

# LEO ENRIGHT LOGBOOKS

Volume  
**15**

January 31, 1999  
to  
March 3, 2000

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15

FANCO



cahier **SCIENCE** book

PAPIER EPAIS — HEAVYWEIGHT PAPER — 100 PAGES

name, nom Leo Enright Observing

subject, sujet Jan. 31, 1999 - Mar 3, 2000.

49-1092  
FANCO  
606 De Courcelle,  
Montréal, Qué. H4C 3L5



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

1999

S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
<b>JANUARY</b>							<b>FEBRUARY</b>							<b>MARCH</b>							<b>APRIL</b>						
1	2						1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6			
3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13	4	5	6	7	8	9	10
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24	25	26	27	28	29	30	28	29	30					28	29	30	31				25	26	27	28	29	30	
31																											
<b>MAY</b>							<b>JUNE</b>							<b>JULY</b>							<b>AUGUST</b>						
1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5	6	7		
9	10	11	12	13	14	15	6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14
16	17	18	19	20	21	22	13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21
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30	31						27	28	29	30				25	26	27	28	29	30	31	29	30	31				
<b>SEPTEMBER</b>							<b>OCTOBER</b>							<b>NOVEMBER</b>							<b>DECEMBER</b>						
1	2	3	4				1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4					
5	6	7	8	9	10	11	3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
12	13	14	15	16	17	18	10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
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26	27	28	29	30			24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
							31																				

2000 THE ARTHRITIS SOCIETY 2000

JANUARY							FEBRUARY							MARCH							APRIL						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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23	24	25	26	27	28	29	27	28	29					26	27	28	29	30	31	23	24	25	26	27	28	29	
MAY							JUNE							JULY							AUGUST						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6		1	2	3				1						1	2	3	4	5	6	7		
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8	6	7	8	9	10	11	12
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15	13	14	15	16	17	18	19
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26
28	29	30	31				25	26	27	28	29	30	23	24	25	26	27	28	29	27	28	29	30	31			
SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2						1	2	3	4	5	6	7	1	2	3	4				1	2	3	4			
3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9
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24	25	26	27	28	29	30	29	30	31					26	27	28	29	30			24	25	26	27	28	29	30

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# Observing Log

Code :  
 Year Day Date Time Place Sky Conditions  
 S = Seeing T = Transparency Instruments

e.g.

Time: Place: Sky Conditions:  
 UT = Universal Time oo = Oso Observatory S = Seeing  
 n = night nd = north deck T = Transparency  
 m = morning sh = shoreline of lake 0-10 scale: 0 = niT or  
 f = forenoon ss = solar station extremely poor;  
 a = afternoon t = table at solar station 10 = absolutely superb  
 e = evening in = indoors cm/ = crescent moonlight  
 r = roof of house gml = gibbous moonlight  
 ice = on ice on lake Fml. = full moonlight.  
 sd = south deck

## Instruments:

C-14 = Celestron 14-35.5cm SCT y = yard

C-8 = Celestron 8-20cm SCT

Ast = Astroscan -10.5cm RFT

12 1/2" = Denise's 32cm Meade Dobsonian

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

A.P.F. = Astro-Physics Solar Filter

T.O.F. = Thousand Oaks Solar Filter.

EG = Easy Guider

EGf = Easy Guider, lens forward

EGb = Easy Guider, lens back

## Objects:

PN = Planetary Nebula

GC = Globular Cluster

OC = Open Cluster

SC = Spiral Galaxy

EG = Elliptical Galaxy

D = double star

LPV = long period variable

## Atlases:

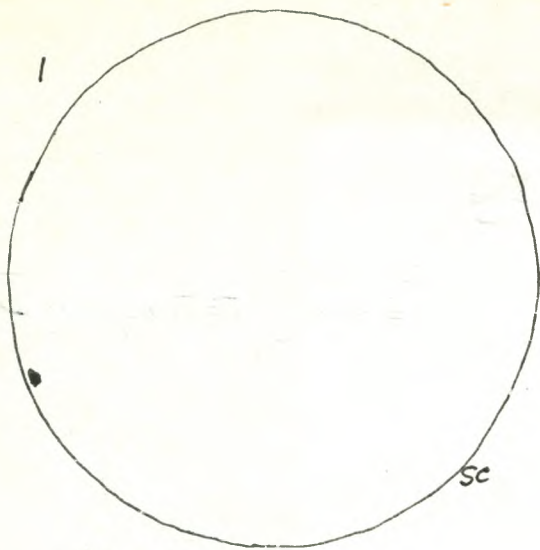
U = Uranometria

U210 = Uranometria Chart 210

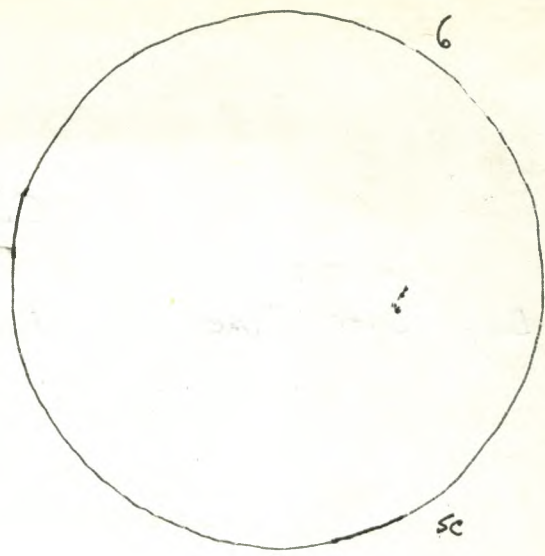
AAUSO = AAUSO Variable Star Atlas

Cam = Cambridge Star Atlas 2000.0

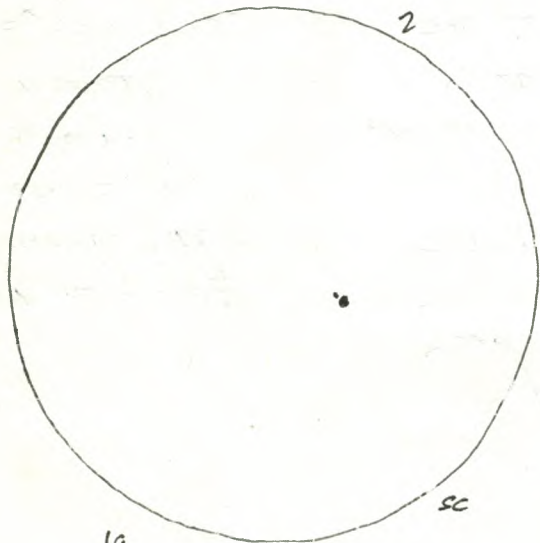
MSA = Millennium Star Atlas.



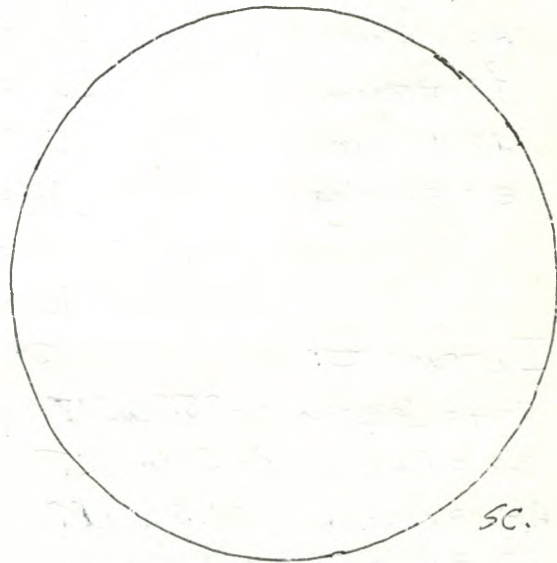
1g  
15  
RSN11  
Feb. 1  
19:10-19:15 UT



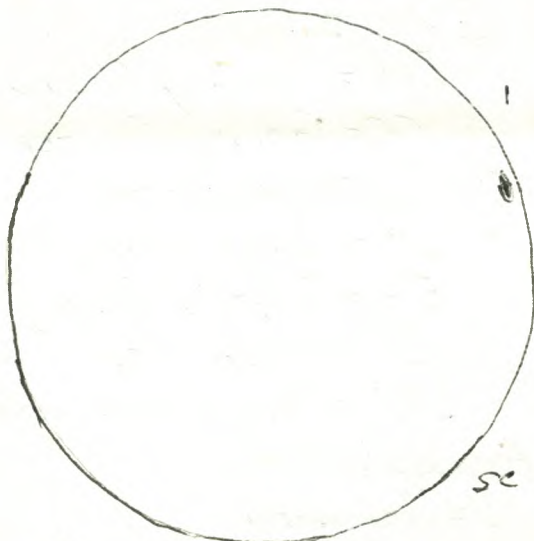
1g  
6s  
RSN16  
Feb. 3.  
20:00-20:05 UT



1g  
2s  
RSN12  
Feb. 5  
19:40-19:45 UT



0g  
0s  
RSN0  
Feb. 7  
19:40-19:45 UT



1g  
15  
RSN11  
Feb. 8  
20:05-20:10 UT

1999

s.m.

Jan. 31 - Feb. 1 22:00 - 22:45 UT ice twl ne

- earth's shadow rising, rising Full Moon
- Venus and Jupiter in WSW

m.

Feb. 1. 19:10 - 19:15 UT t

sun 1g 1s RSN11

C-8, 32, 28, 20, 15.5  
T.O.F.

w.

Feb. 3. 20:00 - 20:05 UT t

sun 1g 6s RSN16

C-8, 32, 28, 20, 15.5  
T.O.F.

F.

Feb. 5. 19:40 - 19:45 UT t

sun 1g 2s RSN12

C-8, 32, 28, 20, 15.5  
T.O.F.

F.-S. Feb. 5-6 02:20 - 03:00 UT y

S8? T9 (!)

20x100b

- M42, M43, M41, RXEri - quite faint - seen with averted vision, Rlep - bright - perhaps mag. 7 and very red, NGC 2244 and Rosette Nebula, S Mon and area, area of Hubble's Variable Nebula - possibly seen

Vesta

with averted vision, the asteroid Vesta (See S. & T. Feb., 1999, p. 112) at about R.A.  $9^h 16^m$  Dec.  $22.5^\circ$  (See U142.) in Cancer W. of the star  $\lambda$  Leonis, R Leonis and area, Alcor and Mizar.

- Clouds moved in at about 03:00 UT (10:00 p.m. E.S.T.)

su. Feb. 7 19:40 - 19:45 UT t

sun 0g 0s RSN0

C-8, 32, 28, 20, 15.5  
T.O.F.

- some haze, cirrus cloud.

M. Feb. 8

20:05 - 20:10 UT t

sun 1g 1s RSN11

C-8, 32, 28, 20, 15.5  
T.O.F.

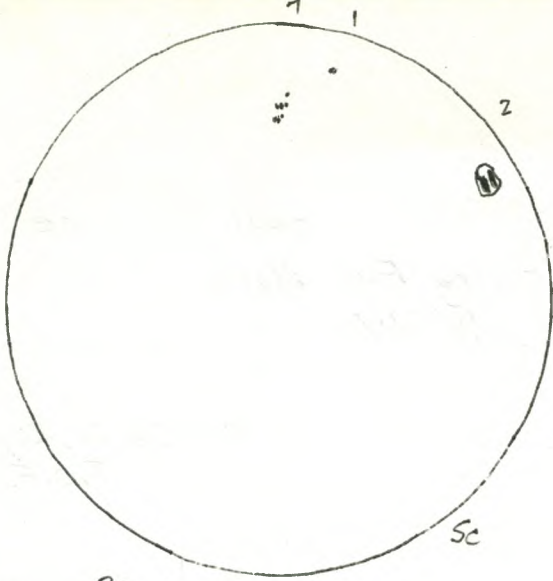
M.T. Feb. 8-9

02:05 - 03:15 UT y

S-8(?) T7-9 (occasional cloud) ne; 20x100b.

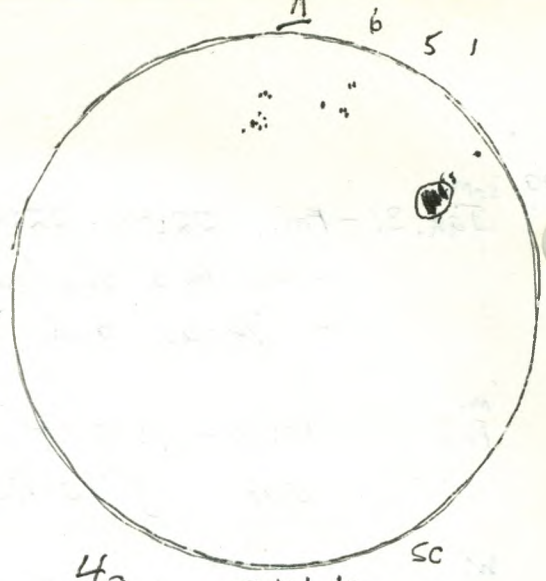
ne: winter and spring constellations

20x100b: M42, M43, M78, Rlep, RXEri, NGC 2244 and area, S Mon and area, M45, Hyades, R Leonis and area, Alcor and Mizar and area, Saturn, M46 and M47, NGC 7789.



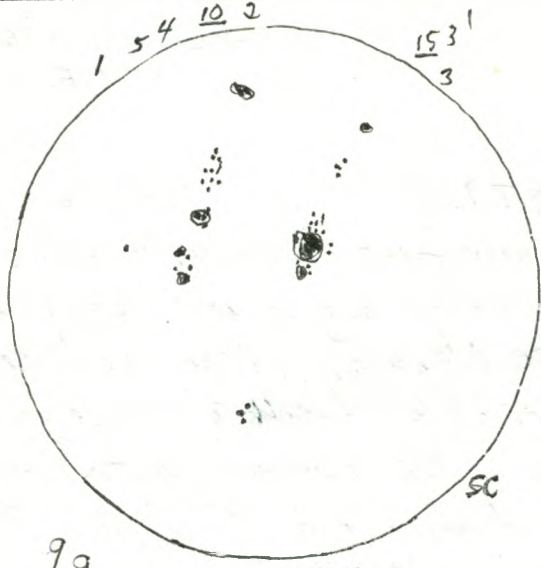
3g  
105  
RSN 40

Feb. 9  
20:35-20:40 UT



4g  
23g  
RSN 63

Feb. 10  
19:40-19:45



9g  
445  
RSN 134

Feb 14  
20:20-20:30 UT

• - Jupiter  
• - Venus  
(Error - see next page)

W

1999

Tu. Feb. 9 20:35-20:40 UT t C-8, 32  
 sun 3g 10s RSN40 Clouds moved in. T.O.F.

W. Feb. 10 19:40-19:45 UT t. C-8, 32, 28, 20, 15.5.  
 sun 4g 23s RSN63 T.O.F.

Sa.-Su. Feb. 13-14 02:00-02:45 UT y S-7-8 T 8.5-9 ne; 20x100b.  
 ne: Saturn, constellations. Earlier in the evening Venus  
 and Jupiter had been seen in the W. - about  $10^\circ$  apart.  
 20x100b: M4, M42, M43, M78, NGC 2244, Rosette Nebula ~~and~~ least  
 parts of it, S Mon and area, R Lep - very red<sup>?</sup> and  
 about mag. 7.5, RX Eri - quite faint, R Leonis,  
 M51, Hyades, Pleiades, M35 and nearby cluster, M36  
 M37, M38. Zodiacal Light still visible in W.

Su. Feb. 14, 20:20-20:30 UT t C-8, 32, 28, 20, 15.5.  
 sun 9g 44s RSN134 T.O.F.

S-M. Feb 14-15 22:45 UT ice twl ne  
 - Venus in WSW about  $20^\circ$  above horizon - seen after I  
 had observed the earth's shadow rising in the E. while  
 I was cross-country skiing on the lake.

00:18 - 00:25 (about 10<sup>min</sup> after E.A.T.) y ne  
 z.l. - constellations of winter; Zodiacal Light quite bright in  
 W., brighter than the Winter Milky Way and up  
 as high as the Pleiades

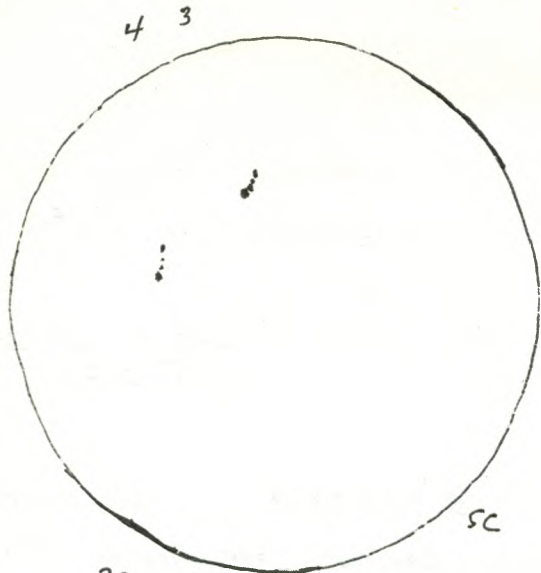
03:23 - 04:23 UT y S-8(?) T 3-8 (varied-cloud) ne; 20x100b.  
 ne: constellations

20x100b: area of T Pyxidis, area of R Leonis, Belt stars of Orion and  
 area, M51.

M.-T. Feb. 15-16 02:00-02:50 UT y S-8(?) T 4-8 varied; cloud, haze ne; 20x100b  
 ne: constellations

20x100b: M42 and area; NGC 2244 and parts of Rosette Nebula, S Mon  
 and area, areas of Pyxis, area near M51, area near R Leonis.



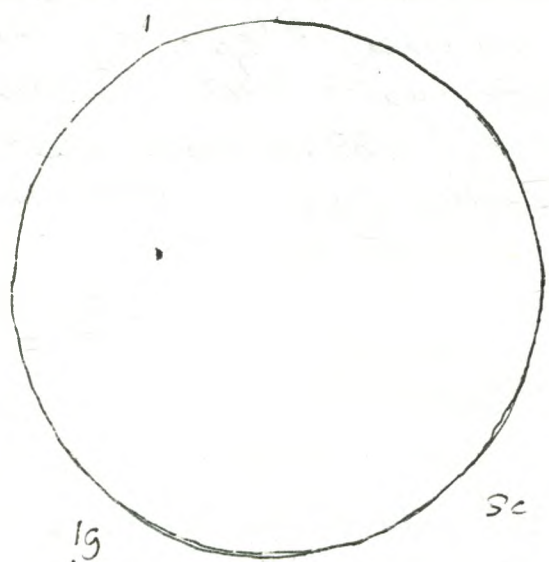
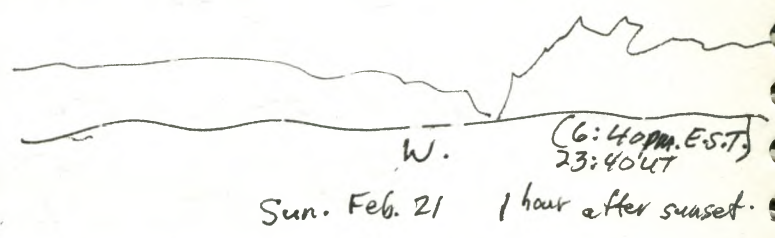


25  
75  
RSN27 Feb 21  
18:40-18:45 UT

☾ - Cr. moon

Saturn

- Jupiter
- Venus

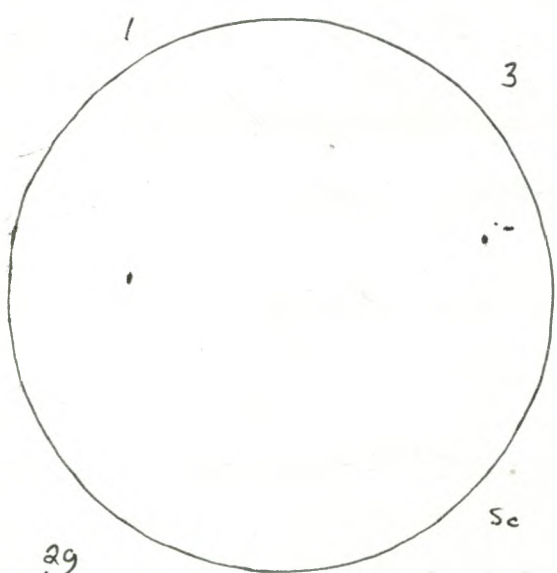
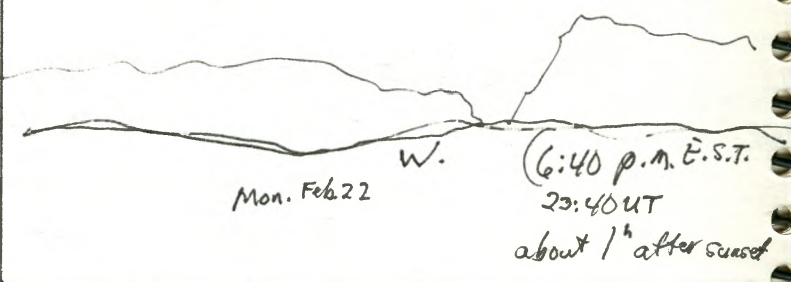


19  
15  
RSN11 Feb. 22  
19:42-19:47 UT

☾ Cr. Moon (near F.Q.)

Saturn

- Jupiter
- Venus

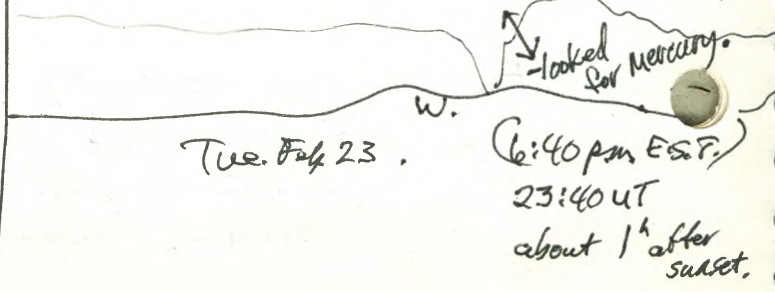


29  
45  
RSN24 Feb. 23  
18:50-18:55 UT

☾ Cr. Moon

Saturn

- Venus
- Jupiter
- (Very close!)



1999

F.-S. Feb. 19-20 05:00-05:05 UT

2-8? T 9-9.5!

ne

- constellations - after moonset, after returning from Ottawa where I had gone with Denise on Wednesday while she was at a Literacy Conference from Feb. 17 to Feb. 19. I had skated on the Rideau Canal 3 times and attended a literacy group meeting with some M.P.s on Parliament Hill on Feb. 18.

Su. Feb. 21 18:40-18:45 UT t

C-8, 32, 28, 20, 15.5  
T.O.F.

sun 2g 7s RSN 27

S.-M. Feb 21-22 23:20-23:45 UT y and ice

twl

ne

- viewed and photographed Jupiter and Venus in W. approaching each other and now only about  $2^\circ$  apart. (See diagram.)

M. Feb. 22 19:42-19:47 UT

C-8, 32, 28, 20, 15.5  
T.O.F.

sun 1g 1s RSN 11

M.-T. Feb. 22-23 23:20-23:50 UT y and ice

twl; crml

ne

- viewed and photographed Jupiter and Venus in W. about  $20^\circ$ - $25^\circ$  above the horizon, and now about  $1^\circ$  or less apart. (See diagram.)

00:00 - 00:20 UT t

near end of twl.; crml C-8, 32, 15.5, 20

- Venus, Jupiter and its 4 moons; Saturn (seen using the 20mm ocular) and Titan; M42, M43, The Trapezium

Tu. Feb. 23 18:50-18:55 UT t

C-8, 32, 28, 20, 15.5  
T.O.F.

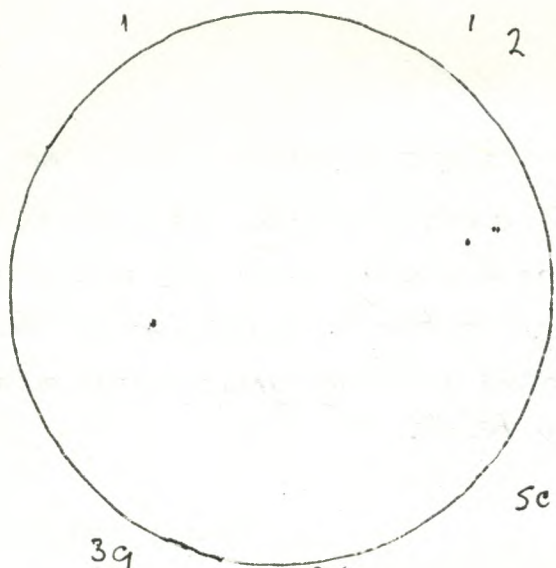
sun 2g 4s RSN 24

T.-W. Feb. 23-24 23:20-23:50 UT y and ice

twl, 1gml

ne

- viewed and photographed Jupiter and Venus in W. about  $20^\circ$ - $25^\circ$  above the horizon, now about 2-3 hours past the moment of closest approach in this conjunction ( $0.1^\circ$  apart!) They must have been about  $0.2^\circ$  apart! - looked for but was not sure of seeing Mercury below Venus. (See diagram.)

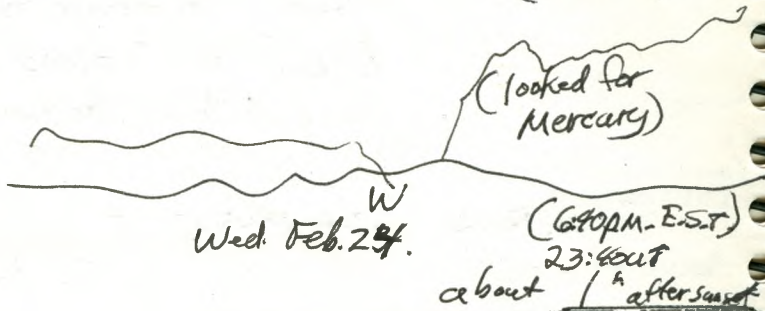


3g  
4s  
RSN34  
Feb. 24  
19:35-19:40 UT

• Saturn

• Venus  
• Jupiter  
(about 1° apart)

(looked for Mercury)



Wed. Feb. 24

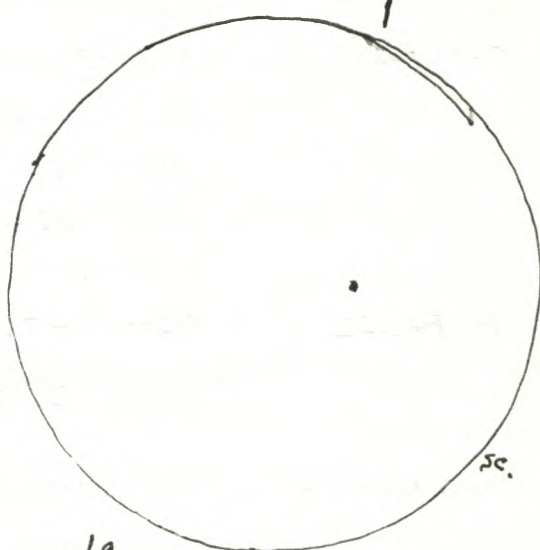
(6:40 PM - EST)

23:40 UT

about 1h after sunset

• Venus  
• Jupiter  
(about 2° apart)

Thu. Feb. 25 23:20 UT

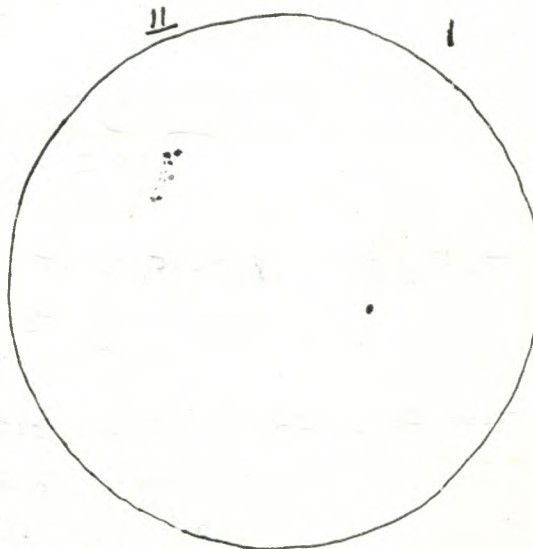


1g  
1s  
RSN11

Feb. 26  
20:10-20:15 UT

• Venus  
• Jupiter  
(about 2½°-3° apart)

Fri. Feb. 26 23:30 UT



2g  
12s  
RSN32

Feb. 27  
19:05-19:10 UT

1999

W. Feb. 24 19:35-19:40 UT t

C-8, 32, 28, 20, 15.5  
T.O.F.

