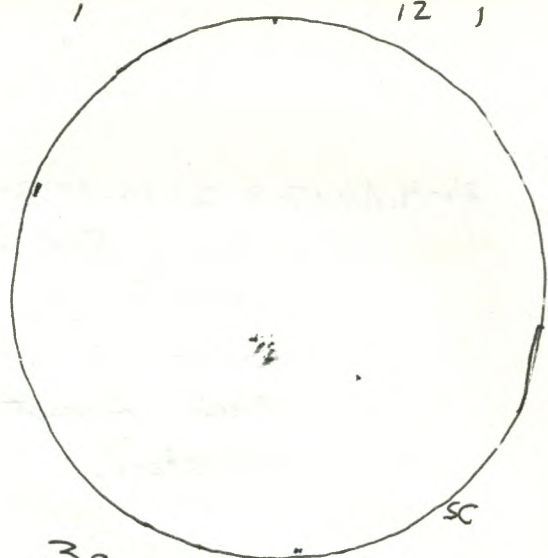
Th. Nov. 25 19:00-19:05 UT SS C-8, 32, 28, 20, 15.5
sun 2g 19s RSN 39

S-M Nov. 28-29 04:20-07:30 UT γ S9(?) T 9.5(?) ne; C-8, 32 camera; 20x100b
After days of cloud and rain we had superb weather for



S.P. only
 2 arcsec. from edge of umbra:

Approximate appearance of the moon
 during total phase of Nov. 29 eclipse.



39
 14s
 RSN44
 Nov. 29
 18:35-18:40UT

1993

this total lunar eclipse of the moon. Denise and I watched it from before First Umbral Contact until about mid-eclipse when she left. I continued until well after Third Umbral Contact.

Times: P1 3:27 UT

U1 4:40 UT

Mid 6:26 UT

U2 6:02 UT

U3 6:50 UT

U4 8:12 UT

P4 9:25 UT

When I began observing about 4:20^{UT} (11:20 p.m. E.S.T.) penumbral darkening was noticeable on the left side of the moon. The umbra appeared very dark. After First Umbral Contact the eclipse appeared very dark. Because the moon went through the southern half of the earth's umbra, there was a great range of darkening during totality - very dark grey, almost black in the upper $\frac{1}{3}$ of the moon; the central region being a dark rusty-orange colour; and the southern area being a brighter whitish yellow.

20x100 binoculars showed a group of stars N. of the moon and the rusty orange colour more clearly.

The C-8 telescope at 62.5x showed a bit of the orange colour even at the N. Pole area of the moon, with the yellowish fringe throughout the lunar disk.

An occultation disappearance of a star of about mag. 8 was recorded at 7:07:30 UT, about 17.5 minutes after Third Umbral Contact.

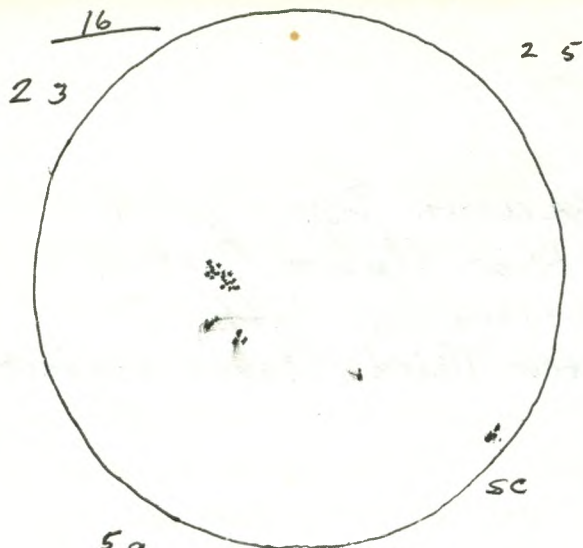
During totality with excellent transparency, faint stars could be seen. R Lep was noted in 20x100b, at about mag. 9. and RX Eri at about mag. 10.

It was an excellent eclipse, affording an opportunity for photography of different kinds - C-8 first focus in partial phase and piggyback in totality.

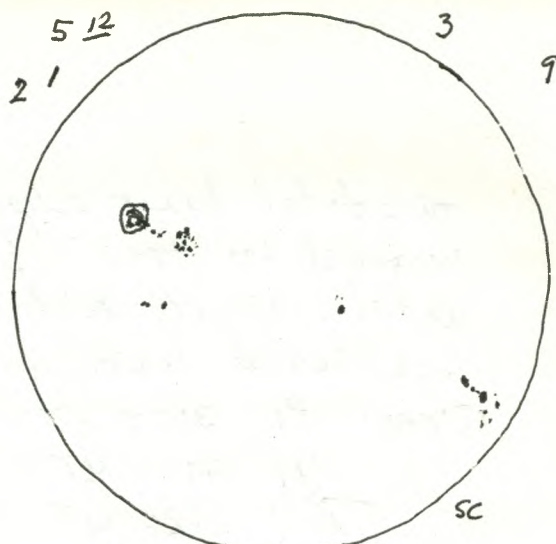
M. Nov. 29 18:35-18:40 UT ss

C-8, 32, 28, 20, 15.5

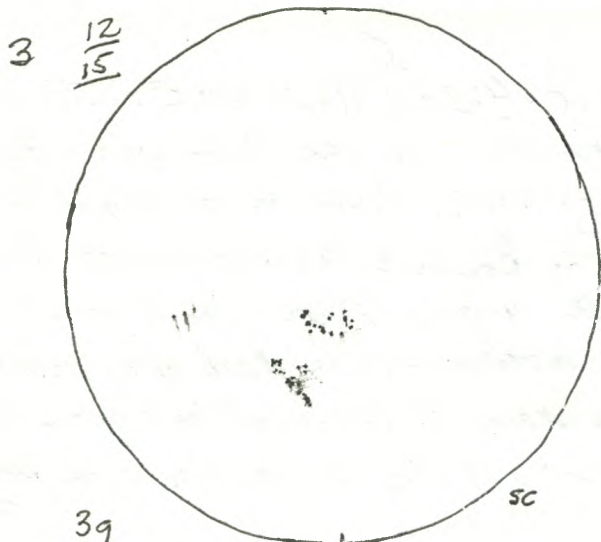
sun 3 g 14 S RSN 44



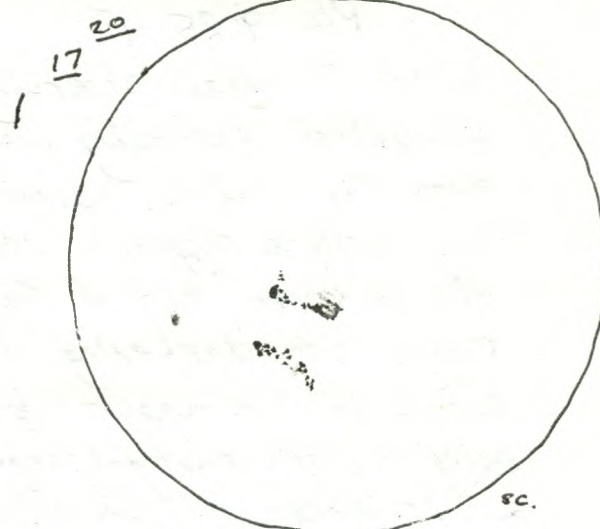
5g
28s
RSN78 Nov. 30
19:15-19:20UT



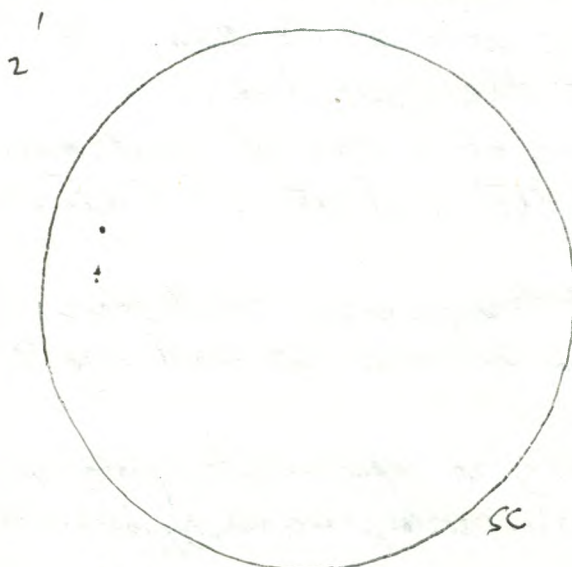
6g Dec. 1
32s 19:10-19:15UT
RSN92



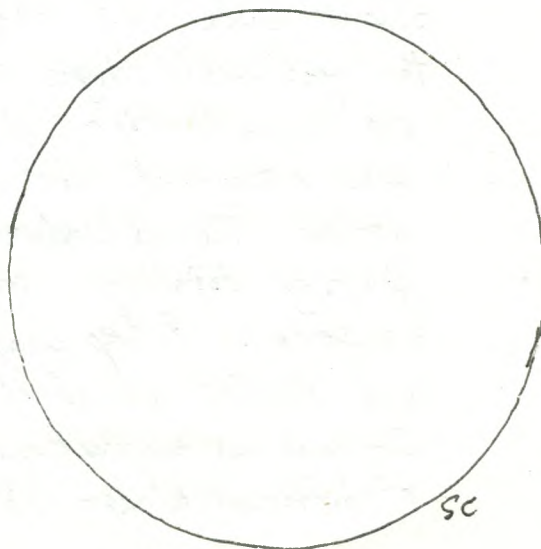
3g Dec. 7
30s 19:10-19:15UT
RSN60



3g Dec. 8
38s 19:15-19:20UT
RSN68



2g Dec. 11
3s 17:40-17:45UT
RSN23



0g Dec. 12
0s 20:10-20:15UT
RSN0

1993. Tu. Nov. 30 19:15-19:20 UT ss c-8, 32, 28, 20, 15.5
sun 5g 28s RSN 78

W. Dec. 1, 1993 19:10-19:15 UT ss c-8, 32, 28, 20, 15.5
sun 6g 32s RSN 92

Tu. Dec. 7, 1993 19:10-19:15 UT ss c-8, 32, 28, 20, 15.5
sun 3g 30s RSN 60

W. Dec. 8 19:15-19:20 UT ss c-8, 32, 28, 20, 15.5
sun 3g 38s RSN 68

Sa. Dec. 11 17:40-17:45 UT ss c-8, 32, 28, 20, 15.5.
sun 2g 3s RSN 23 very poor seeing

Sa.-Su. Dec. 11-12 03:20-04:20 UT y 20x1006; 4e
20x1006: M42, M43, M41, R Lep (very faint - about mag.
9.5) RX Eri, M81, M82
ne: winter constellations, several Geminid meteors.
-photographed areas of the winter sky.

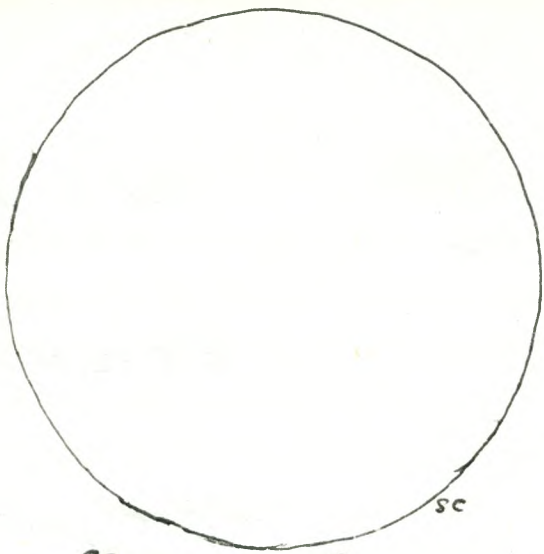
~~Su. M. Dec. 12-13 01:30-03:30 UT y~~

Su. Dec. 12 20:10-20:15 UT ~~ss~~ t c-8, 32, 28, 20, 15.5
sun 0g 0s RSN 0 poor seeing

Su.-M. Dec. 12-13 01:30-03:30 UT y s: 7-8 t-9.5(!) ne; 20x1006

ne: winter constellations; Geminid meteor shower on the
night before the predicted maximum - apparently excellent
display with a good many both faint and fairly bright, though
I did not see any extremely bright ones.

20x1006: area of star BD +19° 750 which was expected to
be occulted by Minor Planet 449 Aurelia later this same
night as viewed from the southern U.S. The star was
mag. 10.0, and I was not precisely sure of it. (See S. + T.
Dec. 1993, p. 77.), M42, M43, R Lep - very faint at



09
05
RSNO

Dec. 13
19:00-19:05UT

1993

about mag 9.5, RAEri - about mag. 10.0; U Ori, an LPV (See U136) - about mag. 7; Y Tau also near the star ξ Tauri (See U136); M1, M41, NGC 2244, the Rosette Nebula, S Mon, the OC NGC 1647 in Taurus NE of Aldebaran, T Tauri and area of Hind's Variable Nebula (See U133)

- photographed areas of the sky, hoping to photograph a Geminid Meteor.

m 10:30 - 10:45 UT y

re

- observing Geminid Meteor Shower - several seen, and some of considerable brightness. It is obviously a good shower.

- The morning Zodiacal Light was very bright extending well up into the constellation Virgo. - very bright during the 15^{min} observing session. End of astronomical twilight was at about 10:49 UT (5:49 am. E.S.T) - about 4^{min} after the end of the session. The air was extremely transparent.

M. Dec. 13 19:50 - 19:05 UT ss

C-8, 32, 28, 20, 15.5

Sun Og Os RSN^o

M.-T. Dec. 13-14 00:20 - 04:00 y

SB(?) T 9.5(!) ne and C-8, 32, 19

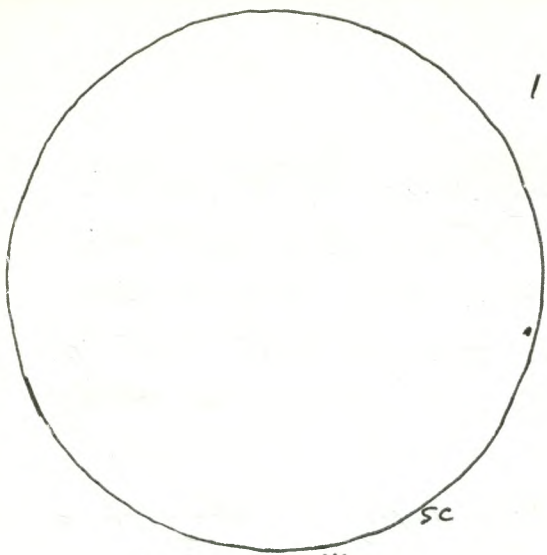
ne: observed Geminid Meteor Shower - very good shower - though at times not as active as the previous night - frequently "bunches" of meteors and one even simultaneous meteors in very widely different parts of the sky. Numerous bright ones.

C-8: Carefully looked for Comet Enke east of θ Peg, and may have seen it using 19^{mm} ocular at 105X, but was not absolutely certain of having seen it. (See map in S. & T. Dec. 1993, p. 105); M42, M43, Saturn before it disappeared in trees in WSW.

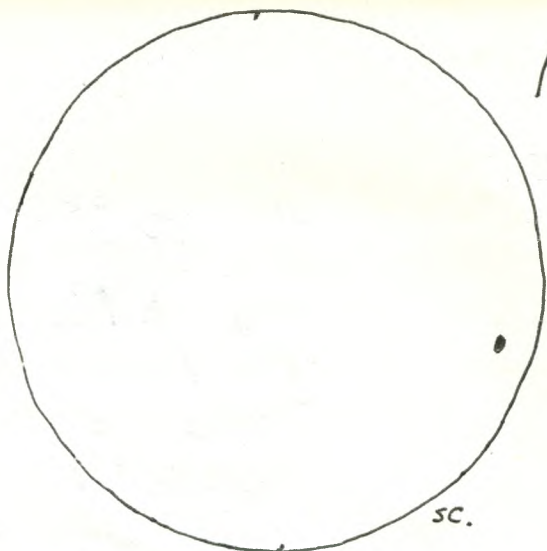
05:00 - 06:00

ne and 20x100b

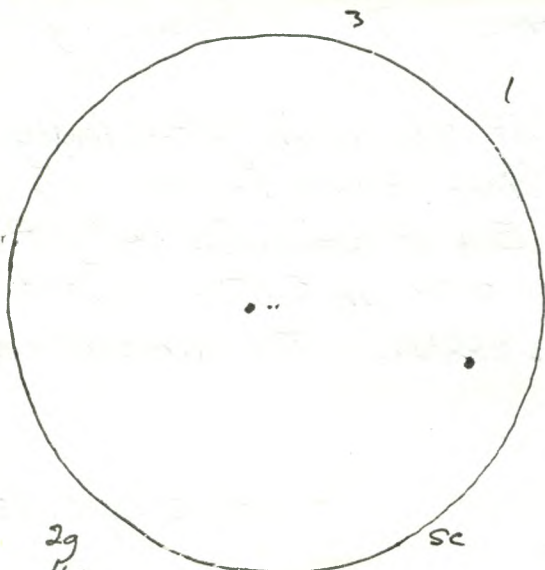
ne: After a nap, I continued to observe the Geminids.



