

Volume

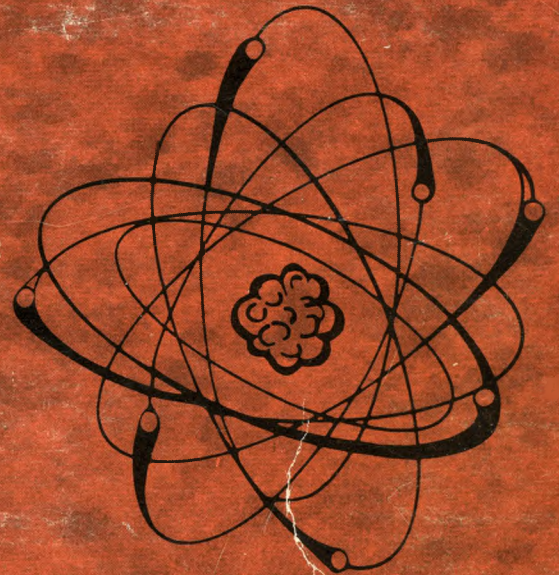
6

**August 30, 1990
to
August 27, 1991**

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Hilroy

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heavyweight paper - papier épais

science note book cahier de sciences

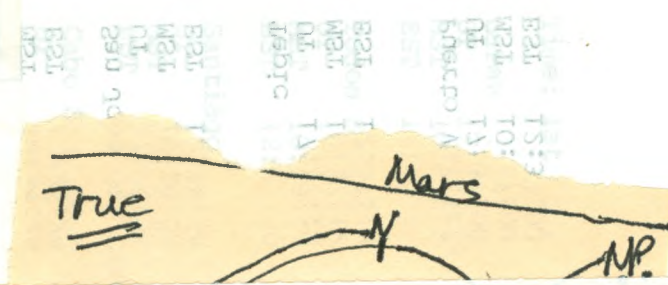
name-nom Leo ENRIGHT Observing Log

subject-sujet August 30, 1990 - August 27, 1991.

HILROY Toronto M6E 2R9
Made in Canada - Fabriqué au Canada

100 pages
27.6 x 21.3 cm
no 13-210

AUGUST 1990 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	SEPTEMBER 1990 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	OCTOBER 1990 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	NOVEMBER 1990 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
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**Epoch 2000.0 Coordinates for Oh UT
For Comet Levy (1990c)**

Date	R.A.	Dec.
1990	h m	Degrees
July 27	23 42	+29.0
28	23 40	+28.8
31	23 31	+28.2
Aug. 03	23 21	+27.3
04	23 17	+27.0
		+25.6

June 7-8, 1991
4:55 UT
Pluto prob.



Observing Log

1990, 1991

Code:

Year Day Date Time Place Sky Condition Instrument
 object(s) observed

eg.:

1990 Th. Aug. 30 20:15-20:30 UT ss c-8, 32, 28, 20, 15.5

Time	Place	Sky Condition
UT - Universal Time	y - yard	S - seeing
n - night	oo - Oso Observatory	T - transparency
m - morning	ss - solar station	0-10 scale
a - afternoon	nd - north deck	0 = nil or
f - forenoon	sd - south deck	extremely poor
e - evening	sh - shoreline of lake	10 = absolutely
	t - table at solar station	superb
	in - indoors, through window	

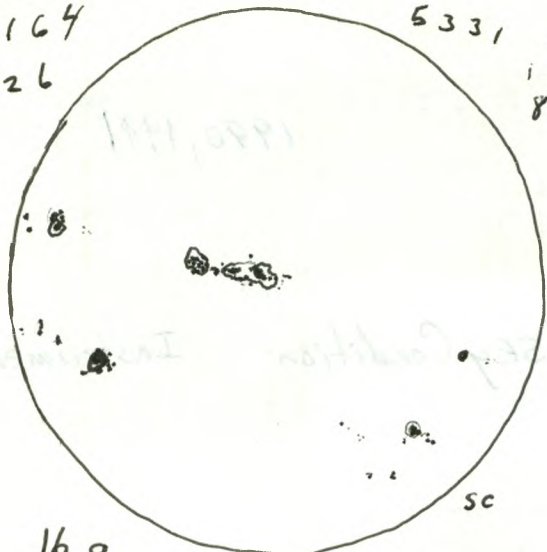
Instrument

c-14 - Celestron 14	EG - Easy Guider	cml - crescent moon light
c-8 - Celestron 8	EGlf - Easy Guider lens forward	gml = gibbous moon light
Ast - Astroscan 2000	EGtb - " " " back	fmf = full moon light
11x80b = 11x80 binoculars		tw - in twilight
9x63b = 9x63 binoculars	Objects	
7x35b = 7x35 binoculars	PN - Planetary Nebula	
32 = 32 ^{mm} ocular	GC - Globular Cluster	
32-2 = 32 ^{mm} 2" ocular	OC - Open Cluster	
K = Kellner	SG - Spiral Galaxy	
O = Orthoscopic	EG - Elliptical Galaxy	
Ko = König	D - Double Star	
WA = Wide Angle		
P = Plössl		
ph = photography		
p/b = piggy back		
o/a = off-axis		
Ba = Barlow lens		

1164
2226

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5331 4
1 8



16 g
88 s
RSN 248

Aug. 30.
20:15-20:30 UT

35

1111

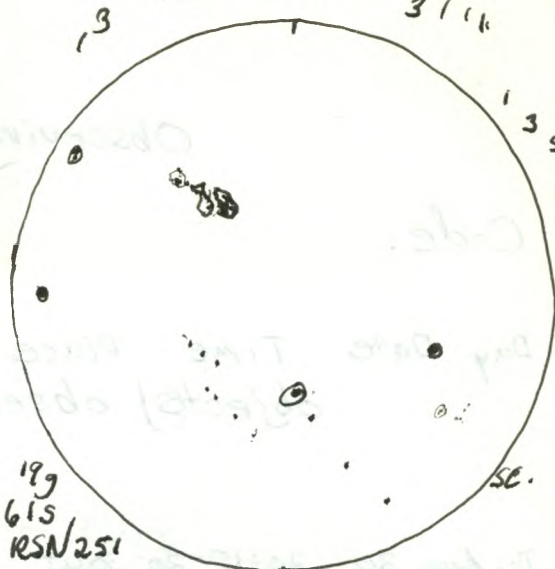
3111

13

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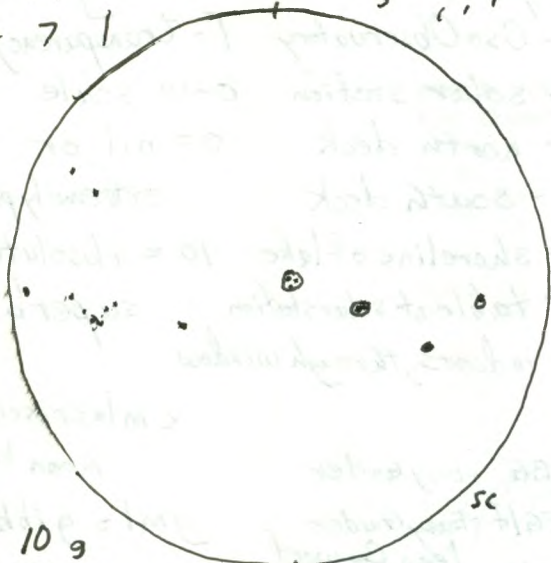
19 g
61 s
RSN 251

Aug 31
20:30-20:40 UT



1 1 1
2 7 1

3 1 1



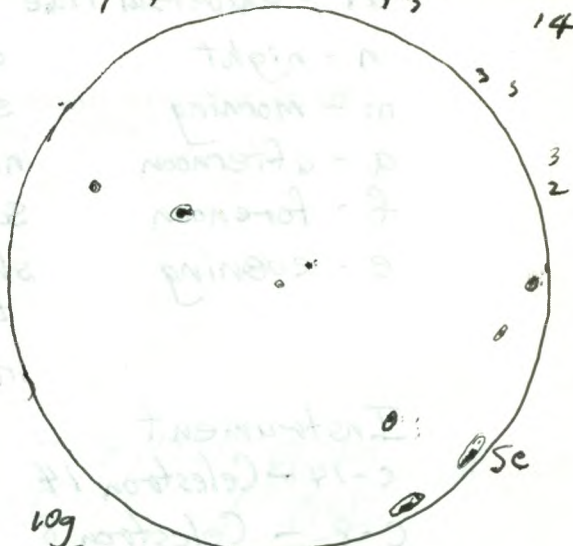
10 g
19 s
RSN 119

Sept. 7
19:50-20:00 UT

1 1

1 3

14



10 g
22 s
RSN 122

Sept 11
17:50-17:55 UT

Saturn
and moons sc.



Titan

32-5 = 32
32 = 32
32 = 32
K = Keiner
U = Ultrascop
K o = Koid
WA = Wide Angle
P = P
ph = photograpy
p/p = piggy back
d/a = off-axis
ba = barlow lens

1990 Th. Aug. 30 20:15 - 20:30 UT SS. C-8; 32, 28, 20, 15.5
sun 16g 88s RSN 248

Th.-F. Aug 30-31 01:00 - 02:30 UT y moonlight ne and 7x35
M39, Cygnus area, Delphinus area glowing and spiking Aurora
-Aurora was seen later about 4:30 UT or later with
glow, spikes and some flames

F. Aug 31 20:30 - 20:40 UT SS C-8; 32, 28, 20, 15.5
sun 17g 61s RSN 257

F. Sept. 7 17:50 - 20:00 UT SS C-8; ³²28, 20, 15.5.
sun 10s 19g RSN 119

F.S. Sept. 7-8 01:00 - 01:10 UT y gml 11x80b
Comet Levy (1990c) in area between Sagittarius
and Scorpius

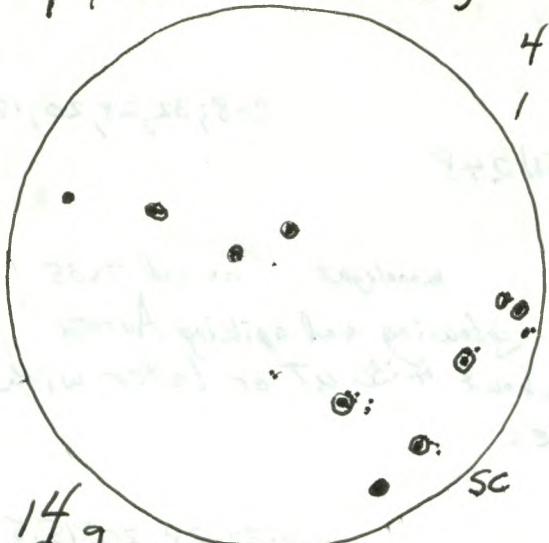
M.-T. Sept 10-11 01:10 - 02:00 UT y SPT8 11x80b
-looked for Comet Levy, but it may have been
"below the trees in SSW. M22, M17, M11, M39,
U and EU Del, M13, area of Neptune, Uranus, M31,
M33, M15, Alcor and Mizar
Clouds moved in to end the observing before moonrise

T. Sept. 11 17:50 - 17:55 UT SS C-8; 32, 28, 20, 15.5
sun 10g 22s RSN 122

T.-W. Sept. 11-12 00:30 - 02:50 UT 00 SPT(?) T7.5 ^{Cirrus} places 7x35b C-14, 26P; 11x80b;
7x35b: looked for Comet Levy (1990c) low in SSW in Scorpius,
but there was too much cloud
11x80b: area of Barnard's Star, M11, M33, M31
C-14: Elyr, M57, Saturn, (See diagram), Uranus, M15,
β Lyr.
A faint Aurora was visible for most or all of the
session with occasional spikes. A very long -1^{mag} meteor ^{was also} seen.