Sun 3g 4S RSN34

W.-Th. Feb. 24-25 23:20-23:50 UT y and ice twl & fgmL ne  
 - viewed and photographed Jupiter and Venus in W. - now  
 moving apart again - about  $1^\circ$  apart with  
 Venus now above. (See diagram.) - looked for  
 Mercury, but not sure of seeing it.

Th. Feb. 25 23:20 UT y twl & fgmL ne.  
 - Venus and Jupiter in W. now about  $2^\circ$  apart

F. Feb. 26 20:10 - 20:15 UT t C-8, 32, 28, 20, 15.5  
 Sun 1g 1s RSN 11 T.O.F.

F.-S. Feb. 26-27 23:30 (?) UT in Kingston twl and gml. ne  
 - Venus and Jupiter in W. now about  $2\frac{1}{2}^\circ - 3^\circ$  apart  
 Denise and I were in Kingston to attend the Leona Boyd  
 Concert at the Grand Theatre, and I saw the planets  
 while in the car.

Sa. Feb. 27 19:05 - 19:10 UT t C-8, 32, 28, 20, 15.5  
 Sun 2g 12s RSN 32 T.O.F.

Sa.-Su. Feb. 27-28 23:40-00:10 UT ice twl and gml ne  
 - observed and photographed Venus, Jupiter and  
 Mercury in W., Venus and Jupiter now about  $3\frac{1}{2}^\circ - 4^\circ$   
 apart and Mercury up about  $10^\circ - 15^\circ$  above the  
 horizon. Saturn was about  $15^\circ$  above Venus.  
 (See diagram on next page.)

Tu. Mar. 2 21:05-21:10 UT t C-8, 32, 28, 20, 15.5  
 Sun 5g 25s RSN 75 T.O.F.

T.-W. Mar. 2-3 23:30-00:10 UT ice twl and fml ne  
 - viewed and photographed the array of four

• Saturn

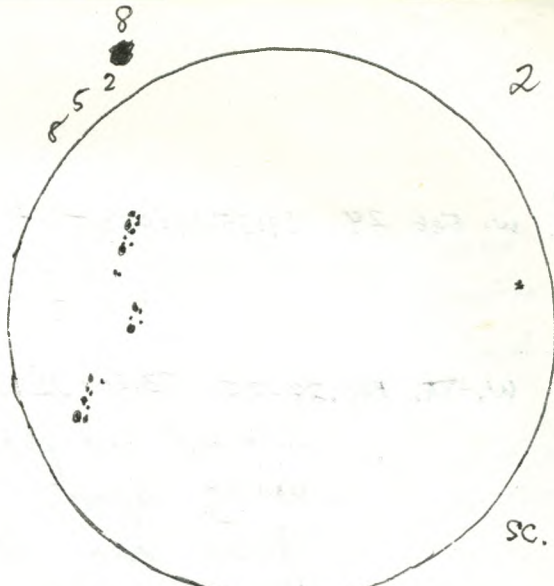
• Venus

• Jupiter

• Mercury

Sat. Feb. 27.

6:45 PM EST.  
23:45 UT



5g  
25 S  
RSN 75

Mar. 2  
21:05-21:10 UT

• Saturn

• Venus

• Jupiter

• Mercury

Tue. Mar. 2

6:45 PM EST.  
23:45 UT

• Saturn

→ about 15°

• Venus

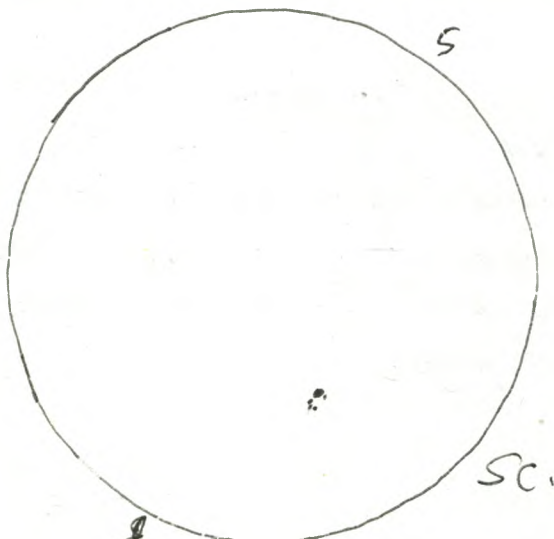
→ about 10°

• Jupiter → about 10°

• Mercury

Thu. Mar. 4

6:45 PM EST.  
23:45 UT



19  
5 S  
AGN 15

Mar. 8.  
19:15-19:20 UT

1999.

Mercury

bright planets in the W., and the Full Moon rising in the E. (See diagram for the array of planets.) Venus and Jupiter were now about  $8^\circ$  apart and Mercury was about  $8^\circ$  from Jupiter. Saturn was about  $15^\circ$  above Venus. It was possible to get all 4 of the planets in the field of the 50mm camera lens.

Th-F. Mar. 4-5 23:40-23:50 UT ice twl ne

Mercury

observed the 4 planets, Saturn, Venus, Jupiter and Mercury (See diagram.)

- after very heavy snowfall lasting almost 36 hours - from early in the day, the previous day, and after using the snowblower to try to clear driveway.

01:20 - 01:40 UT y 5-8(?) T8-9 ne

- winter and spring constellations; a meteor of about mag. 3 - 2.5, about  $10^\circ$  trail from area near Castor and Pollux - southward possibly into constellation Cancer at about 01:35 UT

M. Mar. 8 19:15 - 19:20 UT t C-8, 32, 28, 20, 15.5  
sun 1g 5s RSM15 T.O.F.

M-T. Mar. 8-9 23:35 UT nd twl ne

Venus and Jupiter in W with a separation of about  $12^\circ$

00:45 - 02:00 UT y 5-8(?) + 9.0-9.5(?) ne; 20x100b

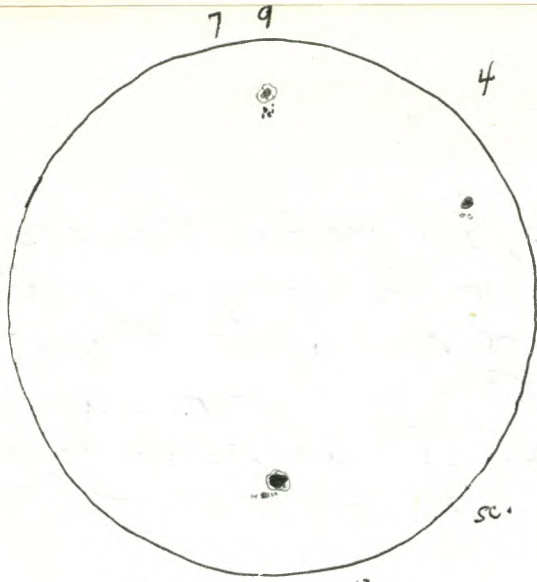
Z.h.

ne.: Zodiacal Light in W. up higher than the Pleiades; winter and spring constellations.

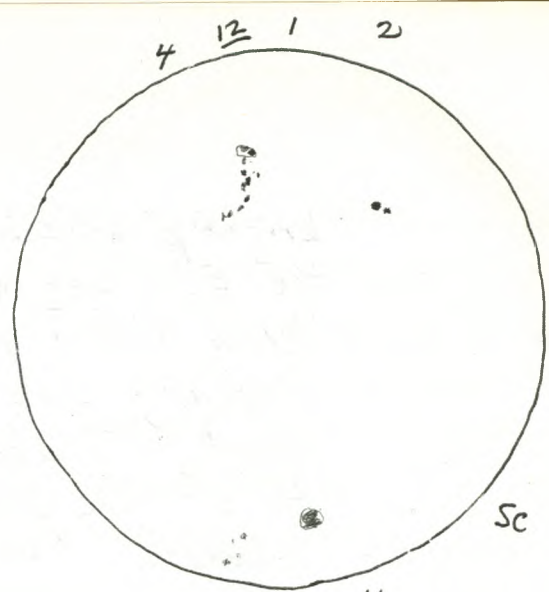
20x100b.: M42, M43, M44, M78, NGC 2224 and part of the Rosette Nebula, area approximately of T Pyxidid, M51, M45, Hyades.

After the end of the session, I saw a glow up to about  $15^\circ$  in the N; it was probably Aurora. Denise was out for a few minutes.

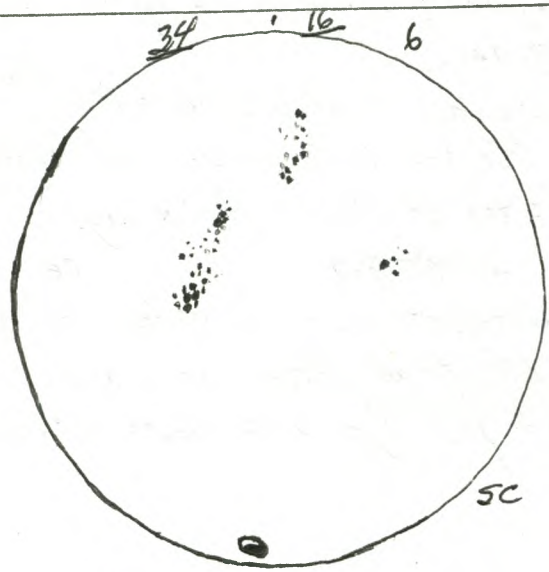
Aurora



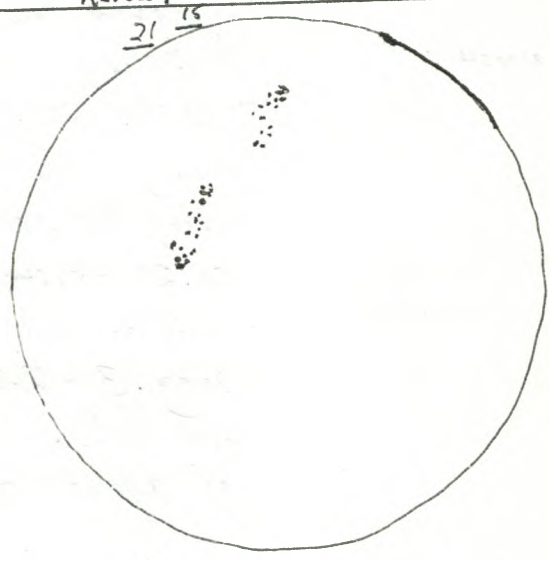
3g  
205  
RSN50  
Mar. 10  
19:35-19:40UT



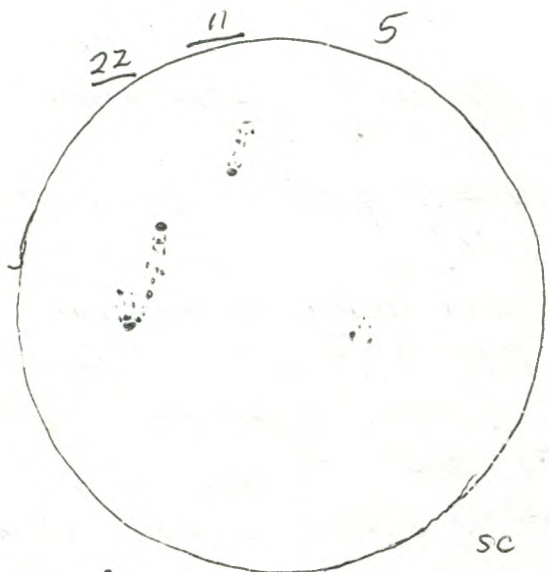
4g  
195  
RSN59  
Mar. 11  
19:00-19:05UT



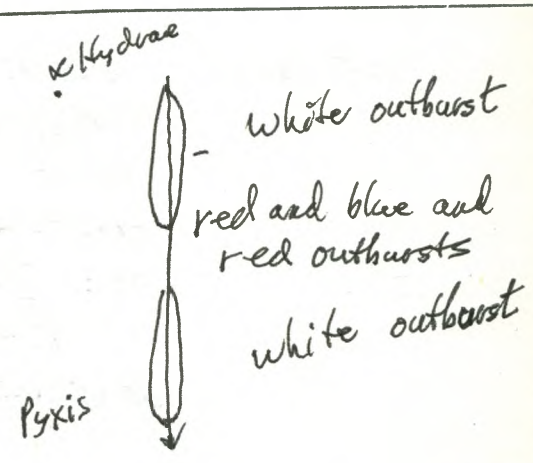
4g  
515  
RSN97  
Mar. 13  
19:35-19:40UT



2g  
365  
RSN56  
Mar. 14  
18:30-18:35UT



3g  
385  
RSN68  
Mar. 15  
19:35-19:40UT



Mar. 15-16: 04:27UT  
Fireball "descending" in SW

1999

W. Mar. 10 19:35-19:40 UT t  
Sun 3g 20s RSN 50

C-8, 32, 28, 20, 15.5  
T.O.F.

W.-Th. Mar. 10-11 02:16-02:35 UT y S-7 T7-8 (some haze) ne  
- Winter and spring constellations - winter Milky Way visible. (Saturn and Venus had been seen earlier in the W. at about 00:00 UT.)

Th. Mar. 11 19:00-19:05 UT t  
Sun 4g 19s RSN 59

C-8, 32, 28, 20, 15.5  
T.O.F.

Sa. Mar. 13 19:35-19:40 UT t  
Sun 4g 57s RSN 97

C-8, 32, 28, 20, 15.5  
T.O.F.

Su. Mar. 14 18:30-18:35 UT t  
Sun 2g 36s RSN 56

C-8, 32, 28, 20, 15.5  
T.O.F.

S.-M. Mar. 14-15 05:30-06:35 UT y S-8(?) T9.5! ne

Aurora  
- winter and spring constellations; Mars in Libra, near  $\alpha$  Lib. There was a fairly bright Auroral glow in the N. up  $10^{\circ}$ - $15^{\circ}$   
- photographed various constellations. - also photographed Mars in Libra hoping to continue to photograph it periodically as it shows retrograde motion in the constellations Libra and Virgo.

M. Mar. 15 19:35-19:40 UT t  
Sun 3g 38s RSN 68

C-8, 32, 28, 20, 15.5  
T.O.F.

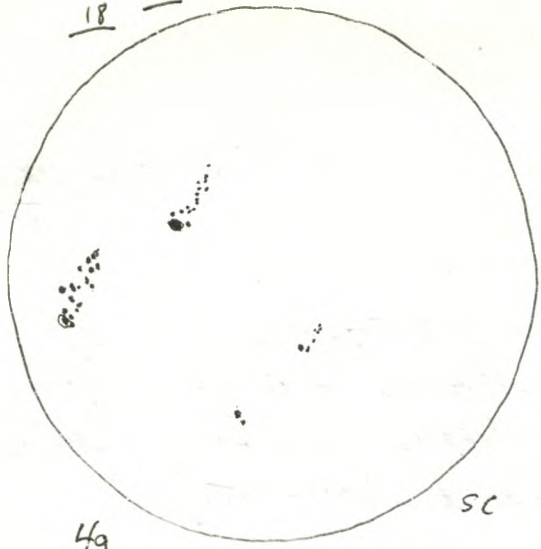
M.-T. Mar. 15-16 02:30-05:00 UT y S-8(?) T9.5! ne; 20x100 b.

ne: Saturn and Venus (in earlier part of the evening), constellations of winter and spring; an extremely bright fireball in SW, going "downward" from a point about  $2^{\circ}$  W. of the star Alpherat ( $\alpha$  Hydrae) to a point (about <sup>nept</sup> W. of) the star  $\alpha$  Pyxidis. There were 2 very intense bursts of white light - about 3 seconds apart with red and blue

Fireball!



18 15 2 8

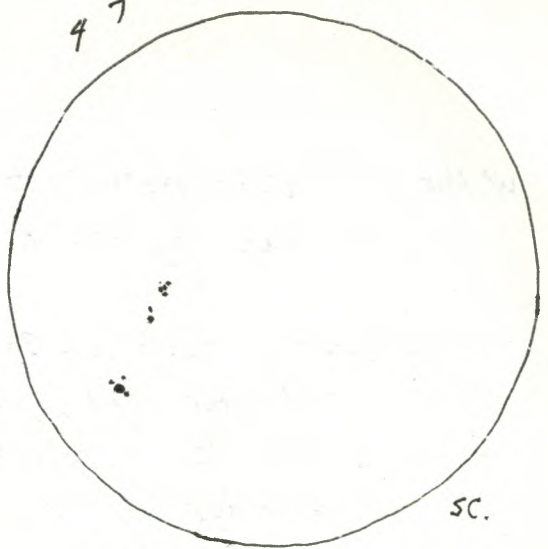


4g  
43s  
RSN 83

Mar 17  
18:00-18:05 UT

SC

47



2g  
11s  
RSN 31

Mar. 19  
21:25-21:30 UT

SC.

Venus

Saturn



W

Mar. 20 00:00 UT



1999

flashes in between them. There was a grey coloured smoky train afterward, that remained visible for 10 seconds. The white bursts were about mag. -10. The time was 4:27 UT (11:27 p.m. E.S.T.) The white outbursts each lasted about 3 seconds.

- 20x100 b.: area near Polaris - looking for Comet Linear (See Sky and Telescope, April, 1999 p. 111). The previous night it had been extremely close to the N.C.P., in fact, much closer than Polaris. Using M.S.A., I identified most stars within  $1^\circ$  of the N.C.P., but was unsure of seeing the comet. -  $\lambda$  UMi, near N.C.P., R Cep, near N.C.P. (See MSA 2.), M35, M36, M37, M38, NGC 2224, S Mon, area of T Pyxidid, but no evidence of the star, R Cor Bor - bright - at about mag. 7, T Cor Bor at mag. 10.5., M92, M13, Mars in Libra

looked for  
Comet  
LINEAR

W. Mar. 17 18:00 - 18:05 UT  $\epsilon$  C-8, 32, 28, 20, 15.5  
Sun 4g 43s RSN 83 T.O.F.

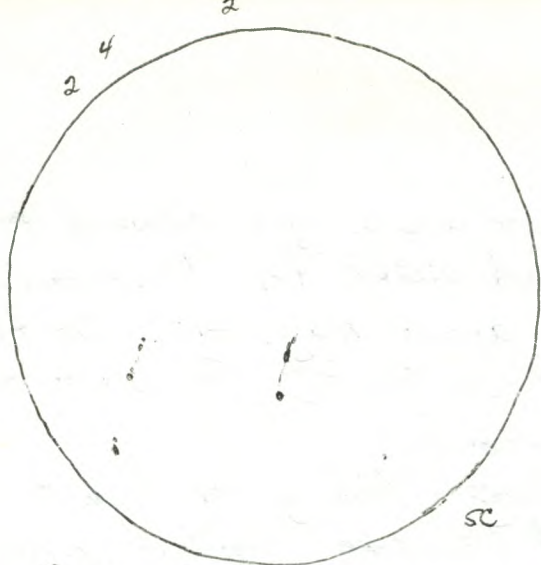
F. Mar. 19 21:25 - 21:30 UT  $\epsilon$  C-8, 32, 28, 20, 15.5  
Sun 2g 11s RSN 31 T.O.F.

F-S. Mar. 19-20 23:45 - 00:25 UT ice twl ne

- observed constellations appear in twl. In West, I observed and photographed ~~M3~~ Venus, Saturn, Moon. ~~photography~~ (See diagram.)

02:30 - 04:30 UT y 8-8; T-9 ne; 20x100b

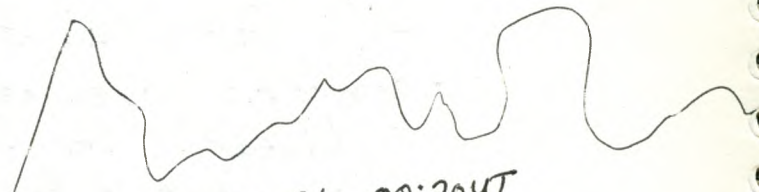
20x100b: M42, M43, NGC 2244 and parts of Rosette Nebula, S Mon and area, areas on U 227 - U Moa - very faint - probably about mag. 10.5 (Burn.: LPU mag 6.3-13.7), area of Ross 614 (-mag. 11.0 star - not seen), area of T Pyxidid - but star not seen, T Cor Bor, Rhenis - at about mag. 8.5-8.0; area of R Corvi - but star not seen (Burn.: LPU - 6.7-14.4 mag.) (U 328),



3g ~~20:20~~ Mar. 20  
 8s 20:20-20:25 UT  
 RSN38

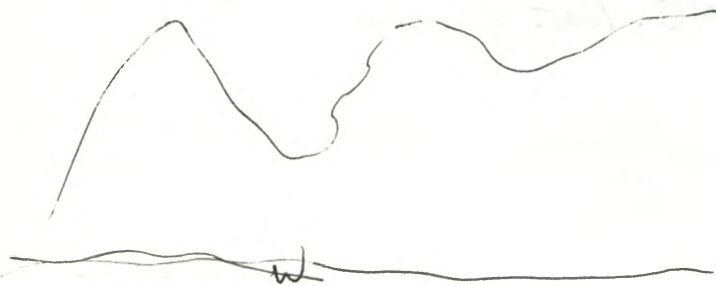


• - Venus  
 • - Saturn

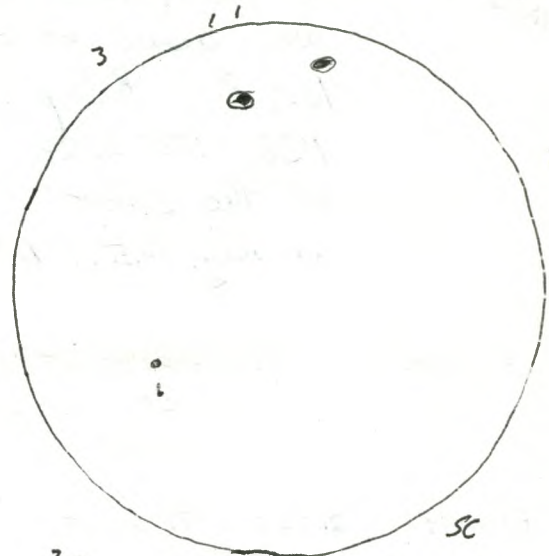


Mar. 20-21 00:20 UT  
 W

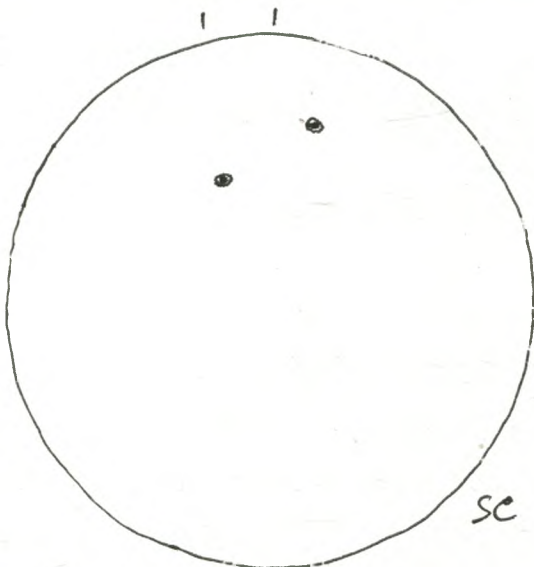
Venus  
 } 5°  
 Saturn



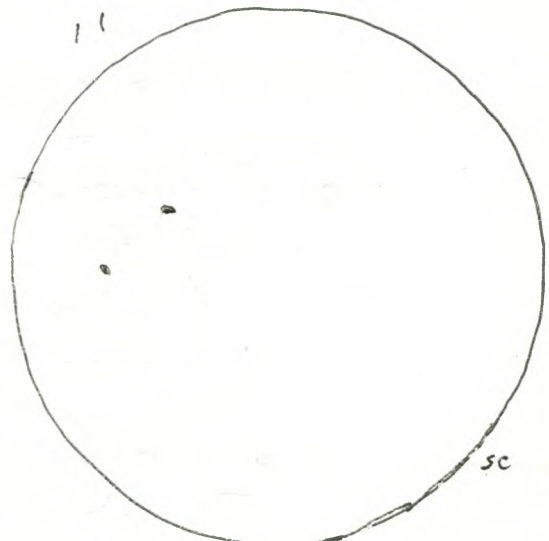
Mar. 23-24  
 01:48 UT



3g Mar. 24  
 5s 20:15-20:20 UT  
 RSN35



29 Mar. 26  
 25  
 RSN22



29 Mar. 28  
 25 20:30-20:35 UT  
 RSN22

S Vir (See U285) - at or near limit of visibility - perhaps barely seen (Burn.: LPU mag. 6.2-13...); R Vir - by star-hopping from S Vir (U194) - about mag. 8.5 (Burn.: LPU mag. 6.2-12.1) M49 - galaxy not far from R Vir (also on U194, Mars.

Sa. Mar. 20 20:20-20:25 UT t C-8, 32, 28, 20, 15.5  
Sun 3g 8s RSN38 T.O.F.

Sa.-Su. Mar. 20-21 00:20-00:30 UT y twl ne  
- observed and photographed crescent moon, Venus, Saturn in W.  
02:20-03:30 UT y S-8(?) T 7-3 increasing cloudiness ne; 20x100b  
ne.: constellations  
20x100b: M42, R Vir and area (see above from last night),  
M51, area near Polaris, R Leonis - at about mag.  
8.5 to 8.0., area of Leo S. of Orion, the  
Pleiades.