1g
1s
RSN11
Dec. 14
18:55-19:00UT



1g
1s
RSN11
Dec. 15
19:15-19:20UT



2g
4s
RSN24
Dec. 16
19:00-19:05UT

1993.

Their numbers seemed to increase, as would be expected, after midnight. A high percentage seemed to be quite bright. An excellent shower. Maximum was stated to be 00^h UT 5 hours before my beginning this second session of the night. 20x100b: area of R Leonis, U Orionis, Y Tauri, M1, M42, M43, M45, M51, R Lep, RX Eri.

Tu. Dec. 14 18:55-19:00 UT ss

C-8, 32, 28, 20, 15.5.

Sun 19 15 RSN11

Tu. Dec. 14-15^w 22:30-22:45 UT ^{from Kingston to Verona} in car while driving ^{twl} ne

- During twilight, I observed the slender crescent moon in W. for about 15 minutes. It was about 37 hours old, since New Moon had been on Dec. 13 at 09^h 27^m.

W. Dec. 15 19:15-19:20 UT ss

C-8, 32, 28, 20, 15.5

Sun 19 15 RSN11

W.-Th. Dec. 15-16 21:55-22:00 UT y

twl 20x100b

- in twilight, observed the slender crescent moon in WSW; some earthshine visible on the moon which was slightly more than 2½ days old.

01:45-02:40 y 5-8 (RT 9.5 (!)) 20x100b.

M35 and nearby cluster, NGC 253 (very large galaxy S. of β Ceti) NGC 208 GC S of β Ceti, area of NGC 247, also S. of β Ceti but the galaxy was almost impossible to detect, M42, M43, R Lep., RX Eri, Y Tauri, U Orionis, stars in area of belt of Orion.

Th. Dec. 16 19:00-19:05 UT ss

C-8, 32, 28, 20, 15.5.

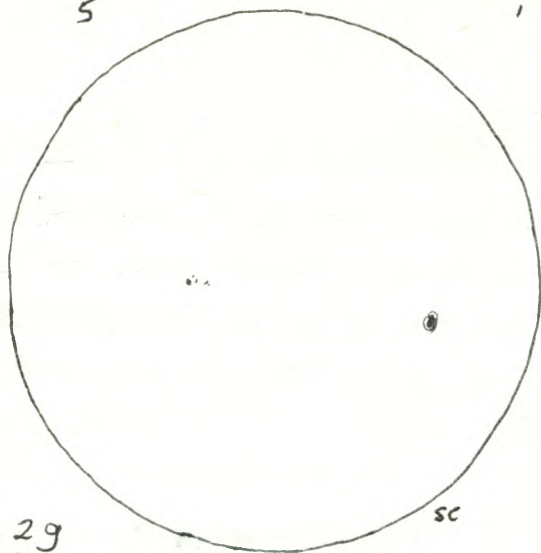
Sun 29 4s RSN24

Th.-F. Dec. 16-17 02:30-05:10 UT y

20x100b

M42, M43, R Lep (faint) RX Eri, M78, S Mon and

5

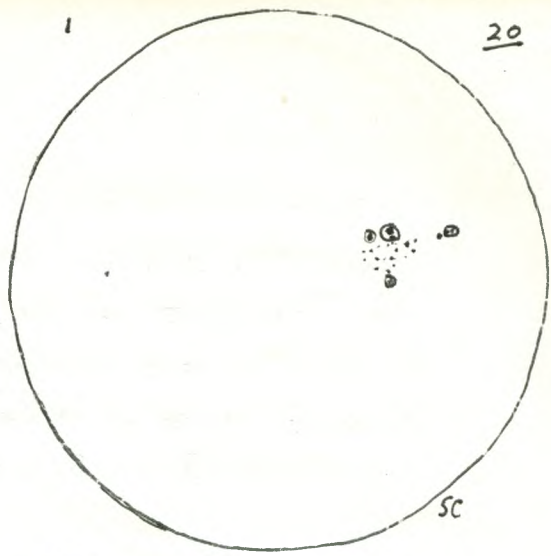


29
65
RSN 26

Dec. 17
20:05-20:10 UT

1

20 3

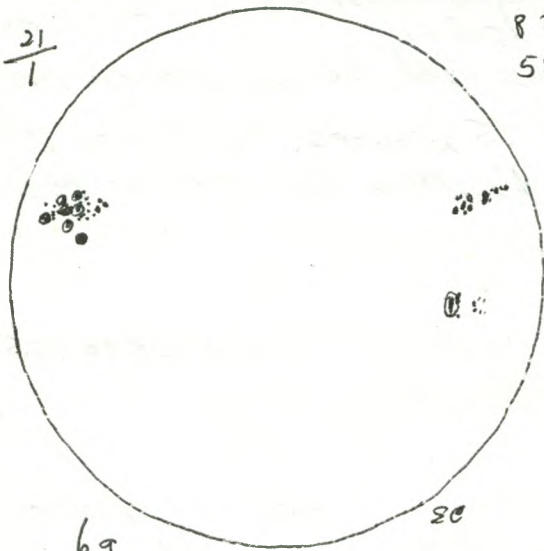


39
245
RSN 54

Dec. 23
18:00-18:05 UT

21
1

87
55



65
475
RSN 107

Dec 30
18:05-18:10 UT

1993.

"Christmas tree" cluster, NGC 2244, M44, M45,
area of T Tauri and Hind's Variable Nebula, M41
area of R Leonis, M31, M32, M110, M33, M46, M47
- an excellent night (again!) for observing
- I also photographed various areas of the sky.

F. Dec. 17 20:05 - 20:16 UT SS C-8, 32, 28, 20, 15.5.
sun 2g 6s RSN 26

F.-S. Dec. 17-18 04:00 - 06:30 UT y S-8-9, T 9.5 (!) ^{some} cloud later 20x100b.
- another night of superb transparency - observed M42, M43,
R Lep, RX Eri, U Ori, Y Tau, area of T Tau and Hind's
Variable Nebula, Hyades, M45, M31, M110, M33,
R Leonis and area, M51, M41, M46, M47, Alcor and Mizar.

Th. Dec. 23 18:00 - 18:05 UT SS C-8, 32, 28, 20, 15.5.
sun 3g 24s RSN 54

Th. Dec. 30 18:05 - 18:10 UT SS C-8, 32, 28, 20, 15.5
sun 6g 47s RSN 107

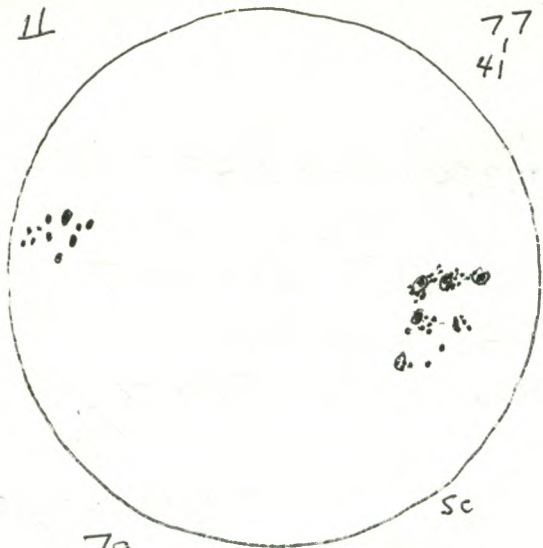
Th.-F. Dec. 30-31 23:10 - 23:40 UT y near end of twl. + after 20x100b

Nova in Cas.

Saturn, nova discovered on Nov. 7 in Cassiopeia by a
Japanese amateur - seen by me for the first time,
now at about mag. 7. - located at R.A.: 23^h 41^m. 8, Dec.: 57° 31'
(See U 35). It appeared rather orangish-red in colour.
In the area, I also observed NGC 7789, a beautiful
galactic cluster, the bright variable star ϵ Cas and
V373, both of which vary only slightly (from mag.
4.1-6.2 and from 6.0 to 6.1 according to Burnham).
I observed the area of Z Cas in the same region
but it was not seen with certainty. According to
Burnham it is a LPV with a ~~414~~ 496 day period and
mag. range from 9.0 to 15.0. M36, M38, M45.

LL

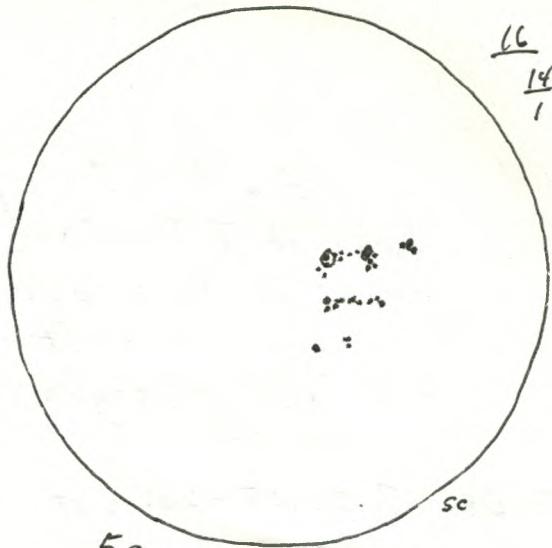
77 ²⁴
41



sc

79
55s
RSN 125 Dec. 31
19:30-19:40UT

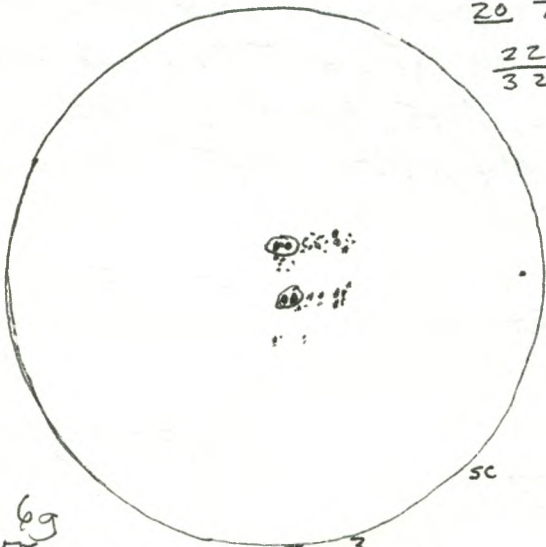
66 ³
14
1 3



sc

59
37s
RSN 87 Jan 2
18:00-18:05UT

20 7
22
32



sc

69
55s
RSN 115 Jan. 3
19:20-19:25UT

1993

F. Dec. 31 19:30-19:40 UT ss

c-8, 32, 28, 20, 15.5

sun 7g 55s RSN 125

1994

Su. Jan. 2 18:00-18:05 UT ss

c-8, 32, 28, 20, 15.5

sun g s RSN - some hazy cloud.

S.-M. Jan 2-3 m 10:30-10:40 UT in

gml

ne

- looking through N, E, and S windows, I thought I might see some Quadrantid meteors, as I had also looked briefly the previous evening, but saw nothing notable. If any were possibly seen they were too faint to be significant or to be seen for sure. Conditions were poor: predicted max was at noon (17^h UT) and there was a bright gibbous moon, and also some cirrus cloud.

M. Jan 3 19:20-19:25 UT ss

c-8, 32, 28, 20, 15.5

sun 6g 55s RSN 115 some hazy cirrus cloud

M.-T. Jan. 3-4 01:30-01:40 UT y

ne

quad. (?)

winter constellations; a meteor in Orion going from N. to S., probably a Quadrantid and perhaps the only one of that brightness I saw this year though it was only about mag. 3.

T.-W. Jan. 4-5 01:20-01:30 UT y

some light cirrus ne

Aurora

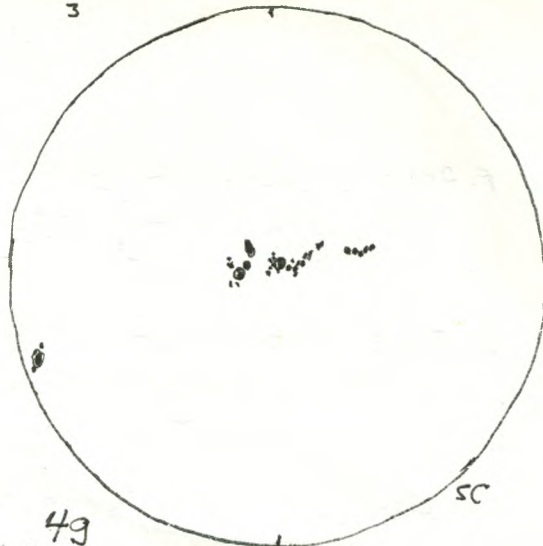
- interesting Auroral display with intense patch in NW and another patch quite intense in N. other vertical bands from NW to SW extending up to zenith. pulsation in the patches in the NW and N. perhaps some pink colour in the patches.

- did not persist; was completely absent when I observed later from 03:10-03:30, though the sky had cleared and was quite transparent.

Jupiter Spica

☾ Earthshine
on
Moon

SE
m. Jan. 8-9 11:50 UT
View to SE

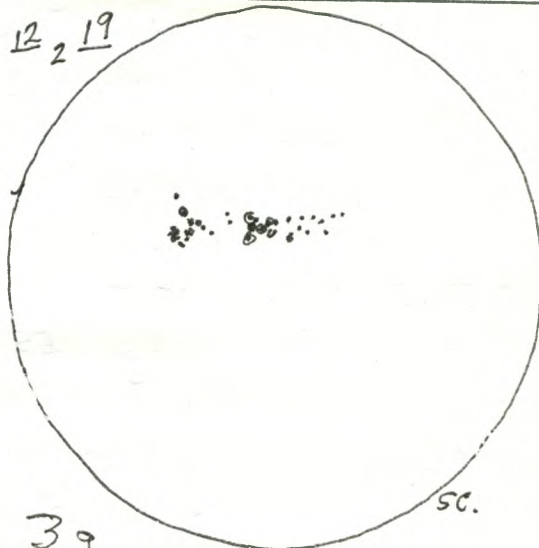


Jan. 9
18:40-18:50 UT

Jupiter

SE

N.M Jan. 11 23^h 10^m UT M Jan 9-10 11:54 UT
View to SE
Moon
35^h 14^m before New Moon



M Jan. 10
18:50-19:00 UT

1994

W-Th. Jan. 5-6 02:15-02:40 y

S-8(?) T9

ne; 9x63b

ne: constellations

9x63b: M45, M35, M42, M36, M37, M38, area of nova in Cassiopeia,
NGC 7789 in Cas, area of RLep.

F-Su. Jan. 8-9 m 11:50-11:55 UT sh

m twl ne; camera

- crescent moon about $2\frac{1}{2}$ days before New Moon in SE about 50 min. before sunrise - beautifully clear and Earthshine clearly visible. Moon had passed Spica and Jupiter about $2\frac{1}{2}$ days before.
- photographed the area of the sky in which the Moon was.

Su. Jan. 9. 18:40-18:50 UT ss

C-8, 32, 28, 20, 15.5

sun 4g 30s RSN 70

Sa-M. Jan. 9-10 23:00-00:10 UT y

twl until 23:30 UT

S-8(?) T8.5-9

20x100b

Comet Encke

saturn, M42, Comet Encke (See map in S+T, Dec., 1993 p. 105) at about mag. 8.7) - position R.A.: $22^{\text{h}} 28^{\text{m}} 6^{\text{s}}$ Dec.: $+2^{\circ} 22'$ in U257 - about $1\frac{1}{2}^{\circ}$ NE of π Aquarii, near border between Aquarius and Pegasus - diffuse, no tail visible - looked for and perhaps saw (but was not absolutely certain because of faintness) Comet Mueller 1993a in Pegasus (See S+T, Jan. 1994 p. 109. and U165) about 1° SW of δ Peg at about position: R.A.: $21^{\text{h}} 34^{\text{m}} 6^{\text{s}}$, Dec.: $18^{\circ} 35'$. With averted vision, I thought it could be seen.

Comet Mueller 1993a

01:40-01:55 y

20x100b

RX Eri, RLep, M42, M43, M78, M33, M31, M32, M110, M45, M41, M44, M67.