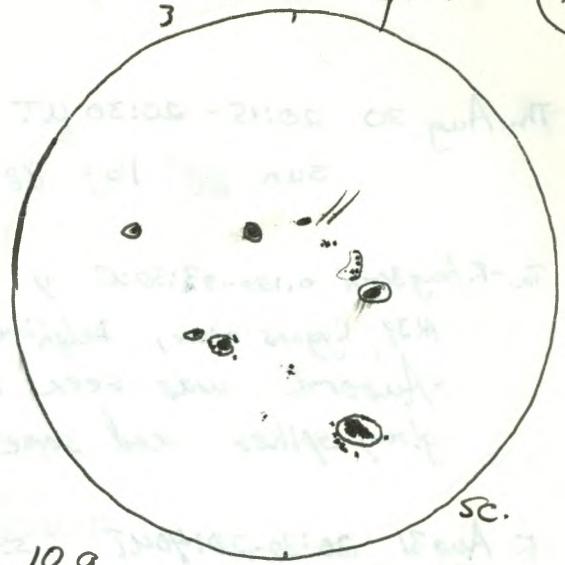
Xeroder

1 1 23 1 2 2 3 2 3 2 4 2 1



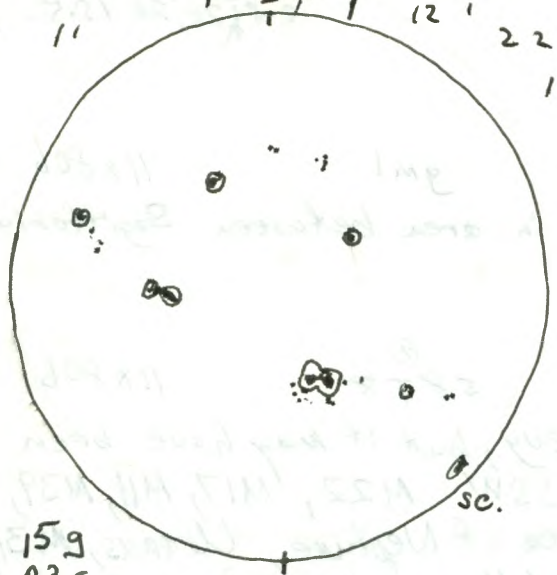
14 9
29 5
RSN 169 Sept. 12
19:22-19:35UT

7 1 1 1 3 6 3 5 9 1



10 9
37 5
RSN 137 Sept. 17
18:20-18:30UT

1 2 4 1 12 1 2 2 1



15 9
23 5
RSN 173 Sept. 18
18:40-18:45UT

Faint, mostly illegible handwritten notes at the bottom of the page, possibly describing the observations or the field of stars.

1990. w. ~~Aug.~~ ^{Sept.} 12 19:22-19:37 UT SS C-8; 32, 28, 20, 15.5
sun 14 g 29 s RSN 169

w.-Th. ~~Aug.~~ ^{Sept.} 12-13 02:30-03:40 UT y s8(?) T 8 cloud intermittent 11x80b
M33, M31, M15, SSCyg area, M39, Col 299, Barnard's Star area,
several meteors including one probable Perseid.

M. Sept. 17 18:20-18:30 UT SS C-8; 32, 28, 20, 15.5
sun 10 g 37 s RSN 137

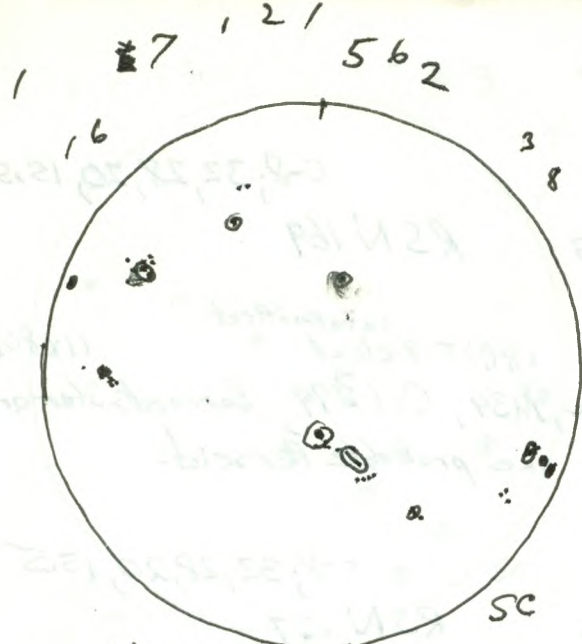
M.-T. Sept. 17-18 02:00-03:35 and 05:10-06:30 UT oo and yandsh s9(?) T 9.5 11x80b C-14, 32 Ko +
11x80b: looked for Comet Levy (1990c) but it was quite far
south in area S. of Antares and probably below the
treetops even from the dock, M6, M7, M22, M28,
M4, Saturn, Uranus, Neptune, M33, M31, area of
Barnard's Star, M44
C-14: M13, ^{NGC} 6207, NGC 7331 and Stephen's Quintet, M15,
Saturn, NGC 6818 - PN in Sagittarius W. of β Cap,
Mars, NGC 253 - a very large, spectacular galaxy
almost edge-on in Sculptor S. of β Cet,
NGC 288 - GC in Sculptor SE of NGC 253, NGC 6215
a PL in Her, NGC 6572 - PN in Oph, M31,
M33, γ Ari, NGC 1055 - SG near δ Cet

T. Sept. 18 18:40-18:45 UT SS C-8; 32, 28, 20, 15.5
sun 15 g 23 s RSN 173

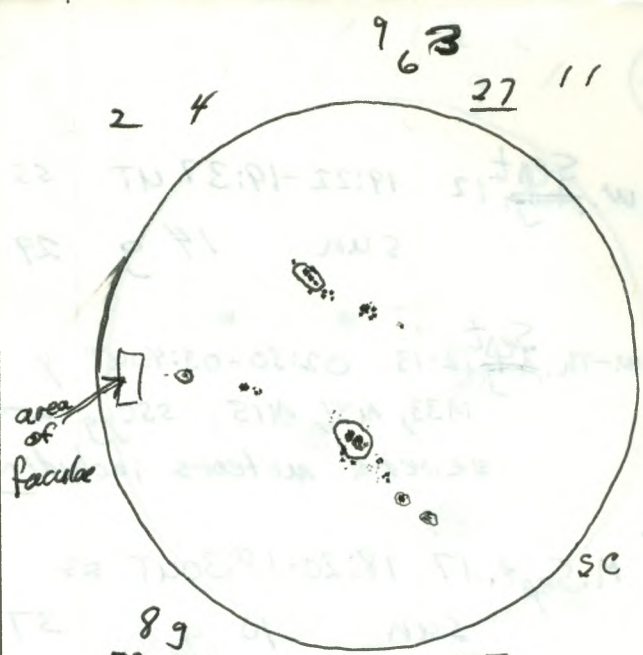
T.-w. Sept. 18-19 01:30-03:30 UT oo and sh. int. clouds s9 T 9 11x80b
from dock: looked for Comet Levy (1990c) S of
Antares, but did not see it for sure, M6, M7,
M4

from oo: area of Barnard's Star, M33, M31,
Saturn, Uranus, Neptune, M22, M28, area
of SSCyg carefully observed.

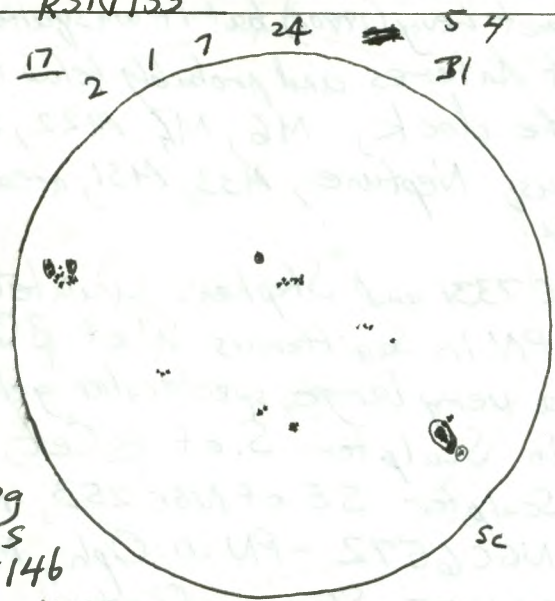
An Aurora was seen during much of the session - at first a
glow in the NNE, then red arcs in N. and a couple of spikes



119
43 S
RSN 153
Sept. 20
19:45-19:50 UT



89
53 S#
RSN 133
Sept. 27
20:52-21:00 UT



109
46 S
RSN 146
16:35-1700 Oct. 5
UT

An Aurora was seen during much of the session at Fitch
 plain in the MNT, then red areas in M. and as bright
 of 22 Cyg. (partially observed.
 Saturn, Uranus, Neptune, Mars, Venus, and
 from so, area of Barnard's Star (M3, M31)
 M4
 Antares, but did not see + for sure, M1, M2
 two dots: top of Car Coat (M190) 2 of
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1990 Th. Sept. 20 19:45-19:55 UT SS

C-8; 32, 28, 20, 15.5

Sun 11g 43s RSN 153

S.-S. Sept. 22-23 01:00-02:20 UT 00 59(?) T8.5 C-14, 32, 30; 11x806
11x806: Saturn, Uranus, Neptune, area of Barnard's star, Cygnus areas including that of S5 Cyg, M22
C-14: S5 Cyg, NGC 6826 (the Blinking Nebula)
Lightning flashes appeared during the observing session from the W sky. They seemed to brighten near the end of the session, though the clouds did not appear close.

Th. Sept. 27 20:52-21:00 UT SS

C-8; 32, 28, 20, 15.5

Sun 8g 53s RSN 133

F. Oct. 5 16:35-17:00 UT SS

intermittent cloud C-8, 32

Sun 10g 46s RSN 146

M. Oct. 15 13:15-13:20 UT inside and y ne

(9:15-9:20 C.D.T.)
Saw and photographed a beautiful semi-circular rainbow in the NW

day
of
two
rainbows

22:15-22:20 inside and sh ne

(6:15-6:20 P.D.T.)
- Second rainbow of the day - also a full semi-circular one and very intense for several minutes - in the SE about 15 minutes before sunset.