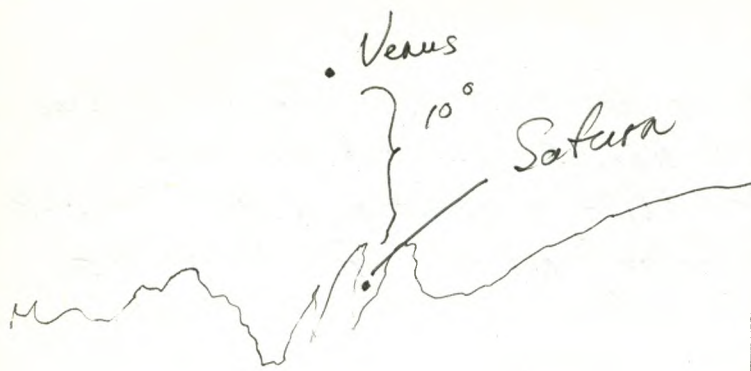
T.-W. Mar. 23-24 01:48 UT nd  
- Venus and Saturn in W. about 5° apart  
- observed momentarily while doing phone survey for the  
provincial election campaign of Leona Dombrowski

W. Mar. 24 20:15-20:20 UT t C-8, 32, 28, 20, 15.5  
Sun 3g 5s RSN35 T.O.F.

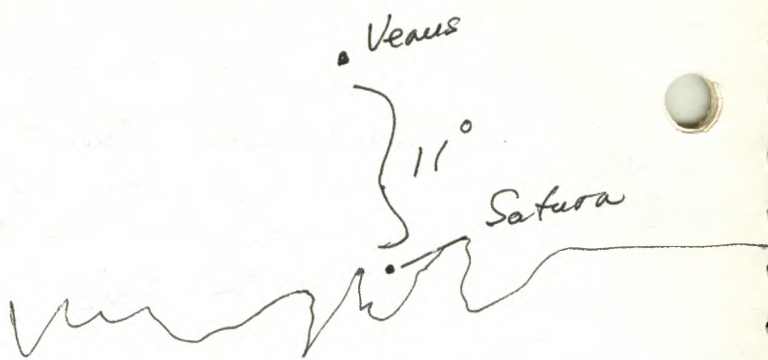
F. Mar. 26 19:35-19:40 UT t C-8, 32, 28, 20, 15.5  
Sun 2g 2s RSN22 T.O.F.

F.-S. Mar. 26-27 00:05-00:45 UT 12½", 32, 19, 15.5, 12  
Saturn (and Titan seen in 19mm ocular) low in W, Venus  
(gibbous) M42 including Trapezium.

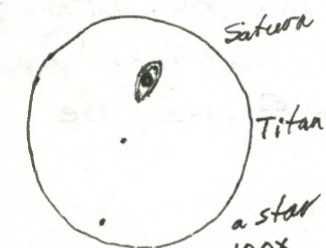
Su. Mar. 28 20:30-20:35 UT t C-8, 32, 28, 20, 15.5  
Sun 2g 2s RSN22 T.O.F.



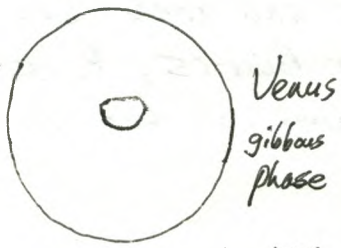
W  
S.-M. Mar. 28-29  
00:48 UT



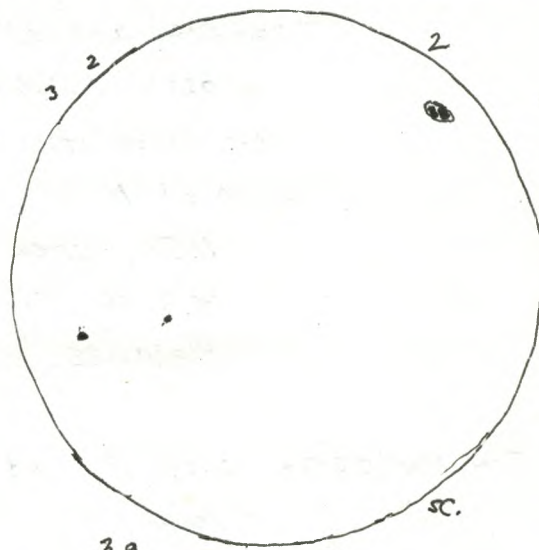
W  
M.-T. Mar. 29-30 00:30 UT



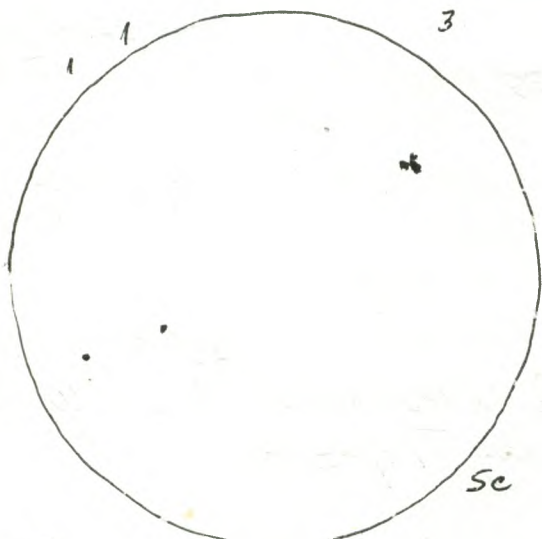
C-8; 20mm - 100X  
M.-T. Mar. 29-30  
00:25 UT



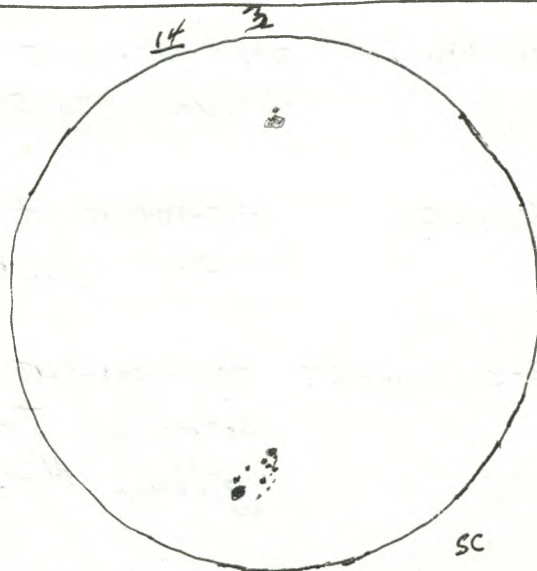
C-8; 20mm - 100X  
M.-T. Mar. 29-30  
00:25 UT



3g  
7s  
RSN37  
Mar. 30  
19:50 - 19:55 UT



3g  
5s  
RSN35  
Mar. 31  
21:35 - 21:40 UT



2g  
17s  
RSN37  
Apr. 5  
20:00 - 20:05 UT

1999

Su.-M. Mar. 28-29 00:48 UT n. doorway twl; gml. ne  
 - Venus and Saturn in W - now  $10^\circ$  apart - See diagram.

02:05 - 02:35 UT y gml. ne  
 - gibbous moon; bright stars of the constellations

M.-T. Mar. 29-30 00:20 - 00:30 UT n.d. twl; gml. ne; C-8, 32, 20, 15.5

ne: bright stars; Venus and Saturn in W. - now  $11^\circ$  apart  
 (See diagram.)

C-8: Saturn and Titan; Venus - gibbous phase.  
 (See diagram.)

T. Mar. 30 19:50 - 19:55 UT t C-8, 32, 28, 20, 15.5  
 sun 3g 7s RSN 37 T.O.F.

W. Mar. 31 21:35 - 21:40 UT C-8, 32, 28, 20, 15.5  
 sun 3g 5s RSN 35 T.O.F.

M. Apr. 5 20:00 - 20:05 UT t C-8, 32, 28, 20, 15.5  
 sun 2g 17s RSN 37 T.O.F.

W. Apr. 7 19:00 - 19:05 UT t C-8, 32, 28, 20, 15.5  
 sun 5g 21s RSN 71 T.O.F.

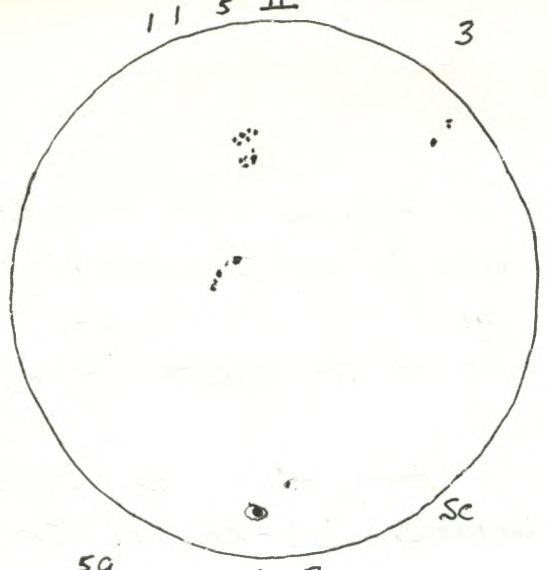
W.-Th. Apr. 7-8 00:55 - 01:35 00 S-8(?) T 5 (increasing cloud) C-14, 32  
 - area near M35 in Gemini; M42 including Trapezium;  
 $\gamma$  Leonis, beautiful double.

Sky became almost completely overcast.  
 - Venus had been observed earlier. (See diagram - next page.)

Th. Apr. 8. 20:50 - 20:55 UT t C-8, 32, 28, 20, 15.5  
 sun 5g 22s RSN 72 T.O.F.

Th.-F. Apr. 8-9 01:40 - 03:40 UT ~~y~~ y S-8(?) T 8.5-9 ~~ne~~ ne; 20x100b  
 ne: Venus, constellations, Mars, meteor - about mag. 3 in  
 Crater-Hydra area; faint brightness or perhaps

Venus

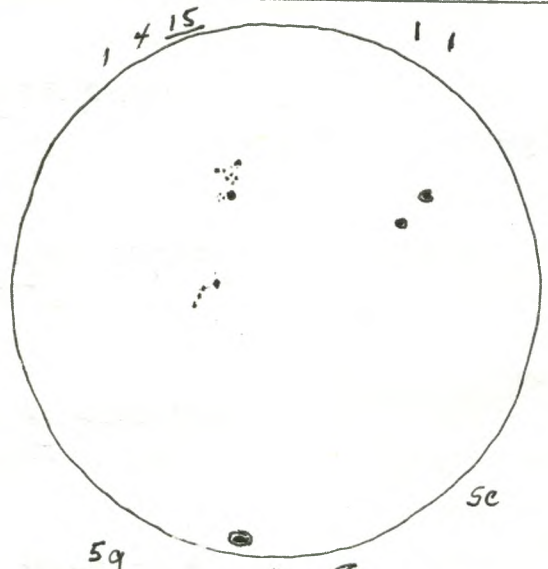


5g  
21S  
RSN71

Apr. 7  
19:00-19:05 UT

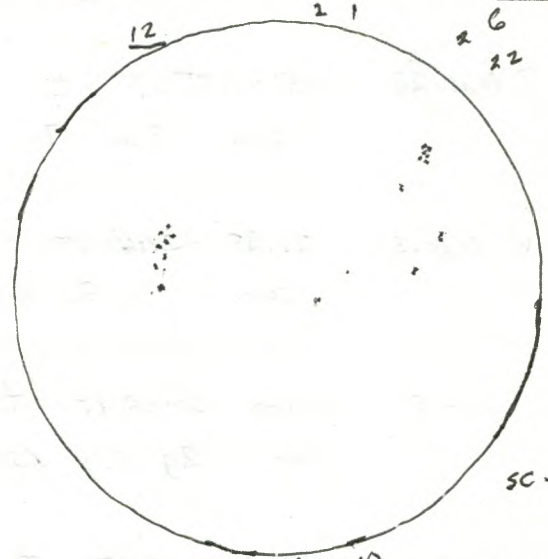


Apr. 7-8



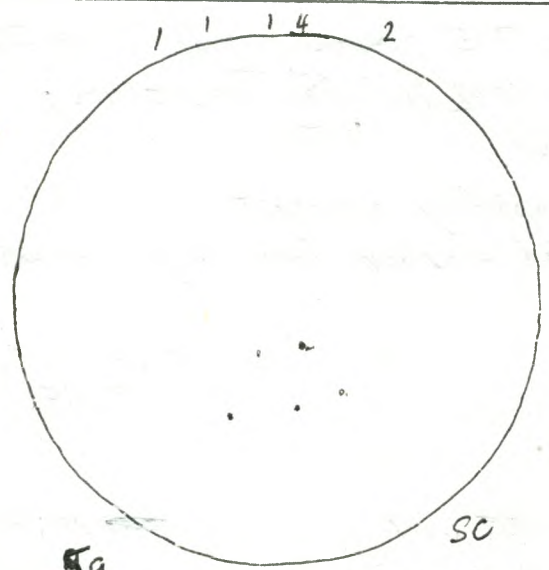
5g  
22S  
RSN72

Apr. 8  
20:50-20:55 UT



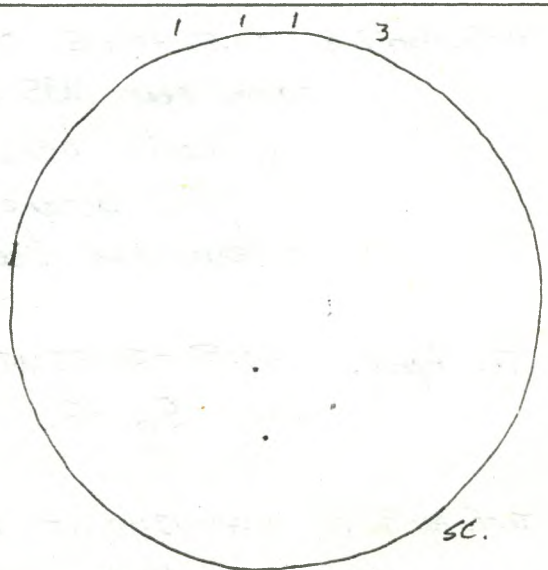
7g  
27S  
RSN97

Apr. 10  
18:05-18:10 UT



5g  
9S  
RSN59

Apr. 13  
19:25-19:30 UT



4g  
6S  
RSN46

Apr. 14  
20:20-20:25 UT

1999

glow in N. that might possibly have been Aurora.  
 20x100b: M42, area of T Pyxidis, T Cor Bor, R Cor Bor,  
 M104 - The Sombrero Galaxy, R Corvi area - but star was not  
 visible - being probably near minimum of its cycle (U 328;  
 Buraham: LTV - mag. 6.7 - 14.4, per.: 317 days), also S V Corvi  
 (U 284; Buraham: Semi-regular; per.: 60: days;  
 mag. 6.8 - 7.6), M13, M92.

Sa. Apr. 10 18:05 - 18:10 UT t.

C-8, 32, 28, 20, 15.5  
T.O.F.

sun 7g 27s RSN97

Sa.-Su. Apr. 10-11 01:30 - 05:10 UT y S-8-9(?) T9 ne; 20x100b; C-8, 28, 15.5, 74

ne: constellations, slight brightness in N. that may have been Aurora.

20x100b: T Pyxidis area, S V Corvi, R Corvi area but star not seen,  
 M104,  $\alpha$  Lib and area,  $\beta$  Lib, Mars, S S Vir and area,  
 area of 3C 273 (U 238), Bk Vir (U 238, Buraham: Irr.,  
 mag. 7.4 - 8.7), M61 (U 238), R Leonis (- about mag. 7.)

C-8: Mars - very bright, difficult to distinguish features.  
 photographed: area of Mars in Virgo, Constellation Leo.

M.-T. Apr. 12-13 04:00 - 04:30 UT

S8(?) T9

ne; photography

ne: constellations

photography: Mars in Virgo.

Tu. Apr. 13 19:25 - 19:30 UT

C-8, 32, 28, 20, 15.5

sun 5g 9s RSN59

T.O.F.

W. Apr. 14 20:20 - 20:25 UT

C-8, 32, 28, 20, 15.5

sun 4g 6s RSN46

T.O.F.

W.-Th. Apr. 14-15 04:00 - 06:10 UT y

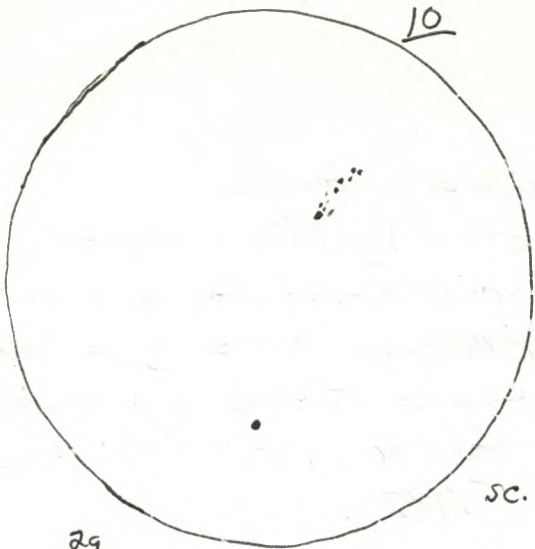
S-8(?) T9

ne; 20x100b

ne: constellations

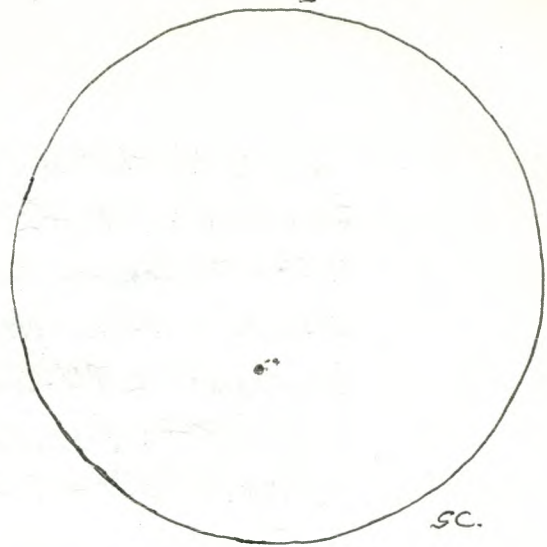
20x100b: S S Vir, T Cor Bor, R Cor Bor, M57,  $\beta$  Cyg -  
 split clearly and colour beautiful, area near Deneb  
 and near  $\gamma$  Cyg, M4 and nearby area, R Leonis,





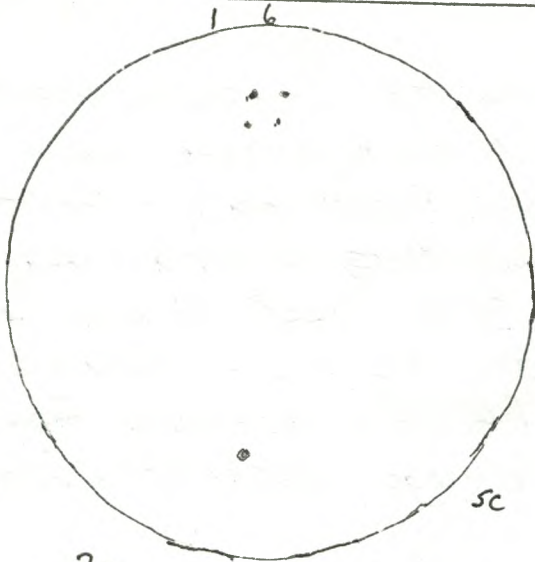
29  
115  
RSN31

Apr. 20  
20:32 - 20:38 UT



19  
5s  
RSN15

Apr. 24  
18:15 - 18:20 UT



29  
75  
RSN27

Apr. 25  
19:35 - 19:40 UT

1999.

## Col 299 (The Coathanger)

S.-M. Apr. 18-19 00:30 - 01:30 UT <sup>home of Doug Steele and Claire Gaveres</sup> S-#) + 2 very cloudy ne  
 N. of Hwy #7 - Zealand Rd.

- I was invited to give an Astronomy presentation about "naked-eye" observing. Besides the hosts, about 5 others came.
- observed Cr. Moon and Venus in W. and Mars low in S.E.
- The presentation was later indoors.

Tu. Apr. 20 20:32 - 20:38 UT t C-8, 32, 28, 20, 15.5  
 sun 2g 11s RSN 31. T.O.F.

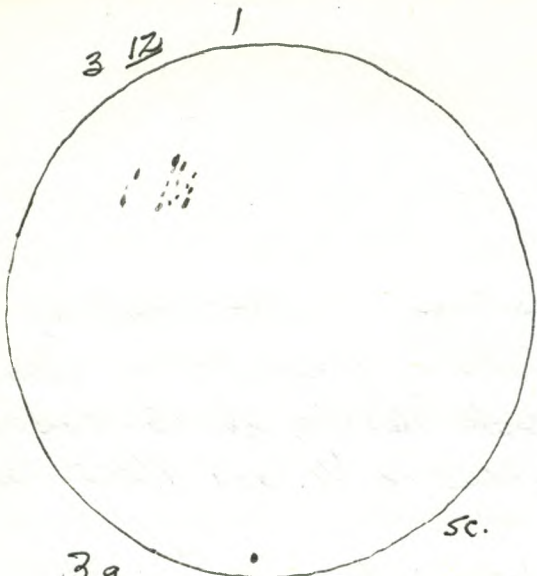
Tu.-W. Apr. 20-21 04:00 - 04:30 UT y crml ne  
 - Constellations ; looked for possible Lyrid Meteors which were supposed to peak the following night, but did not see any bright ones.

Sa. Apr. 24 18:25 - 18:20 UT t C-8, 32, 28, 20, 15.5  
 sun 1g 5s RSN 15 T.O.F.

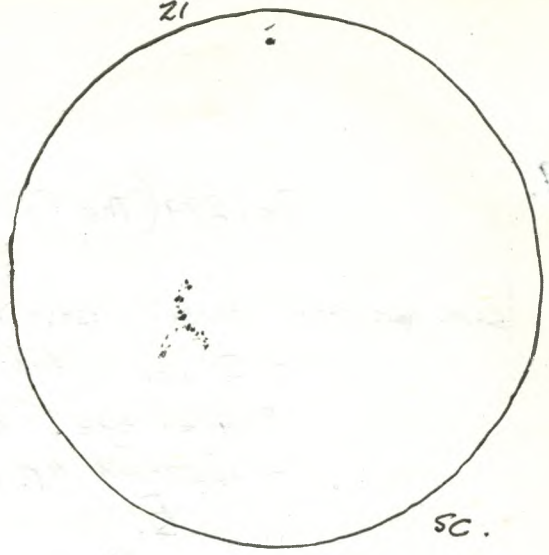
Su. Apr. 25 19:35 - 19:40 UT t C-8, 32, 28, 20, 15.5  
 sun 2g 7s RSN 27 T.O.F.

At Tu. Apr. 26-27 01:30 - 02:40 UT 00 gml. C-14, 19  
 - Venus - about "quarter phase" - up about 25° in NW.; Mizar; Mars - slightly over 2 days after its opposition date - about 16" and Mag. - 1.6 - difficult to distinguish features because of brightness, but some seemed to be faintly visible - "boiling" also a problem since its altitude was only about 20°-25° - tried observing also with 12<sup>mm</sup> ocular and 7.4<sup>mm</sup> ocular, and tried using various filters - red and green - they may have been somewhat helpful. Denise also observed Venus and Mars.

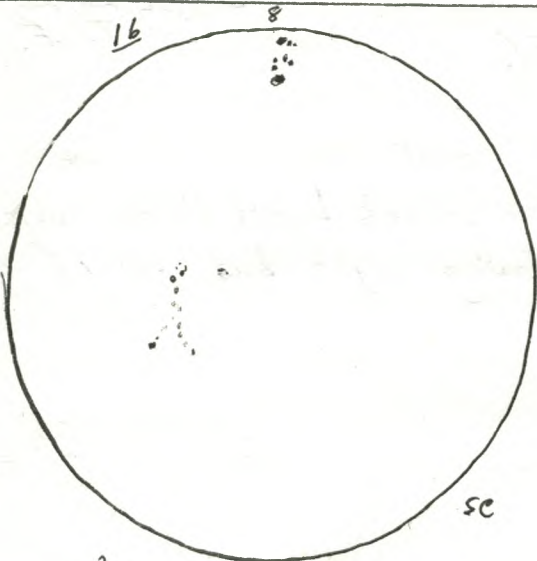
MARS.



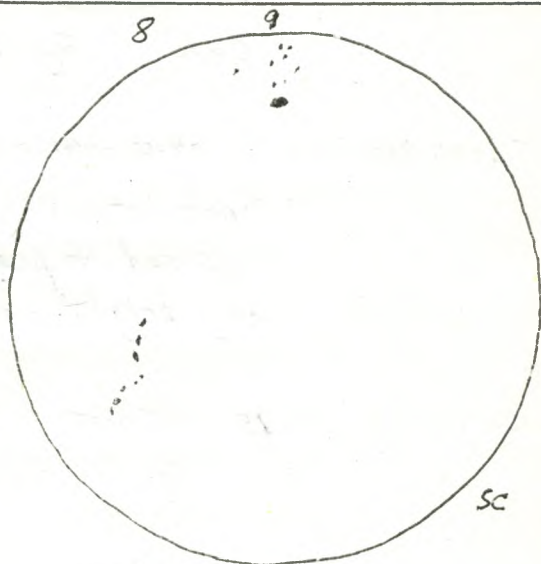
39  
165  
RSN46  
Apr. 27  
21:20-21:25 UT



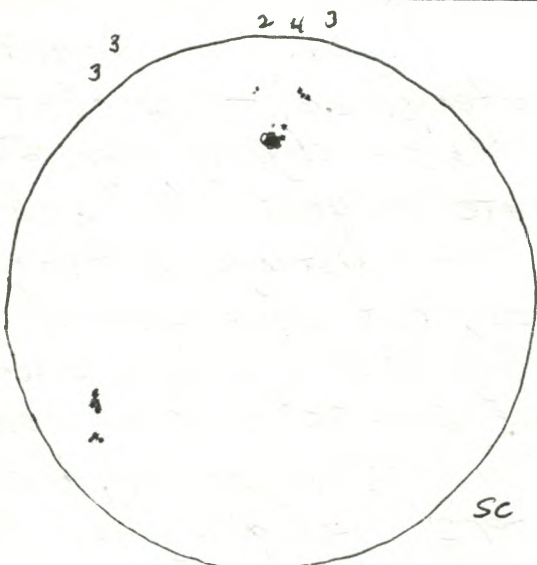
29  
235  
RSN43  
Apr. 29  
20:15-20:20 UT



29  
245  
RSN44  
Apr. 30  
18:50-18:55 UT



29  
175  
RSN37  
May 1  
19:03-19:08 UT



59  
155  
RSN65  
May 2  
18:40-18:45 UT

1999.

Tu. Apr. 27 21:20-21:25 UT t

sun 3g 16s RSN46

C-8, 32, 28, 20, 15.5  
T.O.F.

Th. Apr. 29 20:15-20:20 UT t

sun 2g 23s RSN43

C-8, 32, 28, 20, 15.5  
T.O.F.

F. Apr. 30 18:58-18:55 UT t

sun 2g 24s RSN44

C-8, 32, 28, 20, 15.5  
T.O.F.

Sa. May 1 19:03-19:08 UT t

sun 2g 17s RSN37

C-8, 32, 28, 20, 15.5  
T.O.F.