Sat. m. Jan. 9-10 11:54 UT in

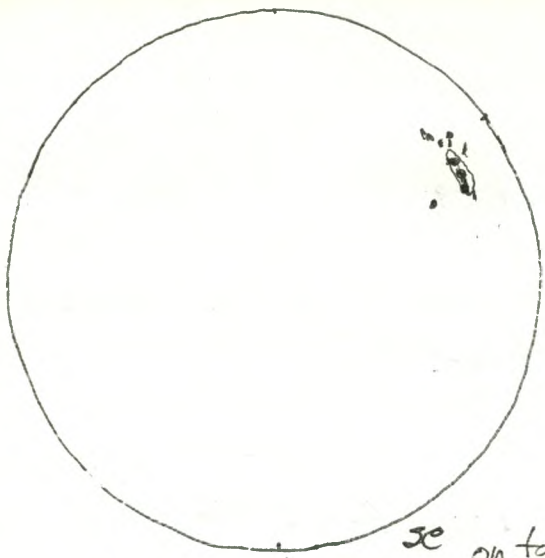
ne

very slender crescent moon about 2° above trees in SE - very clear and cold (-28°C)

M. Jan. 10 18:50-19:00 UT

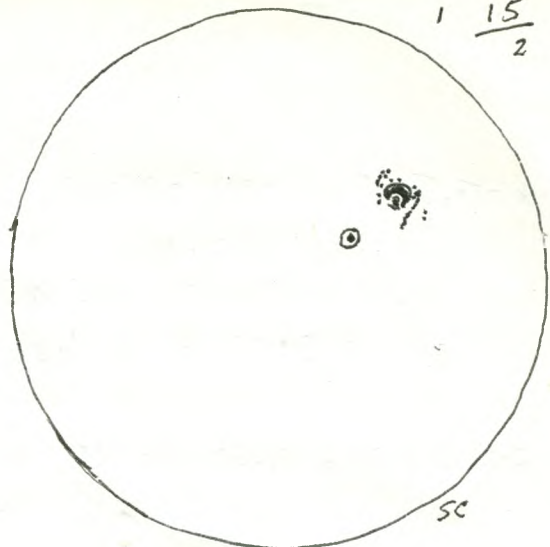
C-8, 32, 28, 20, 15.5.

sun 3g 33s RSN 63.



sc on table

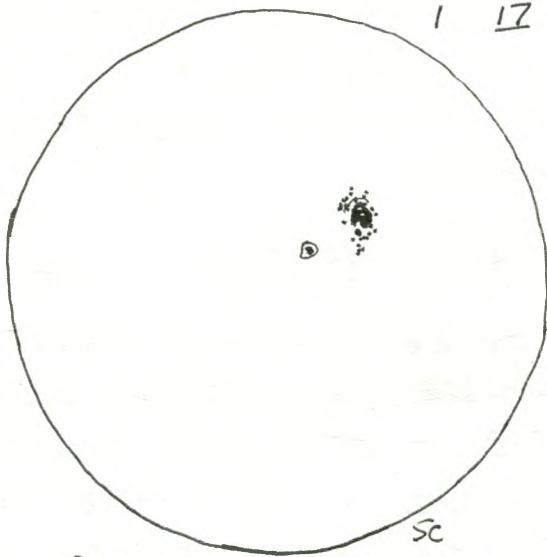
2g Jan 16
16s
RSN 30 18:50-18:55



1 15/2

sc

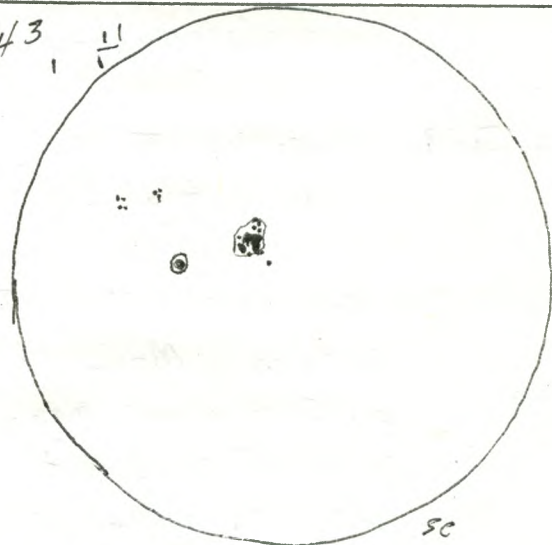
3g Jan 19
18s
RSN 48 18:50-18:55 UT



1 17

sc

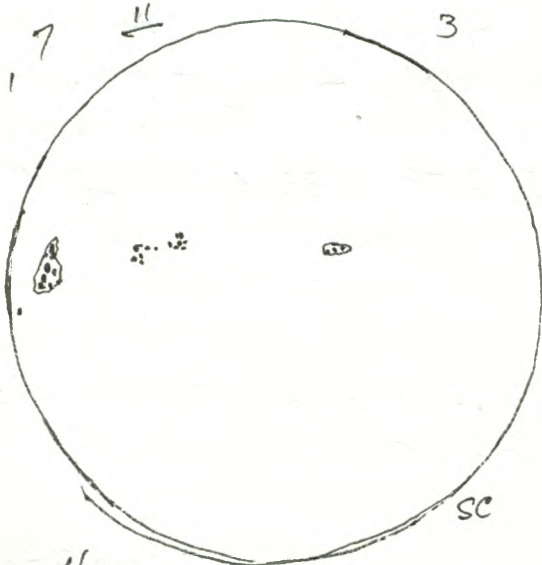
2g Jan 20
18s
RSN 38 20:10-20:15 UT



43 11

sc

5g Jan 22
20s
RSN 70 18:40-18:45 UT

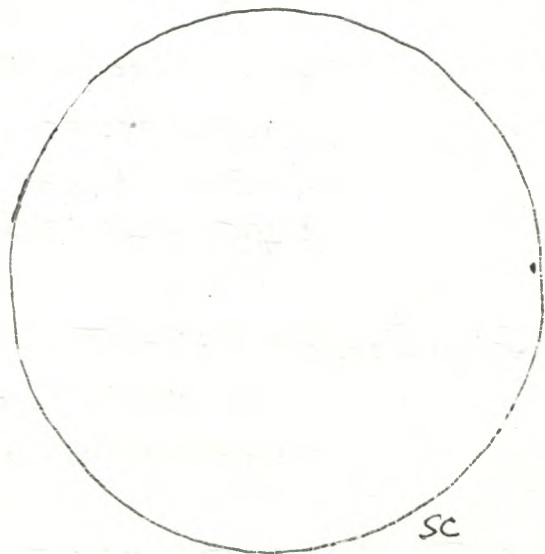


7 11

3

sc

4g Jan 26
22s
RSN 62 20:00-20:05 UT



1

sc

1g Jan 29
1s
RSN 11 17:35-17:40 UT

1994

M-T. Jan. 10-11 23:30-23:45 UT y s-8(?) T 7-9 20x100b.
M42, M36, M37, M38, area of R Lep but star not seen because
of cloud or haze, RX Eri area. Clouds moved in.

T.-w. Jan. 11-12 00:40-02:00 UT y s-8(?) T 9.5(?) 20x100b
R Lep (very red) RX Eri, RX Lep, M42, M43, M78, M41,
NGC 2244, Rosette Nebula, AX Mon, Hubble's Variable
Nebula (almost certainly seen) NGC 2264, Cr 106, RCMi
at about mag. 7.5 (U183) (LPV mag. 7.3-11. 338^d period - see
Burnham, p. 448), VCMi (U183) (LPV mag. 7.8-15. 366^d period - see Burnham, p. 448.) about mag. 8.

Su Jan. 16 18:50-18:55 UT t c-8,32
sun 2g 10s RSN 30

W. Jan. 19 18:50-18:55 UT ss c-8,32,28,20,15.5
sun 3g 18s RSN 48

Th. Jan. 20 20:10-20:15 UT ss c-8,32,28,20,15.5
sun 2g 18s RSN 38

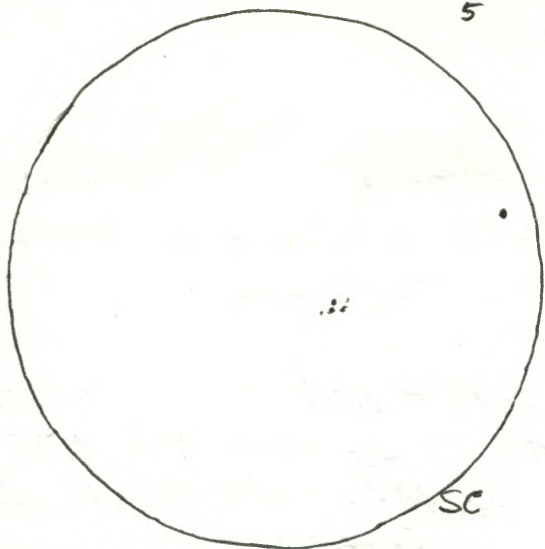
Sa. Jan. 22 18:40-18:45 UT ss c-8,32,28,20,15.5
sun 5g 20s RSN 70

W. Jan. 26 ~~20:00~~-20:05 UT ss c-8,32,28,20,15.5
sun 4g 22s RSN 62 very poor seeing.

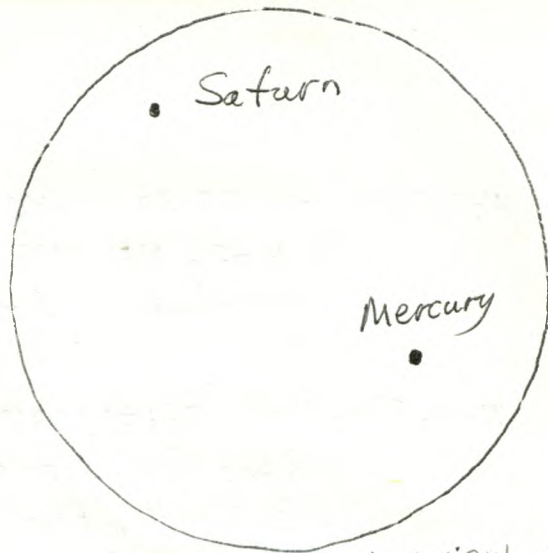
Sa. Jan. 29 17:35-17:40 UT ss c-8,32,28,20,15.5
sun 1g 18s RSN 11 Spot seen only using 129X - very near
the rim of solar disk.

Su. Jan. 30 18:25-18:30 UT ss. c-8,32,28,20,15.5
sun 2g 6s RSN 26

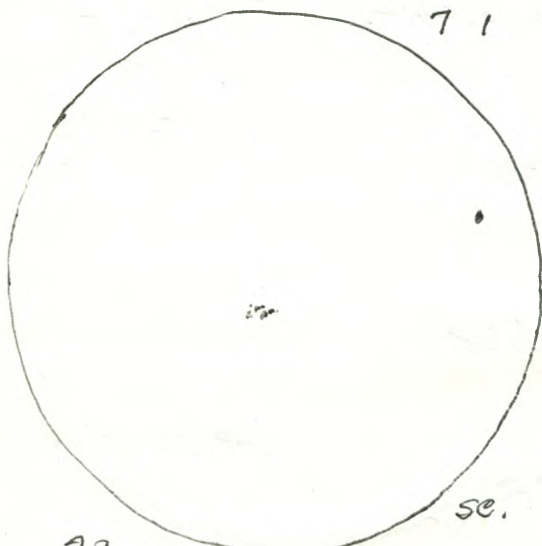
S.-M. Jan. 30-31 22:45-22:55 UT on lake twl 9x63b.
between house
- while looking and island westward about 40 minutes



29 Jan. 30
65
RSN26 18:25-18:30 UT



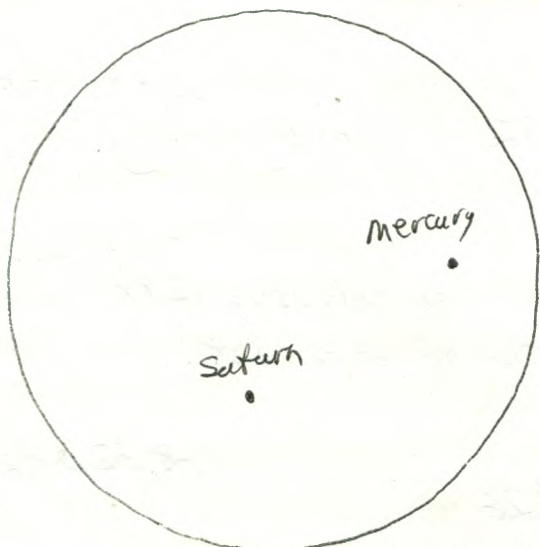
9x63 binocular view of
Saturn and Mercury
Jan. 30-31 22:50 UT



29
85
RSN28 Jan. 31
20:05-20:10 UT



9x63 binocular view of
Saturn and Mercury
Jan. 31-Feb 1 22:55 UT.



300 mm lens camera view
of Saturn and Mercury
Feb. 1-2 23:00 UT.

1994

Mercury (1)

after sunset I was able easily to see Mercury about 3° above the trees and Saturn about $2^\circ-3^\circ$ from Mercury. Naked-eye I could not see either planet at first but later, at about 22:50 UT (5:50 p.m. E.S.T.) I could see Mercury naked-eye.

M. Jan. 31 20:05-20:10 UT ss

C-8, 32, 28, 20, 15.5

sun 2g 8s RSN28

M.-T. Jan. 31-Feb. 1

22:50-23:10 UT ^{on lake} between house and island

twl. 9x63b. with Denise

Mercury (2)

- saw Mercury easily after finding it with binoculars. As twilight darkened it became very bright and easy to see. Saturn was more difficult and seen only with difficulty (if at all naked-eye) though it was easily seen in the binoculars.

00:50-01:00 UT y

S(9) T 9.5 ne

- winter constellations and Zodiacal Light in W. up as high as the Pleiades near the zenith. It was about as bright as the winter Milky Way near Orion or brighter

T.-W. Feb 1-2

22:55-23:30 UT ^{on lake} between house and island twl camera with 200mm lens

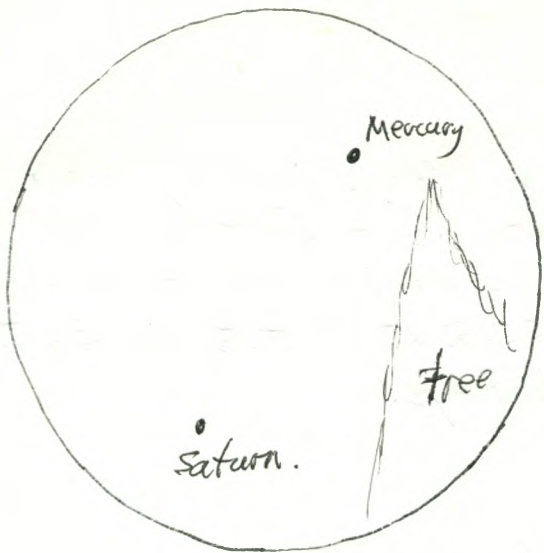
Mercury (3)

- Using the camera and 200mm lens I could see Mercury and Saturn very near conjunction which was listed as today in "Sky and Telescope" at a distance apart of 1.0° . Saturn I thought could be seen briefly though it was very much fainter than Mercury. Their magnitudes were listed as: Mercury -0.8, Saturn +0.9, almost 2 magnitudes different.

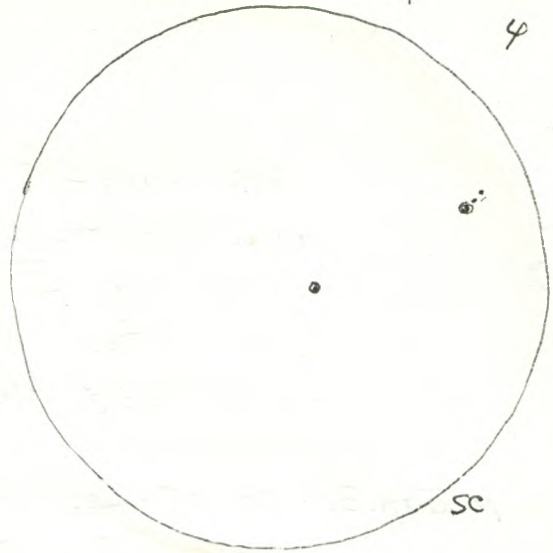
02:40-02:50 UT y

S(9) T 9.5 ne

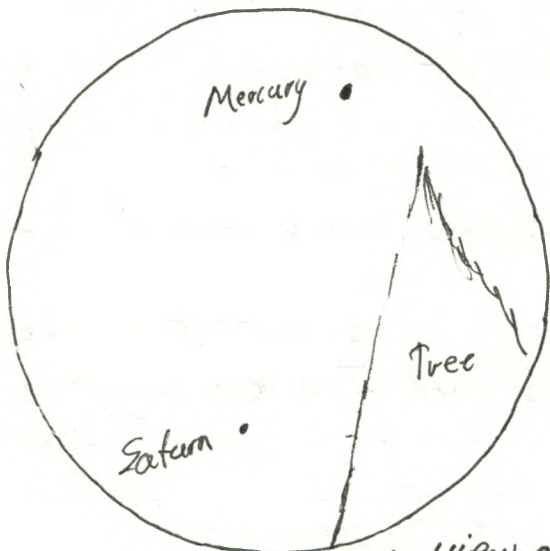
- winter constellations on another exceptionally transparent night. Winter Milky Way was exceptionally bright, as was the Zodiacal Light. I was quite sure I was able to see M35 which was near the zenith.