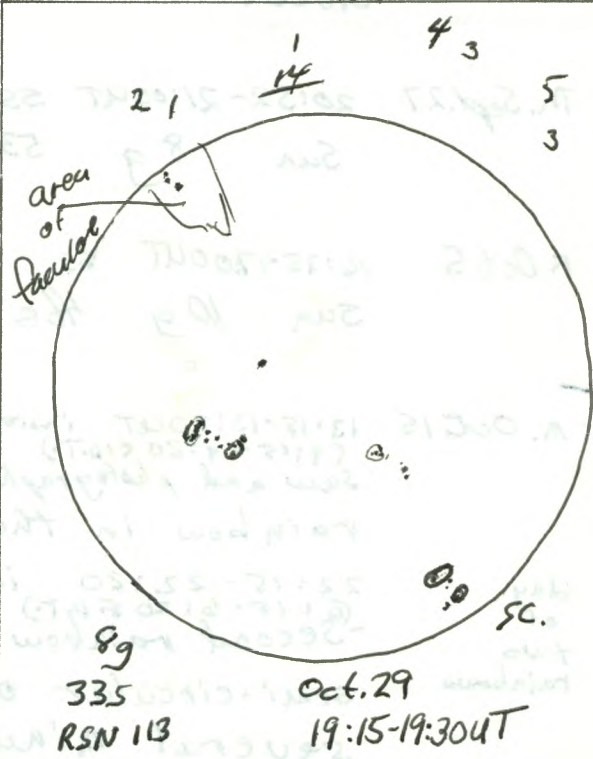
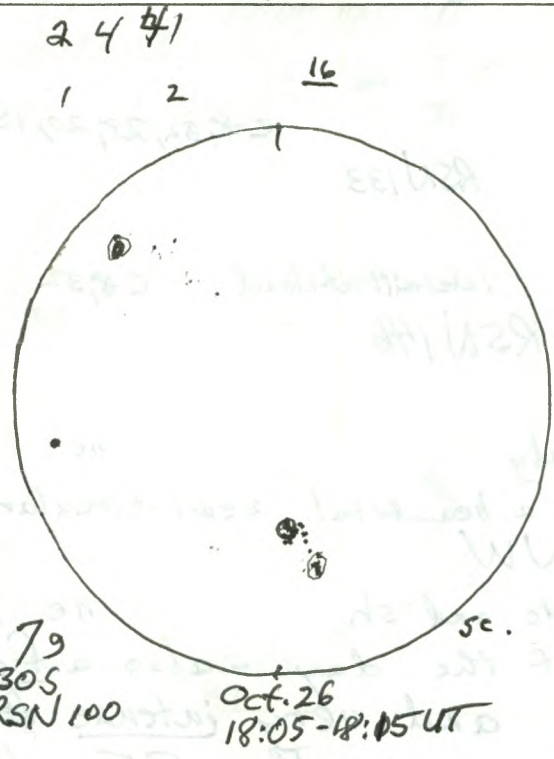
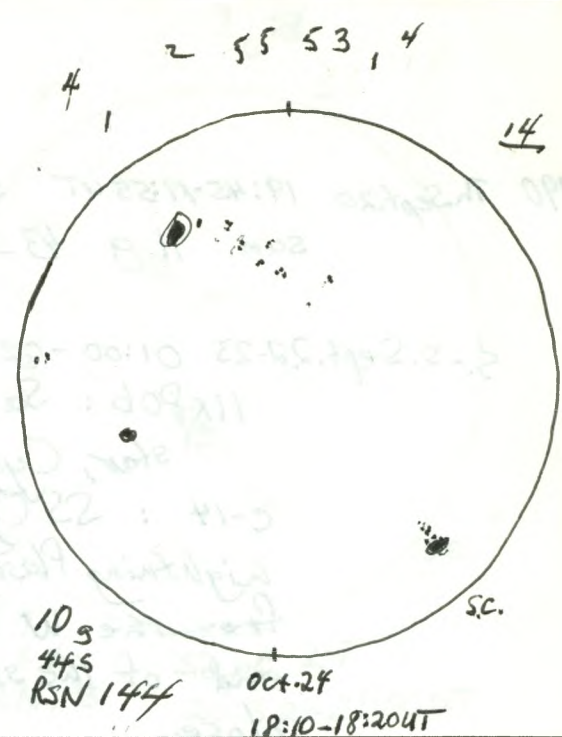
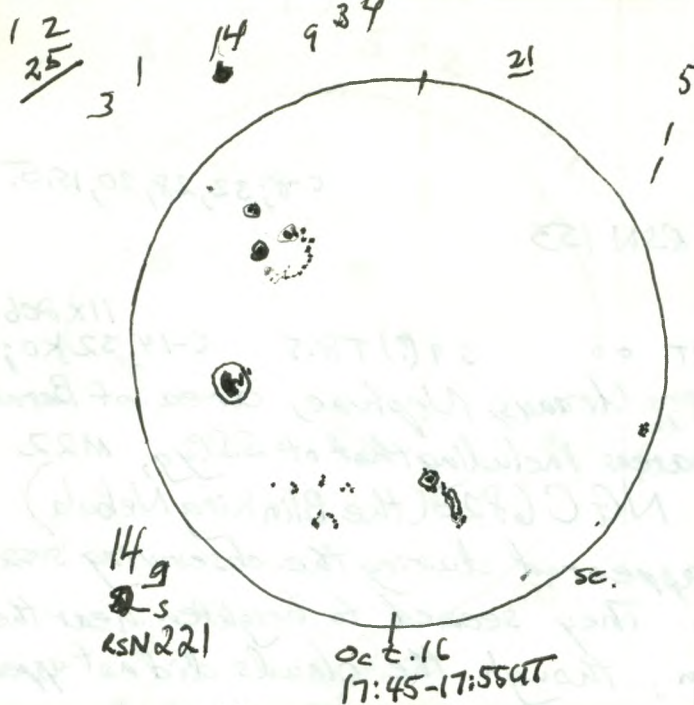
M-T. Oct. 15-16 01:45-03:45 UT y and t^{S-9, T8} 11x806
Ast, 19, 15, 8, 5, 4, Ba;

with Ast: Mars, Saturn, M33, M31, M13, M92,
β Cyg, γ Ari, Pleiades, M71, M27

with 11x806: area of Mira (o Ceti), Col 1399, Pleiades, Hyades,
M36, M37, M38, M15, area of S5 Cyg, M39

Mira was naked eye - about mag 4.5

4 or 5 meteors were seen - several quite bright



1990 Tu. Oct. 16 17:45-17:55 UT ss C-8, 32, 28, 20, 15.5
sun 14g 82s RSN 222

T-W. Oct. 16-17 00:00-00:05 UT 00 C-14, 32K

Saturn observed during twilight. Great White Spot on Saturn not detected though the equatorial area may have been lighter than usual

01:30 - 04:35 UT 00 S9(?) T9 C-14, 32K, 12K

19 NGC objects

Saturn Nebula - NGC 7009, M2 - superb, NGC 7814 near γ Peg., NGC 7742 - SW of γ Peg., NGC 7743 - SW of γ Peg., NGC 7448 and NGC 7454 - near α Peg., NGC 7479 S of α Peg., NGC 7469 (probably) also S. of α Peg. - seemed to have a star in or over the galaxy, NGC 7619 and NGC 7626 very near the Pegasus-Pisces border SSE of α Peg. and seen in the same field, NGC 7541 g. in Pisces, (NGC 7541 seemed to have a star at the E. end; it was lying in an E-W. direction), NGC 6826 - PN - the Blinking Nebula, NGC 7785 g. in Pisces, NGC 7782 g. in Pisces, γ Arietis - D, superb; Mars - very bright in Taurus with some features visible, NGC 95_g in Pisces a faint round-looking galaxy, NGC 16 in Peg. S. of α And. - EG; NGC 23, also S. of α And (2 stars seemed to be in the galaxy); M33, M31, NGC 750, an edge-on galaxy in Triangulum, NGC 697 NNW of β Arietis, NGC 404 near β And, γ And - beautiful double, NGC 891 - beautiful edge-on spiral galaxy E. of γ And., M42, M43 in Orion

Clouds moved in to end the observing

W. Oct. 24 18:10-18:20 UT ss clouds C-8, 32

sun 10g 47s RSN 144

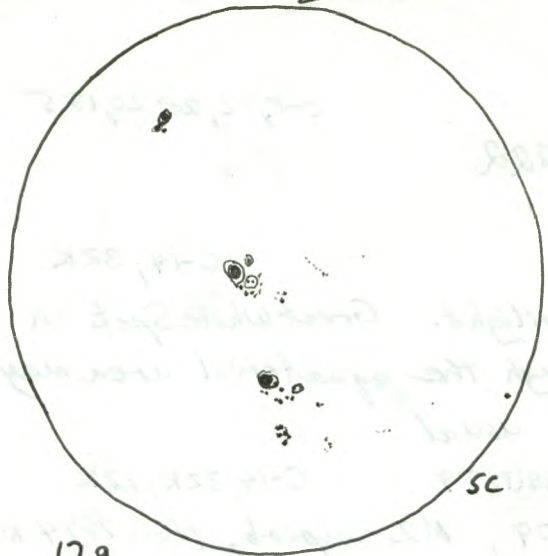
F. Oct. 26 18:05-18:15 UT ss poor "seeing" C-8, 32, 28, 20, 15.5

sun 7g 30s RSN 100

M. Oct. 29 19:15-19:30 UT ss C-8, 32, 28, 20, 15.5

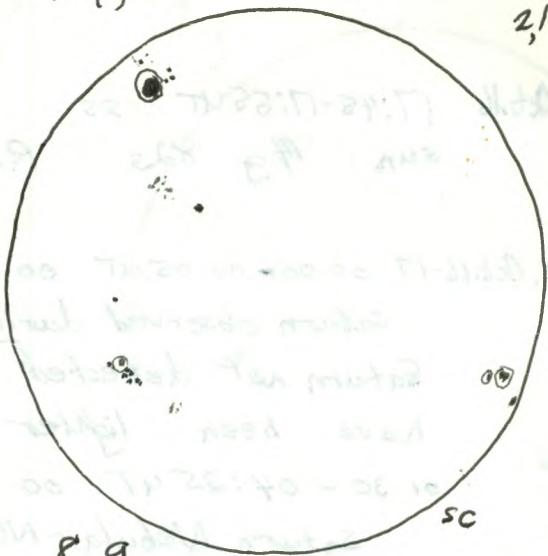
sun 8g 33s RSN 113

3 16 8' 6 14 2 7 6 3 1



129
685
RSN 188
Nov. 3
19:34-19:45 UT

7 19, 3 9 1



8 9
23 5
RSN
Nov. 13
19:20-19:30 UT
very poor "seeing"

very large
G.W.S.



γ Sge
~~Sge~~ 19 58 45.3
19 29 32

α Oph -
(1100) 17 30 12.6
(2000) 17 34 55.9 12 33 36

Separation: 35.17684

1990 M.T. Oct. 29-30 01:30-03:10 UT t gml, ^{some} cloud Ast, 19, 15, 5, 4
Saturn, (Moon) Mars, γ Arietis (superb)

A reddish Aurora persisted during session, in E, N, NW with some areas of intensity mingled with the clouds.

T.-W. Oct. 30-31 22:55-01:30 UT 00 gml, ^{some} cloud. C-14, 19, 12
Saturn seen with its enormous Great White Spot in the equatorial region (listed as crossing the central meridian at 22:59 UT), lunar craters, photographed Saturn.

Sa. Nov. 3 19:34-19:45 UT ss slight haze C-8, 32, 28, 20, 15, 5.
sun 12g 68s RSN 188

Th.-F. Nov. 8-9 23:30-00:00 t Ast, 8
Saturn, Alcor and Mizar

It was very difficult to see the Great White Spot on Saturn at 56X.

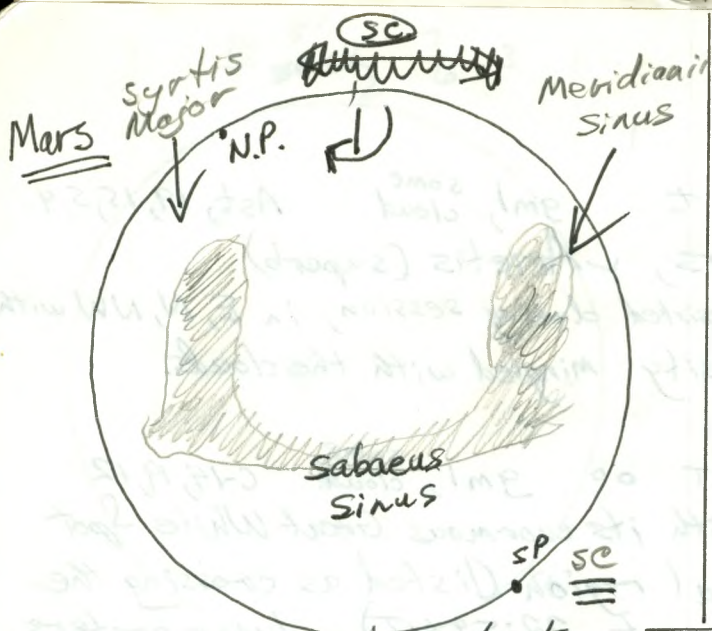
Later Mars was spectacular in Taurus and the Jupiter-Moon conjunction in Cancer was also spectacular.