Sa.-Sun. May 1-2 03:15-03:30 UT nd

g.m.l.

ne

- bright stars, Venus extremely bright  $5^\circ$  above NW horizon,
- Mars at or near its very brightest of current opposition - in Virgo about  $7^\circ$  E. of Spica, listed as mag. -1.6 in O.F. and nearest to Earth (0.578 A.U.) at  $17^h$  UT on May 1 - about 10 hours ago.

Su. May 2 18:40-18:45 UT t

sun 5g 15s RSN65

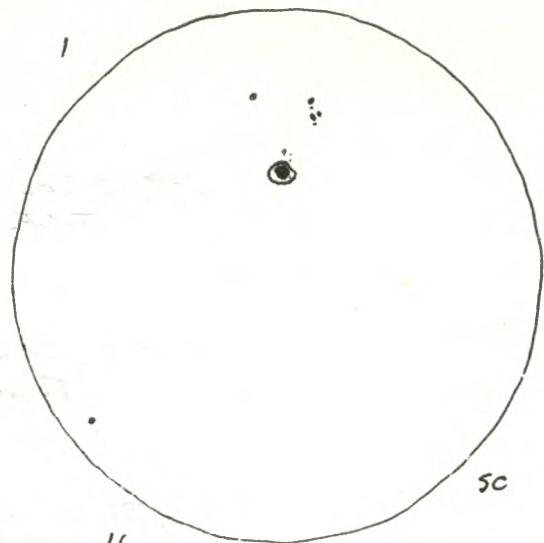
C-8, 32, 28, 20, 15.5  
T.O.F.

S.-M. May 2-3 00:40-02:15 UT sh andy twl.

ne

- Mars - very bright in SE  $7^\circ$  E. of Spica, Venus  $25^\circ$  up in NW, bright stars as they appeared.
- constellations until end of astronomical twilight at 02:04 UT, five minutes before sunrise at 02:09 UT.
- At about 01:55 the shadow of my body on the north deck from the brightness of Venus could be seen. Later at about 02:15 it could be seen on the wall of the Entrance-way when the north door was open.

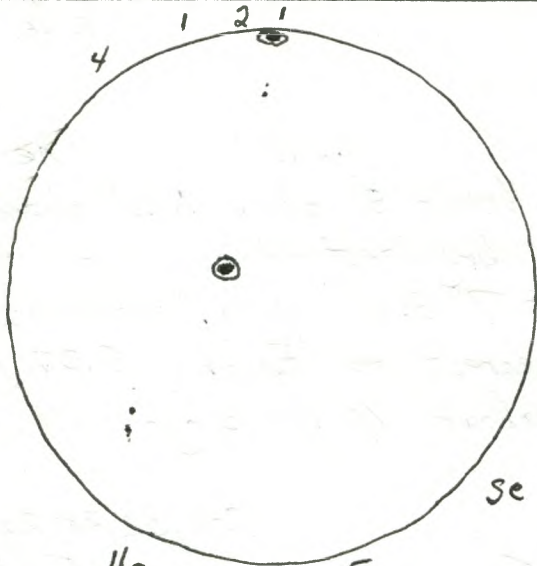
"Venus  
Shadow"



49  
115  
RSN 51  
May 3  
19:40 - 19:45 UT

May 3-4  
Venus:  
less than  
quarter-phase

perhaps  
hint of polar cap  
perhaps  
hint of markings  
May 3-4  
Mars:  
about 3 days  
after closest  
approach to earth



49  
85  
RSN 48  
May 5  
20:20 - 20:25 UT

1999

M. May 3 19:40-19:45 UT t

C-8, 32, 28, 20, 155  
T.O.F.

sun 4g 11S RSN 51

M.-T. May 3-4 00:55-01:05 UT 00

twl.

C-14, 19

Venus - phase less than quarter phase

- 01:30-03:45 UT 00 after e.a.t.: S-7 T9 C-14, 19

Mars - c. 3 days after closest approach to earth; perhaps slight hints of polar cap and markings. - view with the "focuser" in place.

- photographed Mars in Virgo, and area of constellation Leo after seeing two brief flashes in that area - about 30 seconds or so apart - both about mag. 1. - one may have been a "point meteor" and one may have been a rotating satellite.

T-W. May 4-5 02:00-04:20 UT y

S-8 T9-9.5

ne; 20x100b

ne: constellations; Venus - very brilliant, mag. -4.1; Mars in Virgo about 6° ESE of Spica at about mag. -1.6;

possibly a couple of meteors which may have been fairly faint members of the  $\eta$ -Aquarid Meteor Shower which was to peak about 7 to 6 hours later (at 10<sup>h</sup> UT on May 5 - O.H.)

20x100b: M92, M13, M104 and area (U284), area of

- R Cor

R Corvi - not seen, though it is due to be at max on June 7 at mag. 7.5 (See S.&amp;T. June, 1999 p. 120);

R Her

R Her - to have been at max. - mag 7.9 on May 3 (S.&amp;T. June 1999 p. 120) - probably about that mag.

S Her

(U157 and U158), found by star-hopping from  $\delta$  Her (R Her - LPV, per 219<sup>d</sup>, mag. 7.5-12.5: from Burnham); S Her - scheduled to be at mag. on ? June 23(S.&T. June, 1999) at mag. 7.8 - probably about mag. 9.0 to 9.5, (U157) - starhopping from  $\delta$  Her

T Cor Bor

also; (LPV, 117<sup>d</sup>, mag. 8.0-13.0: Burnham); T Cor Bor

- slight glow in N. - possibly a bit of Aurora.

- beautiful night, loon sounds great, moonrise at 03:57 UT

Faint handwritten notes in the top-left quadrant of the page.

Faint handwritten notes in the top-right quadrant of the page.

Faint handwritten notes in the middle-left quadrant of the page.

Faint handwritten notes in the middle-right quadrant of the page.

Faint handwritten notes in the bottom-left quadrant of the page.

Faint handwritten notes in the bottom-right quadrant of the page.

1999

W.-Th. May 5-6 00:30 - 04:45 UT y and 00 twl; later s. ST9 ne; 20x100b; c-14, n  
 c-14 in twl: Venus, up about 25° in NW, about at  
 "quarter phase"

20x100b: in y. - area near Venus in NW since Ceres was  
 supposed to be 0.7 degrees N. of Venus only a few  
 hours before, (Ottewill and S. & T.) but was unsure  
 of seeing it. (See U136.) Venus was area of  
 about R.A. 5<sup>h</sup>46<sup>m</sup> Dec. 25.8. - observed variable  
 star ETTau nearby (Burham: Ec. Bin, per 5.7969,  
 mag. 9.1 - 10.0); also area of STau and area of  
 M1.

ETTau

RS Her

SS Her

R Her

SX Her

T Cor Bor

R Cor Bor

(R Cor)

R Hyd

SS Hyd

RS Lib

GC 5897

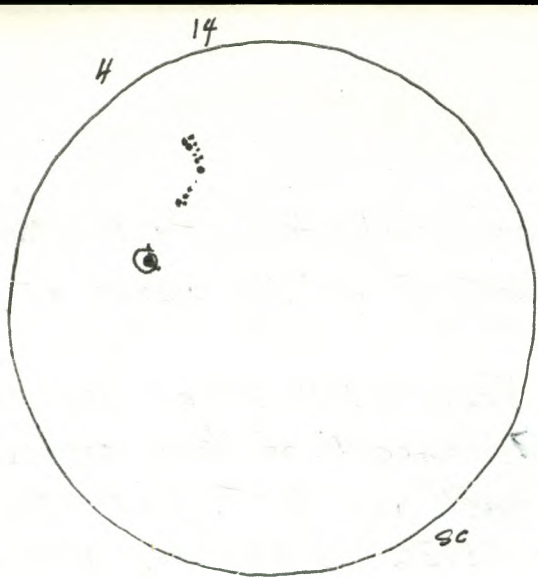
RW Lib

in 00. - <sup>SY</sup> RStter and ~~Rt~~ Her (see previous  
 night.) (U157); also RU Her (Burham: LPV, 484<sup>d</sup>,  
 7.0 - 14.0 mag) and SX Her (Burham: Semi-reg,  
 163<sup>d</sup>, 7.8 - 9.5 mag) - both found by star-  
 hopping from T Cor Bor (U155), T Cor Bor,  
 R Cor Bor (U155), area of R Corvi though it  
 was too faint to observe (U328); R Hydrae  
 (south of Spica and E. from  $\gamma$  Hydrae - very  
 easily found (predicted to reach mag. 4.5 on May 27,  
 Burham: LPV, 386<sup>d</sup>, mag. 4.0 - 10.0) (3rd LPV discovered)  
 SS Hydrae nearby (U330) (~~Semi-reg. Carbon star~~  
 Type uncertain, mag. 7.7 - 8.0, possibly an  
 ec. bin.); R Librae (U334) (Burham: LPV,  
 217<sup>d</sup>, mag. 7.0 - 12.5) - starhopped from  
 distinctive pattern of stars near 42 Lib  
 which was about "claws of Scorpius" and  
 $\sigma$  Librae; nearby GC. NGC 5897 - very  
 large, but somewhat faint in the binoculars,  
 listed as mag. 10 in Burham (U334),  
 RW Librae, also near RShib (also LPV, mag.  
 9.0 - 14., 203<sup>d</sup>)

c-14: Mars, M57

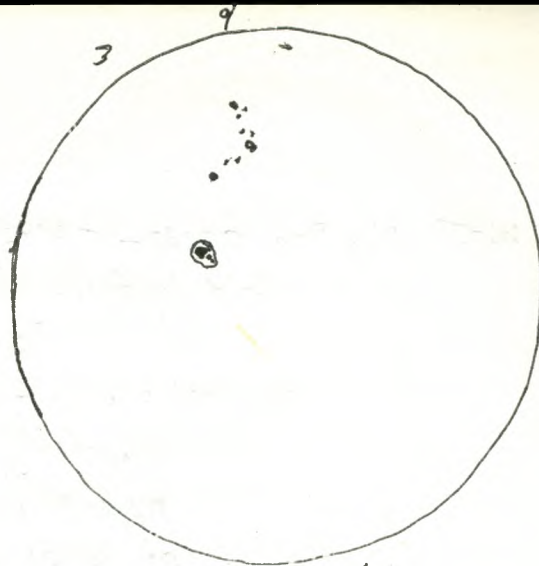
Photographing: Mars in Virgo





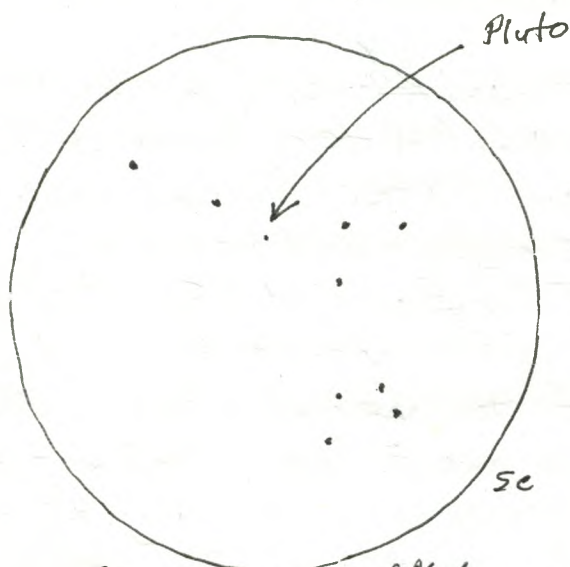
29  
18S  
RSN38

May 10  
21:30-21:35 UT



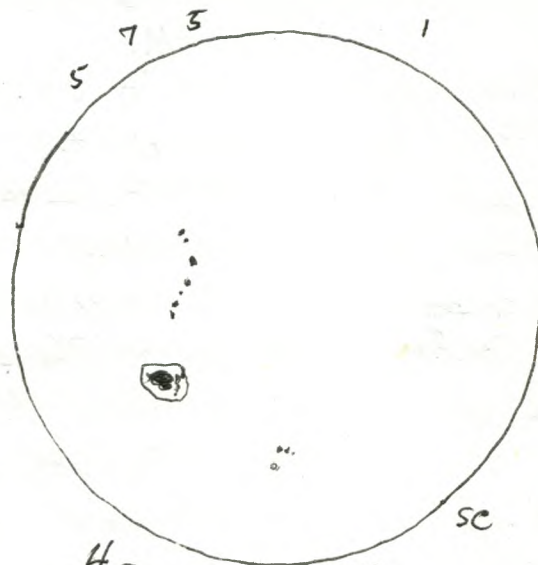
29  
12S  
RSN32

May 11  
18:55-19:00 UT



May 12-13  
05:30-06:00 UT

Field of Pluto  
NEAR  $\alpha$  16<sup>h</sup> 38.5<sup>m</sup>;  $\delta$  -10° 10'  
IN OPHIUCHUS



49  
18S  
RSN58

May 13  
20:50-20:55 UT

1999

F.-S. May 7-8 04:15 - 04:45 UT y S-8(?) T 6-8.5 (scattered cloud) ne  
- constellations; Mars about 5° from Spica.  
- photographed - Mars in Virgo.

M. May 10 21:30 - 21:35 UT t C-8, 32, 28, 20, 15.5  
sun 29185 RSN 38 T.O.F.

M.-T. May 10-11 01:30 - 04:20 UT 00 S-8(?) T 9 ne; 20x100b; 12 1/2"; C-14, 19

ne: constellations; several meteors - fairly faint

20x100b: area near  $\gamma$  Hydrae - R Hydrae - quite bright, perhaps mag. 7., SS Hydrae, TU Hydrae (U 330); area of R Corvi, but star not seen (U 328), R Cor Bor, T Cor Bor, Barnard's Star and area in Ophiuchus.

12 1/2": Venus, Mars, 3 galaxies in Leo: M65, M66, NGC 3628, M13

C-14: Venus - near quarter phase, Mars - some features visible, area near M104, area near  $\gamma$  Hydrae.

R Hyd-  
SS Hyd-  
TU Hyd-  
R Corvi-  
R Cor Bor  
T Cor Bor

Tu. May 11 18:55 - 19:00 UT t C-8, 32, 28, 20, 15.5  
sun 29125 RSN 32 T.O.F.

C-14, 32; ne.

W.-Th. May 12-13 01:30 - 06:20 UT y and 00 S-8(?) T 9-9.5! 12 1/2"; 20x100b; 12 1/2", 32, 12, 15.5: Venus,  $\delta$  Hydrae,  $\gamma$  Leonis

20x100b: R Corvi area; several variable stars near

$\gamma$  Hydrae: R, SS, TU, RW Hya (U 330) NGC 5897 ⊕

several variable stars in Libra (U 334): E1, GG, TU Lib, T Cor Bor, R Cor Bor, M4, M80, M8, M20, M107,

C-14: Mars, Pluto - found fairly easily by star-hopping from  $\delta$  Ophiuchi slightly north-eastward. Pluto was very faint at mag. 13.8. (See diagram.)

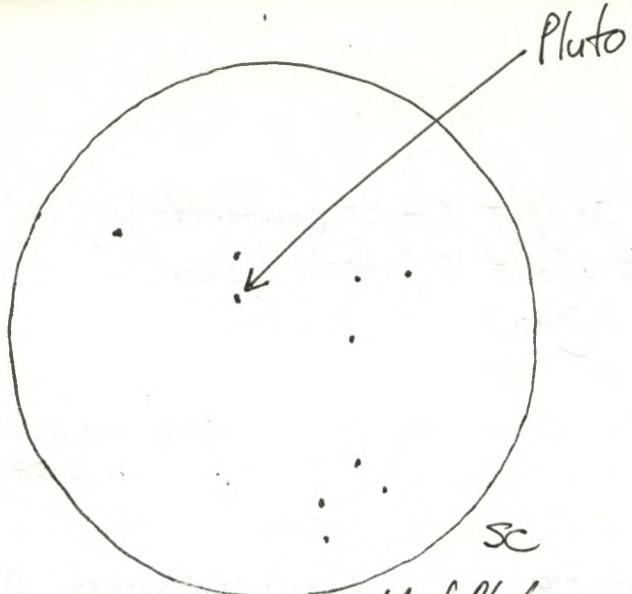
ne: Aurora in N to NW - very bright glow - up 20° and at times spikes and columns up 45° - perhaps the best Aurora seen in about a year.

photographing: Mars in Virgo; the Aurora.

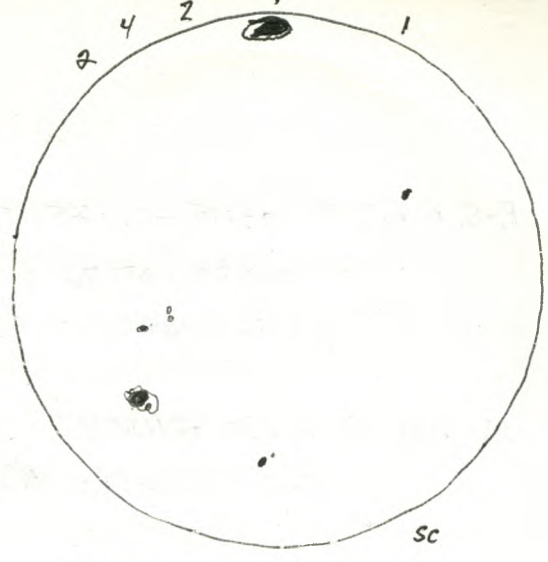
- R Cor  
R Hya  
SS Hya  
TU Hya  
RW Hya  
E1 Lib  
GG Lib  
TU Lib  
T Cor Bor  
R Cor Bor

Pluto

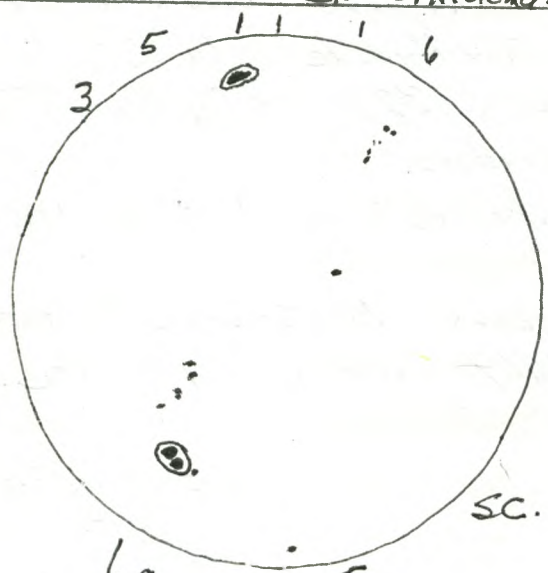
Aurora.



May 13-14  
 05:00-05:10 UT  
 Field of Pluto  
 Near  $\alpha$  (16h 38.5;  $\delta$  10° 10')  
 IN OPHIUCHUS.



59  
 105  
 RSN 60  
 May 14  
 19:30-19:35 UT



69  
 175  
 RSN 77  
 May 15  
 22:15-22:20 UT

1999. Th. May 13 20:50-20:55 UT t  
sun 4g 18s RSN 58

C-8, 32, 28, 20, 15.5  
T.O.F.

Th.-F. May 13-14 01:30-05:20 UT y and 00 S-8? T 9 12 $\frac{1}{2}$ "<sup>C</sup>, 11x806, 14", 32; ne  
12 $\frac{1}{2}$ ", 32, 15.5, 12: Venus, M13, M57.  
Mount of the 12 $\frac{1}{2}$ " seemed better,  
since I had worked at fixing  
it earlier in the day.

guest: Barbara Hale, a  
pharmacist working in village

20x1006: areas of Vesta and Juno in Cae and Oph, but  
not sure of seeing them because of not taking enough  
time, probably (information from Ottewill's Astronomical  
Calendar), area of R Corvi, variables on U 330-  
R Hya, SS Hya, TU Hya; variables on U 334-E Lib,  
GG Lib, NGC 5897-GC; M4; M80; M107 (U 291) not far  
from  $\zeta$  Oph, the star near which Pluto is now found.  
C-14: Venus; Mars - some features evident, such  
as a fairly large one just to the right of the  
centre of the disk; Pluto (see diagram) using  
map from S. & T. March page 103 and Star-hopping from  
 $\zeta$  Oph - very faint at mag. 13.8 - had moved westward  
from location 24 hours earlier. Earlier in the  
evening I had also observed M13 and M92,  
Alcor and Mizar.

ne.: constellations; Auroral glow in N - up about 20-30;  
but not as active as the previous night.  
photography - Mars in Virgo

F. May 14 19:25-19:30 UT t  
sun 5g 10s RSN 60

C-8, 32, 28, 20, 15.5  
T.O.F.

Sa. May 15 22:15-22:20 UT t  
sun 6g 17s RSN 77

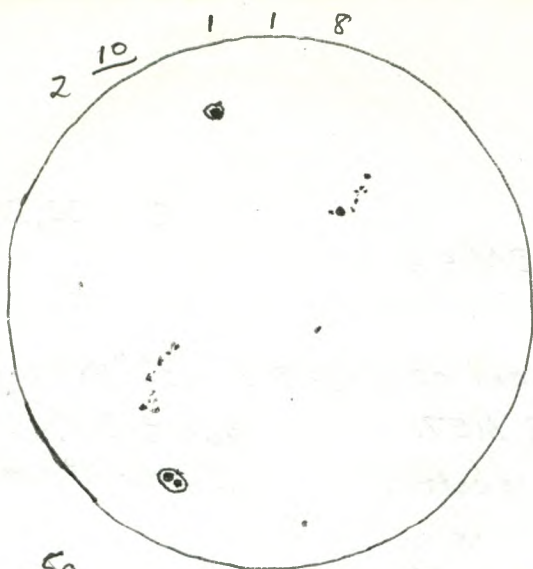
C-8, 32, 28, 20, 15.5  
T.O.F.

Sa.-Su. May 15-16 04:00-05:00 UT y  
constellations,

possibly cirrus cloud  
S-8(?) T 7.5-9 somewhere, ne  
Mars in Virgo.

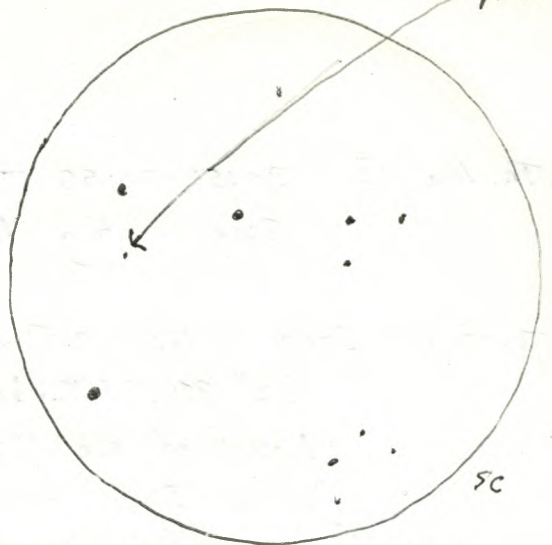
R Cor  
R Hya  
SS Hya  
TU Hya  
E Lib  
GG Lib

Pluto



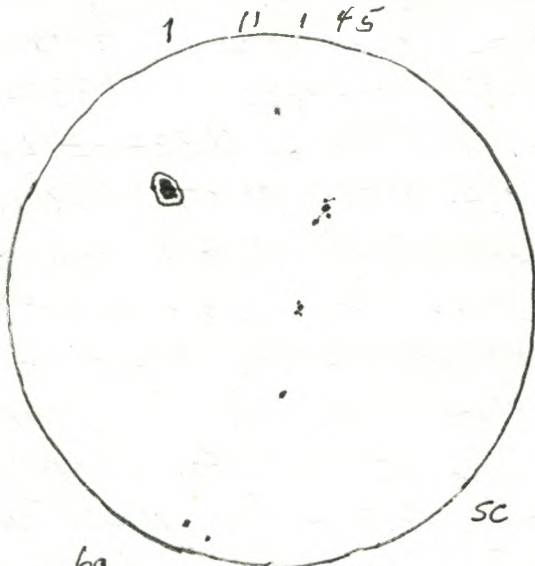
5g  
225  
RSN 72

May 16  
19:40-19:45 UT



May 16-17  
05:00 UT

Field of Pluto  
near  $\alpha$  16<sup>h</sup> 38.5  $\delta$  -10° 10'  
IN OPHIUCHUS.



6g  
135  
RSN 73

May 18  
21:10-21:15 UT

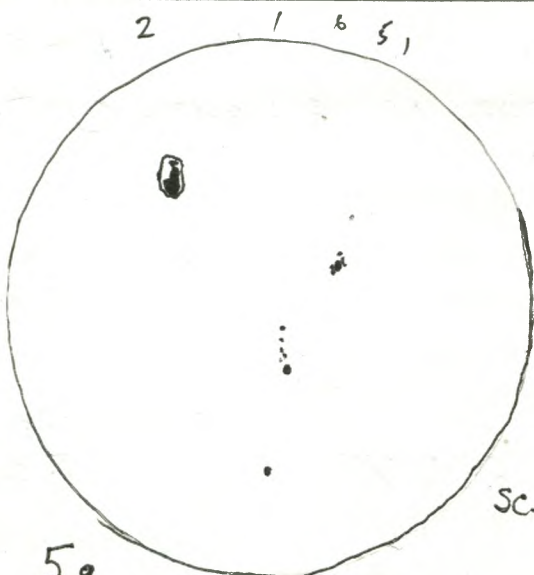
Pollux • Castor  
Cr. Moon ☾ • Venus

← W ← NW → N →

May 18-19

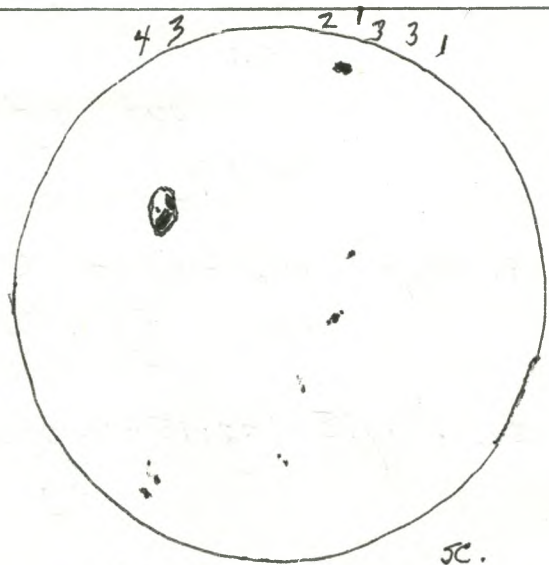
03:00 UT

Crescent Moon and Venus  
below



5g  
155  
RSN 65

May 19  
19:55-20:00 UT



7g  
175  
RSN 87

May 20  
19:55-20:00 UT

1999

Su. May 16 19:40-19:45 UT t  
sun 5g 22s RSN72

C-8, 32, 28, 20, 15.5  
T.O.F.

Su.-M. May 16-17 02:15-05:15 UT 00 S8(?) T 8-9.5 (varied) ne; C-14, 32  
ne: constellations, Venus-extremely bright, Mars in Virgo  
photographing: testing the new "Barn-Door Tracker" that I  
had purchased the previous Friday night at the Kingston  
Centre meeting

Pluto C-14: Pluto, found again for the 3<sup>rd</sup> time in less than a  
week by star hopping from  $\zeta$  Ophiuchi.