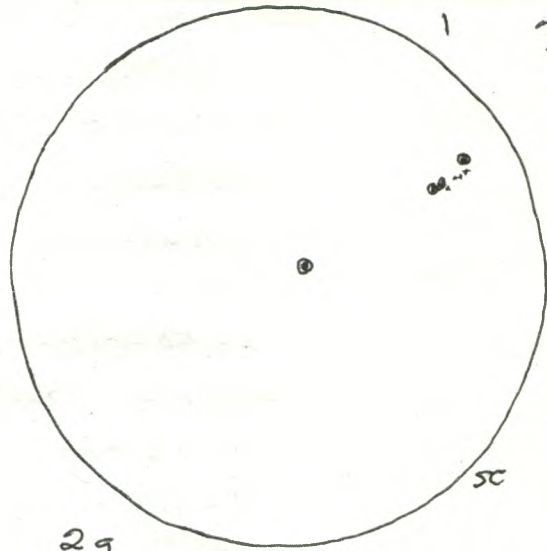
9x63 binocular view of
Saturn and Mercury
Feb. 2-3 23:10UT



29 Feb. 3
5 S
RSN 25 20:05-20:10 UT



9x63 binocular view of
Saturn and Mercury
Feb. 3-4 23:10UT



29 Feb. 4
P S
RSN 28 20:15-20:20 UT



9x63 binocular view of
Mercury
Feb. 4-5 23:10UT.

1994

Mercury (4)

W.-Th. Feb. 2-3 23:10-23:20 UT ^{on lake} between house and island twl 9x63b

- Mercury was easily naked-eye about 8° above the horizon
- With 9x63 binoculars Saturn was also visible, about 2.5° from Mercury, very noticeably more distant than last night when they were at conjunction.
- Photographed area of Mercury and Saturn with 200mm lens

00:40-00:50 UT y s(?) T 7-8 ne
 winter constellations, and Zodiacal Light in W., but it was not well defined because of haze or some cloud. Clouds seemed to be moving in in several areas of the sky.

Th. Feb. 3 20:05-20:10 UT SS

c-8, 32, 28, 20, 15.5

sun 2g 5s RSN 25

Th. F. Feb. 3-4 23:00-23:20 UT ^{on lake} between house and island twl 9x63b

9x63b

Mercury (5)

- For fifth night in a row I saw Mercury easily naked-eye and Saturn using 9x63 binoculars. They were considerably further apart than the previous night.

00:10-00:40 UT y s(?) T 8-9 ne

- observed winter constellations
- attempted to photograph the Zodiacal Light which was fairly bright in the W. Clouds moved in and a column of light was seen in the N. - probably a terrestrial light - about at azimuth 350° and extending up about 30°

F. Feb. 4 20:15-20:20 UT SS

c-8, 32, 28, 20, 15.5

sun 2g 8s RSN 28

F. S. Feb. 4-5

23:00-23:15 UT

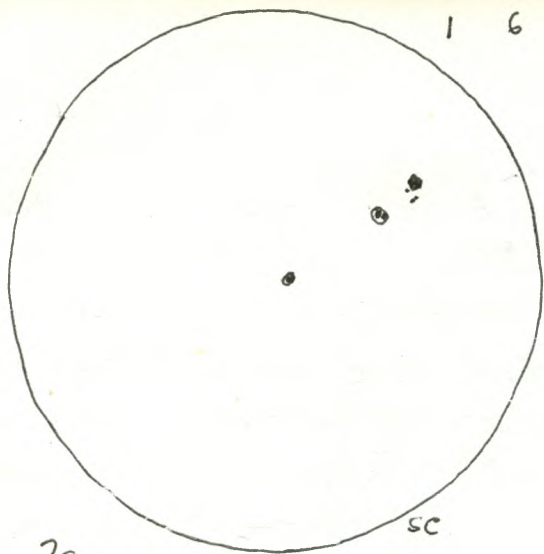
^{on lake} between house and island

twl

9x63b.

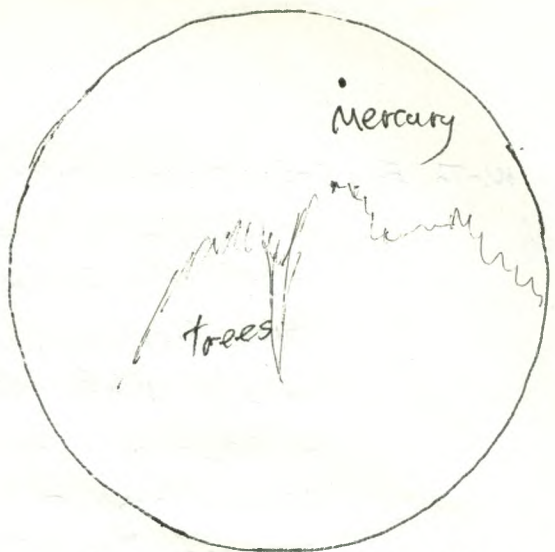
Mercury (6)

- For sixth consecutive night I saw Mercury easily naked-eye in W. Saturn was not seen, either naked-eye or in the binoculars

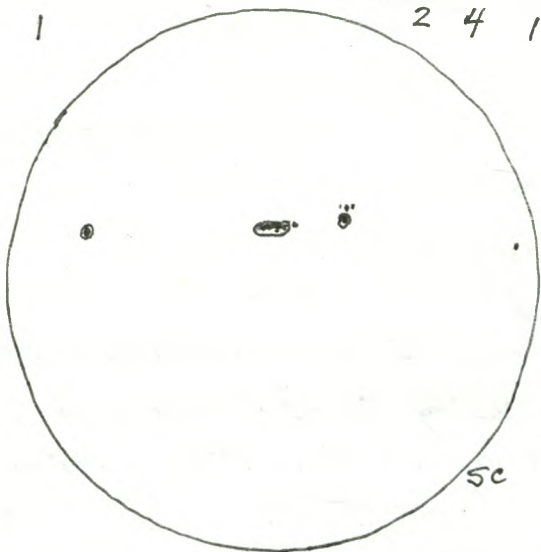


29
75
RSN27

Feb. 5
17:40-17:45 UT



9X63 binocular view of
Mercury
Feb. 7-8 23:10 UT

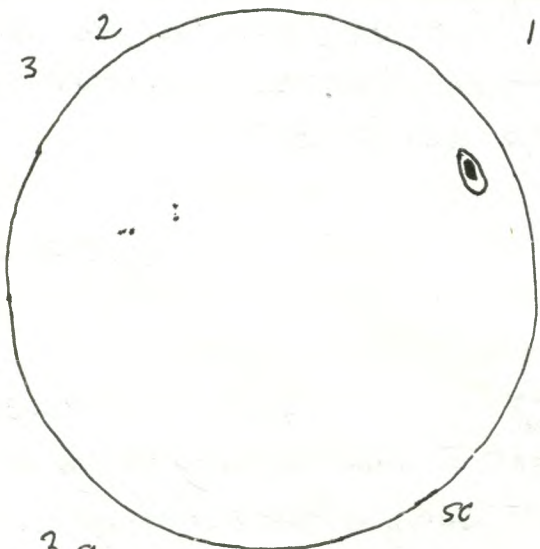


49
85
RSN48

Feb. 11
18:30-18:40 UT



9X63 binocular view of
Mercury and crescent moon
Feb. 11-12 23:15 UT



39
65
RSN36

Feb. 14
18:50-18:55 UT

1994

Sa. Feb. 5 17:40-17:45 UT ss

C-8, 32, 28, 20, 15.5.

sun 2g 7s RSN 27

Sa.-Su. Feb. 5-6 23:00-23:30 UT ^{in car} between Smiths Falls and home twl ne

- While Denise was driving I looked amid the many clouds in the W. to try to see Mercury, but did not notice it

06:15-06:40 UT y s-8(?) T 9 ne; 9x63b

ne: winter and spring constellations

9x63b: M35, M36, M37, M38, M13, M45, M44, M67, M13, M45; area of R Leonis.

M.-T. Feb. 7-8 23:05-23:20 UT ^{on lake} between house and island. 9x63b.

Mercury

[7]

- For seventh time on current elongation, I saw Mercury well above the trees and higher than I had expected to see it.

01:30-02:40 UT y s-8(?) T 7-8 1/2 20x100b

- slight haze in parts of the sky - M41, M45, M44, M42, M43, M78, R Leonis, NGC 7789, Double Cluster in Perseus, M100, M51, R Leonis and area.

F. Feb. 11. 18:30-18:40 UT ss.

C-8, 32, 28, 20, 15.5

sun 4g 8s RSN 48

F.-S. Feb. 11-12 23:00-23:30 UT ^{parking lot} in west end of Kingston off Hwy. 2. ^{raggy} c. Denise ^{camera} Torney ^{200mm} ne; 9x63b,

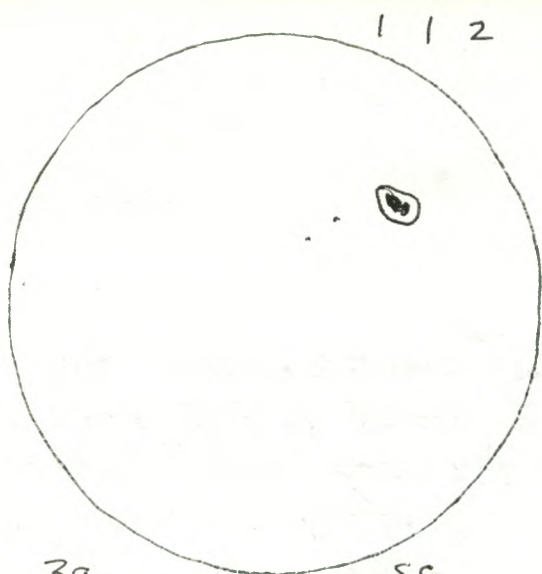
- Denise spotted the crescent moon ne. first. Then I saw it and with 9x63b. also saw Mercury which was almost in conjunction with the moon and 2.2 S. of the Moon. It was a very beautiful sight in the W. sky. I could not be sure of seeing Mercury ne.

I photographed the area of the sky.

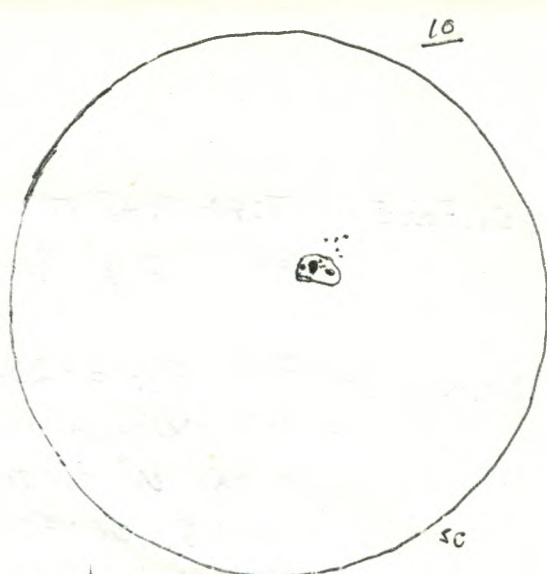
M. Feb 14 18:50-18:55 UT ss

C-8, 32, 28, 20, 15.5

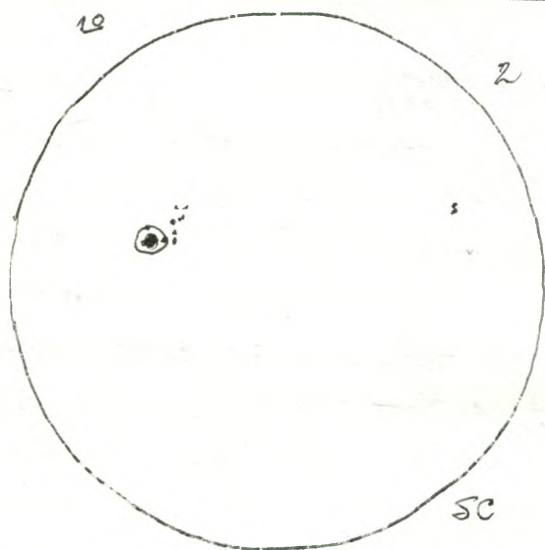
sun 3g 6s RSN 36



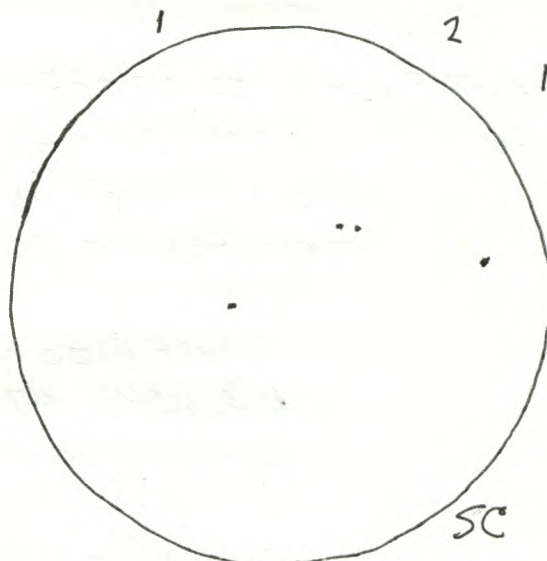
3g
4s
RSN34 Feb. 16 SC
19:25-19:30 UT



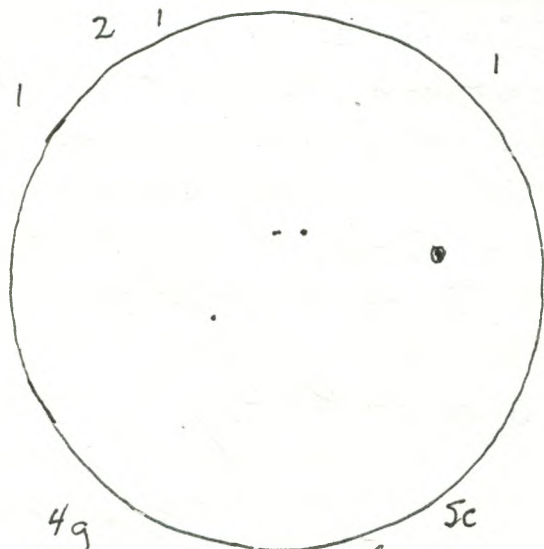
1g
10s
RSN20 Feb. 18 SC
19:20-19:25 UT



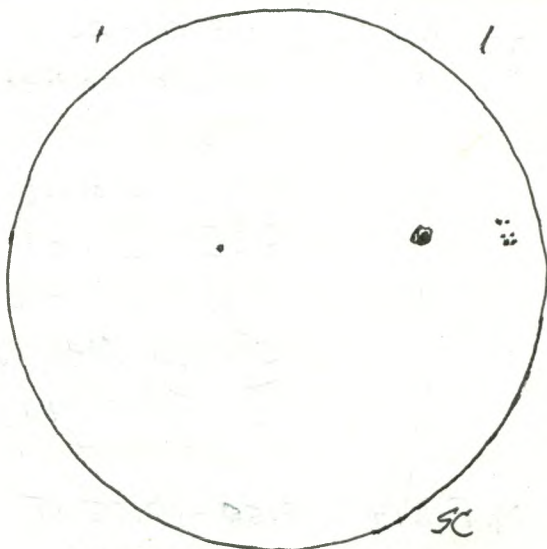
2g
12s
RSN32 Feb. 22 SC



3g
4s
RSN34 Feb. 25 SC
19:15-19:20 UT



4g
5s
RSN45 Feb. 26 SC
18:40-18:45 UT



3g
8s
RSN38 Feb. 27 SC
19:50-19:55 UT

1994

W. Feb. 16 19:25-19:30 UT ss c-8, 32, 28, 20, 15.5
 sun 3g 4s RSN 34

F. Feb. 18 19:20-19:25 UT sc c-8, 32, 28, 20, 15.5
 sun 1g 10s RSN 20 very good seeing.

Tu. Feb. 22 19:10-19:15 UT ss c-8, 32, 28, 20, 15.5
 sun 2g 12s RSN 32

F. Feb. 25 19:15-19:20 UT ss c-8, 32, 28, 20, 15.5
 sun 3g 4s RSN 34

Sa. Feb. 26 18:40-18:45 UT ss. c-8, 32, 28, 20, 15.5.
 sun. 4g 5s RSN 45

Su. Feb. 27 19:50-19:55 UT ss c-8, 32, 28, 20, 15.5
 sun 3g 8s RSN 38

Tu. Mar. 1 19:30-19:35 UT ss c-8, 32, 28, 20, 15.5
 sun 4g 18s RSN 58

T.-W. Mar. 1-2 02:20-03:00 UT y S-8 UT 9 20x100b
 R Lep, RX Lep, M42, M43, M78, ϵ Ori, M45, M41, R Leans,
 Alcor and Mizar

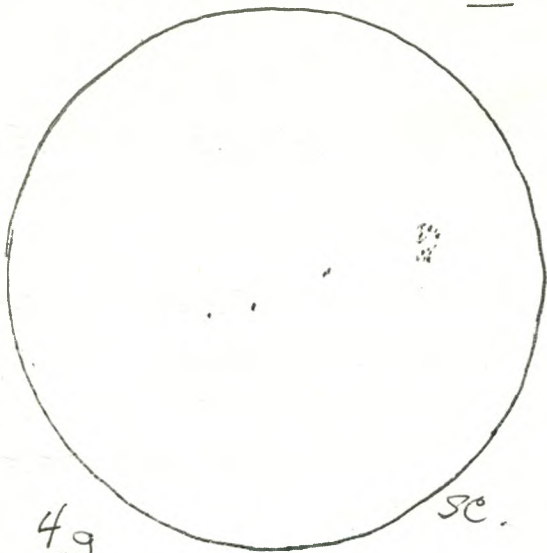
W. Mar. 2 19:10-19:15 UT ss c-8, 32, 28, 20, 15.5
 sun g s RSN

W.-Th. Mar. 2-3 03:15-03:45 UT ^{while driving} from Perth to Sharbot Lake ne

Aurora.