Tu. Nov. 13 19:20-19:30 UT seeing very poor - "boiling" C-8, 32, 28, 20, 15, 5
sun 8g 33s RSN 113

Tu.-W. Nov. 13-14 23:30-05:15 UT ^{with breaks} 00 58(?) T 9.5 (above 45°) C-14, 32, 5, 4, 12. ^{ne. 11x806.}

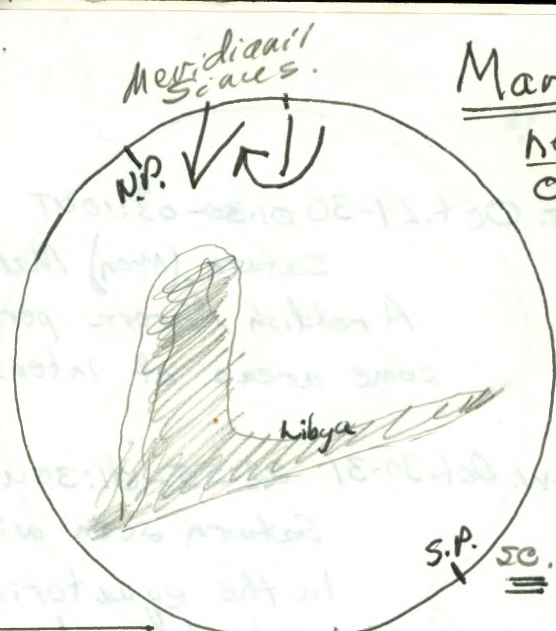
Saturn low in SW amid trees - Great White Spot not well seen because of conditions. It was reported to have by now extended completely around the equatorial region.

Bolide: ne. bright bolide seen about 23^h 54^m UT going slowly from about γ Sagittae to α Ophiuchi (about 35°) at about -6 mag. or brighter. Its white light seemed to become greenish fringed with red as it moved in a WSW direction in the W sky. Near the end of its trail it seemed to explode into about 4 particles - white in



Mars at about
00:30 UT or later
Nov. 14
Central Meridian:
292.85

Very
rough
drawings
of
Mars



Mars at about
4^h UT
Nov. 14
Central Meridian
344.06

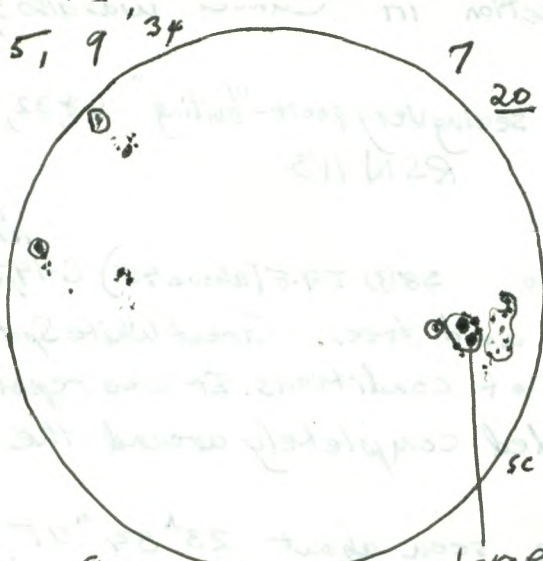
O.H.
p. 133

YR, MO, DAY ? 1990, 11, 14
UT (H, M, S) ? 0, 30, 0

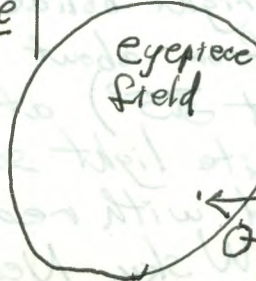
Central meridian: 292.85
P.A of axis: 325.46
Decl. of Earth: -6.25
Angular diameter: 18.0
Phase: 0.988
Magnitude: -1.9

YR, MO, DAY ? 1990, 11, 14
UT (H, M, S) ? 4, 0, 0

Central meridian: 344.06
P.A of axis: 325.44
Decl. of Earth: -6.27
Angular diameter: 18.0
Phase: 0.988
Magnitude: -1.9



89
50s
R&N/130
Nov. 15
20:20-20:30 UT
large
pair



YR, MO, DAY ? 1990, 11, 16
UT (H, M, S) ? 3, 35, 0

Central meridian: 320.31
P.A of axis: 325.22
Decl. of Earth: -6.66
Angular diameter: 18.1
Phase: 0.991
Magnitude: -1.9

C.M. 320.31
PA 325.22

1990

colour.

Mars: The red planet was at an angular diameter of 18" and mag -1.9. It was possible to distinguish features - The Syrtis Major and Meridianii Sinus.

(See drawings)

NGC 890, 925, 750, M31, M33 (very spectacular and huge when near the zenith, γ Arietis, NGC ~~440~~ 404 near β And, Pleiades

11x80b. area of R Lep.

Th. Nov. 15 20:20-20:30 UT SS

C-8, 32, 28, 20, 15.5

Sun 8g 50s RSN 130

Th.-F. Nov. 15-16 01:00-05:15 UT 00 SST 9-above 45° C-14, 12, 9, 13, 19

poor below 45°

C-14: Mars - (See diagram); possible sighting of a moon of Mars when Mars was outside the field of the 13^{mm} Nagler eyepiece.

Pleiades (It did not seem to be verified since it seemed to be W of Mars in the sc. field but Sky & Telescope p643 shows

11x80b: Pleiades, Kemble's Cascade in Camelopardalis, area of California Nebula in Perseus.

photographed: area of Mars in Taurus

Deimos near E.W. Elongation

Sa. Nov. 17 19:23-19:30

Sa. Nov. 17 19:23-19:30 UT SS

It seemed to be a bit too far out to be Phobos, but it could have been C-8, 32, 28, 20, 15.5

Sun 7g 75s RSN 145

Sa.-Su. Nov. 17-18 00:00-08:00 UT 00

S-8.5 "all-sky"
T-9.5 - exceptional

C-14, 32, 12

M74, Jupiter, Mars, M31, M33, NGC 404, M1,

photographing: - Jupiter and Mars with eye-piece projection

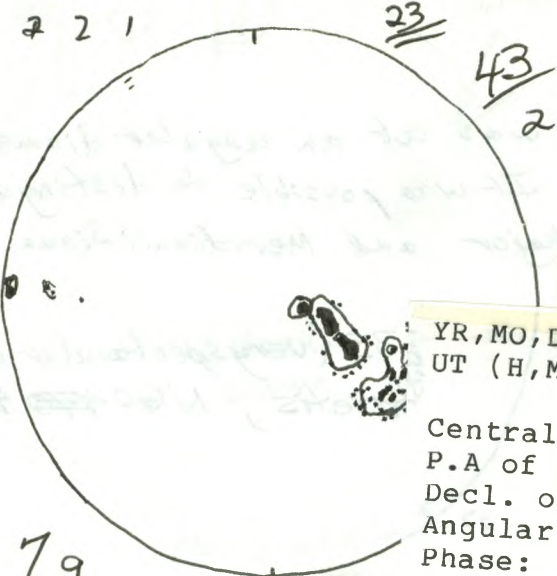
- constellations using tripod and still camera

Few Leonid meteors were seen, though it was very near maximum at beginning of session and the night was exceptionally clear.

Mira still "naked-eye".

S. of
Lepus
(Columba)

2



YR, MO, DAY ? 1990, 11, 18
UT (H, M, S) ? 3, 0, 0

Central meridian: 294.15
P.A of axis: 325.00
Decl. of Earth: -7.06
Angular diameter: 18.1
Phase: 0.994
Magnitude: -1.9

79
75S
RSN 145

Nov. 17.
19:23-19:34 UT

Mars

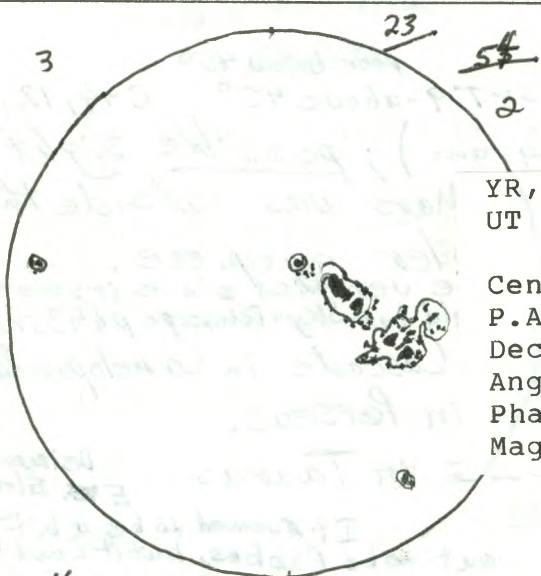


ars
59

boat 3:00 UT
Nov. 18

C.M. = 294.15
P.A. = 325.00

3

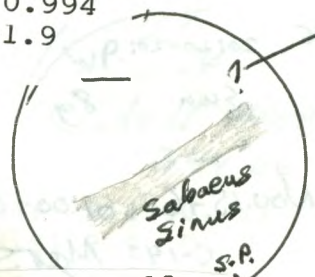


YR, MO, DAY : 1990, 11, 19
UT (H, M, S) : 6, 40, 0

Central meridian: 339.00
P.A of axis: 324.86
Decl. of Earth: -7.29
Angular diameter: 18.1
Phase: 0.995
Magnitude: -1.9

49
82S
RSN 122

Nov. 18
18:30-18:40 UT

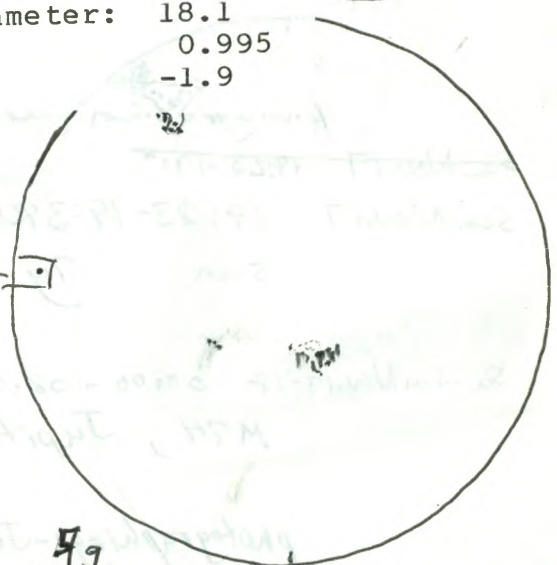


Sinus Meridiani may have been indistinct because of dust storms.

C.M. = 339.00
P.A. = 324.86

6:40 UT
1.19

Faculae



79
50S
RSN 99

Nov. 23.
18:15-18:20 UT

YR, MO, DAY : 1990, 11, 27
UT (H, M, S) : 0, 45, 0

Central meridian: 182.10
P.A of axis: 323.99
Decl. of Earth: -8.90
Angular diameter: 18.0
Phase: 1.000
Magnitude: -2.0

79
51S
RSN 121

Nov. 26

Mars Nov. 26-27
00:45 UT
Sc. C-14 - 19mm W.F.
205.8X

1990 Su. Nov. 18 18:10 - 18:20 UT SS
Sun 4g 82s RSN 122

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

S.-M. Nov. 18-19 01:00 - 07:00 UT 00 T-9.5 (excellent) 11x80b
S-8 C-14, 19m, 12, 5

Mars - very near time of closest approach to earth (listed for Nov. 20 4:00 UT.) - very bright, with features easily seen, but perhaps not as distinct as previously. NGC 253 - g. in Cetus - huge and spectacular, NGC 288 - a "loose, huge" globular cluster in Cetus, Mira naked-eye; M42 Jupiter, M33, M31, γ Arietis, NGC 404, γ Andromedae. (Scott, Stephanie, and Chris Milligan were guests from about 3 UT until 4:30 UT.)