M.-T. May 17-18 01:06-03:30 UT y 5-8(?) T 7-8 (haze) ne  
- constellations, Mars in Virgo, Venus-extremely bright  
in NW, crescent moon below Venus in N.W. The sky  
was slightly hazy.

Tu. May 18 21:10-21:15 UT t  
sun 6g 13s RSN73

C-8, 32, 28, 20, 15.5  
T.O.F.

T.-W. May 18-19 00:50-05:30 UT 00 5-8-9(?) T 0-9 (varied widely) ne; C-14, 19, 32  
ne: constellations, Mars about  $2^\circ$  from Spica, crescent moon and  
Venus in NW, below Castor and Pollux (See diagram.)  
C-14: lunar craters, Venus - about "quarter phase",  
Mars; looked carefully near  $\zeta$  Oph for Pluto,  
and may have seen it, but was not absolutely  
certain. Clouds moved in about 05:25 UT

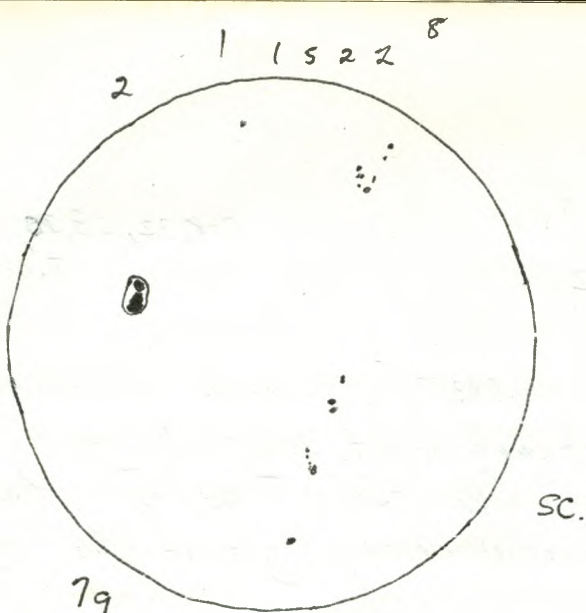
W. May 19 19:55-20:00 UT t  
sun 5g 15s RSN65

C-8, 32, 28, 20, 15.5  
T.O.F.

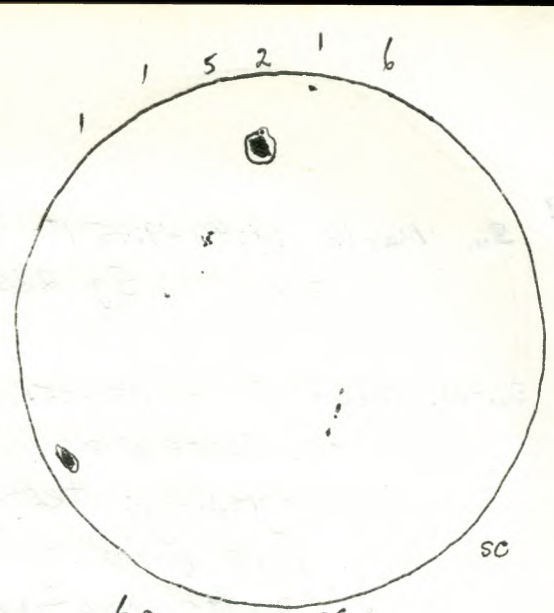
W.-Th. May 19-20 03:15-04:20 UT y 5-8 T 8-9 (crmb) ne  
constellations, Mars in Virgo, Venus in NW, cr. moon in WNW, several  
faint meteors

Th. May 20 19:55-20:00 UT t  
sun 7g 17s RSN87

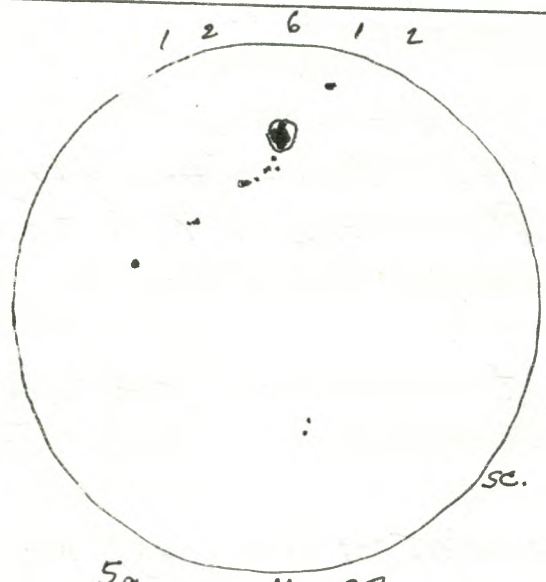
C-8, 32, 28, 20, 15.5  
T.O.F.



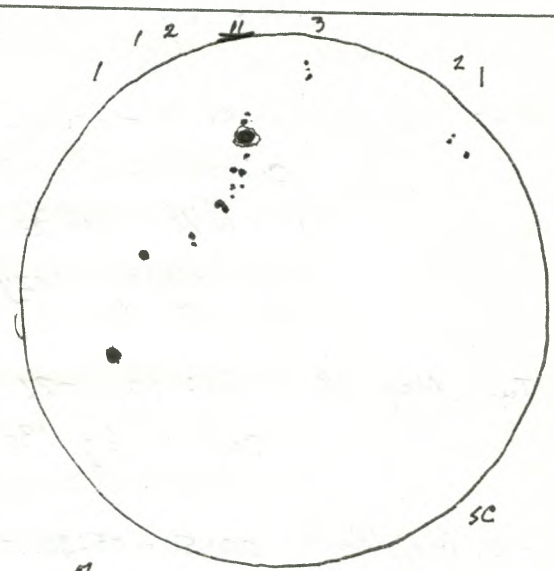
7g  
215  
RSN 91  
May 21  
20:55-21:00 UT



6g  
165  
RSN 76  
May 26  
19:45-19:50 UT



5g  
125  
RSN 62  
May 27  
20:25-20:30 UT



7g  
215  
RSN 91  
May 28  
19:55-20:03 UT

1999

F. May 21 20:55-21:00 UT t  
 Sun 7g 21s RSN 91

C-8, 32, 28, 20, 15.5  
 T.O.F.

F.S. May 21-22 03:50-04:15 UT y, t <sup>F.Q.M.L.</sup> 5(?) T 0-3 (clouds) ne; ~~19~~ Ast, 19  
 ne: a few stars occasionally among the clouds - generally fairly dense clouds; moon about 1 1/2 hours before exact time of First Quarter

Ast.: Moon and Regulus seen occasionally fairly well among the clouds during the last 3 minutes or so before the predicted time of the disappearance of the star Regulus for the Lunar Occultation roughly predicted for about 04:00 UT (12:10 a.m. E.D.T.). Because of the generally dense cloud cover, I did not find it feasible to consider timing the occultation. I stopped observing shortly after seeing that Regulus was no longer visible near the dark side of the First Quarter Moon, considering it virtually hopeless for having a decent view of the emergence of the star at the bright side of the moon about an hour later (about 05:07 or 1:07 a.m. E.D.T.) when the moon would be lower in the NW sky at about 10° altitude.

Too cloudy  
 for good  
 view of  
 Lunar Occultation  
 of Regulus.

W. May 26 19:45-19:50 UT t  
 Sun 6g 16s RSN 76

C-8, 32, 28, 20, 15.5  
 T.O.F.

Th. May 27 20:25-20:30 UT t  
 Sun 5g 12s RSN 62

C-8, 32, 28, 20, 15.5  
 T.O.F.

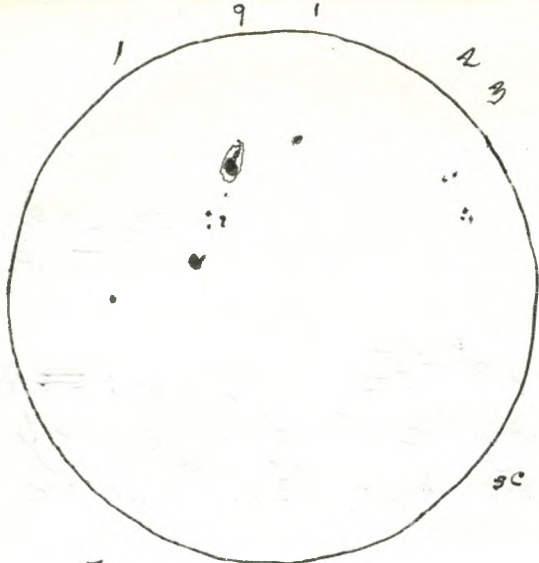
F. May 28 19:55-20:03 UT t  
 Sun 7g 21s RSN 91

C-8, 32, 28, 20, 15.5  
 T.O.F.

F.S. May 28-29 03:15-04:10 UT t <sup>F.M.L.</sup> (1d. before Full Moon) ne; Ast, 19, 8, 5, 4  
 Ast: Mars,  $\gamma$  Leonis - split beautifully with 5mm and 4mm ocular (at 89X and 111X), Alcor and Mizar with Mizar split nicely

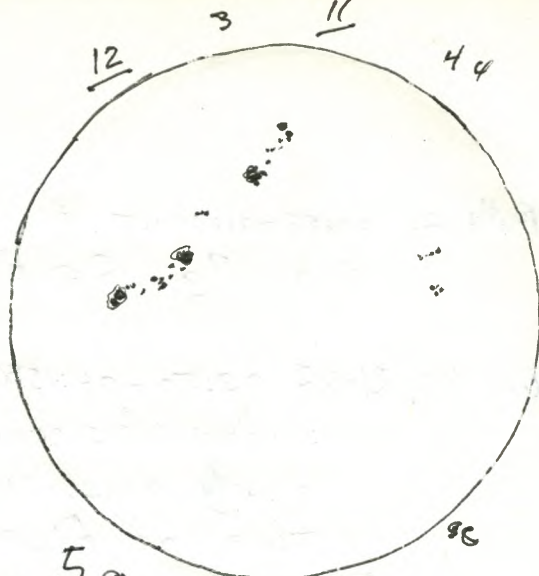
doublets  
 $\gamma$  Leo  
 $\delta$  UMa A





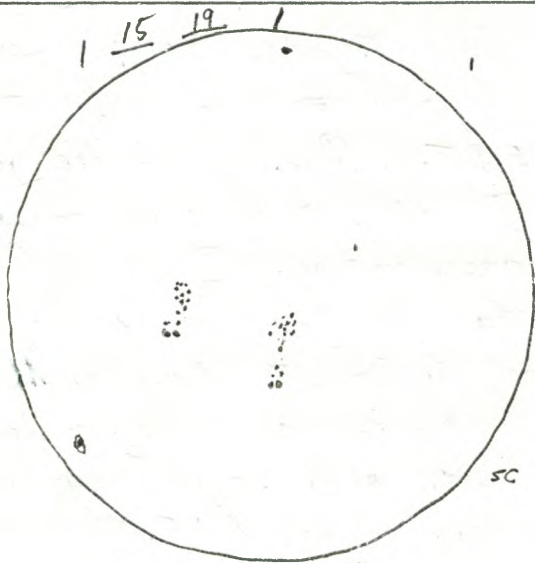
5g  
16S  
RSN 66

May 29  
18:15-18:20 UT



5g  
34S  
RSN 84

May 30  
17:55-18:00 UT



5g  
37S  
RSN 87

June 4  
21:40-21:45 UT

1999

$\alpha$  CVn  
& Eyr

with the 8mm ocular (at 55.6X);  $\alpha$  CVn, again nicely split with the 5mm and 4mm oculars; Ehyrae, the "Double-Double", somewhat difficult but barely split with 5mm ocular.

May 29 18:15-18:20 UT t  
sun 5g 16 S RSN66

C-8, 32, 28, 20, 15.5  
T.O.F.

May 30 17:55  
sun 5g 34s RSN84

C-8, 32, 28, 20, 15.5  
T.O.F.

S.-M. May 30-30 02:00-03:45 UT t twl and Paul. with Denise  
- Venus - near dichotomy, Mars, John & Ev  
 $\gamma$  Leonis - split nicely,  $\alpha$  CVn - also Elder from  
split nicely, Alcor and Mizar, Ehyrae - the Australia  
Double-double

F. June 4 21:40-21:45 UT t  
sun 5g 37s RSN87

C-8, 32, 28, 20, 15.5  
T.O.F.

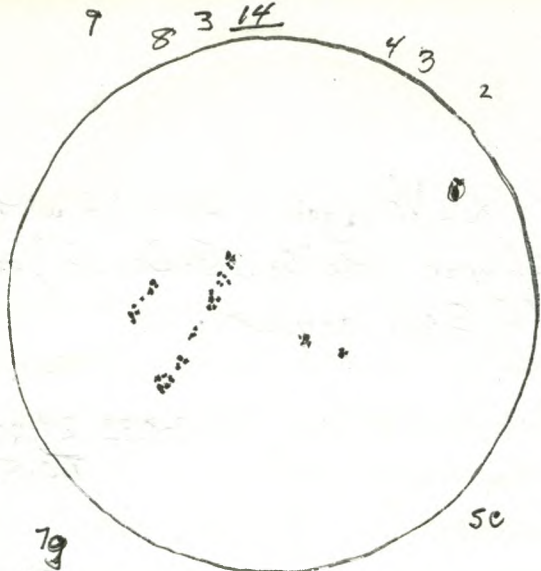
F.-S. June 4-5 04:10-04:30 UT y S 8(?) T 9 ne

- constellations of spring and early summer
- Mars in Virgo - only about  $1^{\circ}$ - $1\frac{1}{2}^{\circ}$  from Spica, on date of its becoming stationary before beginning its prograde motion through E. part of Virgo again.
- photographing - Mars in Virgo, UMa.

S.-M. June 6-7 03:15-04:00 UT y S-8(?) T 7-8 (haze, cloud) 20X100b.

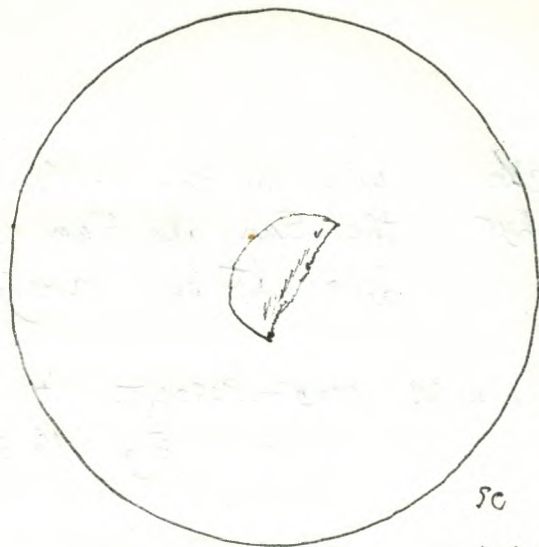
- Mars near Spica - about 2 days after Mars was stationary in R.A. and began prograde motion, area of M4 in Sco., area near  $\zeta$  Oph (U291) including M107 (GC) and nearby  $\nu$  Oph and the field of about 1 square degree just W. of  $\nu$  Oph where I saw all the stars shown and at about the magnitudes shown except 1 which was much fainter. [That one was not shown on

"star near  
 $\nu$ Oph"  
mystery



7g  
43s  
RSN 113

June 10  
19:35 - 19:40 UT



June 11 Venus near dichotomy  
01:00 UT 205.8X

MSA, as I found later and the error may be in Uranometria in showing it as brighter than it is or it may be an unrecognized variable. It is about at R.A.  $16^h 20^m.9$  Dec  $-12^{\circ}.9$ . The MSA chart is 1349, area of NGC 5897 (GC) in Lib. (U334).

T.-W. June 8-9 03:45-04:50 UT y 5-8 (PT) 7-9 clouds at certain times 20x100b.

M4 and area; area near 23 Lib (U334) in order to see why a certain star marked on Uranometria 334 just to the right of 23 Lib and down from it was not marked on MSA Chart 861. Most of the stars, as marked on the MSA chart, were seen but there was not a star as bright as indicated by the dot on the Uranometria chart. This would seem to indicate an error in the Uranometria chart, or an unknown variable that was bright at the time the Uranometria chart was made.

"star near 23 Lib" mystery

Photography: Mars in Virgo, Cygnus, Auroral glow  
 ne.: An auroral glow was fairly noticeable at the beginning of the session, but became somewhat fainter toward the end of the session. Clouds moved in quickly at the end of the session.

Th. June 10

19:35-19:40 UT t

C-8, 32, 28, 20, 15.5  
T.O.F.

sun 7g 43s RSN113

Th.-F. June 10-11 01:00-01:10 UT 00

twl

C-14, 19

Venus at dichotomy or quite near it (See diagram.)

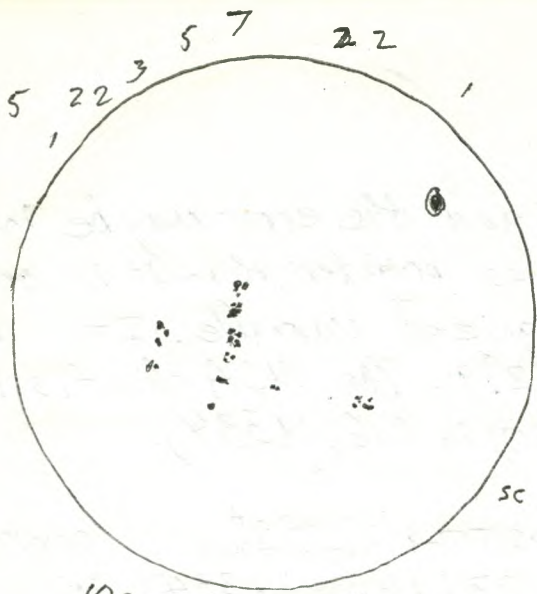
03:10-05:30 UT 00

5-7-8 T 7.5-8.5 slight haze ne.; 20x100b; C-14, 32

"Bright flash"

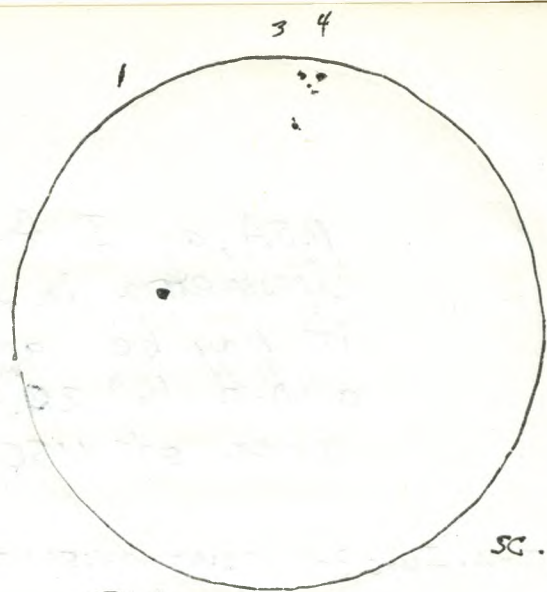
ne.: constellations; very bright flash lasting several seconds (perhaps -5 mag.) about  $1^{\circ}$  N. E. of Denebola (Pheonix) at about 03:27 UT. <sup>7</sup>/<sub>2</sub> - possibly a point meteor.

20x100b: M80, M4 and area, M8, area of M20, M22,



109  
305  
RSN130

June 11  
19:20-19:25 UT



39  
83  
RSN38

June 20  
22:25-22:30 UT

1999.

M28, M11 and area of R. Scuti, M16, M17, M18.  
 C-14; area of  $\zeta$  Ophiuchi with the hope of possibly viewing  
 Pluto, but was not sure of seeing it; M57.

F. June 11

19:25 - 19:35 UT t

C-8, 32, 28, 20, 15.5  
T.O.F.

Sun 10g 305 RSN130

T.-W. June 15-16 01:45 - 05:30 UT y; 00 twl; later 5-8p 78.5-9 9x636; 20x1006; C-14, 19  
 y; 9x636: slim crescent moon - up  $10^\circ$  in WNW; looked for Mercury  
 but did not see it; Venus about  $10^\circ$  above moon  
 00; 20x1006: M4, M80, area of  $\beta$  Lib on both Uranometria  
 and MSA - for comparison purposes - including  
 FZ Lib (marked on U 289 and MSA 812 and 813),  
 1N Lib (marked as star on both, but labelled  
 as a variable only on MSA 813). MSA was ~~not~~  
 so convenient since the star  $\beta$  Lib was near  
 the corner of chart 813, and to get the whole  
 area would require 3 or 4 charts, whereas only  
 one was needed in the case of Uranometria-289.  
 - also M16, M17, M18, M23, M24, M25, M18, M20, M22,  
 M28, M11 and R. Scuti and area.  
 00; C-14: Mars - hints of some features and polar cap.  
 Photographing: Mars in Virgo and other areas of the sky.  
 - slight glow in N. - possibly Aurora.

Su. June 20

22:25 - 22:30 UT t

C-8, 32, 28, 20, 15.5  
T.O.F.

Sun 3g 8s RSN38

S.-M. June 20-21

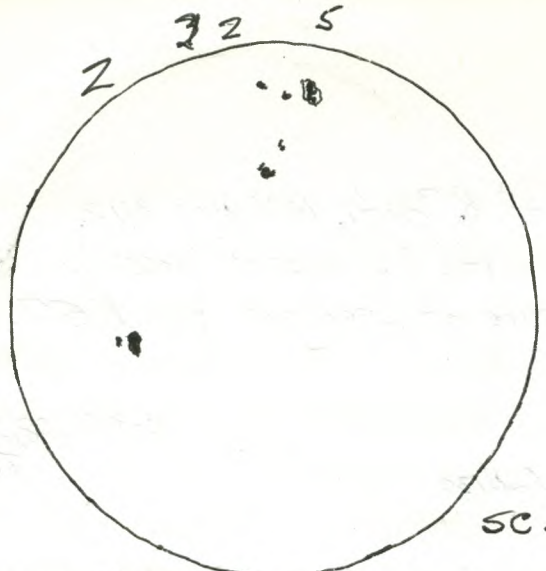
02:15 - 02:45 00

fg ml.

ne; C14 Finder

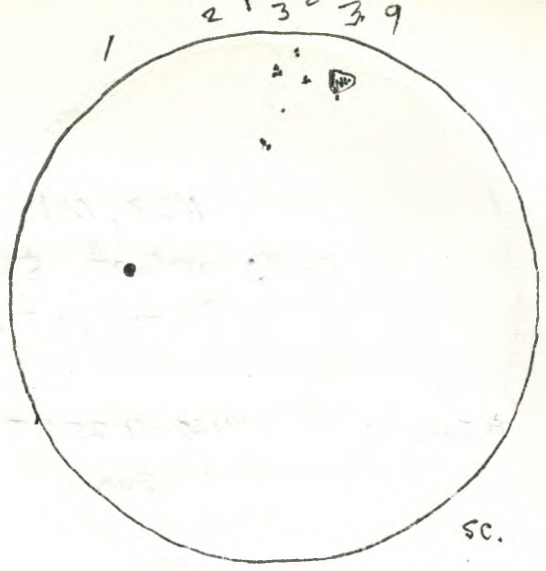
- ne: Venus, Mars in Virgo

finder of C-14: lunar craters - preparing to do eyepiece-  
 projection photography, but there was some lightning  
 especially in the NW. I, therefore, closed the roof,  
 but later did some photography of Mars in Virgo, at  
 about 03:25 UT.



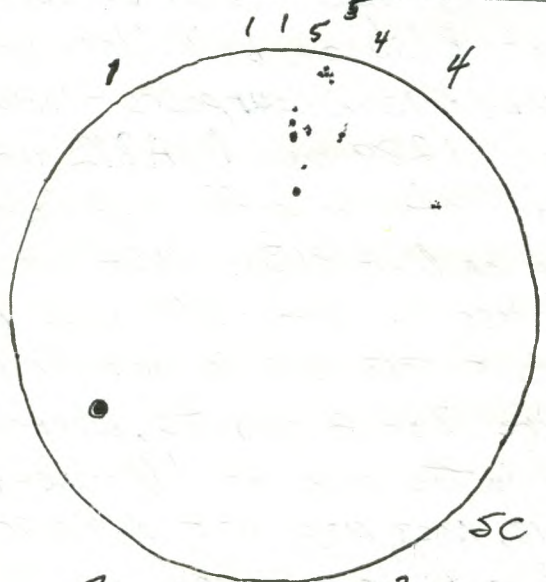
4g  
125  
RSN 52  
June 21  
21:00-21:05 UT

sc.



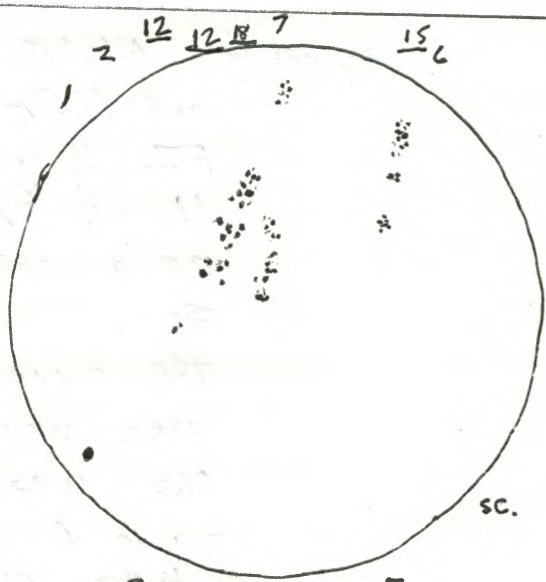
9g  
215  
RSN 111  
June 22  
17:25-17:30 UT

sc.



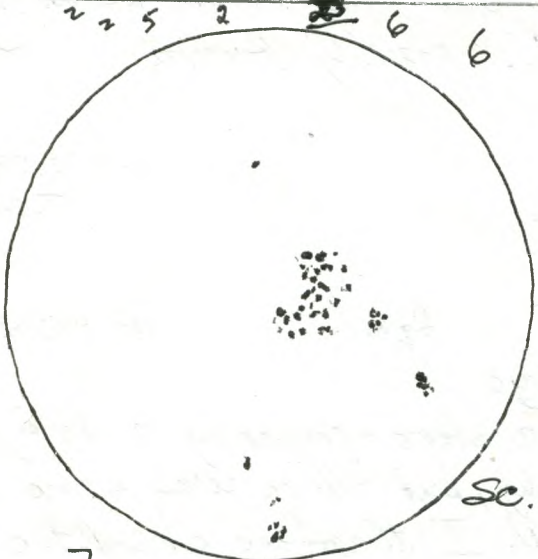
7g  
215  
RSN 91  
June 23  
20:30-20:35 UT

sc



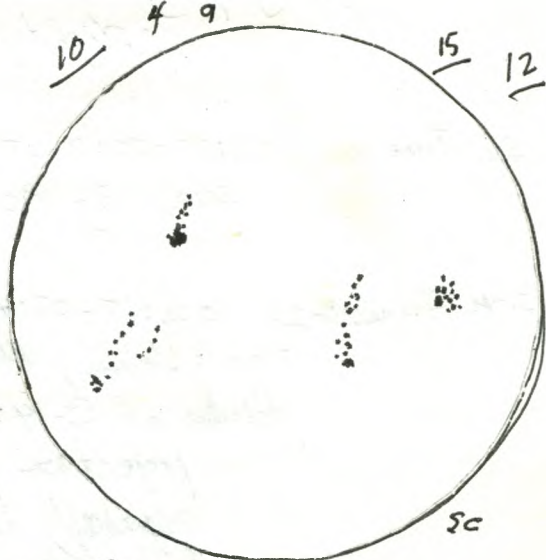
8g  
TBs  
RSN 153  
June 25  
20:30-20:40 UT

sc.