- While returning home from teaching the Astronomy course in Perth, I saw an interesting Aurora in the N. There were patches of bright glow and numbers of spikes up perhaps 30° or more. There were perhaps slight hints of blue or purple.

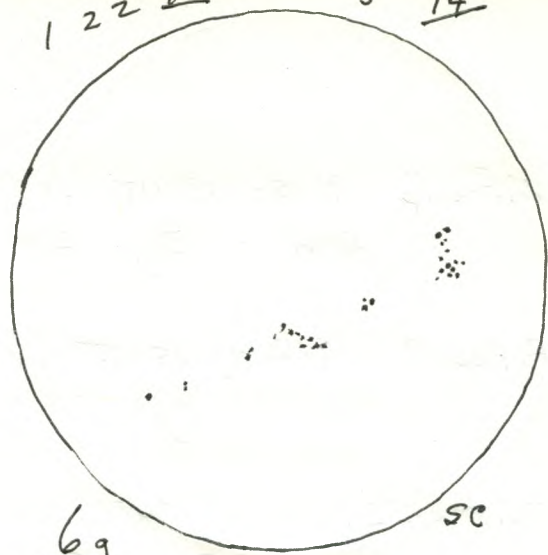
1 1 2 14



4g
18s
RSN 58 Mar. 1
19:30-19:35 UT

SC

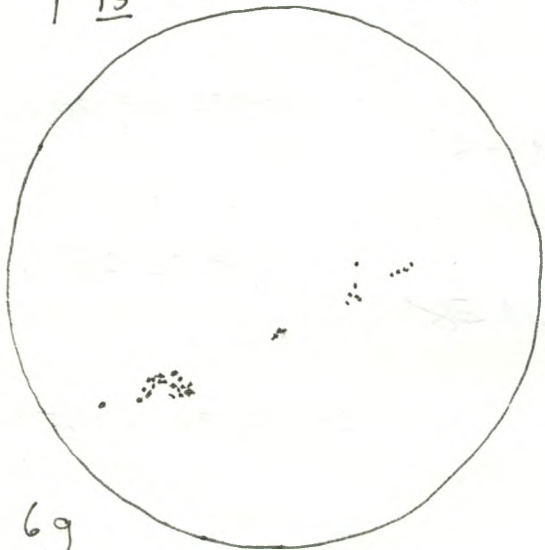
1 22 10 3 14



6g
32s
RSN 92 Mar. 2
19:10-19:15 UT

SC

1 15 2 5 5



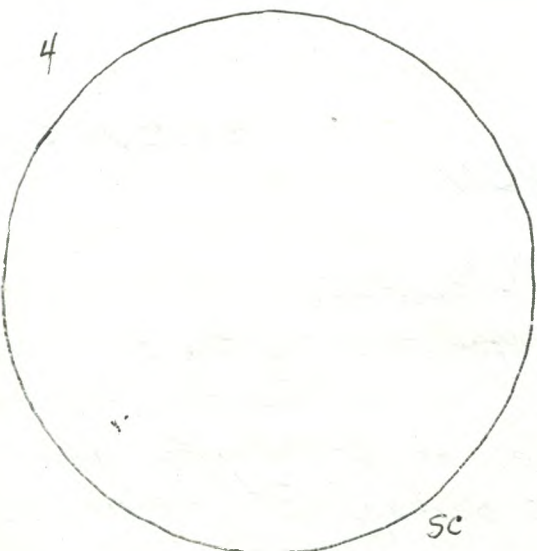
6g
29s
RSN 89 Mar. 3
20:15-20:20 UT



E SE

Moon in morning sky
Mar. 9. 10:20 UT.

4



4g
4s
RSN 14 Mar. 11
18:40-18:45 UT

SC

1994

Th. Mar. 3 20:10-20:15 UT 55

C-8, 32, 28, 20, 15.15

sun 6g 29s RSN 89

See
Sa. Mar. 5-6 23:30 UT in Terry Hicks' car coming from National Council Meeting; E. of Toronto twl. ne

During twilight on very clear night, I saw Venus low in W, the first time seen on the current elongation.

T.-W. Mar. 8. 9 04:10 UT nd

T9

ne

Aurora

Aurora with considerable, fast flaming in N. from NW. to NE. Not a great deal of colour was evident

10:20 UT in

m. twl

ne

old Moon in SE 3 hours less than 3 days from New Moon.

Th. F. Mar. 10-11 01:20-04:00 UT y

s-8(?) T8-9 (slight haziness at times) 20x100b

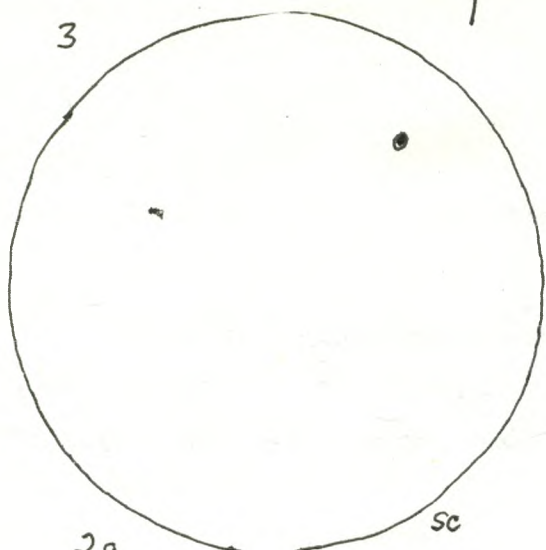
39 Laetitia
R Lep - down at about mag. 8.5 M42, M43, M78, M45, Hyades, M46, M47, NGC 2244 and part of the Rosette Nebula, S Mon and the "Christmas Tree" cluster, R Leonis and the asteroid Laetitia which was nearby (See S. & T. Mar. 1994, page 76) (The asteroid was about mag. 10.6 and R Leonis was about mag. 7.5), M104 but I was not certain of seeing the asteroid Ate (See S. & T. Mar. 1994 p. 75) and probably did not see since it was listed as being at mag 11.6 and it was quite close to the galaxy.
T Pyxidis area
Aurora
M35, M36, M37, M38, M57, M101, area of T Pyxidis-nostar.
An Aurora was visible from about 01:40 until 02:40 UT as a glow in the N. with occasional spike or spikes, slightly reddish in colour. The Aurora died out after a while.

The Zodiacal Light was quite evident during the early part of the observing session.

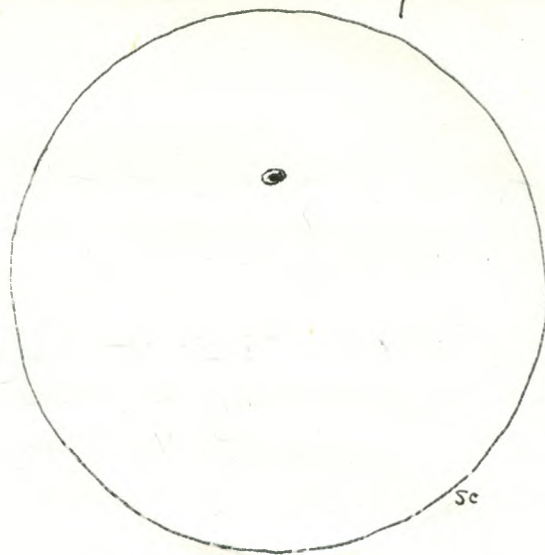
F. Mar. 11 18:40-18:45 UT 55

C-8, 32, 28, 20, 15.5

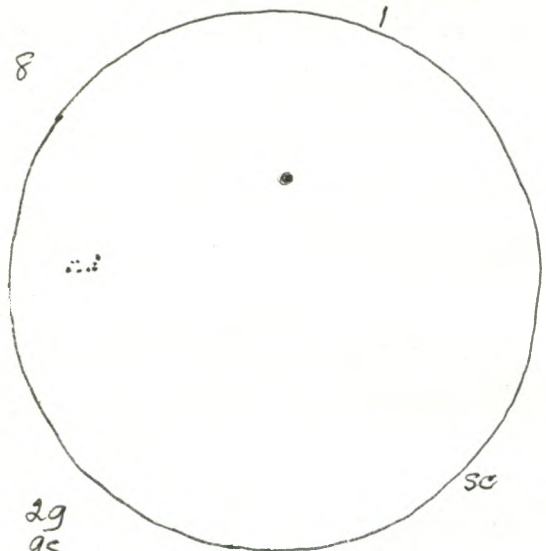
sun 1g 4s RSN 14



29
45
RSN24 Mar. 17
20:20-20:25UT



19
13
RSN11 Mar. 20
19:15-19:20UT



29
95
RSN29 Mar. 22
19:20-19:25UT

1994

Th. Mar. 17 20:20-20:25 UT SS

c-8, 32, 28, 20, 15.5

Sun 2g 4s RSN24

Th. F. Mar. 17-18 about 21:45 UT (8:45 p.m. E.S.T.) ^{on} lake during daylight
Sun bright in W. nesaw waxing crescent moon very high - about 25° - 30°
from zenith. Moon was about 5 days $14\frac{1}{2}$ hours old04:15-06:30 UT y s(8)? T8 $\frac{1}{2}$ -9 20x100b.area of T Pyxidis, M44, R Leonis, M35 and nearby cluster
M37, M67, Jupiter and 4 moons two on each side of
the planet, ϕ Lyrae which actually appeared green
(Was it for St. Patrick's Day?!), α Lyrae, M5,
 ϵ Lyrae, M57, M92, M13, M104 and area.

Su. Mar. 20 19:15-19:20 UT SS

c-8, 32, 28, 20, 15.5

Sun 1g 1s RSN11

Su. - M. Mar 20-21 01:30-02:40 UT y

M42, M57, area of T Pyxidis, M93, ^{gml} RU Pup (See U319 and
U320. RU Pup is a very red star with a listed range of
mag. 8.9 - 11.1 in Buraham, page 1494.) XZ Pup (in the
same area, not far from ρ Pup (listed as mag.
8.0 - 10.7) Both of these stars seemed to be near the
brighter part of their cycles. - also the stars near
 δ Canis Majoris.- bright slow meteor though one with a short trail
of about 10° - 15° , in constellation Bootes, east of
Arcturus, the meteor going NE, about mag. -3.
at 02:09:50 UT.

Tu. Mar. 22 19:20-19:25 UT SS

c-8, 32, 28, 20, 15.5

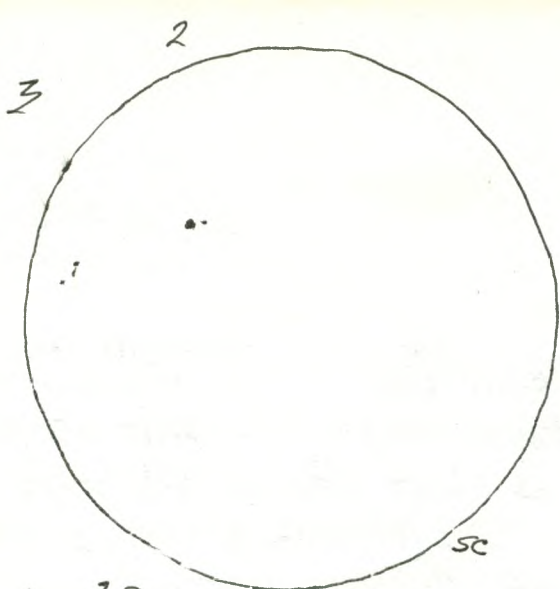
Sun 2g 9s RSN29

F.-W. Mar. 22-23 23:50 UT nd

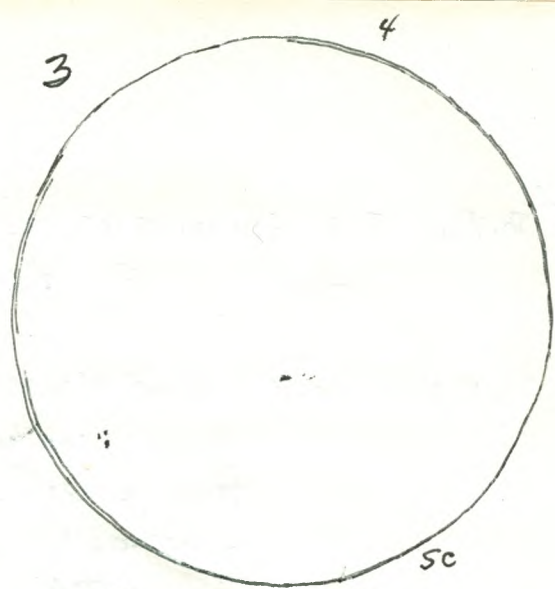
mid-tw. ne

Venus bright in W. up about 8° .

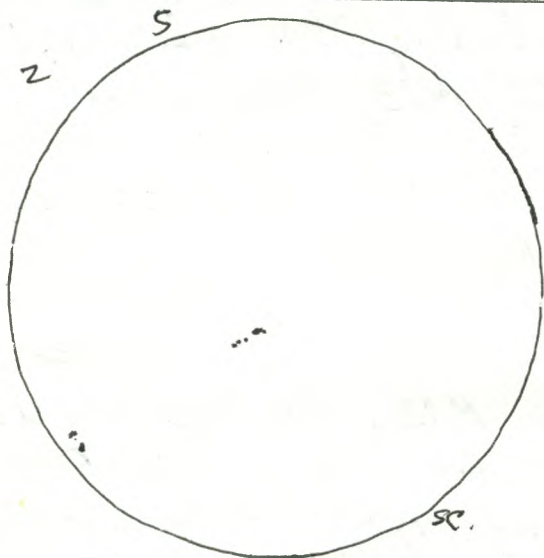
v.



29 Mar. 23
55 RSN/25 19:30-19:35 UT



29 Mar. 30
75 RSN/27 19:15-19:20 UT



29 Mar. 31
75 RSN/29 19:20-19:25 UT

1994

W. Mar. 23 19:30-19:35 UT

C-8, 32, 28, 20, 15.5.

sun 29 5s RSN 35

W. Mar. 30 19:15-19:20 UT

C-8, 32, 28, 20, 15.5

sun 29 7s RSN 27

W.-Th. Mar. 30-31 ~~19:20-19:25 UT~~ 03:20-03:40 UT at Last Duel Park

S-8, T7 20x100b

^{+4 moons} in Perth
Jupiter, α Lib, β Lib, M104, R Leonis.

light c. 4 students

Th. Mar. 31 19:20-19:25 UT ss

C-8, 32, 28, 20, 15.5

sun 29 7s RSN 27.

F.-S. Apr. 1-2 01:35 UT (7:35 pm E.S.T.) ^{in churchyard} and on Hwy 38 in Sharbot Lake twl ne
Venus, very bright in W, about altitude 8° - 10° .

01:00 - 03:00 UT y+00 S-8-9(?) T9-9.5 20x100b & C-14, 32k0
20x100b: Comet McNaught-Russell - about at mag. 7 and about 20° NE of Aldebaran in Taurus - diffuse - about $20''$ - $30''$ - little or no evidence of tail; R Leonis

area of τ Pyxidis, M42, M43, M78, SS Vir and area, area of 3C273 in Vir., M35, M36, M37, M38

C-14: Comet McNaught-Russell; M42, M43, Trapezium.

ne: The Zodiacal Light was excellent - up higher than the Pleiades and as bright as or brighter than the Winter Milky Way.