- photographed Mars and Jupiter with c.p.p. and 15.5m oculars.
- 11x80b: M45, M36, areas of Rosette, R Lep
- also with C-14: Trapezium with 6 stars seen, looked for Horsehead Nebula

F. Nov. 23 18:15 - 18:20 UT SS

C-8, 32, 28, 20, 15.5

Sun 5g 60s RSN 110

guest observer: David H. Levy - very clear views with 32, 28, and 20; not bad with 15.5. Sky clear with rare thin cirrus to south, seeing poor after cold front passage.

M. Nov. 26 19:05 - 19:15 SS

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

Sun 7g 51s RSN 121

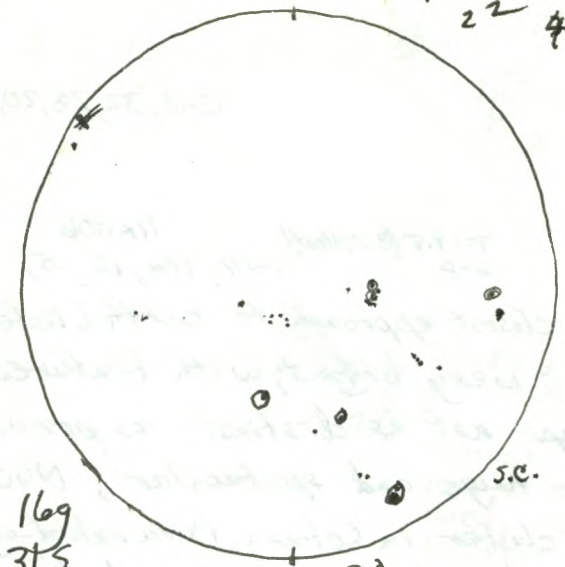
M.-Tu. Nov. 26-27 00:40 - 02:00 UT 00

S9T5 haze, cirrus C-14, 19, 12, 8, 9, 5, 4

Mars - between dates of closest approach and opposition (C.A. - Nov. 20, 4^h UT; OPP. Nov. 27 21^h UT)

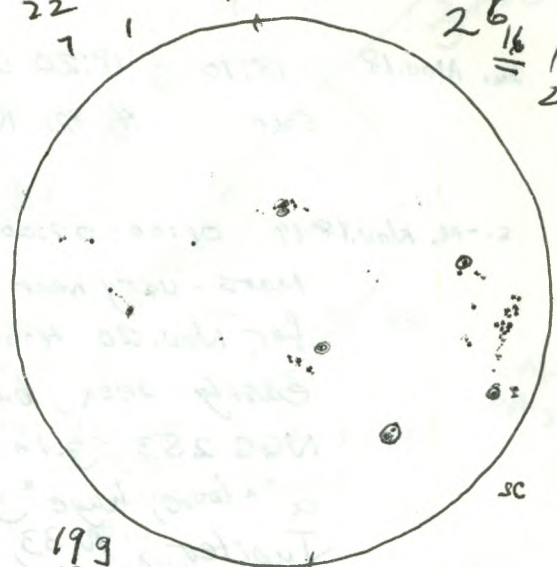
(S.C. view) A definite "streak" was seen, curving from the 7 o'clock to 3 o'clock position on the disk with more "whitish" colouring below the band and more "reddish" above it.

Lunar craters including Plato, Copernicus, and the Straight Wall.



169
315
RSN 191

Nov. 30
19:30-19:40 UT



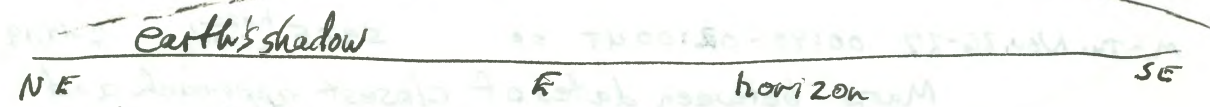
199
635
RSN 153

Dec. 2
19:35-19:45 UT

The Perigee Full Moons of December 1990
 (Closest perigee distance since 1912 (Jan. 12) and until 2034)
 (farthest apogee of the year)

			Distance	Earth-radii
3h 10 ^m	Full Moon - Dec 2	7 ^h 50 ^m	356 525 km	55.9 earth-radii
	Perigee - Dec. 2	11 ^h	356 525 km	55.9 earth-radii
2h 22 ^m	Apogee - Dec. 16	4 ^h	406 584 km	63.7 earth-radii
	New Moon - Dec. 17	4 ^h 22 ^m	406 584 km	63.7 earth-radii
18h 35 ^m	Perigee - Dec. 31	00 ^h	357 757 km	56.1 earth-radii
	Full Moon - Dec. 31	18 ^h 35 ^m	357 757 km	56.1 earth-radii

Pink glow



Very transparent skies

Sun Dec. 2 21:35-21:40 UT
 (after sunset which was at
 4:28 pm. E.S.T.)

21:28

1990. F. Nov. 30 19:30-19:40 UT ss

C-8, 32, 28, 20, 15.5

16g 31s RSN 191 (many single spots.)

S.-S. Dec. 1-2 - 00:00 UT from inside the house

conjunction of Full Moon and Mars (listed as 1ⁿ earlier) ^{ne}

- 02:00 UT y ^{fml} Full Moon (listed as full 5^h 50^m later) still ^{ne} appearing close to Mars. Skies clouded over within 2 or 2½ hours later preventing photographing of perigee full moon.

12:08 UT indoors

Full Moon near setting - up about 12° in N.W. ^{ne}

12:30 UT indoors

About 7 min after sunrise, (7:23 a.m. E.S.T.) I watched the moon disappear behind low clouds in the N.W. ^{ne}

The setting time for this Full Moon was given as 31 min later (8:01 a.m. E.S.T.) at azimuth 307.9 (See opposite page for details about this)

Diameter

33'31"

29'23"

33'24"

Su. Dec. 2 19:35-19:45 UT ss

C-8, 32, 28, 20, 15.5

sun 19g 63s RSN 153

21:35-21:50 UT ^{travelling} east of Read ^{very} transparent sky ^{ne}
The earth's shadow could be observed in the eastern direction below a pink glow of sunlight in the atmosphere
(See diagram on opposite page.)

S.-M. Dec. 2-3 02:08 - 04:20 UT oo

sg fml

^{1b} EG+32, 55
C-14, 19, 12, 1

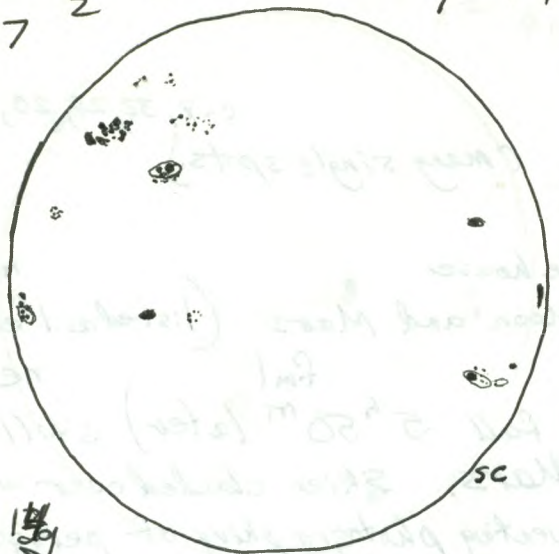
γ And.-d, γ Ari.-d, Mars - very bright and large still

- using C-14 and EG1f and EG1b - photographed the moon about 18 to 20 hours after the moment of Full Moon and about 14 to 15 hours after moment of perigee - a close perigee full moon.

- with C-14, EG1b, 55^m - observed lunar craters.

2 3 8 12 6 9
1 7 2 6

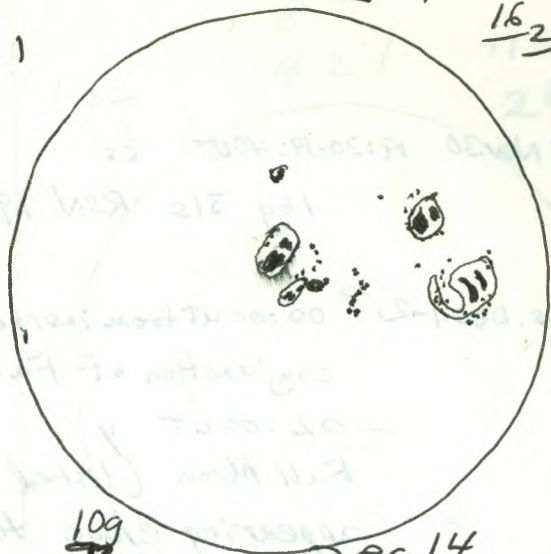
7 1 11 1



146
665
RSN 206

Dec. 10.
18:45-18:55 UT

4 6 11 7 3 11
16 23



109
70s
RSN 181

Dec. 14
16:20-16:25 UT

Jupiter

0

:

:

Dec. 11: 2:50 UT

1990, M. Dec. 10 18:45-18:55 UT ss
sun 14g 6bs RSN 206

C-8, 32, 28, 20, 15.5

M-F. Dec. 10-11 01:15-04:20 UT y t s. 8(?) T8-9 Astroscan 28, 32, 8
11x80b

11x80b: areas of ZUMA, R Lep (bright at about 7.5-8 mag.)
Orion Nebula, M33, M31, α Cet, M35, M41, Rosette
Nebula,

Ast.: Mars (too low power for details), Jupiter
with 4 Galilean moons on one side, M1, M42, M43.

Th.-F. Dec. 13-14 04:00-05:00 UT y s-9(?) T8 ^{some} cirrus ne

n. -observed and photographed areas of the sky for members
of the Geminid Meteor Shower.

It seemed to be an excellent meteor shower with
many meteors visible. Most were 2nd and 3rd
magnitude - few very bright ones. Most also
had short trails with almost none leaving visible
"trains" in the sky. Most were yellow or white in
colour. The number was high, perhaps almost
one per minute, though I did not keep
a precise count.

m. 10:30 - 11:00 UT in s(9?) T. 9.5 ne

For $\frac{1}{2}$ hour, again I observed Geminid Meteors,
seeing about 1 per minute perhaps, most of
2nd or 3rd magnitude and with short trails,
but without "trains" left behind.

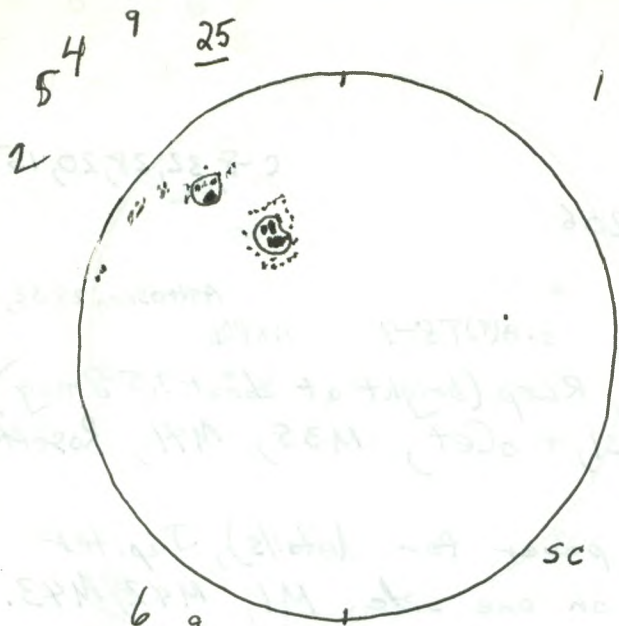
Beginning of astronomical twilight was at 10:49 UT
(5:49 a.m. E.S.T.) and moonrise, a slender crescent
at 10:30 UT (5:30 a.m. E.S.T.). Before and
even after the beginning of twilight, Zodiacal
light was visible extending up through Libra and
Virgo to the constellation Leo.