7g  
465  
RSN 106  
June 26  
15:40-15:50 UT

sc.



5g  
505  
RSN 100  
June 29  
20:10-20:15 UT

sc

1999

M. June 21 21:00 - 21:05 UT t C-8, 32, 28, 20, 15.5  
Sun 4g 12s RSN 52 T.O.F.

Tu. June 22 17:25 - 17:30 UT t C-8, 32, 28, 20, 15.5  
Sun 9g 21s RSN 111 T.O.F.

W. June 23 20:30 - 20:35 UT t C-8, 32, 28, 20, 15.5  
Sun 7g 21s RSN 91 T.O.F.

F. June 25 20:30 - 20:40 UT t C-8, 32, 28, 20, 15.5  
Sun 8g 73s RSN 158 T.O.F.

Sa. June 26 15:40 - 15:50 UT t C-8, 32, 28, 20, 15.5  
Sun 7g 46s RSN 116 T.O.F.

Tu. June 29 20:10 - 20:15 UT t C-8, 32  
Sun 5g 50s RSN 100 T.O.F.

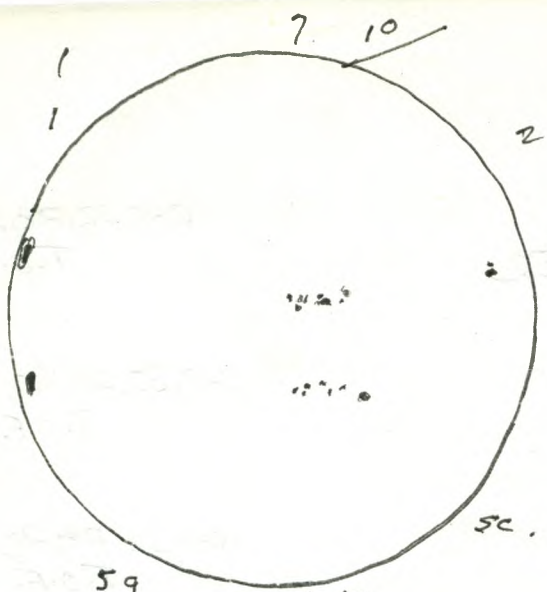
Tu. July 6 07:15 UT <sup>during 1999 Toronto G.A.</sup> New College Dorm at U of T<sub>N</sub> about beginning of Ast. Twl. ne  
Moon above and to right in E.S.E. of Jupiter and Saturn below  
and to left.

Wed. July 7 07:45 UT <sup>during 1999 Toronto G.A.</sup> New College dorm at U of T<sub>N</sub> beg. of Ast. Twl ne  
Moon nearer Jupiter than previous day, Jupiter  
and Saturn below and to left along the ecliptic.  
Saturn was difficult to locate because of light  
and possibly air pollution.

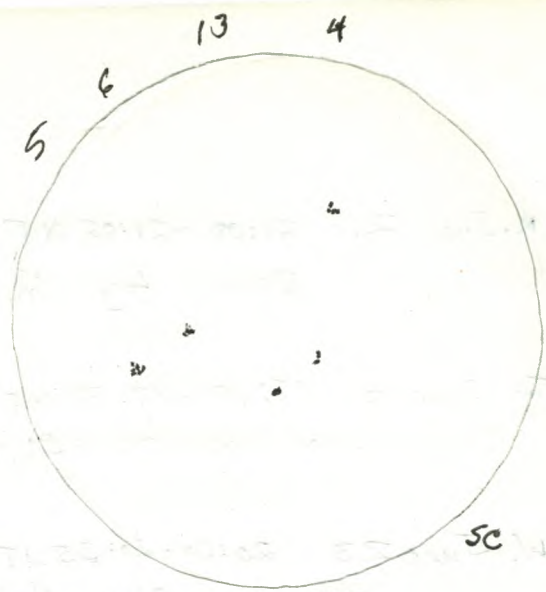
Mon. July 12 20:20 - 20:30 UT ss C-8, 32, 28, 20, 15.5  
Sun 5g 21s RSN 71 T.O.F.

M.-T. July 12-13 03:00 - 03:55 UT y 5-8(?) T9-9.5 ne  
constellations; 2 meteors - one almost N. to S. through head of  
Draco to Vega, one E. to W. through Hercules, perhaps a  
Perseid.

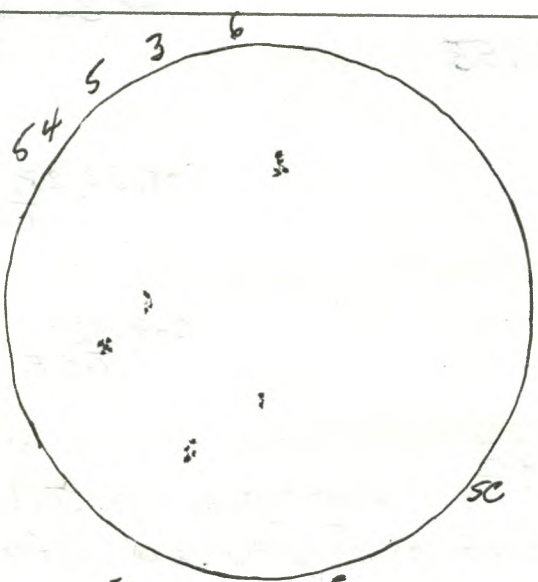




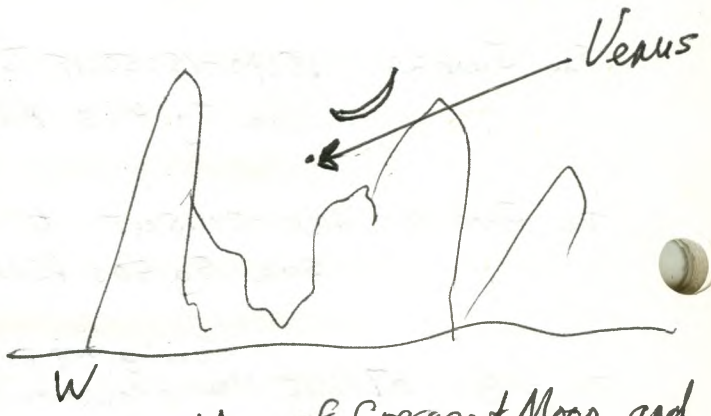
59  
215  
RSN 71  
July 12  
20:20-20:30 UT



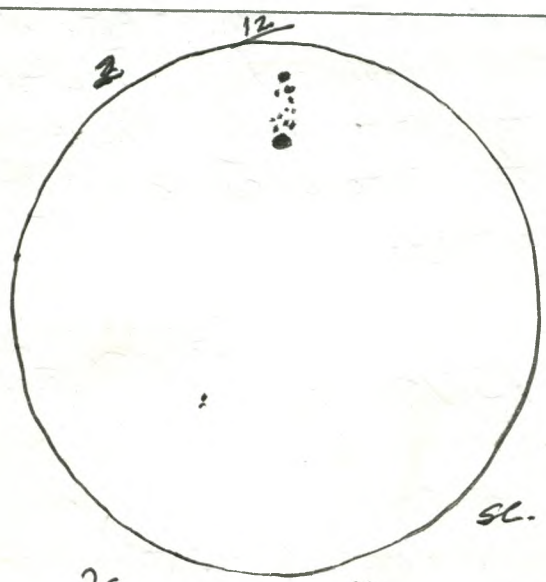
59  
195  
RSN 69  
July 14  
20:15-20:20 UT



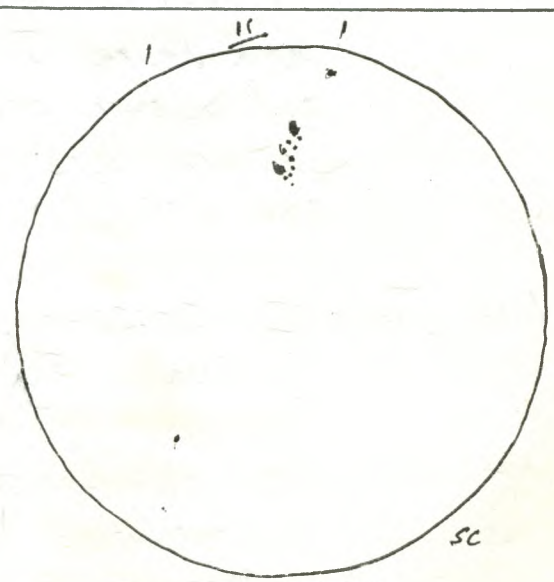
59  
235  
RSN 73  
July 15  
19:45-19:50 UT



View of Crescent Moon and  
Venus in WNW-sky  
July 15-16 01:35 UT nd.



29  
145  
RSN 34  
July 19  
21:06-21:10



39  
135  
RSN 43  
July 20  
20:40-20:45 UT

1999

W. July 14 20:15 - 20:20 UT t  
sun 5g 19s RSN 69

15.5  
C-8, 32, 28, 20, 15.5  
T.O.F.

Th. July 15 19:45 - 19:50 UT t  
sun 5g 23s RSN 73

C-8, 32, 28, 20, 15.5  
T.O.F.

Th. F. July 15-16 01:35 UT nd twl ne  
Cr. Moon and Venus in WNW - very interesting view  
of the night sky's two brightest objects.

F. S. July 16-17 03:50 - 04:08 UT y s-8? T-7 (haze) ne; 9x63b  
ne.: constellations

9x63b: area in Aquila near  $\epsilon$  Aquilae looking for the  
nova announced on the Sky Website as having  
been discovered about  $3\frac{1}{2}$  to 4 days earlier about  
 $1.5^\circ$  S of that star. I thought I saw it  
but on checking with the M.S.A. I was not  
sure of it since there was a fairly bright star  
in about that area. - also areas of Sagitta  
and Cygnus and Sagittarius - including Col 289,  
M22, M8.

M. July 19 21:06 - 21:10 UT t  
sun 2g 14s RSN 34

C-8, 32, 28, 20, 15.5  
T.O.F.

Tu. July 20 20:40 - 20:45 UT t  
sun 3g 13s RSN 43

C-8, 32, 28, 20, 15.5  
T.O.F.

W. July 21 19:00 - 19:05 UT t  
sun 3g 33s RSN 63

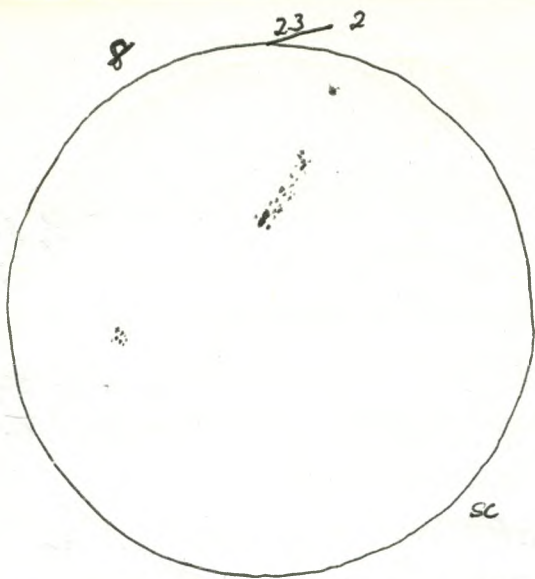
C-8, 32, 28, 20, 15.5  
T.O.F.

W.-Th. July 21-22 03:35 - 03:45 UT nd gml. ne with Denise  
- constellations - looking for possible Perseids - did not  
see any

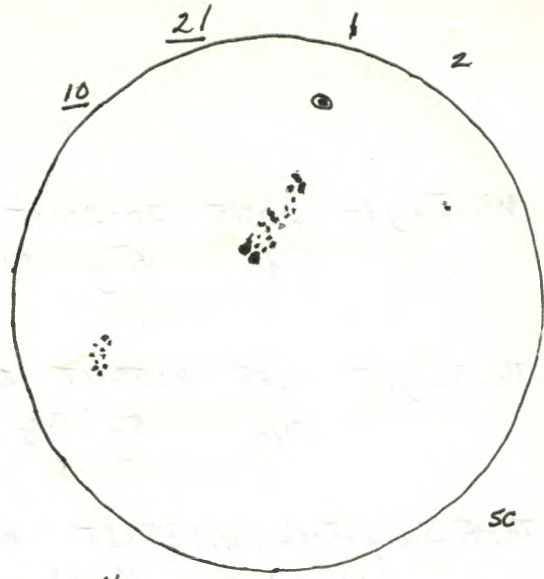
07:35 - 07:40 UT in and nd ne

Aurora

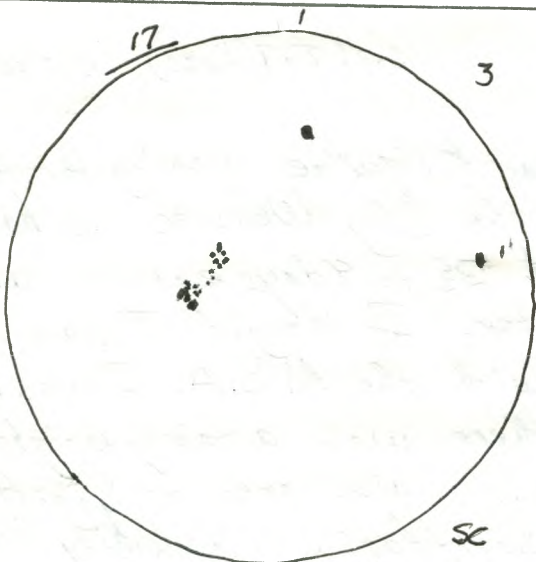
Aurora in N. - two distinct vertical bands -



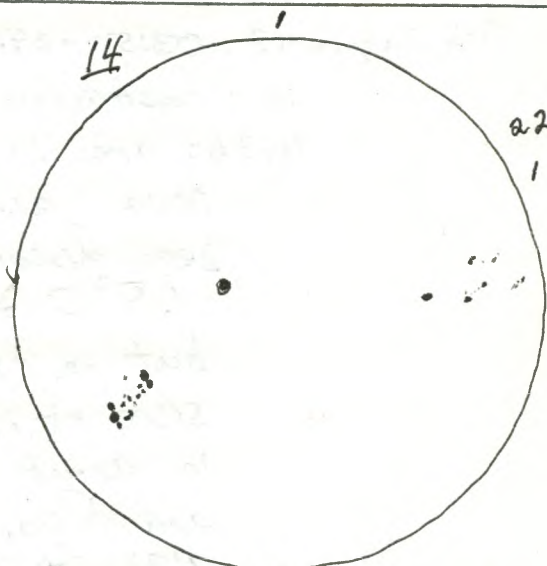
39 July 21  
335 19:00-19:05 UT  
RSN 63



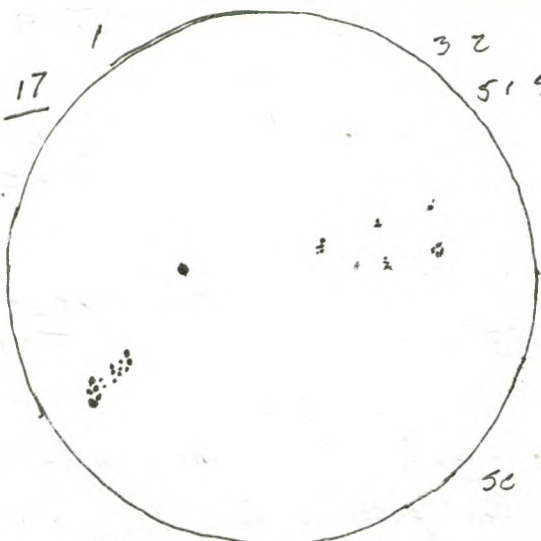
49 July 22  
345 21:35-21:40 UT  
RSN 74



39 July 24  
205 19:55-20:00 UT  
RSN 50



79 July 26  
295 20:35-20:40 UT  
RSN 99



89 July 27  
375 20:40-20:45 UT  
RSN 117



89 July 29  
455 17:10-17:15 UT  
RSN 125

1999

one N. up to Polaris or a little higher, one in NNW - about  $20^\circ$  W. of N and up about the same height, both whitish or with little colour.

Th. July 22 21:35 - 21:40 UT t C-8, 32, 28, 20, 15.5  
Sun 4g 34s RSN74 T.O.F.

Sa. July 24 19:55 - 20:00 UT t C-8, 32, 28, 20, 15.5  
Sun 3g 20 RSN51 T.O.F.

M. July 26 20:35 - 20:40 UT t C-8, 32, 28, 20, 15.5  
Sun 7g 29s RSN99 T.O.F.

Tu. July 27 20:40 - 20:45 UT t C-8, 32, 28, 20, 15.5  
Sun 8g 37s RSN117 T.O.F.

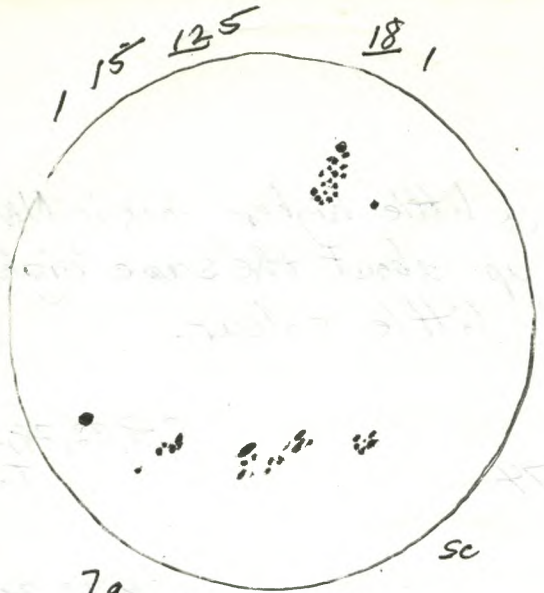
W.-Th. July 28-29 03:50 - 04:20 UT nd fml. ne  
- bright stars; hoping to see some bright Perseids but did not see any.

Th. July 29 17:10 - 17:15 UT t C-8, 32, 28, 20, 15.5  
Sun 8g 45s RSN125 T.O.F.

F. July 30 21:10 - 21:15 UT t C-8, 32, 28, 20, 15.5  
Sun 7g 43s RSN113 T.O.F.

S.-M. Aug. 1-2 03:15 - 03:35 UT y some cloud; some moonlight (y.m.l.) ne  
- bright stars and constellations  
- one Perseid, about mag 3, in Cassiopeia-Andromeda area

W.-Th. Aug. 4-5 02:00 - 04:35 UT 00 S-8(?) T6-9 (cloud) (intermittent) C-14, 19, 55; 20x100b  
C-14: M4, M22, M57, M13, area of Veil Nebula, Elyrae,  $\beta$  Cyg  
areas in Cygnus  
20x100b: Barnard's Star, T Cor Bor, R Cor Bor, M16, M17, M18, M24,  
M8, M20 area, M22, M28, M13, M92, M15, area



79  
435  
RSN113

July 30  
21:00-21:15 UT

1991

1999

of U Del and EU Del, area of  $\alpha$  Cap and  $\beta$  Cap, M31, M32, M110, M33, Alcor and Mizar, M101, M81, M82, M27, IC 4665.

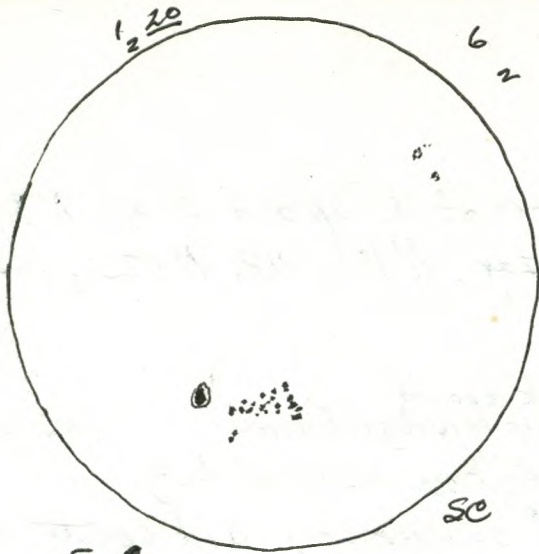
S.-M. Aug. 8-9 02:00 - 03:30 UT(?) <sup>sundeck aboard</sup> cruise ship M/V Regal/Empress <sup>ne with Denise</sup>  
in Atlantic Ocean - NE. of New York City  
- observed bright stars of summer sky and constellations.

M.-T. Aug. 9-10 02:30 - 04:00 <sup>UT</sup> (?) <sup>sundeck of</sup> cruise ship <sup>ne with Roy and Gertrude Bishop; Denise</sup>  
- bright stars of the summer sky and constellations.  
- I fell asleep, I think, while waiting for Denise to return from seeing a movie.

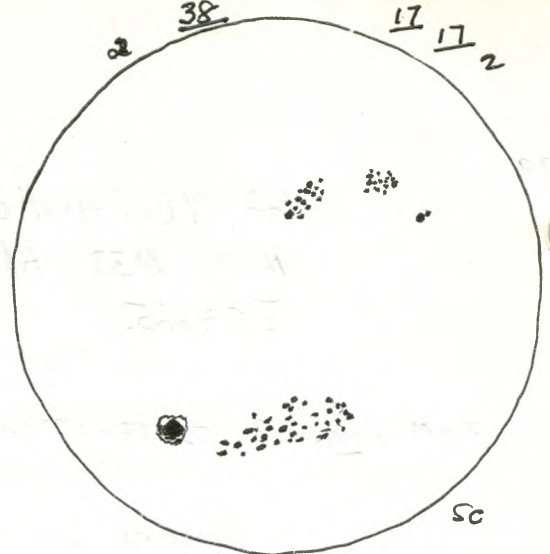
T.-W. Aug. 10-11 01:00 - 02:00 UT(?) <sup>sundeck of</sup> cruise ship <sup>ne</sup>  
- I observed the bright summer stars for only a short while in expectation of the early eclipse the next day and rising early to see it, if possible.

W. Aug. 11 m. 08:40 - 10:30 UT <sup>5:40 a.m. A.D.T. - 7:30 a.m. A.D.T.</sup> <sup>upperdeck of</sup> <sup>twl</sup> <sup>ne; 4000 ft/leas;</sup> <sup>e: Denise for a while; a Mr. Doyle a Joel and his family.</sup>  
<sup>cruise ship</sup>  
<sup>c. 100 km E.S.E. of Sable Island.</sup>  
<sup>c. 250 km. E. of Nova Scotia.</sup>

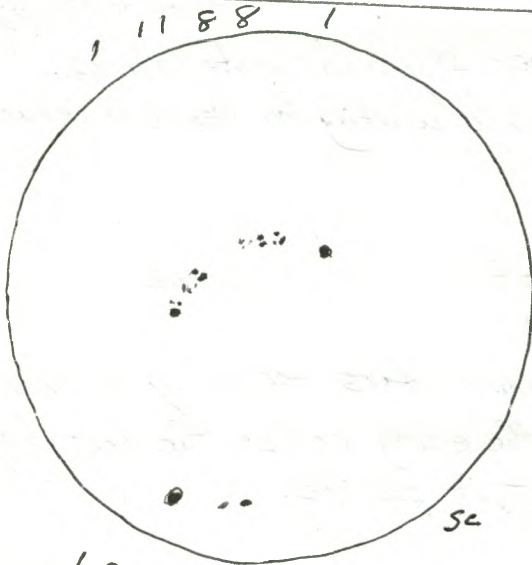
I woke up even before the alarm went off and prepared to take equipment onto the deck for the eclipse. Denise and I arrived on the sundeck about 5:40 a.m. Dawn was apparent on the port side. An announcement said that the ship would turn to put the sun on the starboard side. The ship seemed to turn very slowly and then stop for a considerable while. Meanwhile a crowd was milling about and some people were finding chairs. It seemed as if it might be difficult to photograph the eclipse because my camera might be blocked by people standing in front of it. I had only a small tripod which I was using on top of a table. With some help from another gentleman I moved to an upper deck near one of the lifeboats at



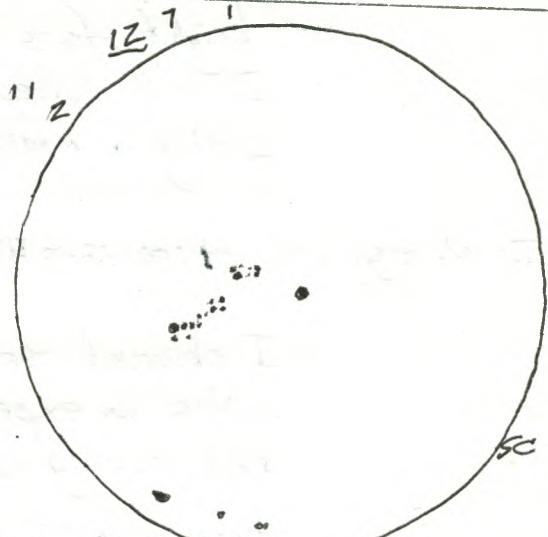
59  
315  
RSN 81  
Aug. 27  
21:40-21:45 UT



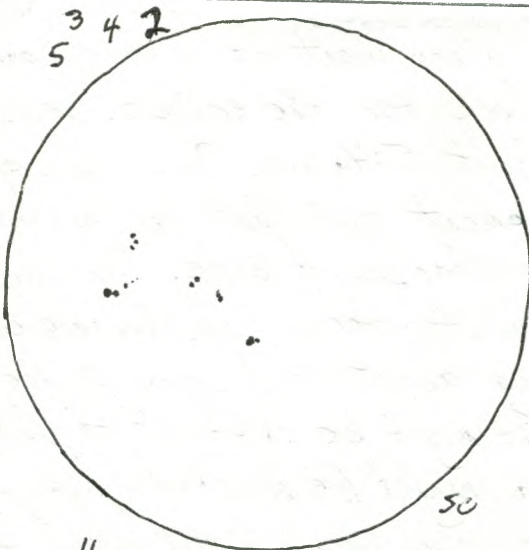
59  
76S  
RSN 126  
Aug. 28  
20:15-20:20 UT



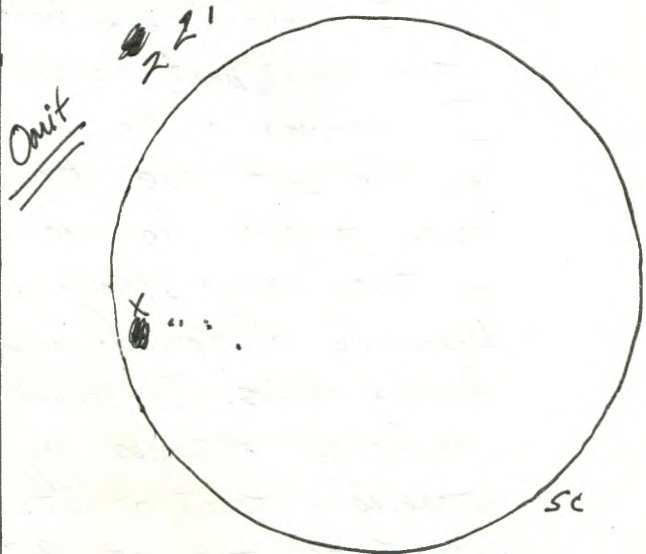
69  
205  
RSN 80  
Aug. 30  
21:40-21:45 UT