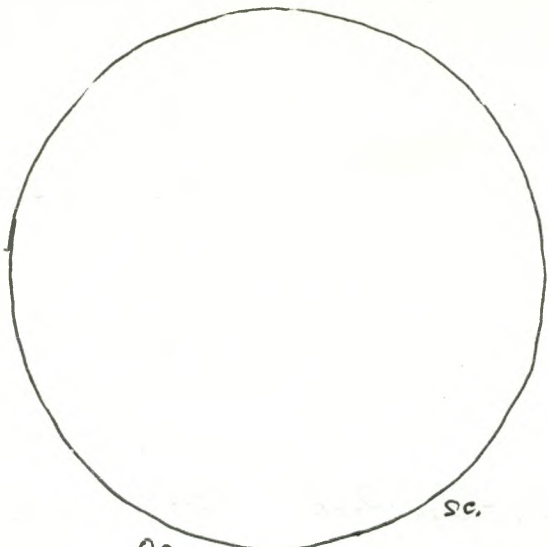
Su.-M. Apr. 3-4 02:10-03:45 UT ^{on Hwy 7 coming from Ottawa} and y T9 ne

- a magnificent Aurora in N from NW to NE seen first as large white glow when I was in car near Carleton Place. Then it developed into long row of spikes going up about 40° . From yard I observed and photographed Aurora that became more flaming and pulsating and extended up to the zenith. This was a very active Aurora but one that was mainly white - showing very little colour.

Comet

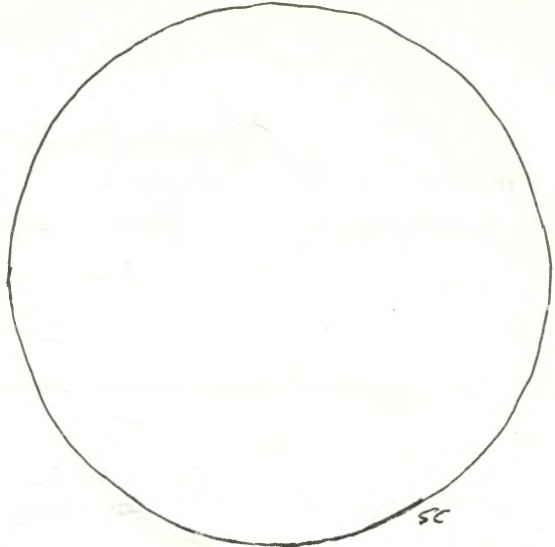
Z.L.

Aurora



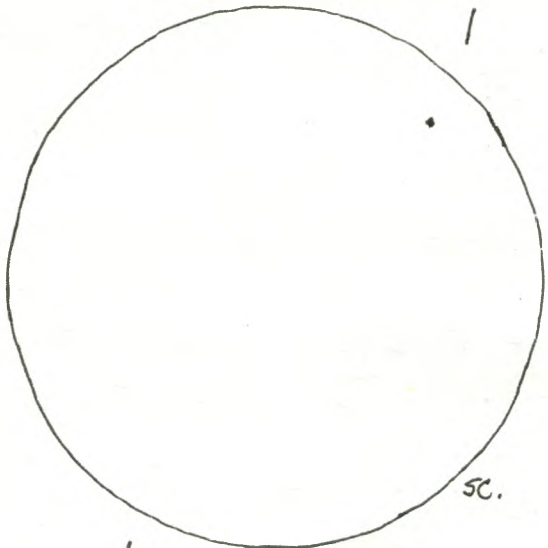
09
05 Apr. 4
RSNO 17:40-17:50UT

sc.



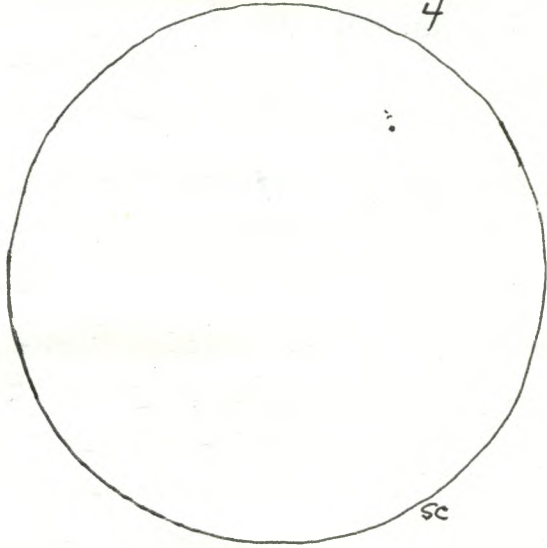
09
05 Apr. 8
RSNO 19:35-19:40

sc



19
15 Apr. 9
RSN11 19:40-19:45UT

sc.



19
43 Apr. 10
RSN14

sc

IV I II III
• • •
see Notes
Apr. 10-11
View of Jupiter

1994

M Apr. 4 17:40-17:50 UT ss

C-8, 32, 28, 20, 15.5.

sun 0g 0s RSN0

Th.-F. Apr. 7-8 03:30-03:50 UT y

T9.5 ne

Aurora.

- a very interesting Aurora - in N. from NW to NE a glow and spikes on occasion going up 40 to 50°, but not with much colour, but especially interesting because of the band Aurora across the sky from WNW to ESE, at first about 5° wide passing through Gemini, Cancer, Leo Minor, and Boötes N. of Arcturus. At about 03:40 it faded in the E and W and briefly split into bars near the zenith. Then they faded. At about 03:45 the band returned but was narrower - about 2° wide. - a very rare kind of Aurora.

The activity in the N. became subdued. Later there seemed to be only a glow.

F. Apr. 8 19:35-19:40 UT sb

C-8, 32, 28, 20, 15.5.

sun 0g 0s RSN0

Sa. Apr. 9 19:40-19:45 UT ss

C-8, 32, 28, 20, 15.5

sun 1g 1s RSN11

Sa. Apr. 10 18:45-18:50 UT ss

C-8, 32, 28, 20, 15.5.

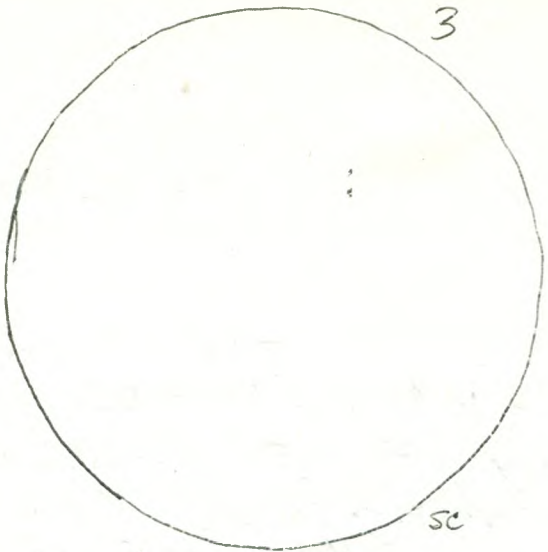
sun 1g 4s RSN14

S.-M. Apr. 10-11 02:00-02:50 UT y

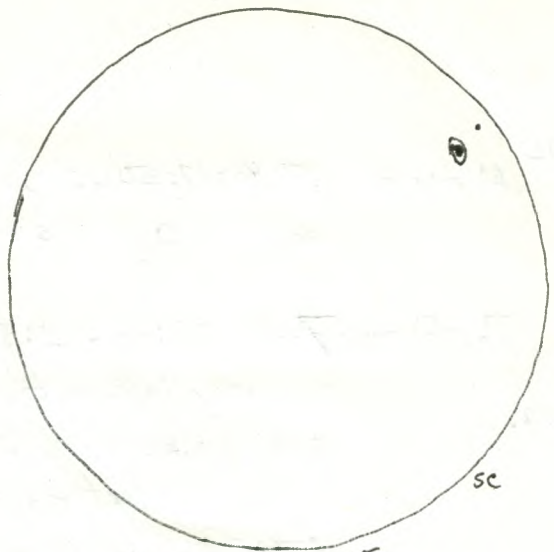
S-9T9 (clouds moved in) 20x100b

area of T Pyxidis, Jupiter and 3 moons (II (Europa) was so close to the planet that it seemed when seen to be just a very tiny dot. It had just reappeared from an Eclipse and Occultation.); Comet McNaught-Russel at about mag. 7. in Auriga and easily noticed to have moved after about 30 minutes. It was at about R.A. 5^h 21^m Dec 40.9°. At first it seemed just over a 7th mag. star marked on Uranometria

Comet.



19 Apr. 11
35 RSN 13 19:50-19:55 UT



19 Apr. 15
25 RSN 12 19:55-20:00 UT

Chart #66. It was diffuse and about 20" in diameter. In the same area are the variables PU Aur - about mag. 7 or 6 (not in Burnham) SY Aur - about mag. 10 (9.3-10.4 Cepheid, per.: 10.14 days - in Burnham; SX Aur - about mag. 8.5 (8.4-9.1, per. 1.210 days, eclipsing binary) (See Burnham Vol. I page 259 and U66) - also M13 and M92

A.

A glowing Aurora in the N persisted during the time of the observation. It was generally white, with a tiny indication at times of red. Occasionally there ^{was} a hint of a spike.

M. Apr. 11 19:50-19:55 UT ss

c-8, 32, 28, 20, 15.5

sun lg 3s RSN 13

Th.-F. Apr. 14-15 00:00 UT y

twl

ne

Venus in W at altitude about 10° - seen about 18 minutes after sunset.

01:30-01:35 y

cm

ne

4-day old crescent moon in Taurus just N of the Hyades, between Hyades and Pleiades.

02:45-03:05 UT y

cm | 5-PTT7 ^{moisture} in air

20x100b

comet
McNaught-Russell

Comet McNaught-Russell in Auriga at about R.A. $5^h 40^m$, Dec. $+49^\circ$ (U66) - at about mag. 7 - diffuse, no evidence of a tail; R Lears - at about mag. 7; ψ Draconis - a beautiful binocular double - sep. $30''$ mag. 5 and 6 (See Burnham p. 855); Jupiter

F. Apr. 15 19:55-20:00 UT

c-8, 32, 28, 20, 15.5.

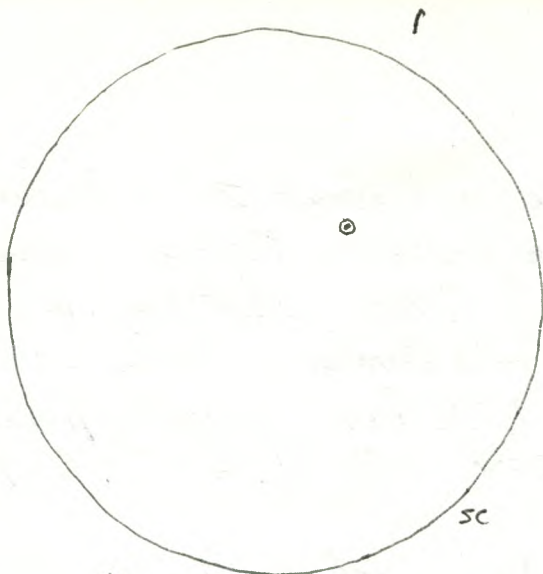
sun lg 2s RSN 12

Sa.-Su. Apr. 16-17 00:00-00:45 UT parking lot at MacDonald Park

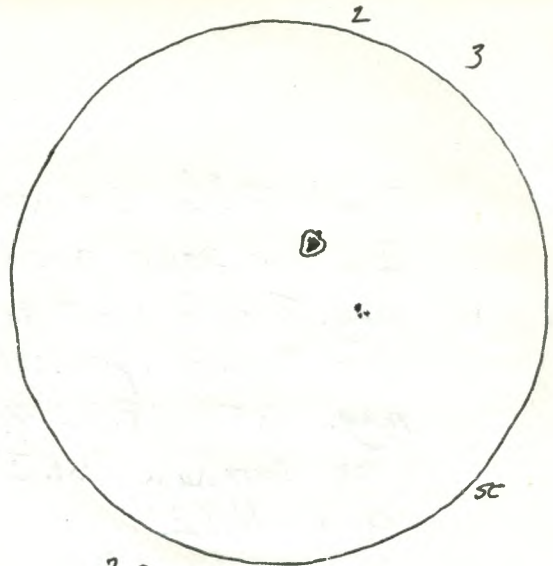
twl, and cloudy

ne

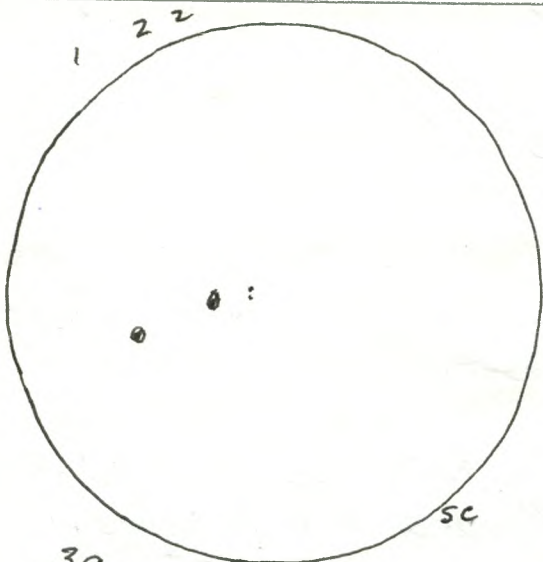
Denise and I went to the parking lot at MacDonald Park near Murney Tower in Kingston for the Public Star Night after the Astronomy Day Display at the Kingston Centre and after having supper at Ruth Hicks' place. It was quite cloudy but there was hope that it might clear because of a clear



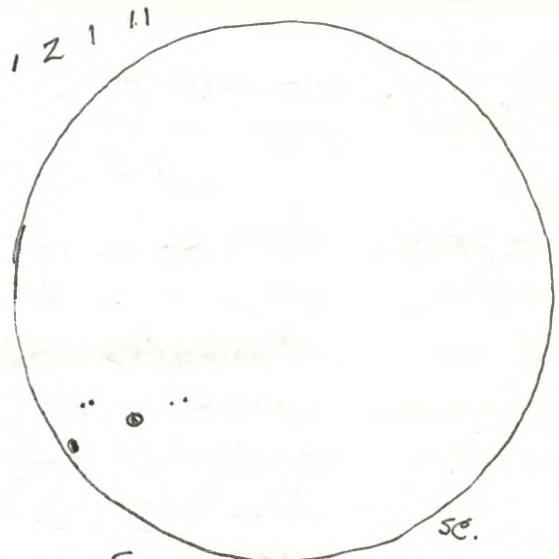
19
15
RSN11 Apr. 18
18:10-18:15 UT



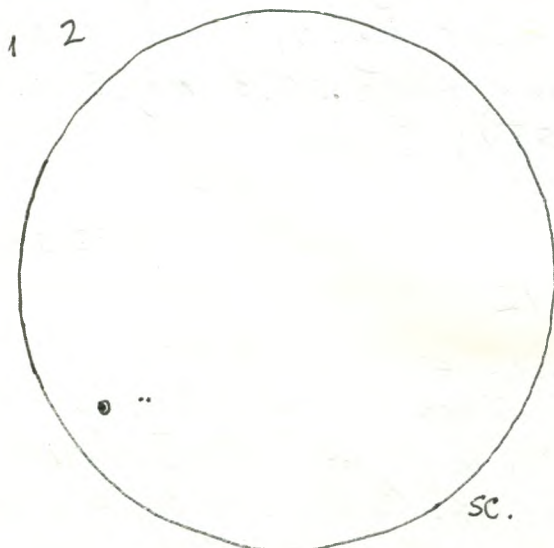
29
55
RSN25 Apr. 19
18:10-18:15 UT



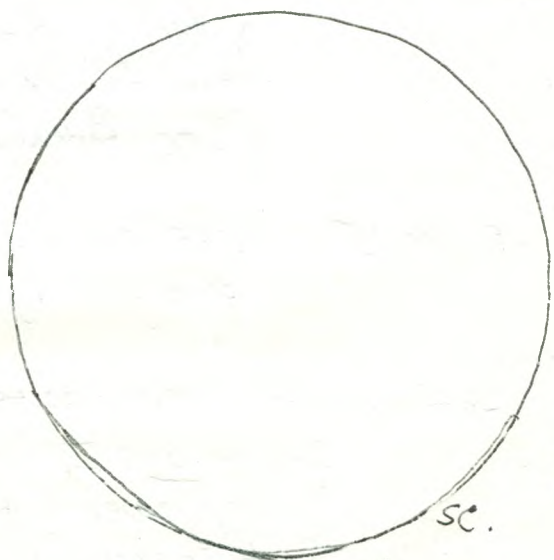
39
55
RSN35 Apr. 23
18:05-18:15 UT



59
65
RSN56 Apr. 26
20:15-20:20 UT



29
35
RSN23 Apr. 27
20:05-20:10 UT



09
05
RSN0 Apr. 28
18:15-18:20 UT

patch in the western sky. Venus became visible in W. about 10° above the horizon and later the 5-day old crescent moon appeared as the ^{clouds} moved Eastward. No other astronomers or others wanting to observe (apparently) appeared, and we left at about 00:45 UT (8:45 p.m. EDT). However, it had been a good Astronomy Day Display at the Kingston Shopping Centre.