Transparency was superb!

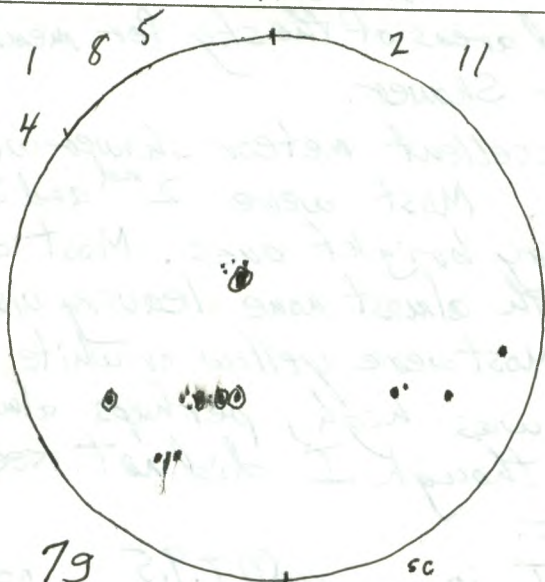
F. Dec 14. 16:20-16:25. ss

sun. 10g 93 RSN 173

C-8, 32, 28, 20, 15.5



6 9
46 5
RSN 106 Dec. 20
17:55-18:00UT



79
225
RSN 92 Jan. 4
16:20-16:30UT

Dec. 17 4:10UT.

Jupiter
(2 Galilean moons
visible)

Th-F. Dec. 20-21
brief period of
observing with the
14X100 binoculars which
Denise bought me for
Christmas
M 42, M 43 - spectacular
RX Eridani - seen for
sure, as
had not been the case
with the 11X80
binoculars.

Jupiter

1990 s.-M. Dec. 16-17 04:00-05:20 UT y s-7.5(?) T9.5 (superb!) 11x80b.

M31, M33, M45, M44, M67, M42, M43, area of Orion Nebula, areas of the following variable stars: R Lep. - (bright at about mag. 7)

R Leonis - (very bright at about mag. 6)

R Canis Minoris area

S Canis Minoris area

~~R. Lep~~ ^{RX} Lep area (very bright at about mag. 6)

RX Eridani (not seen for sure in the binoculars)

area of the belt of Orion, Mars (very near the Pleiades, Jupiter, M35, area of α Ceti (Mira) - now about 6 mag., area of Rosette Nebula, area of γ Orionis, M41.

W.-Th. Dec. 19-20 04:30-05:20 UT y (observatory door frozen shut) s-7(?) T9 ne

winter constellations, Jupiter in Cancer, Mars in Taurus now past Pleiades in its retrograde motion, stars of southern constellations including Puppis and Columba.

photographing with 50mm lens: area of Hyades and Mars near Pleiades, and area of Orion.

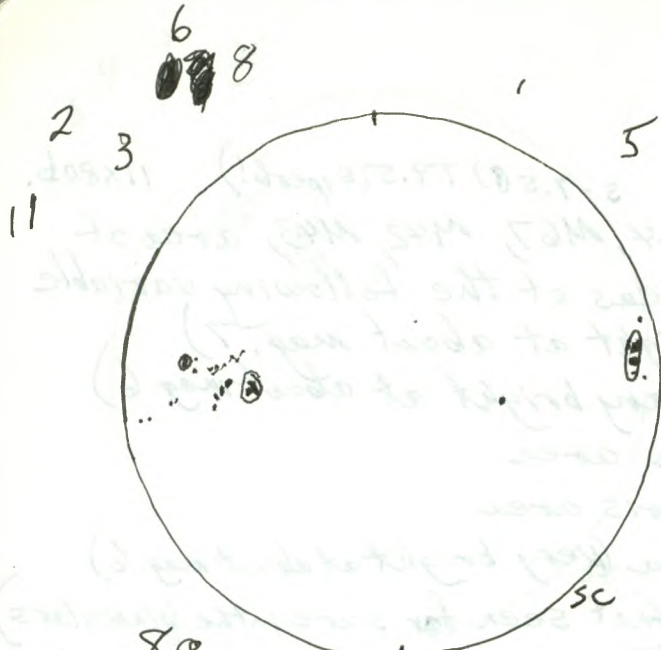
1991 Th.-F Jan. 3-4 03:30-03:55 UT gml scattered cloud ne

- tried to observe the Quadrantid Meteor Shower, predicted, according to the Observer's Handbook to be at maximum at 0^h UT Jan. 4, just 3^h previous.

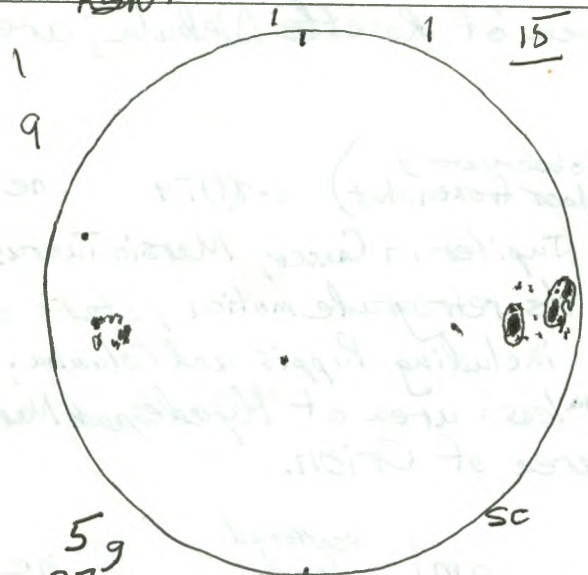
- did not see any meteors that were certainly Quadrantids. One was seen near the zenith, but it seemed to be coming from SE. - one at about mag 0. Bright moonlight and many clouds may have hindered seeing the shower.

F. Jan. 4 16:20-16:30 UT SS C-8, 32, 28, 20, 155.
sun 7g 22s RSN 92

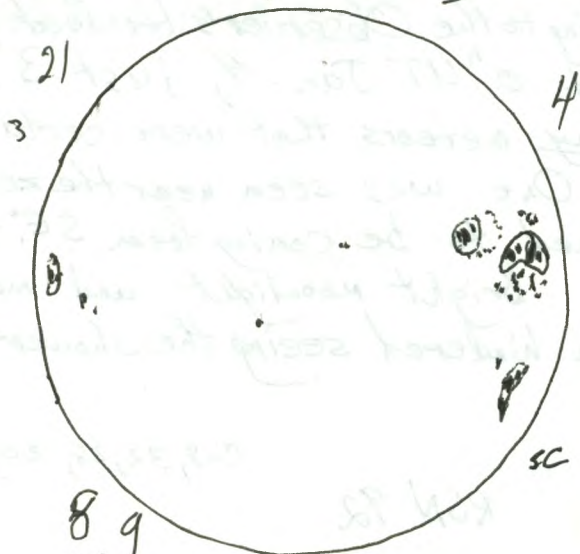
F.-S. Jan 4-5. 03:30-04:00 UT s 8(?) T9 11x80b
M42, M35, M31, M33, R Lep, Jupiter, area of RX Eri.



89
27s
RSN 107
Jan. 7.
17:05-15:19 UT



59
27s
RSN 77
Jan. 8.
1 2
14 21



89
48s
RSN 128
Jan. 10
19:45-19:50 UT

6
Jupiter

6
0

1991 Su.-M. Jan. 6-7 00:30-01:30 UT y S(?) T 7-8.5 first light for my new 20x100b

Using the 20x100 binoculars which I just today brought from Perceptor in Schenberg (having gone up yesterday to exchange the 14x100b I received for Christmas and having gone on to Barrie to visit Bernice and Larry Carroll), I observed several surprisingly good objects in spite of the atmospheric haze: M42, M43, R Lep, RX Lep, M31, M33, Jupiter, cluster associated with Rosette Nebula, M35.

M Jan. 7 17:05-17:15 UT C-8, 32, 28, 20, 15.5
Sun 8g 27s RSN 107

M.-T. Jan. 7~~8~~ 02:00-04:20 UT y very cold!
S9(?) T 8.5 20x100b
M31, M33, M42, M43, M44, M41; areas of R Lep, RX Eri, RX Lep VV Ori, Mizar (split it!) and Alcor, Z UMa, M35.

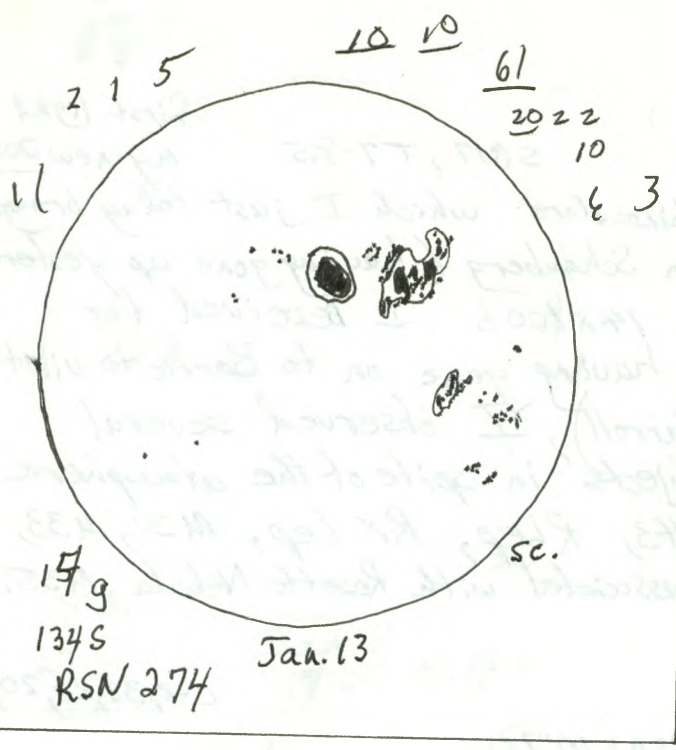
m 11:30 UT in ne
Mercury about 5° above SE horizon

T. Jan. 8 19:50-20:00 UT SS some haze
S4 C-8, 32, 28, 20, 15.5
Sun 5g 27s RSN 77

Th. Jan. 10 19:45-19:50 UT SS C-8, 32, 28, 20, 15.5
Sun 8g 48s RSN 128

Th.-F. Jan. 10-11 01:35-02:35 UT y T-5.7 generally hazy ne, 11x80b
ne.: looked for proposed NASA release of berium gas cloud slated for release at 8:43 pm. E.S.T. (01:43 UT) in order to study Aurora. It did not appear.

11x80b: M42, Orion's belt area, Jupiter



Comet Meeus/Brewington
(1991-)

oh UT 2000	R.A.	Dec
Jan. 20	0 ^h 43	-3 ^o 5
22	0 ^h 49.	-3.1
24	0 ^h 54	-2.7

... looked for proposed NASA release of
 ... It did not appear.