~~20 40~~  
69  
245  
RSN 84  
Aug. 31  
20:40-20:45 UT



49  
143  
RSN 54  
Sept. 1  
21:00-21:05 UT

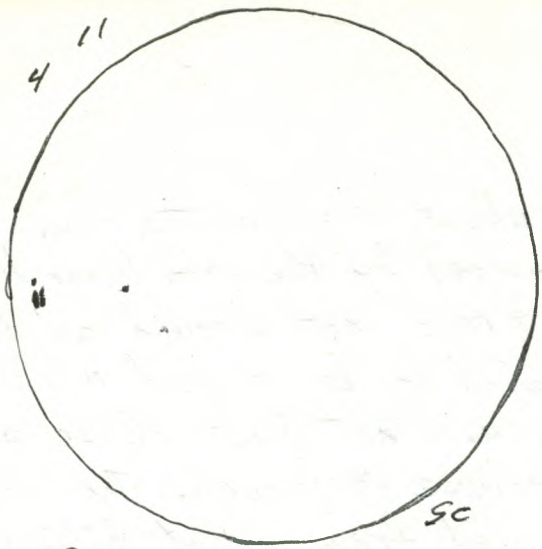


Omit  
Sept. 2

1999

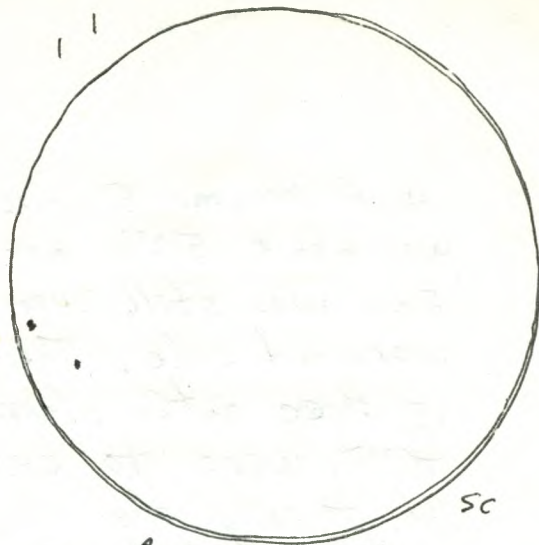
about 6:00 a.m. Sunrise was at about 6:03 a.m. The sun's disk was about 50% or more covered by the solar lunar disk. The sun was still, even after it rose, not around on the starboard side. The ship needed to be turned much more if those on the starboard side, and not just those at the front, were to see the eclipse very well. The delay in turning the ship continued from about 6:05 a.m. until about 6:15 a.m. Finally the turning was completed. I spoke to a gentleman, a Mr. Doyle, about the possibility of seeing shadow bands on a white wall behind him. (He eventually did see them at about the time of second contact and was perhaps the only person onboard the ship who saw them.) Time seemed to go slowly over the last five minutes before totality. Then someone announced that there was one minute until totality. Within five or six seconds there was second contact. The Diamond Ring was spectacularly bright. Bailey's Beads were very bright and enormous and lasted three or four seconds. Then totality in all its glory! I ripped off the camera filters. The large clear space in the east was absolutely free of any cloud or haze or fog and forty degrees wide; the cloud to the left of the clear space was ten degrees to the left of the sun. Spectacular and fantastic! The sun was still low enough to be subject to the enlarging effect often associated with the full moon - when our brain makes it appear larger than actual. The corona blazed forth seething and boiling and whiter than anything imaginable, but it was thinner than at either of my two previous views of totality. This corona was slightly smaller than I had expected it to be. It was very symmetrical; this I had indeed expected. However, the bright red prominences were far beyond anything I had expected both for their size and brilliance. They were prominent, indeed! They appeared at the bottom - quite a few of them there, and to the right of that area at the five o'clock position, there was a very large one. There





39  
65  
RSN36

Sept. 3  
20:40-20:45 UT



29  
25  
RSN27

Sept. 4  
19:41-19:45 UT

1999

were also several at the top of the disk with the most noticeable of them being at the one o'clock position. These ruby-red prominences dominated the corona in a way I had not seen before. The seconds passed very quickly. I was determined that I would get four photographs, but I was also equally determined that I would view the spectacle, <sup>for</sup> enough of the 49 seconds that the image would be clearly etched on my mind. I studied the incredible image through the camera's viewfinder and with the unaided eye. All too soon a quick burst of light appeared at the right side of the black disk. The beads lasted <sup>only</sup> a second - so different from the ones on the left side <sup>of the disk</sup> less than a minute earlier. It was over so soon - far too soon. I had snapped four photographs - fewer than I had originally planned, but I was immediately happy that I had spent as much time drinking in visually the spectacle in the east as photographing it. Totality ended at about 6:31 a.m. A.D.T. with third contact, but the partial phase lasted about another 58 minutes. It was time to relax and talk to people nearby about "the incredible minute". Mr. Doyle had seen the shadow bands on the wall behind us - moving slowly and deliberately from right to left - at a time when I had stopped looking for them - at the time when I was seeing the Diamond Ring and the first moment of Bailey's Beads; I had given up on my hope of seeing them on the clean white wall and decided that the awesome moments of totality in the east should grab my attention rather than anything behind me. A man named Joel who had <sup>his</sup> two children and his wife with him was glad to share his impressions of the event and his views of the partially eclipsed sun as the moon's disk moved eastward across the face of the sun.

It had been an awesome spectacle. Denise who had been at another location during totality, fearing that my location might not be a good one before the ship probably had turned completely, returned to where I was, and indicated that she had had an excellent view of it also. I stayed on the upper



1999

deck until the time of last (fourth) contact. Then we went and had breakfast.

Thu-Fri. Aug. 12-13 9:30pm - 11:30pm N.D.T.  
 01:00 - 02:30 UT Cape Spear during a 8-8(?) T8.5-9 ne; c. Denise  
 Singing and Betty Concert  
 - We saw several bright Perseid Meteors  
 12:30 am - 2:00 am NDT  
 03:00 - 4:30 UT Butterpot Prov. Park 8-8(?) T8-9 ne; c. Denise  
 near St. John's NF

- On the invitation from the R.A.S.C. St. John's Centre, our eclipse group went on a bus out to their observing site where they had telescopes set up and refreshments afterward for us. About 35 of us went. Denise and I were happy to stand or sit on the floor on the bus since we had not previously thought we would be going because our bus was late returning from the "Voices of Cape Spear" Concert. However, those who were planning to go to observe were waiting for our bus to return to take that bus! We did not keep an exact count, but the shower was quite good under dark skies. Shortly before leaving, some people saw a -7 mag. fireball. I was looking down and saw the ground light up. Denise and I were also quite sure that we saw some faint pinkish or reddish Aurora near Polaris. I talked to Gary Dymond and Phil McCausland. We returned to our cruise ship at about 2:00 a.m. N.D.T.

S-S Aug. 14-15 11:00pm - 12:00 (midnight) N.D.T. (?)  
 01:30 - 02:30 UT (?) sun deck of the after leaving Bonavista ne  
 cruise ship M/V Regal Express  
 - observed summer stars and constellations

S-M. Aug. 15-16 10:30pm - 1:30 a.m. N.D.T.  
 01:00 - 02:00 UT deck of the cruise ship ne with others.  
 after leaving St. Anthony in Strait of Belle Isle

At about 00:00 UT (9:30 p.m. N.D.T.) Denise, from the sun deck spotted what looked like a faint Aurora in the N. I was not sure, but considerably later was more sure. By 01:00 UT,

Handwritten notes in the top-left quadrant, including a date and several lines of text.

Handwritten notes in the top-right quadrant, including a date and several lines of text.

Handwritten notes in the middle-left quadrant, including a date and several lines of text.

Handwritten notes in the middle-right quadrant, including a date and several lines of text.

Handwritten notes in the bottom-left quadrant, including a date and several lines of text.

Handwritten notes in the bottom-right quadrant, including a date and several lines of text.

1999

Aurora!

it developed into a very good display. We went to the front deck near the bow and were with Roy and Gertrude Bishop and David and Wendee Levy and <sup>Wendee</sup> others including Joe Rao and his wife and family and Sam Storch and his family, <sup>and</sup> David's wife's sisters and brother. The Aurora developed into an intense arc and a second arc for a while, distinct spikes, some pinkish colour, vertical bands, a bit of pulsation, and some reddish-pink colours. The bottom edge of the arc had sharply intense and rapidly moving areas of brightness for a while. It was an excellent display for many people who had never seen such a spectacle before.

T.-W. Aug. 17-18 10:00 p.m. - 1:30 a.m. A.D.T. after leaving Sydney, N.S. ne; with another gentleman from U.S.  
01:00 - 04:30 UT on deck of cruise ship

- Denise and I went onto the deck of the ship, and I saw the bright stars and summer constellations.
- When Denise later went to a movie, a gentleman who was an accomplished ornithologist and I went to the bow of the ship to see if there possibly was an Aurora such as had been seen two nights earlier. We saw a wide vertical band, pinkish in colour up about 50°; it was very faint and quite indistinct. There were several meteors.

Faint Aurora

W.-Th. Aug. 18-19. 7:30 p.m. - 10:30 p.m. A.D.T. <sup>(?)</sup> forward deck before sunset and during twilight and after  
23:30 - 01:30 UT (?) of cruise ship ne

A group of passengers including Roy and Gertrude Bishop and David Levy and Wendee and her sisters gathered on the forward deck of the ship to watch the sun set and see if we had a chance of seeing the green flash. There was a little bit of cloud in the area where the sun was about to set. For the first time I was able to say that I saw it - unequivocally. It did not appear very green, but rather was a darker colour, like a very dark blue, almost a black colour. It appeared to come up from the area where the sun touched the horizon and

it looks like a very good day for the first day  
we have had here in the morning. The weather is  
just what we need. The sun is shining and the  
wind is blowing. It is a very pleasant surprise.  
I hope to go to the beach today. I have been  
thinking about it for a long time. I will  
take my swimsuit and a book. I will  
enjoy the view and the sound of the waves.  
I will be back in the evening.

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Page 1

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Page 2

I will be back in the evening. The weather is  
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waves.

Page 3

1999

Green Flash

"sit there" for about three seconds, slightly to the right of the midpoint of where the sun touched the horizon. Roy Bishop with his 15x45 binoculars had seen the green flash on three or more occasions previously on the trip. There were many comments about the trip, including so many spectacular events: a great eclipse, a stunning aurora, icebergs, whales, and the green flash.

9:30 p.m. - 11:30 p.m. E.D.T. (P)  
Th-F. Aug. 19-20 01:30 - 03:30 UT? forward deck of cruise ship twl ne  
Denise and I and several others observed some stars and constellations and noted particularly the "light pollution" of New York City to the west of us. It was an orangeish glow.

F.-S. Aug. 27-28 01:00 - 03:30 UT 00 twl; later g.m.l. ne; C-14, 32  
- ne: stars of summer, constellations, Mars in SW; later Jupiter.  
- C-14: M57, M13. We had guests visiting: Barry and Patti and Adele - from England. Denise had taken them to Ottawa for part of the day and when they returned, Barry, Patti, and Denise observed M57 and M13, the latter of which was somewhat difficult to locate because of the very bright gibbous moon quite high in the sky.



T.-W. Aug 31 - Sept. 1 01:30 - 04:30 UT y

Reclining outdoors on the lawn chaise, I observed summer stars and constellations and fell asleep for a while

\* F. Aug. 27 21:40 - 21:45 UT t  
sun 59 31s RSN 81

C-8, 32, 29, 20, 15.5  
T.O.F.

\* S. Aug. 28 20:15 - 20:20 UT t  
sun 59 76s RSN 126

C-8, 32, 28, 20, 15.5  
T.O.F.



Faint handwritten notes in the top-left quadrant, possibly describing a process or observation.

Faint handwritten notes in the top-right quadrant, including a small circular diagram or symbol.

Faint handwritten notes in the middle-left quadrant, appearing as a list or series of observations.

Faint handwritten notes in the middle-right quadrant, including a small diagram or sketch.

Faint handwritten notes in the bottom-left quadrant, possibly concluding a section or providing a summary.

Faint handwritten notes in the bottom-right quadrant, including a small diagram or sketch.

1999

M. Aug. 30 21:40-21:45 t  
Sun 6g 208 RSN 80

C-8, 32, 28, 20, 15.5  
T.O.F.

\*\*\* T. Aug. 31 20:40-20:45 UT t  
Sun 6g 24s RSN 84

C-8, 32, 28, 20, 15.5  
T.O.F.

W. Sept. 1 21:00-21:05 UT t  
Sun 4g 14s RSN 54

C-8, 32, 28, 20, 15.5  
T.O.F.

F. Sept. 3 20:40-20:45 UT t  
Sun 3g 6s RSN 36

C-8, 32, 28, 20, 15.5  
T.O.F.

S. Sept. 4 19:41-19:45 UT  
Sun 2g 2s RSN 22

C-8, 32, 28, 20, 15.5  
T.O.F.

[ I was in Kingston General Hospital from Fri. Sept. 10, when I went there by ambulance until Mon. Oct. 25. For about two or three weeks following the heart surgery, I was sedated and generally unaware of visitors. From about October 5 or 10 when I was moved to a room on the wards and away from the intensive care unit, I was more aware of the generally fine weather outdoors and the visibility of the planets Jupiter and Saturn in the southern sky during the night. The changing moon phases were easy to observe through the south-facing window. ]

Th-F. Nov. 4-5 01:30-01:50 t

S-8(?) T 8.5

C-8, 20, 15.5 with Denise

Jupiter.

- Jupiter - trying to observe the double shadow transit which was to begin at 01:32 UT when the shadow of III Ganymede started to transit. The shadow of I - Io had been transiting since 01:01 UT. I was not sure of seeing two shadows at all. I thought I saw one near or at the S. Equatorial Belt

W-Th. Nov. 10-11 06:50-06:52 in

Aurora

From inside I observed a strong <sup>Aurora</sup> in the N. and N.W. ne



1999

It was a white glow up about  $30^\circ$  to  $40^\circ$  and gave hints that it might later become active with vertical bands or spikes.

W.-Th. Nov. 17-18 00:30 - 00:45 UT y *Spain* ne -with Denise

After having checked several times to see if there should happen to be any Leonid Meteors, even though the first quarter moon was bright and the radiant-point for the Shower (in the "Sickle of Leo") was still well below the E. Horizon, Denise and I stood in the yard for about 15 minutes looking mainly toward the E and SE hoping to see a Leonid Meteor. We did not see any. (The peak time for the Leonid Shower was given in the Observer's Handbook as 23<sup>h</sup> G.T. on Nov. 17., i.e. about  $1\frac{1}{2}$  hours earlier. (There was a consensus that sites in Europe would probably be better on this occasion for seeing this shower.) Jupiter and Saturn were prominent in the SE, and the First Quarter Moon was high in the S and bright. Gradually a bank of heavy dark clouds moved in from the W and covered up the Summer Triangle and the moon. The heavy cloud cover persisted all night, since there were no stars visible when I checked the sky on several occasions later in the night and toward morning. I had hoped that it might have been possible to see some Leonids after the moon set shortly after 1:00 a.m. and the constellation Leo rose in the E.; however, the clouds prevented that. (News reports the next day were that a very good display was witnessed in Israel. We wondered if David Levy and Wendee, who went on a Mediterranean cruise, had had a good view of the shower. Cathy Hall of Ottawa had also gone to Europe, to Germany to see the Leonid Meteor Shower.)

Leonid  
shower  
clouded  
out.


1999

Th.-F. Dec. 9-10 22:35-22:45 and 23:40-23:55 y twl/s-8(?)T8.5 ne; 20x100 c. Denise  
ne: constellations; Jupiter and Saturn in SE.

20x100b: Jupiter and 4 moons; Saturn; Pleiades;

Nova Aquilae 1999#2 - first real and good chance to see the nova since learning of its discovery on the Sky Pub. website on Dec. 2. It was discovered by Alfredo Pereira on Dec. 1. It quickly brightened to about mag. 4 and had started to fade by Dec. 6. The co-ordinates were R.A.:  $19^{\text{h}}23^{\text{m}}05.38^{\text{s}}$ ; Dec.:  $+40^{\circ}57'20.1''$  (2000.0) (U251) (MSA1268). It was quite red in colour and  $d$  about mag. 6.5

Nova Aquilae 1999#2

S.-S. Dec. 11-12 21:44-21:46<sup>UT</sup><sub>y</sub> twl 20x100 b.

- crescent moon in SW. - about 20 minutes after the sun set

23:30 - 23:55 UT y 5-8(?)T8-9 20x100b.

- Pleiades, Saturn, Jupiter, Nova Aquilae - at about mag. 6.5, and area near the nova, area in Lyra near M57.

Nova Aquilae

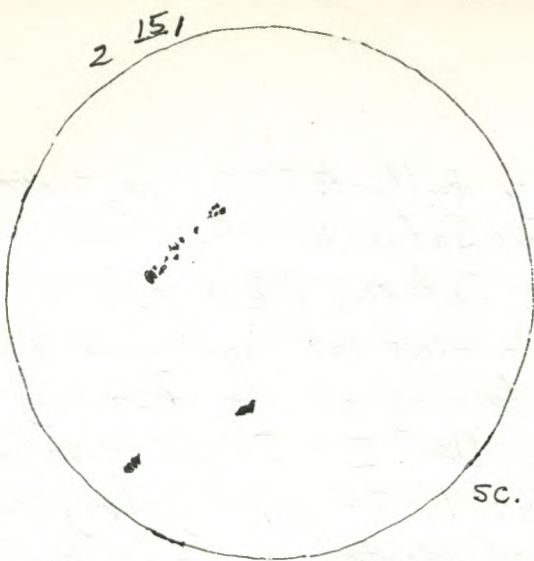
M.-T. Dec. 13-14 03:30 - 04:00 UT y overcast ne

I was hoping that skies would clear at about the time of moonset and thereafter for the Geminid Meteor Shower which was scheduled to peak at  $11^{\text{h}} \text{UT}$  (6:00 a.m. E.S.T.) (according to the Astronomical Calendar) or at  $18^{\text{h}} \text{UT}$  (1:00 p.m.)<sup>EST</sup> (according to the Observer's Handbook) on Dec. 14. The skies had appeared clear or about to clear in the early evening, but after the end of astronomical the skies were overcast and remained so. They probably also remained overcast throughout the entire night, since I checked twice during the night and did not see any hope of immediate clearing.

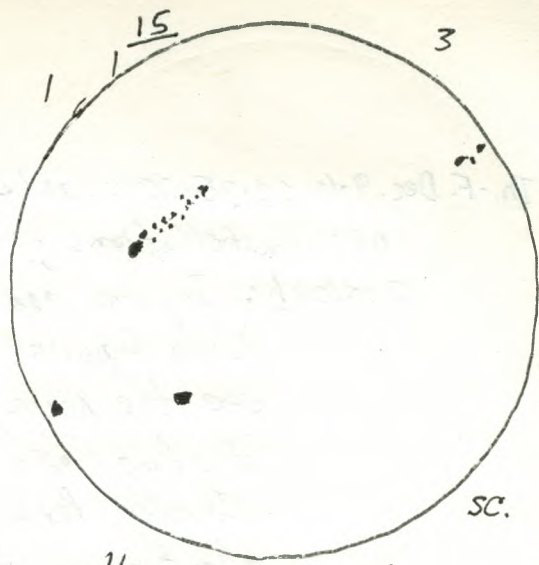
Geminids:

"overcast"

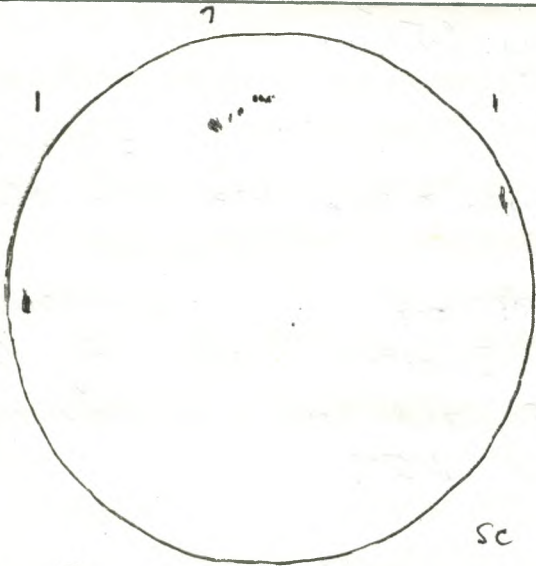
On the following evening the skies were also overcast.



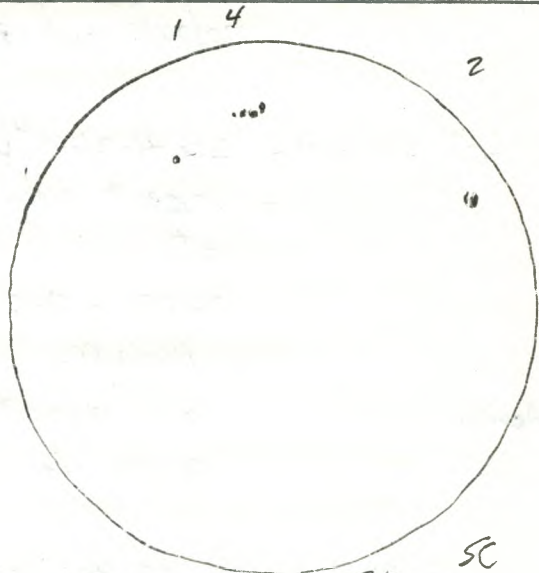
39  
185  
RSN 48  
Dec. 24  
19:20-19:25 UT



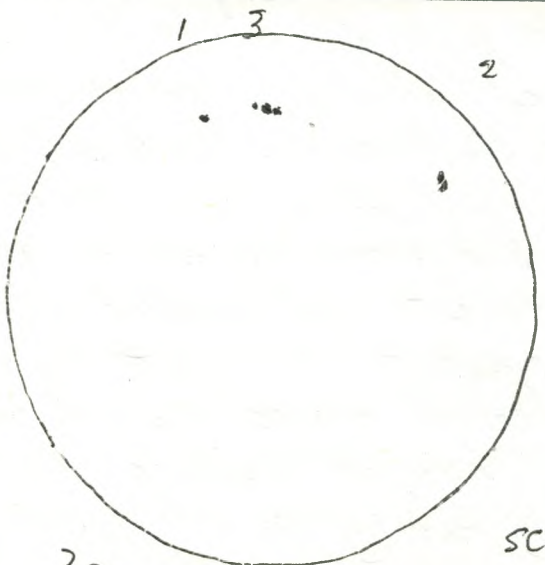
49  
205  
RSN 60  
Dec. 25  
17:05-17:10 UT



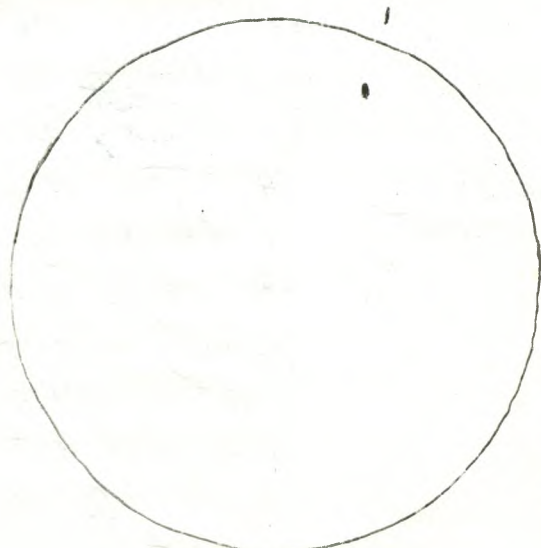
39  
95  
RSN 39  
Dec. 29  
18:50-18:55 UT



39  
75  
RSN 37  
Dec 30  
18:25-18:30 UT



39  
65  
RSN 36  
Jan. 1.  
18:00-18:05 UT



19  
15  
RSN 11  
Jan. 8  
19:50-19:55 UT

1999

F. Dec. 24 19:20-19:25 UT t C-8, 32, 28, 20, 15.5  
 Sun 3g 18s RSN48 T.O.F.

Sa Dec. 25 17:05-17:10 UT t C-8, 32, 28, 20, 15.5  
 Sun 4g 20s RSN60 T.O.F.

W. Dec. 29 18:50-18:55 UT t C-8, 32, 28, 20, 15.5  
 Sun 3g 9s RSN39 T.O.F.

Th. Dec. 30 18:25-18:30 UT t C-8, 32, 28, 20, 15.5  
 Sun 3g 7s RSN37 T.O.F.

2000 Sa. Jan. 1 18:00-18:05 UT t C-8, 32, 28, 20, 15.5  
 Sun 3g 6s RSN36 T.O.F.

Sa. Jan. 8 19:50-19:55 UT t C-8, 32, 28  
 Sun 1g 1s RSN11 T.O.F.

Su. Jan. 16 18:50-18:55 UT t C-8, 32, 28, 20, 15.5  
 Sun 6g 16s RSN76 T.O.F.

M. Jan. 17 18:50-18:55 UT t C-8, 32, 28, 20, 15.5  
 Sun 5g 20s RSN70 T.O.F.

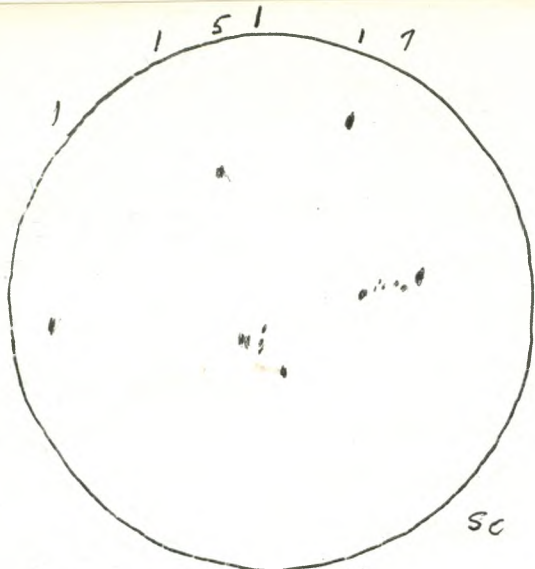
Th.-F. Jan. 20-21 02:35 in ne

- I checked through the window to see if the darkening of the lunar disk was noticeable at approximately a half-hour before first contact with umbra on the night of a total lunar eclipse. The darkening on the left side of the disk was noticeable

03:05-06:00 UT y and ss 58(?) T8 → 9.5 ne and C-8 camera

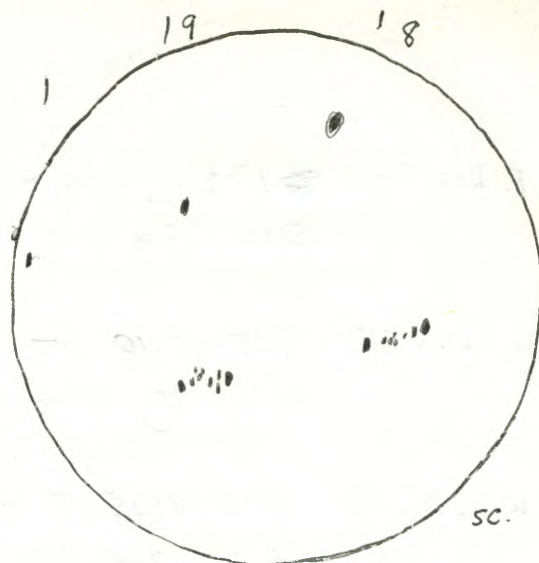
At about the time of first contact with the umbra, the moon's disk was quite clear, but there appeared to be some haze in the atmosphere, as there was a large ring around the moon. However, it soon disappeared and the





69  
165  
RSN76

Jan. 16  
18:50-18:55 UT



59  
205  
RSN70

Jan. 17  
18:50-18:55 UT

Total Lunar Eclipse of Jan. 20-21, 2000

- P1 02:02:56 UT (9:03 E.S.T.  
p.m.)
- U1 03:01:30 UT (10:02 p.m.)
- U2 04:04:37 UT (11:05 p.m.)