M. Apr. 18 18:10-18:15 UT SS C-8, 32, 28, 20, 15.5
Sun 1g 1s RSN 11

Tu. Apr. 19 18:10-18:15 UT SS C-8, 32, 28, 20, 15.5
Sun 2g 5s RSN 25

Sa. Apr. 23 18:05-18:15 UT SS C-8, 32, 28, 20, 15.5
Sun 3g 5s RSN 35

Tu. Apr. 26 20:15-20:20 UT SS C-8, 32, 28, 20, 15.5
Sun 5g 6s RSN 56

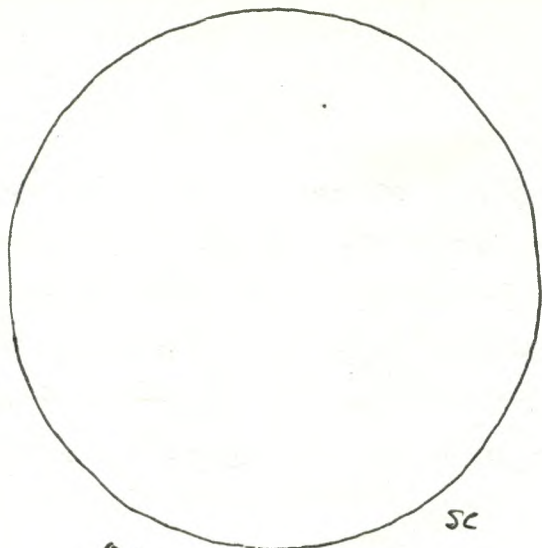
W. Apr. 27 20:05-20:10 UT SS C-8, 32, 28, 20, 15.5
Sun 2g 3s RSN 23

W.-Th. Apr. 27-28 02:40-02:50 UT t s-8(8) T 8 ^{Clouds moved in.} Ast, 21, 7.6, 4
Jupiter and its 4 moons - 2 on each side, brief attempt to find Comet McNaught-Russell, but did not have the coordinates for the present time. Clouds moved in.

Th. Apr. 28 18:15-18:20 UT SS C-8, 32, 28, 20, 15.5
Sun 0g 0s RSN 0

F. Apr. 29 18:50-18:55 UT SS C-8, 32, 28, 20, 15.5
Sun 0g 0s RSN 0

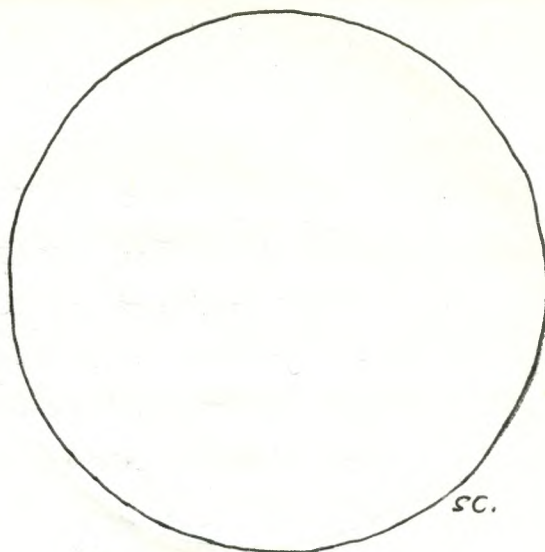
Sa. Apr. 30 17:15-17:20 UT C-8, 32, 28, 20, 15.5
Sun 0g 0s RSN 0



09
05
RSN0

Apr. 29
18:50-18:55 UT

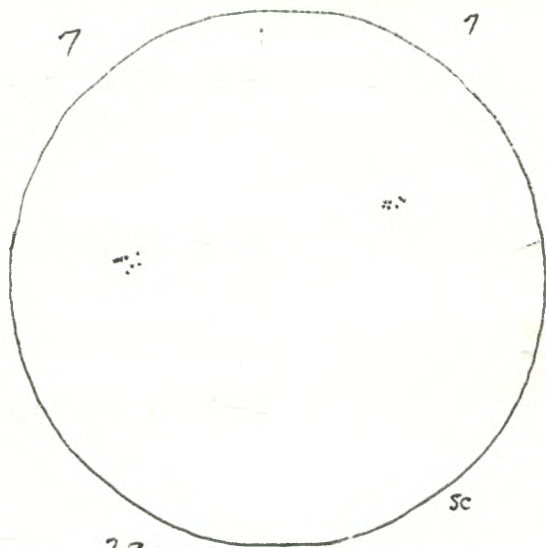
sc



09
05
RSN0

Apr. 30
17:15-17:20 UT

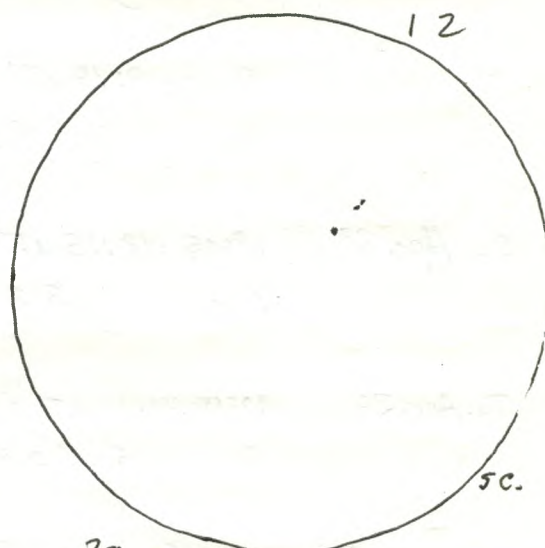
sc.



29
145
RSN34

May 2
21:15-21:20 UT

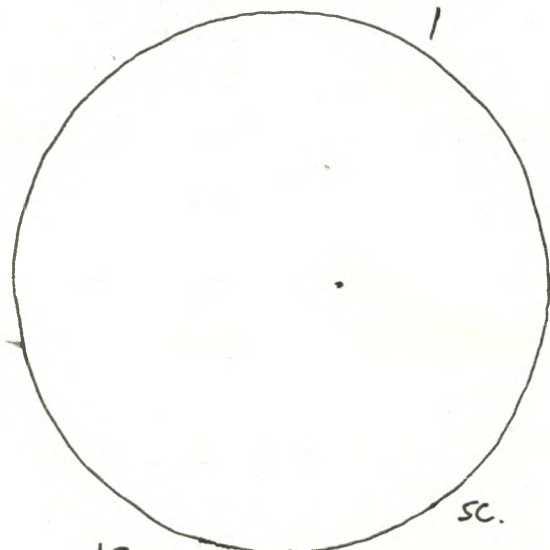
sc



29
35
RSN23

May 3
18:45-18:50 UT

sc.



19
15
RSN11

May 4
18:15-18:20 UT

sc.

1994

M. May 2 21:15-21:20 UT SS

C-8, 32, 28, 20, 15.5

sun 2g 14s RSN 34

M.-T. May 2-3 01:40-04:00 UT 00

C-14, 32; 20x100b; ne

c-14: Venus - low in WNW, Jupiter and 4 moons

Comet
McNaught-
Russell20x100b: Comet McNaught-Russell - faint at about mag. 8.5, at
R.A.: $8^h 11^m$; Dec. $73^{\circ} 7'$, M81, M82

A

ne.: very spectacular Aurora, beginning with glow low in N. before the end of Astronomical twilight, then broad arc in N. up about 20° ; then double and triple arc, and then spikes and very active flaring and pulsation. Over half the sky was covered by very active flaring - up to the zenith and even some in the southern part of the sky. It was mainly white, but there were some shades of yellow and red. It seemed particularly active in NE and E.

T. May 3 18:45-18:50 UT SS

C-8, 32, 28, 20, 15.5.

sun 2g 3s RSN 23

T.-W. May 3-4 03:00-03:50 UT Y

S 8(?) T 8.5

20x100b

Comet
McNaught-
Russell

Comet McNaught-Russell at R.A. $8^h 25^m$ Dec. $74^{\circ} 25'$
(47) at about mag. 8, ^{dr. cause} M104, M57, Jupiter and
3 of its moons.

A

A glow of Aurora was seen throughout the observing session, but only once did a single spike appear to give an indication that it might develop into a more active one, but it did not.

W. May 4. 18:15-18:20 UT SS

C-8, 32, 28, 20, 15.5

sun 1g 1s RSN 11.

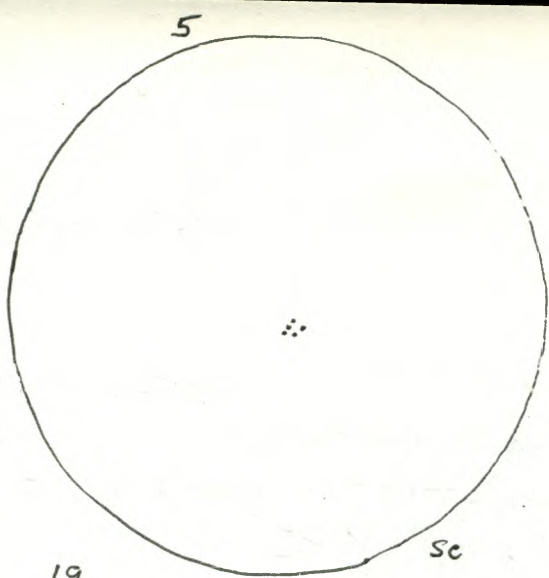
W.-Th. May 4-5 03:40-04:40 UT Y

S-8-9(?) T 8.5-9

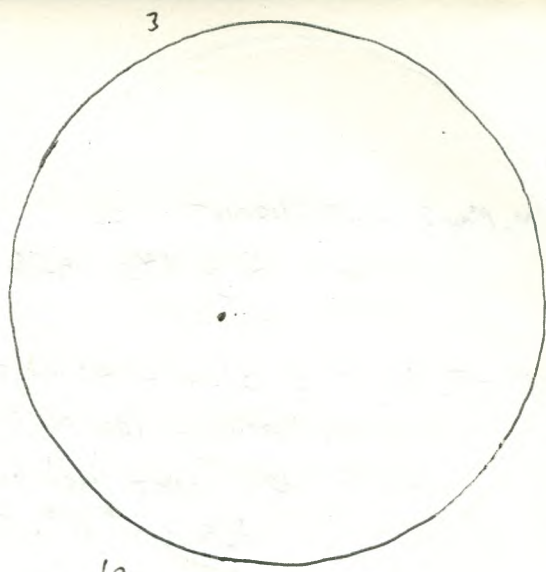
20x100b

Comet
McNaught-
Russell

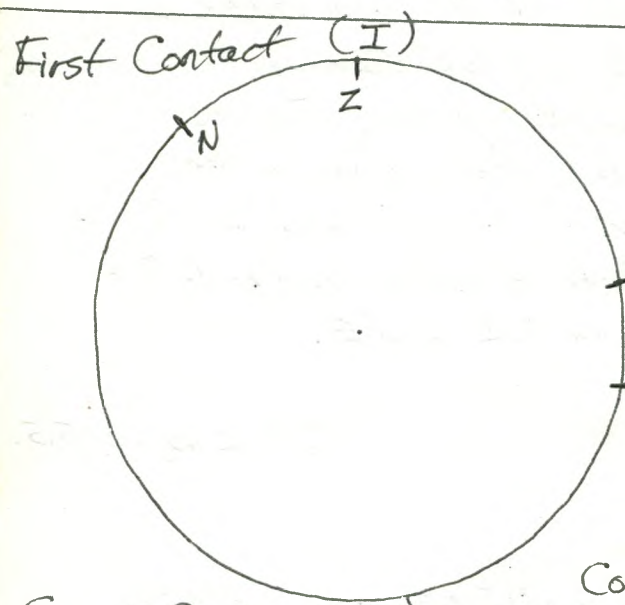
Comet McNaught-Russell at R.A. $8^h 40^m$ Dec. $74^{\circ} 50'$ (47)
M104, M44, ϵ Lyrae, M57, R Leonis - up to about mag. 6.5, M81,



19
55
RSN15
May 8
21:05-21:10 UT



19
35
RSN13
May 10
15:30-15:35 UT



First Contact (I)

Annular
Solar
Eclipse
of
May 10,
1994

First Contact:

Predicted for Syracuse:
15 46 56.3 UT
11 46 56.3 E.D.T

Observed

11 47 02 E.D.T.

- occulted sunspot near mid-disk
(see above)

12:27:00 E.D.T.

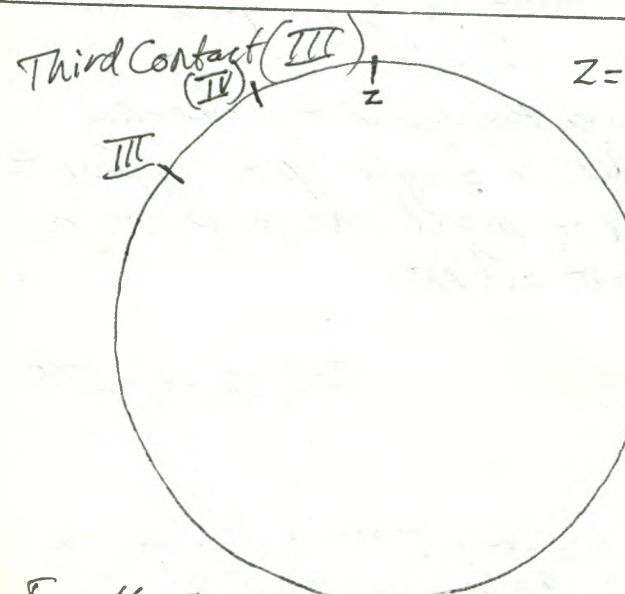
Second Contact (II)

Contact
Points.

Second Contact: Predicted for Syracuse:

17:28:18.7 UT
13:28:18.7 E.D.T.

observed (uncertain) about 13:28:12(?)



Third Contact (III)
(IV)

Z = zenith
point on
solar
disk

Third Contact:

Predicted for Syracuse:
17:34:22.7 UT
13 34:22.7 E.D.T.

observed (uncertain) - was at camera
and did not see it precisely at the
telescope

Fourth Contact (IV)

Fourth Contact:

Predicted for Syracuse
19:14:23.5 UT
15:14:23.5 E.D.T.

- observed (uncertain) about 15:14

1994

M82, M13, M92.

Su. May 8 21:05 - 21:00 UT SS C-8, 32, 28, 29, 15.5
 sun 1g 5s RSN 15

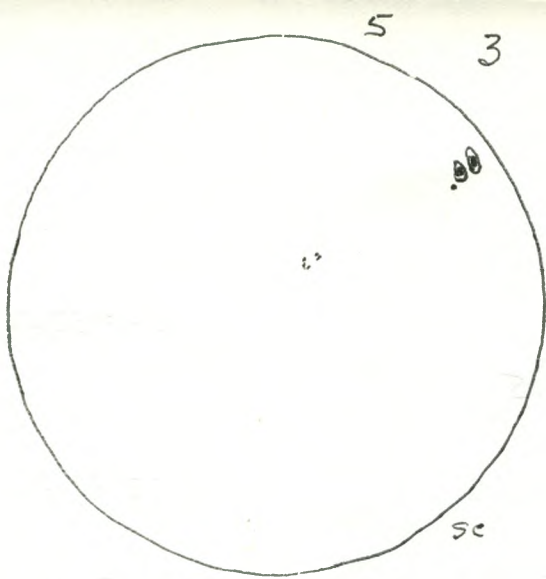
Tu. May 10 15:30 - 15:35 UT ^{in Baldwinsville} at home of John + Rhonda Carlo C-8, 32, 28, 29, 15.5
 sun 1g 3s RSN 13

Eclipse 15:40 - 19:15 UT ^{backyard at home} of John and Rhonda Carlo C-8, 32, 28

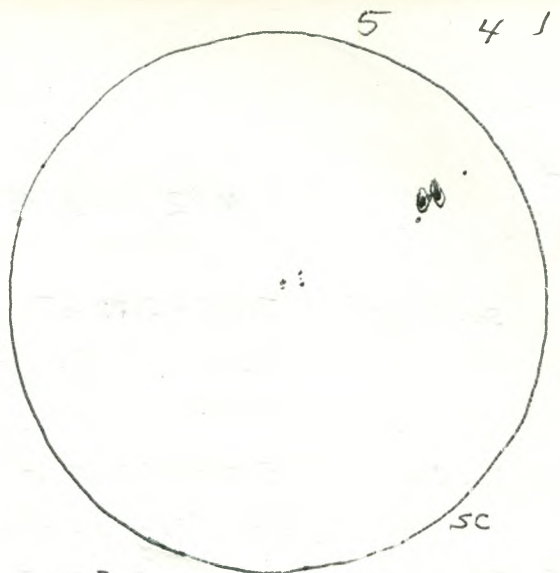
A stunning and wonderful and very memorable Annular Solar Eclipse 1994! The weather was very co-operative from First Contact until Fourth Contact. In the morning there were a few hints of cloud and some occasional scattered cirrus cloud. There were some heavy clouds to the South, and perhaps in the city of Syracuse there were some cloud problems, but none for us. The C-8 telescope was set on a table and we could follow the eclipse with it as well as with arc welders glass #14. Denise and I were joined by Rhonda Carlo and several neighbours. I photographed the partial phases at approximately 10 minute intervals and the annular phase at approximately 1 minute intervals. The "Ring of Fire" was symmetrical since we were very close to the Centre Line. Annularity lasted for more than 6 minutes - for about 6 minutes and 8 seconds. It was a solid jet-black orb in a bright yellow perfect circle at mid-eclipse.