11x80p : M45, Orion's belt area, Jupiter

1998 S.-S. 06:50-07:10 UT y cloudy ne

- observed Jupiter and a cloudy sky in anticipation of seeing a lithium gas release from the CRRES NASA satellite, to be released 14000 km above South America to study Aurora or magnetic fields

S. Jan. 13 17:45-17:50 UT C-8, 32, 28, 20, 15.5

Sun 14g 1345 RSN 274

S.-M. Jan. 13-14 about 23:15 UT from car on way from Road to Sherbot Lake ^{very clear in W} ne
Venus very bright in twilight in WSW

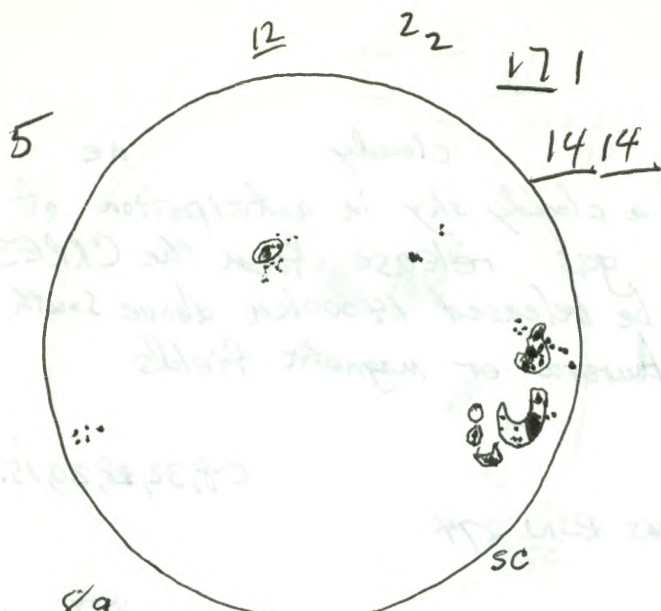
F.-S. Jan. 18-19 about 22:30 UT from car near Sherbot Lake very clear ne
Venus in WSW in twilight

01:00-02:20 y S(?) T 9.5 20x100b

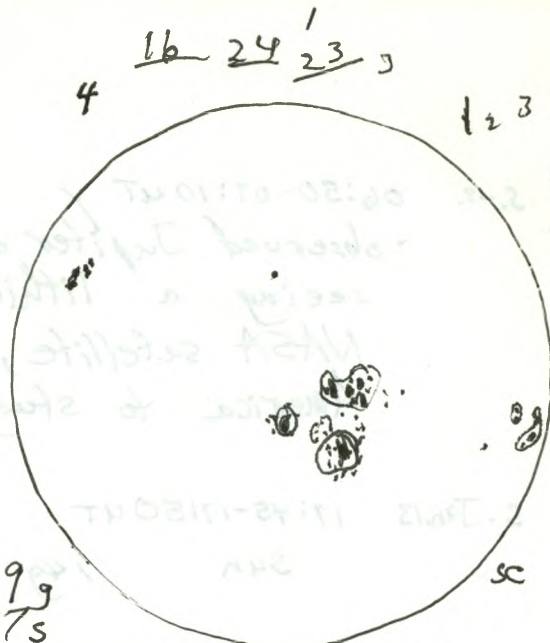
Comet Metcalf-Brewington - discovered about a week and a half ago by Howard Brewington and later ascertained to have been Comet Metcalf of 1906. It was quite faint and diffuse in the binoculars and about mag 8.5, seen best by slightly moving the binoculars. Its position was about RA. $0^h 41^m$ Dec -3.7° (west of star 13 (et on chart 216 in Uranometria) and east of NGC 239) also M81, M82, M45, M44, M41, M46 and M47 (excellent objects in the Milky Way east of Sirius), M42, M43, areas of R Lep, RX Eri, RX Lep, NGC 2244 and part of the Rosette Nebula could be seen - the upper part, faintly, part of NGC 2024 - the nebula east of S Ori, the "left" star of Orion's belt, M31, M110, M33, R Leonis.

M.-T. Jan 21-22 06:05-06:28 UT y T 9.5 ^{about} -24° ne

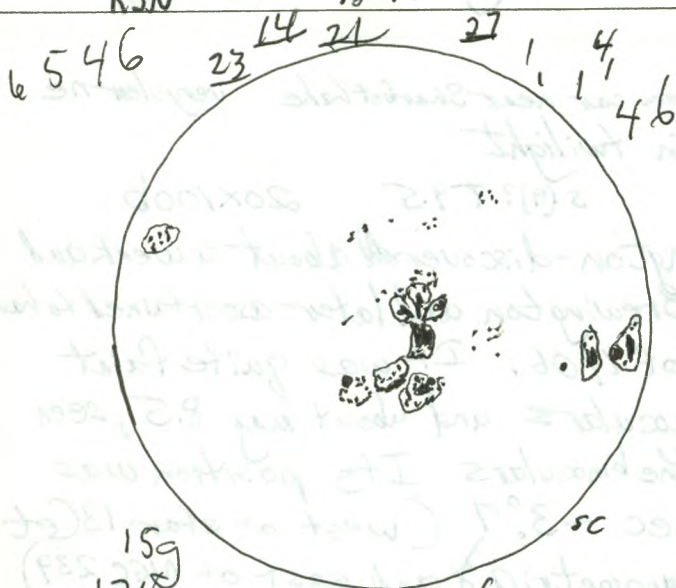
- photographed Orion setting
- winter and spring constellations
- waited to observe and photograph a proposed release of lithium gas by NASA to study the magnetic field (apparently planned for 06:15 UT) but it was not seen. (on checking with



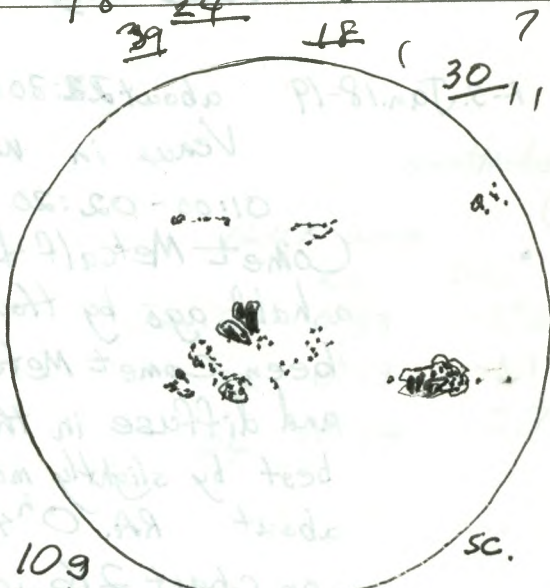
89
67s
RSN 147
Jan. 22
18:40-18:45UT



99
77s
RSN 167
Jan. 25
19:55-20:05UT

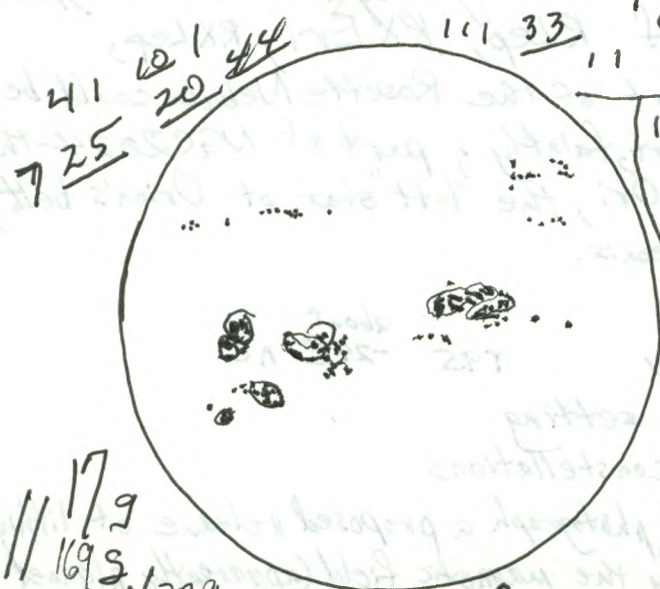


15g
124s
RSN 274
Jan. 26
16:00-16:10UT

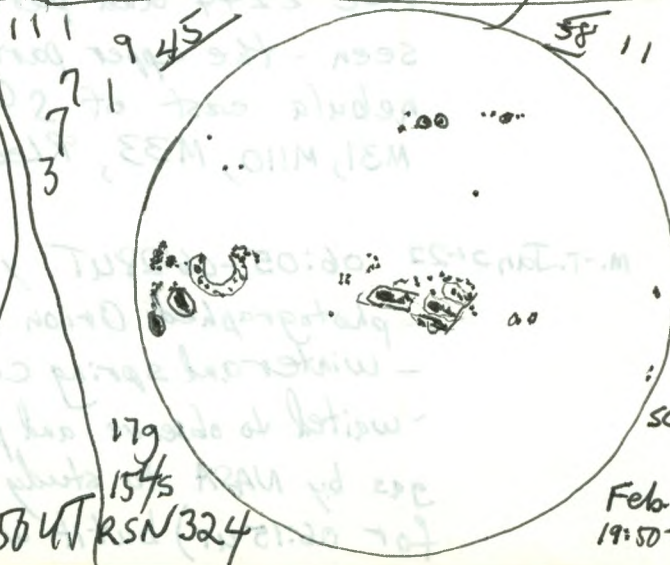


109
138s
RSN 238
Jan. 28.
19:30-19:42

Penumbral Lunar Eclipse of Jan 29-30
clouded out - check sky several times.



17g
16s
RSN 339
Jan 30
19:40-19:50UT



179
154s
RSN 324
Feb. 1
19:50-20:00UT

79
76
154

1991

NASA CRESS release headquarters the next day it was learned that the release was "scrubbed" because conditions were not right. Plans apparently will be made to conduct releases near the time of the February Full Moon.)

Tu. Jan. 22 18:40-18:45 UT ss ^{20^m and 15.5^m} seeing poor with _n c-8, 32, 28, 20, 15.5
sun 8g 6Ts RSN147

F. Jan. 25 19:55-20:05 UT ss clouds moving in c-8, 32.
sun 9g 7Ts RSN167

S. Jan. 26 16:00-16:10 UT ss c-8, 32
sun 15g 12Ts RSN274

~~(S-M. Jan. 27-28)~~

S-M. Jan. 27-28 10:55-11:00 UT in ne
m. moon set in N.W about 5° alt. about 20 min before
it was scheduled to set (at 6:21 a.m. E.S.T.) at
AZ. 304.7

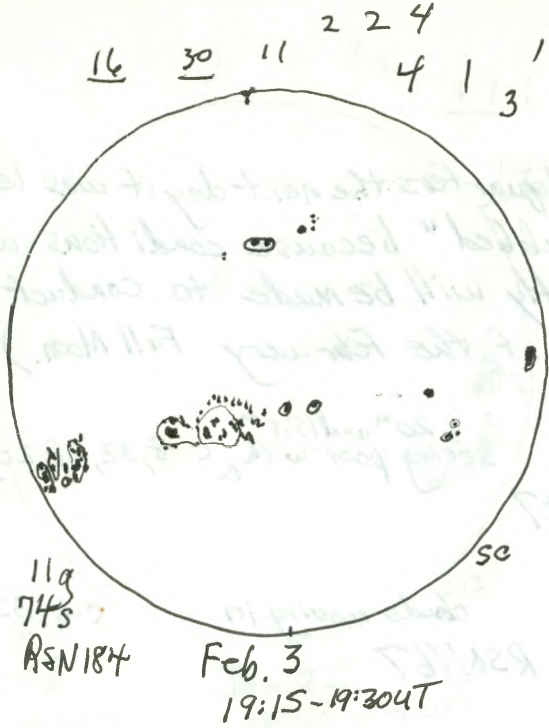
~~M. Jan. 28~~

M. Jan. 28 19:30-19:42 UT very windy c-8, 32
sun 10g 13Ts RSN238

W. Jan. 30 19:40-19:50 UT c-p, 32^m
sun 17g 16Ts RSN 339

F. Feb. 1. 19:50-20:00 UT seeing good. c-8, 32, 28, 20, 15.5
sun 17g ^{17Ts}/_{15T} RSN 324

F-S. Feb. 1-2 23:30-00:00 UT going to Bedford in car on Hwy 38n
spectacular Aurora in N. extending 30°-40° or more
on either side of N. and up 40°-50°: intense spots
and band and numerous spikes. Very bright, intense
red spots in NE. Strangely, it did not seem to last
very long, appearing to fade out in about a half hour.