Greatest Eclipse 04:43:31.3 UT (11:44 p.m.)

- U3 05:22:24 UT (12:22 a.m.)
- U4 06:25:30 UT (1:26 a.m.)
- P4 07:24:09 UT (2:24 a.m.)

Total Lunar Eclipse of Jan. 20-21, 2000.



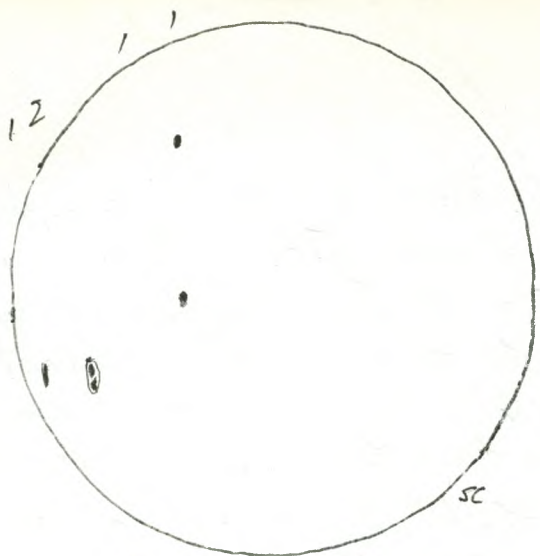
Range of Colours at Mid-Totality  
(about 04:40 UT)

2000

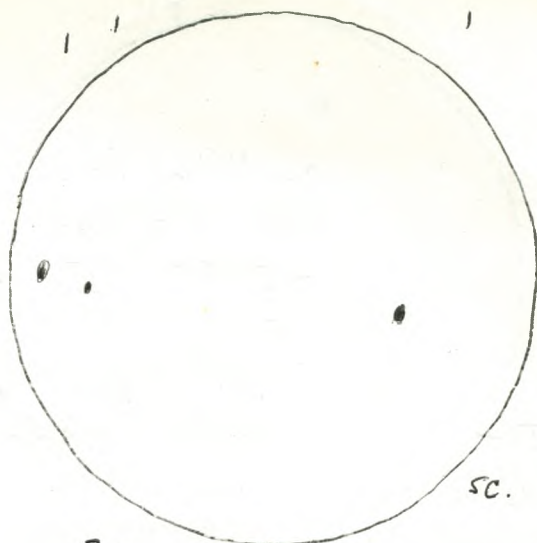
Total  
Lunar  
Eclipse

-remarkable  
range in colours  
and in brightness.

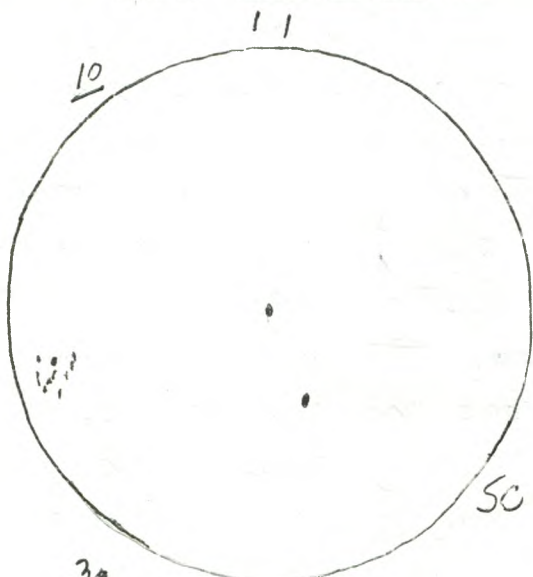
conditions became very good. Before long the sky transparency was excellent on a very cold night which was about  $-20^{\circ}\text{C}$ . The left side of the moon appeared quite dark even before the time of first contact with the umbra and a fairly large part of the left side was dark soon after first umbral contact, so that the "curve of the umbra" - line seemed difficult to distinguish naked-eye. After second contact with the umbra the contrast in both the range of colours on the lunar disk and the darkness of the disk was evident. The upper part of the disk was a deep orangeish rust, ranging to a slightly darker, more greyish rusty colour near the middle of the disk to a brighter light-yellowish colour <sup>to</sup> the south of the disk - or rather the side furthest from the centre of the shadow. (See diagram.) The overall darkness was not as great as in some previous eclipses, mainly because of the relative brightness of the outer edge of the umbra (Danjon Scale Estimate: 2.6 - See O.H. 2000 p. 122.). From my "solar observing station" I photographed the eclipse at various stages during totality and after third contact. Denise observed with me also for over half an hour during totality. My observations were all either "naked eye" or through the camera mounted - "first-focus" on the C-8 telescope at the "solar observing station". The colours were quite distinct through the telescope. About 15 minutes after third contact I began to put away the equipment. During the total phase the weather had been very good and the constellations and the planets Jupiter and Saturn had been splendidly clear. Denise and I saw several meteors.



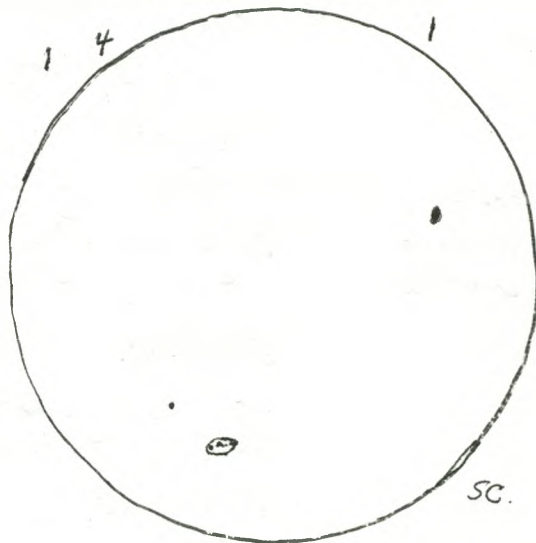
4g  
55  
RSN45  
Jan. 22  
16:45-16:50UT



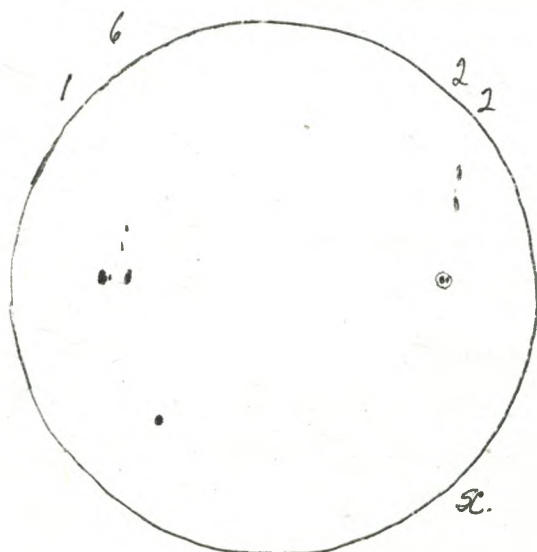
3g  
35  
RSN33  
Jan. 24  
18:25-18:30UT



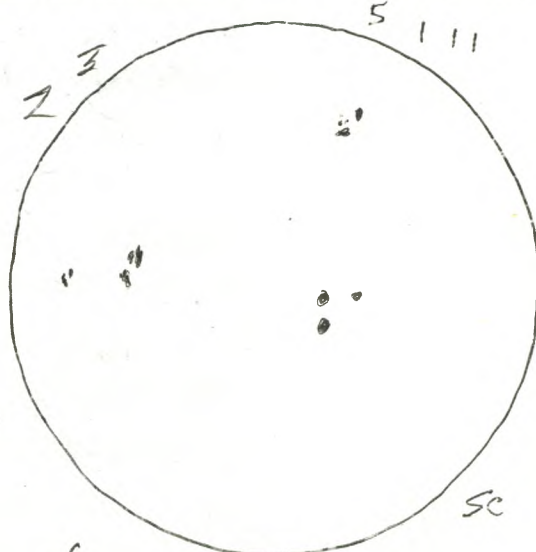
3g  
125  
RSN42  
Jan. 27



3g  
65  
RSN36  
Jan. 29  
18:15-18:20UT



4g  
115  
RSN51  
Feb. 4  
19:10-19:15UT



6g  
135  
RSN73  
Feb. 6  
19:10-19:15UT

2000

Sa. Jan. 22 16:45-16:50 UT t  
sun 4g 5s RSN 45

C-8, 32, 28.  
T.O.F.

M. Jan. 24 18:25-18:30 UT t  
sun 3g 3s RSN 33

C-8, 32, 28  
T.O.F.

Th. Jan. 27m 6:50 a.m. E.S.T.  
11:50 UT in

ne

Venus, brilliant in S.E. about  $15^\circ$  from the horizon on a very cold, very clear morning - seen during twilight

Th. Jan. 27 18:45-18:50 UT t  
sun 3g 12s RSN 42

C-8, 32  
T.O.F.

Fr. Jan. 28m. 6:55 a.m. E.S.T.  
11:55 UT in

ne

Venus, brilliant in S.E. sky about  $15^\circ$  from horizon - during twilight.

Sa. Jan. 29m. 6:50 a.m. E.S.T.  
11:50 UT in

ne

Venus, brilliant in S.E. sky, about  $15^\circ$  above horizon, during twilight.

Sa. Jan. 29 18:15-18:20 UT  
sun 3g 6s RSN 36

C-8, 32, 28  
T.O.F.

F. Feb. 4 19:10-19:15 UT t  
sun 4g 11s RSN 51

C-8, 32  
T.O.F.

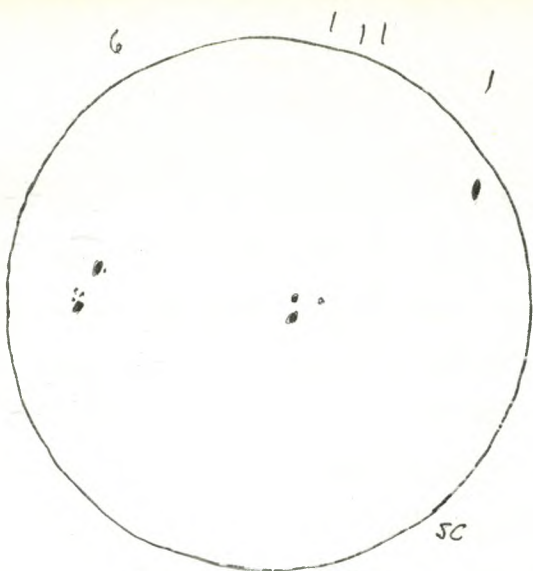
F.-S. Feb. 4-5 01:06-01:08 UT y 5-7-8 T 9.5 (!)

ne

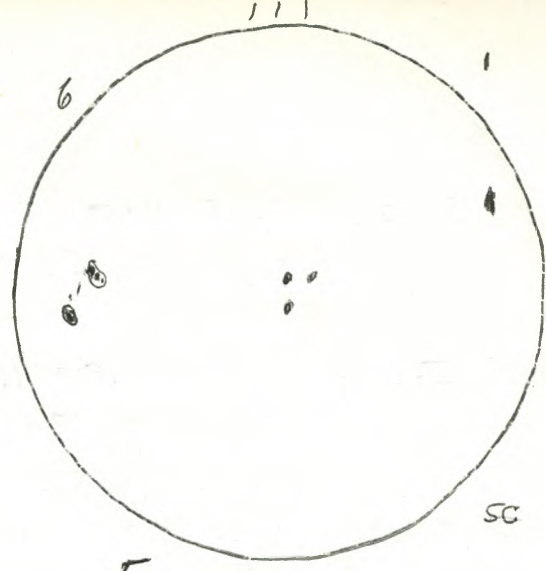
-winter constellations, Saturn and Jupiter near the bright stars of Aries (Mars had been seen earlier lower in the W.); the Zodiacal Light seen easily in the W.; the winter Milky Way quite bright.

Su. Feb. 6 19:10-19:15 UT t  
sun 6g 13s RSN 73

C-8, 32  
T.O.F.



5g  
105  
RSN60  
Feb. 7  
18:00-18:05 UT



5g  
105  
RSN60  
Feb. 8  
17:40-17:50 UT

2000

Su.-M. Feb. 6-7 22:40-23:00 UT (periodically) ice twl ne; 9x63b  
 - With binoculars I looked among the clouds in the SW to WSW hoping to see Mercury and a young crescent moon quite close together (since Mercury was listed in the O.H. as being  $1.8^\circ$  N. of the Moon at 19<sup>h</sup> UT). I did not see the moon but saw a bright star-like object that may have been Mercury among the clouds - at about  $10^\circ$  above the horizon. Further to the S. the clouds were not as thick.

"missed  
 Moon-Mercury  
 conjunction low  
 in the W.

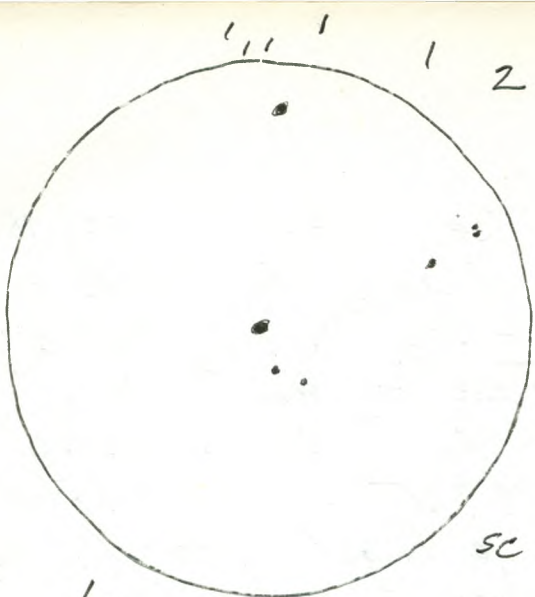
M. Feb. 7 18:00-18:05 UT t C-8, 32  
 sun 5g 10s RSN 60 T.O.F.

M.-T. Feb. 7-8m 5:57 a.m. E.S.T. 10:57 UT in twl ne  
 - While looking out s. window toward the S.E., I saw Venus just barely above the trees. I saw it later and about  $10^\circ$  above the horizon at about 12:00 UT

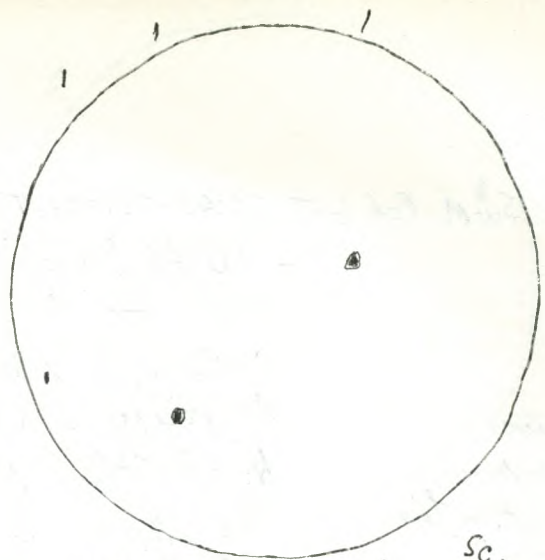
Tu. Feb. 8 17:40-17:50 UT t C-8, 32  
 sun 5g 10s RSN 60 T.O.F.

Tu.-W. Feb. 8-9 23:00-23:05 UT y. 20x100b  
 - Cr. moon in W. with Earthshine clearly visible (also, to the naked eye); Jupiter, high in S.W.  
 00:00 - 01:18 y ne; 20x100b.  
 ne: winter constellations, winter Milky Way; Zodiacal Light in W.  
 20x100b: area of M42 and M43, areas of R Lep, RX Eri, RX Lep (R Lep was quite faint - perhaps mag. 8.5), M44 and area nearby, Rosette Nebula and nearby area, Hind's Variable Nebula's area; M41; R Leonis and area (R Leonis was quite faint - perhaps mag. 9.)

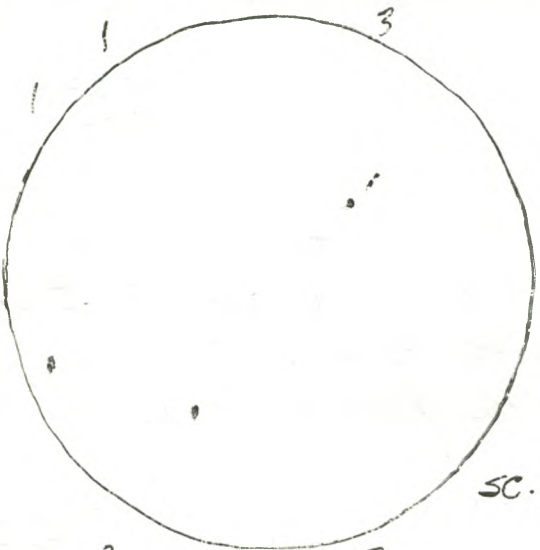
F.-S. Feb. 11-12 04:52-04:53 in ne  
 Looking out through the window of the north door, I saw a



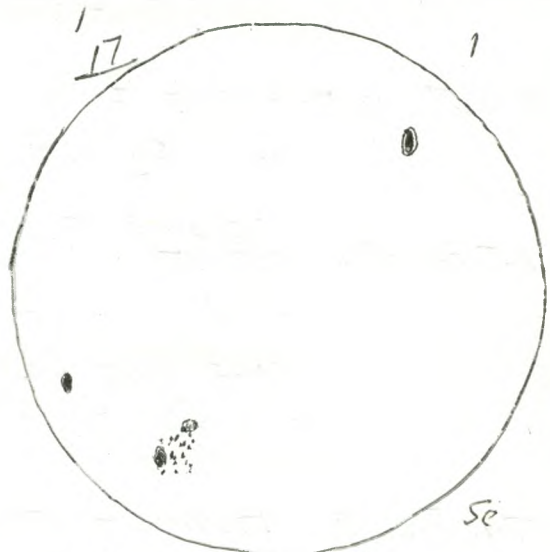
6g  
7s  
RSN 67  
Feb. 12  
20:15-20:20 UT



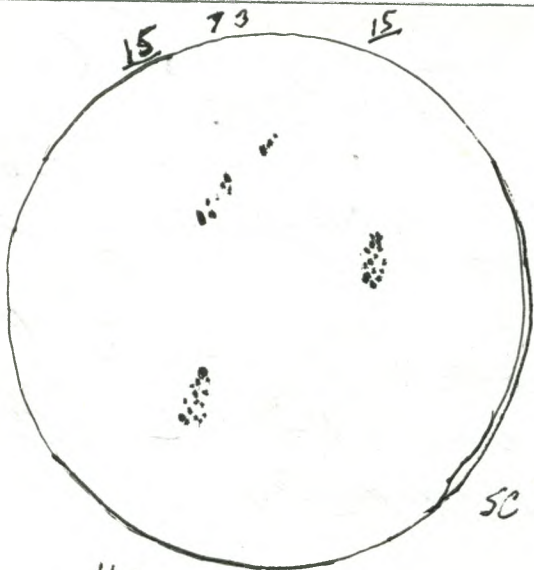
3g  
3s  
RSN 33  
Feb. 15  
18:25-18:30 UT



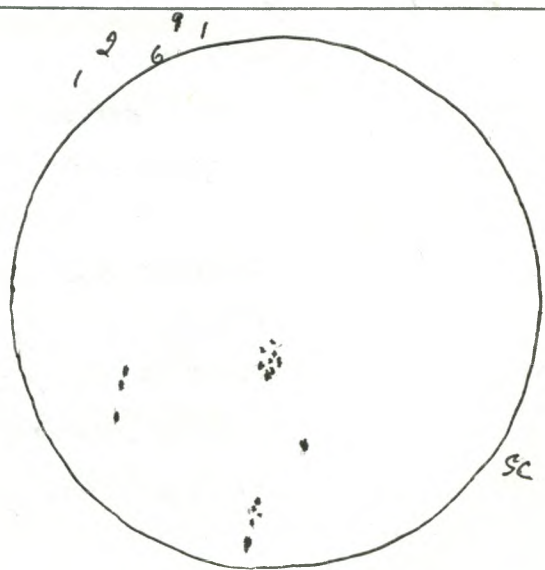
3g  
5s  
RSN 35  
Feb. 17  
19:05-19:10 UT



3g  
19s  
RSN 49  
Feb. 19  
17:25-17:30 UT



4g  
40s  
RSN 80  
Feb. 29  
18:40-18:45 UT



5g  
19s  
RSN 69  
Mar 3.  
20:20-20:25 UT

2000

very bright glow of an Aurora in the N. It was up about  $20^\circ$  and extending from N.W. to N.E. I

was generally white  
(about 4:00 a.m. E.S.T.)  
09:00 - 09:05 UT in

ne

Aurora!

While looking through the bathroom window I saw a superb Auroral display, the best one I had seen in a long time. It extended from NW to NE and up about  $40^\circ$  with two vertical bands between NW and N. It may have been slightly greenish but was generally white except for a noticeable large red patch in the NW. It was a very cold night - down to about  $-30^\circ\text{C}$ .

Sa. Feb. 12 20:15 - 20:20 UT t C-8, 32, 28.  
sun 6g 7s RSN 67 T.O.F.

Tu. Feb. 15 18:25 - 18:30 UT t C-8, 32, 28.  
sun 3g 3s RSN 33 T.O.F.

Th. Feb. 17 19:05 - 19:10 UT t C-8, 32, 28  
sun 3g 5s RSN 35 T.O.F.

Sa. Feb. 19 17:25 - 17:30 UT t C-8, 32  
sun 3g 19s RSN 49 T.O.F.

M.-T. Feb. 28-29 01:45 - 03:20 UT in at north door, nd, and y S-7-9; T9-9.5! <sup>except for</sup> intermittent clouds ne  
- winter and spring constellations; Jupiter and Saturn in W. about 8 degrees apart; meteor in Orion of about mag. 2.5.

Tu. Feb. 29 18:40 - 18:45 UT t C-8, 32, 28  
sun 4g 40s RSN 80 T.O.F.

F. Mar. 3. 20:20 - 20:25 UT t C-8, 32  
sun 5g 19s RSN 69 T.O.F.




# Relative Sunspot Numbers

Date My  
1999 Observation

Feb. 1 11  
3 16  
5 12  
7 0  
8 11  
9 40  
10 63  
14 134  
21 27  
22 11  
23 24  
24 34  
26 11  
27 32  
Mar 2 75  
8 15  
10 50  
11 59  
13 97  
14 56  
15 68  
17 83  
19 31  
20 38  
24 35  
26 22  
28 22  
30 37  
31 35  
Apr 5 37  
7 72  
7 97  
13 59  
14 46  
20 31  
24 15  
25 27  
27 46

29 43  
30 44  
May 1 37  
1750 2 65  
3 51  
10 38  
11 32  
13 58  
14 60  
15 77  
16 72  
18 73  
19 65  
20 87  
21 91  
26 76  
27 62  
28 91  
29 66  
30 84  
June 4 87  
10 113  
11 130  
20 38  
21 52  
22 111  
23 91  
25 153  
26 116  
29 100  
July 12 71  
14 69  
15 73  
19 34  
20 43  
21 63  
22 74  
24 51  
26 99  
27 117  
29 125  
30 113

1790 Aug. 27 81  
28 126  
30 80  
31 84  
Sept. 1 54  
3 36  
4 22  
Dec. 24 48  
25 60  
29 39  
30 37  
1800 -  
2000 Jan. 1 36  
8 11  
16 76  
17 70  
22 45  
24 33  
27 42  
29 36  
Feb. 4 51  
6 73  
7 60  
8 60  
12 67  
15 33  
19 35  
19 49  
29 80  
Mar. 3 69

TELESCOPE MAGNIFICATION

OCULAR	C-14(3910 <sup>m</sup> FL)	C-8(2000 <sup>m</sup> )	AST(445 <sup>m</sup> )	12.5"Dob(1525 <sup>m</sup> )
55mm	71 X	36.4 X		27.8 X
40	97.8	50	11.1 X	38.1
36	108.6	55.6	12.4	42.4
32	122.2	62.5	13.9	47.6
28	139.6	71.4	15.9	54.5
26	150.4	76.9	17.1	58.7
25	156.4	80	17.8	61
21.5	181.9	93	20.7	70.9
20	195.5	100	22.3	76.3
19	205.8	105.3	23.4	80.3
18	217.2	111.1	24.7	84.7
17	230	117.6	26.2	89.7
15.5	252.3	129	28.7	98.4
15	260.7	133.3	29.7	101.7
13	300.8	153.8	34.2	117.3
12.7	307.9	157.5	35	120.1
12.5	312.8	160	35.6	122
12	325.8	166.7	37.1	127.1
9	434.4	222.2	49.4	169.4
8.8	444.3	227.3	50.6	173.3
8	488.8	250	55.6	190.6
7.4	528.4	270.3	60.1	206.1
7	558.6	285.7	63.6	217.9
5	782	400	89	305
4	977.5	500	111.3	381.3

TELESCOPE PARAMETERS

	C-14	C-8	Ast	12.5"Dob
FL	3910mm	2000mm	445 mm	1525mm
D	354 mm	200 mm	105 mm	320 mm
f/	f/11	f/10	f/4.24	f/4.8

USEFUL MAGNIFICATION (0.2D to 2D)

D	354 mm	200 mm	105 mm	320 mm
U.M.	71X-708X	40X-400X	21X-210X	64X-640X

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

Local Mean Sidereal Time

For 1999:

$$L.M.S.T. = 6.^h 614723504 + 0.^h 0657098244d \\ + 1.^n 00273790934t - 5.^n 11123737$$

Longitude: W.  $76^{\circ} 40' 06."818$   
 $76.^{\circ} 66856055$   
 $5.^n 11123737$   
 $5.^n 06^m 40.^s 454532$

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

FABRIQUE E  
MADE IN