From about 13:10 UT (1:10 p.m. E.D.T.) The sky was noticeably darker with a very "eerie" light permeating the atmosphere. There seemed to be a yellowish glow to the surroundings. There was a calm or stillness near the time of annularity that seemed different from the breezes that blew periodically before the eclipse and during part of the partial phase.

The two dogs seemed unaffected by the eclipse. Overall, it was a marvellous and very memorable event, a totally stunning sight. Six minutes of annularity is an awesome spectacle.



29 May 12
85
RSN28 21:00-21:04 UT



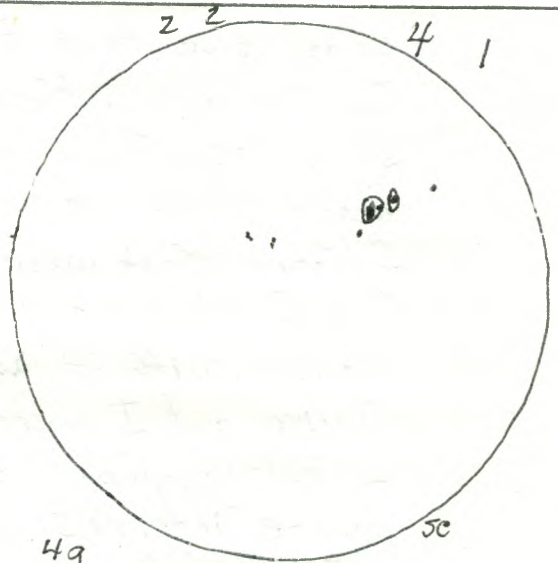
39 May 13
105
RSN40 19:25-19:30 UT



• Venus

May 13-14 01:20 UT
Kingston

Moon's Earthshine was spectacular.



49
95
RSN49

May 14
18:30-18:35 UT

1994

Th. May 12 21:00-21:04 UT SS

C-8, 32, 28, 20, 15.5

Sun 2g 8s RSN 28

Th.-F. May 12-13 04:30-05:00 UT Y

S-8(?) T9 20x100b

M104, Jupiter and 4 moons, M4, M80, M57, M27, SS Vir,
R Cor Bor, T Cor Bor, β Cyg, α Lib, β Lib, area of 3C273.

F. May 13 19:25-19:30 UT SS

C-8, 32, 28, 20, 15.5

Sun 3g 10s RSN 40

F.-S. May 13-14 01:15-01:20 UT ^{Queen's University} near Mackintosh-Corry Hall

twl ne

During a 10-min. break in the Kingston Centre meeting members went out to see the crescent moon and Venus. Earthshine was spectacular.

04:50-05:00 UT Y, nd

S-? T9 ne

Spring and summer constellations; considerable glow in N and NW up to about 20° indicating Auroral activity

Aurora

Sa. May 14 18:30-18:35 UT SS

C-8, 32, 28, 20, 15.5

Sun 4g 9s RSN 49

Sa.-Su. May 14-15 01:30-6:30 UT 00 S-9 T9

ne; C-14, 32;

with Denise and Steve Pellerin

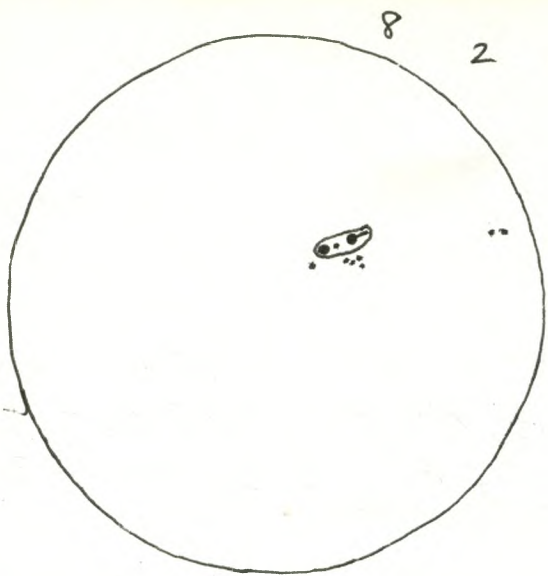
ne: constellations and some Aurora during twilight. Later Aurora was seen but it did not develop as we thought it might.

In twilight there were spike(s) and perhaps some flaring.

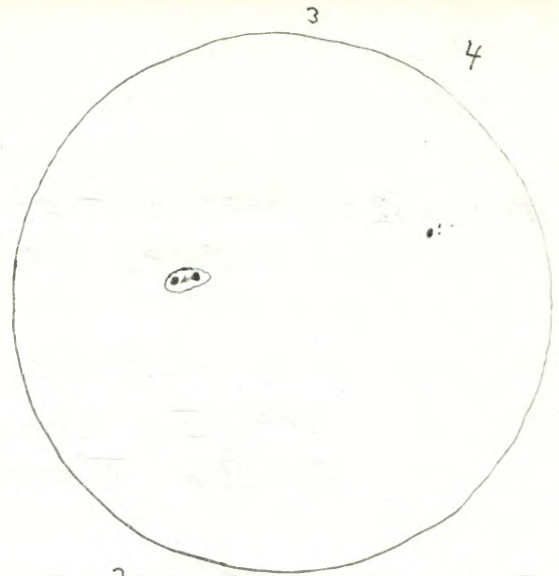
C-14: M51, M104, 3C273 - quasar in Virgo, and also the 13.5 mag. star just west of it, though the 14.9 mag. star was not seen steadily nor with certainty for more than an instant. 3C273 may have been at about mag. 12.4.

I searched carefully for Pluto, but just as I thought I was close to identifying it, clouds moved in and made identification difficult. Later I also checked the area, and probably again had it in the field, but did not positively identify it. Denise and I also observed several galaxies in Steve Pellerin's 8" Newtonian telescope.

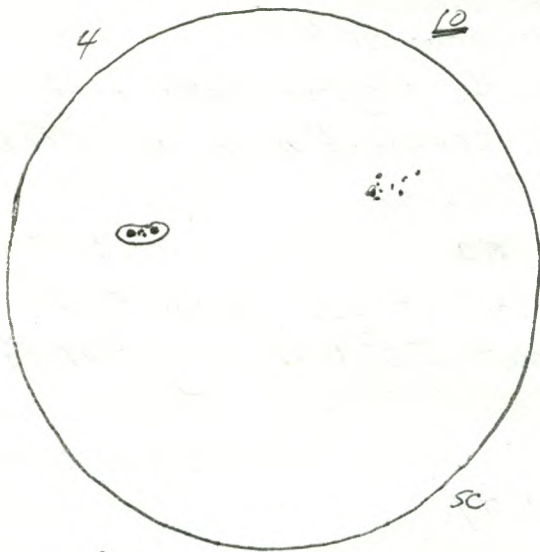
3C273



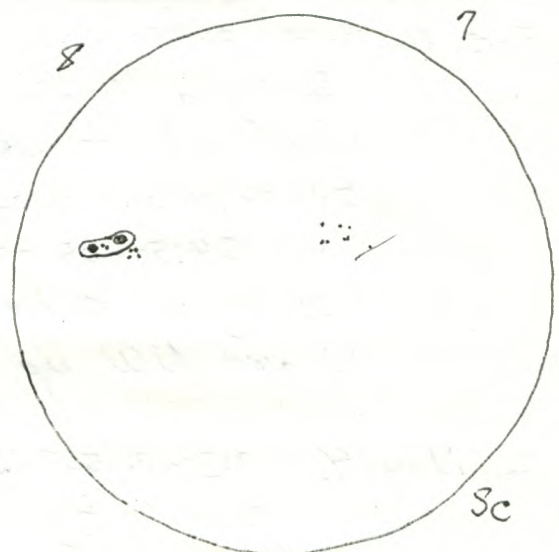
29 May 17
105 RSN30 18:50-18:55 UT



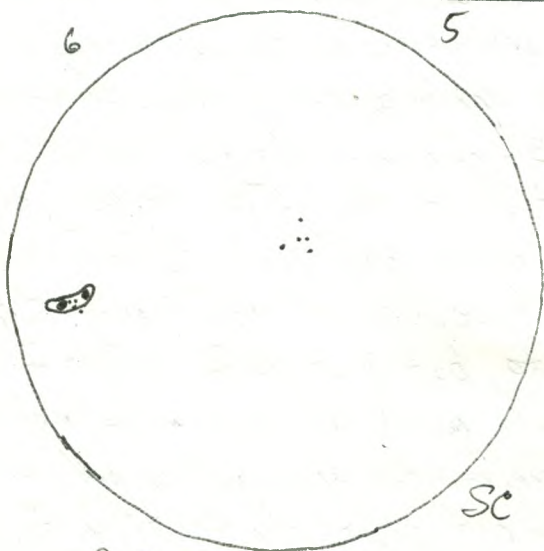
29 May 19
75 RSN27 18:15-18:20 UT



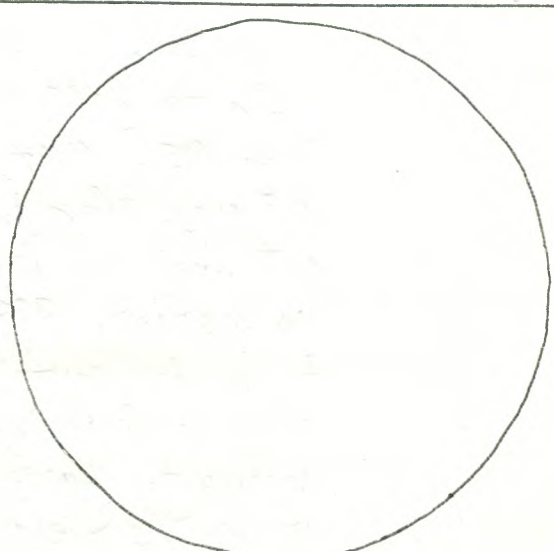
29 May 20
145 RSN34 17:55-18:00 UT



29 May 21
155 RSN35 19:50-19:55 UT



29 May 22
115 RSN31 19:00-19:05 UT



09 May 24
05 RSN0 20:45-20:50 UT

1994

Tu. May 17 18:50 - 18:55 UT ss C-8, 32, 28, 20, 15.5
sun 29 10s RSN 30

Th. May 19 18:15 - 18:20 UT ss C-8, 32, 28, 20, 15.5
sun 29 7s RSN 27

F. May 20 17:55 - 18:00 UT ss C-8, 32, 28, 20, 15.5
sun 29 14s RSN 34

F.-S. May 20-21 01:20 - 01:25 UT nd + ~~st~~ t gml; twl C-8, 12
Venus (gibbous), Jupiter and 4 moons, lunar craters
along the terminator.

Sa. May 21 19:50 - 19:55 UT ss C-8, 32, 28, 20, 15.5
sun 29 15s RSN 35

Su. May 22 19:00 - 19:05 UT ss C-8, 32, 28, 20, 15.5.
sun 29 11s RSN 31

Tu. May 24 20:45 - 20:50 UT ss C-8, 32, 28, 20, 15.5
sun 09 0s RSN 0.

T.-W. May 24-25 02:00 - 05:00 periodically ne

Eclipse
clouded
out.

The weather was not co-operative for the Partial Lunar Eclipse two weeks after the Great Annular Eclipse of May 10, 1994. After we returned from the school after a music and drama concert, I checked the sky. It was completely overcast. There seemed very little hope of seeing the eclipse. Denise checked later. It was still overcast. ut

Times: 1st Umbral Contact 02:38_n (10:38 pm EDT)

Last Umbral Contact 04:23_n (12:23 am EDT)

I checked later. The moon was "perceptible" through slightly less dense clouds. The eclipse would have been over by then - at least the umbral phase. It was about 12:40 UT (12:40 am EDT). Much better to have been clouded out at the Lunar than the Solar Eclipse!

Relative Sunspot Numbers

1993	My Observation	AAUSO	SIDE Brussels	My Observation	AAUSO	SIDE Brussels	My Observation	AAUSO	SIDE Brussels	
July	18 96	82	80	Oct. 24	42	46	52	Feb. 18	20 44 42	
	20 89	65	69		25 24	44	39		22 32 38 35	
	21 80	60	64		26 0	43	55		25 34 37 29	
	24 49	64	66	Nov. 2	25	17	20		26 45 38 36	
	25 35	54	61		12 16	15	15		27 38 46 38	
Aug.	1 22	44	38		18 35	36	37	Mar. 1	58 46 49	
	3 49	32	36		22 58	54	52		2 92 58 56	
	4 37	33	35		24 52	56	54		3 89 78 62	
	6 88	34	49		25 39	40	40		11 14 40 32	
	8 77	40	47		29 44	56	55		17 24 24 22	
	9 76	60	59		30 78	72	69		20 11 10 8	
1000	17 22	25	29	Dec. 1	92	67	62		22 29 29 24	
	18 34	32	28		7 60	66	65		23 25 25 22	
	26 61	49	44		8 68	60	57		30 27 32 29	
	28 65	51	48		11 23	35	35		31 27 36 24	
	29 40	49	49		12 0	23	21	Apr. 4	0 0 7	
	30 38	41	37		13 0	19	17		8 0 7 8	
Sept.	1 22	32	26		14 11	20	23		9 11 8 8	
	4 25	28	22		15 11	17	8		10 14 10 9	
	5 19	23	21		16 24	22	20		11 13 11 11	
	7 12	11	12		17 26	30	21		15 12 20 19	
	8 0	17	12		23 54	57	54		18 11 20 17	
	11 0	0	12		30 107	81	75	1094	19 25 25 21	
	12 0	0	9		31 125	93	99		23 35 40 37	
	13 0	6	10	1994					26 56 35 30	
	14 0	8	10	Jan. 2	87	71	84		27 23 39 31	
	16 13	25	23		3 115	89	95		28 0 25 15	
	21 0	17	14		9 70	69	71		29 0 11 9	
	22 0	0	14		10 63	54	51	1000	30 0 17 15	
	23 26	23	16		16 30	34	29		May 2	34 37 35
	24 31	25	23		19 48	29	28			3 23 24 26
Oct.	3 110	81	87		20 38	39	35			4 11 16 15
	5 64	76	90		22 70	66	65			8 15 23 21
	7 68	50	65		26 62	66	67			10 13 16 19
	11 91	59	65		29 11	54	46			12 28 28 27
	12 44	45	56		30 26	44	53			13 40 37 32
	13 39	28	35	Feb. 3	25	43	38			14 49 39 31
	14 38	26	29		4 28	51	44			17 30 39 39
	15 65	46	52		11 48	27	50			19 27 32 28
	22 73	58	61		14 36	44	39			20 34 28 25
	23 50	53	61		16 34	40	43			21 35 25 25

TELESCOPE MAGNIFICATION

OCULAR in	C-14(3910 ^m FL)	C-8(2000 ^m FL)	ASTROSCAN(445 ^m FL)
55mm	71 X	36.4 X	
40	97.8	50	11.1 X
36	108.6	55.6	12.4
32	122.2	62.5	13.9
28	139.6	71.4	15.9
26	150.4	76.9	17.1
25	156.4	80	17.8
21.5	181.9	93	20.7
20	195.5	100	22.3
19	205.8	105.3	23.4
18	217.2	111.1	24.7
17	230	117.6	26.2
15.5	252.3	129	28.7
15	260.7	133.3	29.7
13	300.8	153.8	34.2
12.7	307.9	157.5	35
12.5	312.8	160	35.6
12	325.8	166.7	37.1
9	434.4	222.2	49.4
8	488.8	250	55.6
7	558.6	285.7	63.6
5	782	400	89
4	977.5	500	111.3

STELLAR MAGNITUDES FOR COMPARISON PURPOSES

- 0 Capella, Vega
- 1 Aldebaran
- 1.5 Castor
- 2 Polaris, Alpha Andromedae
- 2.5 Alpha Pegasi
- 3 Zeta Tauri, Gamma Ursae Minoris
- 3.5 Alpha Trianguli
- 4 Mu Andromedae
- 4.5 Nu Andromedae, Delta Ursae Minoris
- 5 Chi Cassiopeiae

For 1994:

$$L.M.S.T. = 6.^h628584014 + 0.^h0657098243d \\ + 1.^h00273790934t - 5.^h11123737$$

Longitude: W. $76^{\circ} 40' 06.''818$
 $76.^{\circ}66856055$
 $5.^h11123737$
 $5.^h 06.^m 40.^s454532$

Latitude: N. $44^{\circ} 45' 32''$
 $44.^{\circ}758$

FABRIQUE EN CHINE
MADE IN CHINA