AX

AX Mon α 6^h 30.5^m δ 5° 52'

unique variable

max. 6.59

varies by .28 mag

min. 6.87

per 232.5

See Sky Catalogue Vol. 2 p. 231

RW Mon α 6^h 34.8^m δ 8° 50'

Jupiter

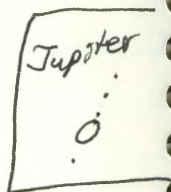
Algol Type

max. 9.26

min. 11.43

per 1.9060913

See Sky Catalogue Vol. 2 p. 231.



S Mon is in the cluster NGC 2264 Mon

Irreg type

max. - 4.62

varies by 0.05 mag

min - 4.67

part of "Christmas Tree" Cluster

See Uran. - 182

Bur. - p. 1206-1213

SC2 - p. 231

Plaskett's Star (V640 Mon)

brightest star in cluster Cr10
in Uran. 182

Lunar Occultation of Antares
was clouded out.

1991 Su. Feb. 3 19:15-19:30 UT ss S-poor C-8, 32ⁿ, 28ⁿ, 20ⁿ
sun 11g 74s RSN 184

S.-M. Feb. 3-4 01:30-03:10 UT y T-8-3 because of haze + cloud increasingly poor 20x100b

area of R Lep and R hep, area of Cone Nebula, though it was not seen; Hubble's Variable Nebula, faintly seen, and it seemed to blink as does "the Blinking Nebula" when stared at; NGC 2244 and Rosette Nebula, the northern half of which was visible; nearby AX Monocerotis, a variable star; RW Mon, a very red variable and Algol type with a period of 1.9060913 days; M42; M43; R Leonis; the asteroid Eunomia (mag 9) near M67 in Cancer (See S. + T. Feb. 1991, page 183); M44; M45; Jupiter and 4 moons visible; Cluster 2264 in Mon.

T.-W. Feb. 5-6 01:30-03:10 UT y and ~~st~~ t S(-9)(8) T-7.5 to cloudy Astroscan⁸ 20x100b^{7.5}
Astroscan: Mars, Jupiter - (Superb with numerous belts and 4 moons seen!), M44, M42, M43, R Leonis.

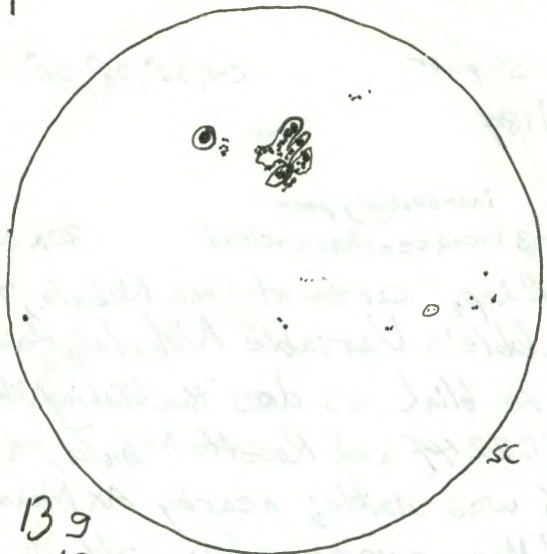
20x100b: areas of RW Eri, R Lep (both seen) M42, M43, Jupiter and 4 moons, NGC 2244 and upper part of Rosette Nebula, RW Mon, Plaskett's Star, the asteroid Eunomia (mag 9) near M67 in Cancer (See S. + T. Feb. 1991, p. 183). Jupiter was extremely close to, if not within the southern border of, M44. Plaskett's Star is the brightest one in a cluster near the Rosette Nebula.

S.-S. Feb. 9-10 05:30-08:30 UT ss and y Excellent winter conditions S-9.5(?) T-9.5 C-8, 13, 9; 20x100b.

20x100b: area of T Pyxidis carefully studied, M67 and asteroid Eunomia nearby, R Leonis Comet Levy in Hydra ($\alpha 10^h 35^m$, $\delta -25^{\circ} 50'$) at about mag. 8.2, M44 and Jupiter nearby near the S edge of the cluster.

C-8: Jupiter and 3 Galilean moons - bands clearly seen.

11 44 31
2 5 2 2 1 1

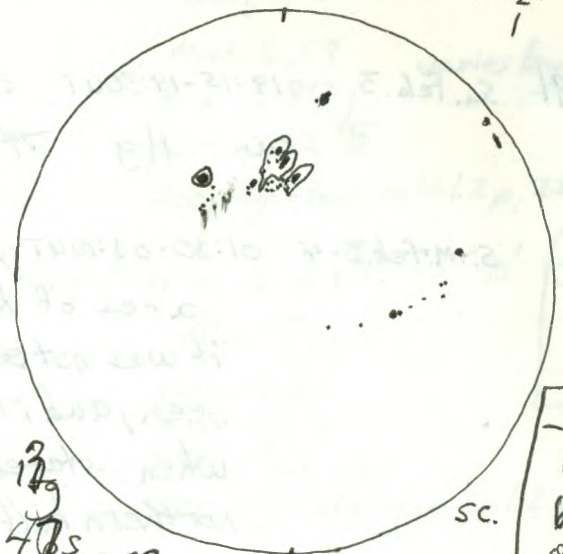


B 9
76S
RSN 206

Feb. 10
18:10-18:20UT

sc

9 25 1
1 1 2 1 1 1



129
40S
RSN 100

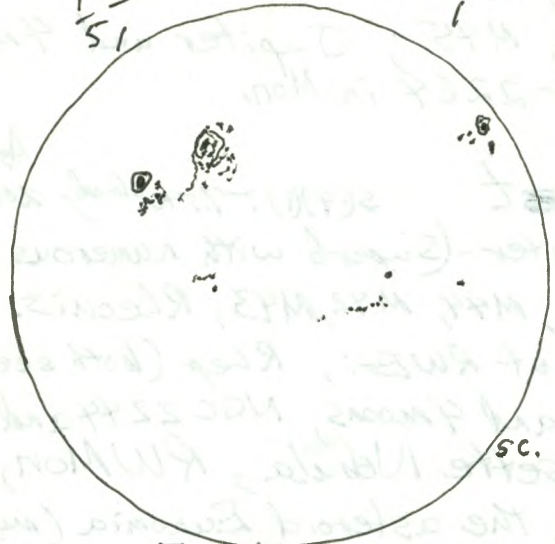
Feb. 11.
20:15-20:25UT

sc.

Very bright bolide or meteor reported to have occurred on evening of Feb. 10-11

Feb. 10:
- received phone call from Rolf Meier about David Levy's discovery of comet photographically (1991e) - another (4th) Comet Shoemaker-Levy

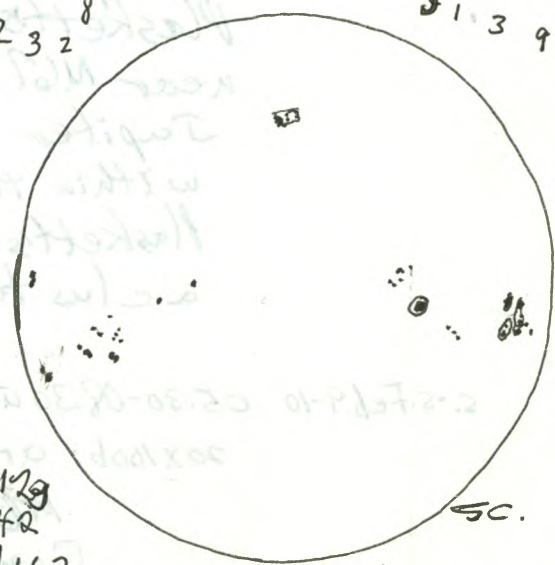
1 14 21 2 10 3 1
51



Tu. Feb. 12 19:30-19:40UT

sc.

2 1 5
2 3 2 8 5 1 3 9

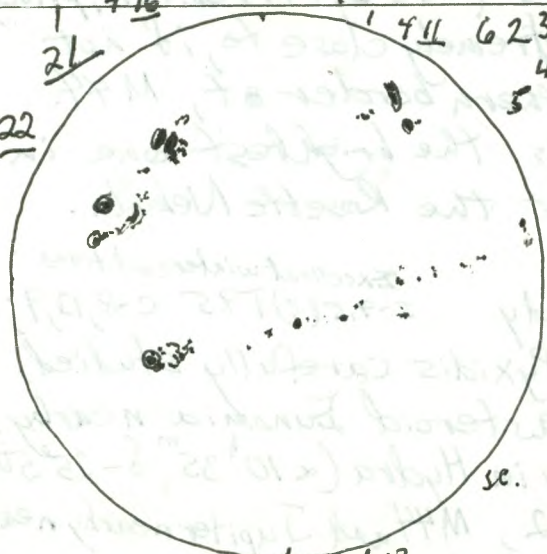


129
42
RSN 162

Feb. 16
18:40-18:55UT

sc.

4 16 22 1 4 11 6 2 3 4 1 2 5 6 5



Feb. 13
17:50-18:00UT

sc.

1991 Sat Feb. 10 18:10-19:20 UT ss C-8, 32, 28, 20, 15.5.
sun 13g 76s RSN 206

M. Feb. 11 20:15-20:25 UT ss hazy C-8, 32, 20, 15.5
sun 13g 47s RSN 177. with Stanley Hanna
13 47 177

M-T. Feb. 11-12 04:30-06:30 UT 00 S 9.5 T 9 very cold. C-14, 32, 19^m
Jupiter and its moons, M42, M43, Trapezium, Mars,
NGC 2392 - the Eskimo Nebula SE of δ Gem - a
beautiful planetary nebula
photography: e.p.p. photography of Jupiter

T. Feb. 12 19:30-19:40 UT ss hazy C-8, 32, 28, 20, 15.5
sun 12g 62s RSN 182

W. Feb. 13. 17:50-18:00 UT ss C-8, 32, 28, 20, 15.5
sun 17g 114s RSN 284

Sat Feb. 16 18:40-18:55 UT ss C-8, 32, 28, 20, 15.5
sun 12g 42s RSN 162

Su. Feb. 17 18:25-18:35 UT ss C-8, 32, 28, 20, 15.5
sun 9g 50s RSN 140

S-M. Feb. 17-18 22:45-23:00 UT in car between Robin + Verona extremely transparent ne

- between 5 and about 20 minutes after sunset
observed the earth's shadow rising in the east
There was a clear distinction between the dark
blue below and "pinkish colour above.



S.S. about 5:38 pm A.S.T.

(22:38 UT)
This would be about

10 and 20 minutes later

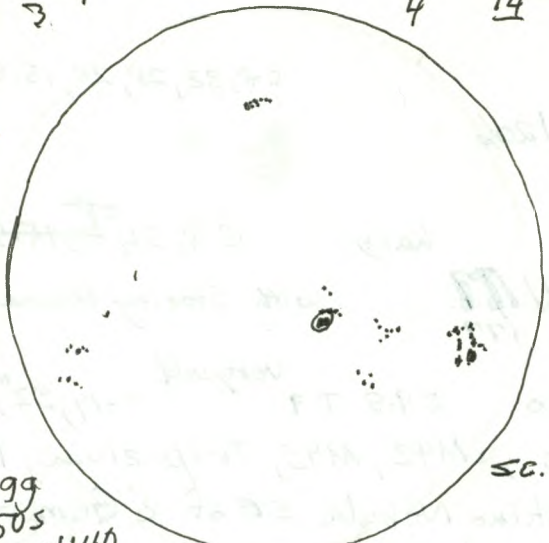
- Venus and crescent moon in W.
04:20-06:00 UT y S-9 T 9.5 + extremely 20x100b
good for winter Ast, 8

20x100b: area of γ Pyxidis studied carefully, M41,
M42, M43, M44 and Jupiter nearby, R Leonis area,
Comet Levy (1990c) in Hydra at about mag 8.5

- Ast: - Jupiter and 3 moons

With the superb transparency, the Gegenstein was easily
visible in the constellation Leo

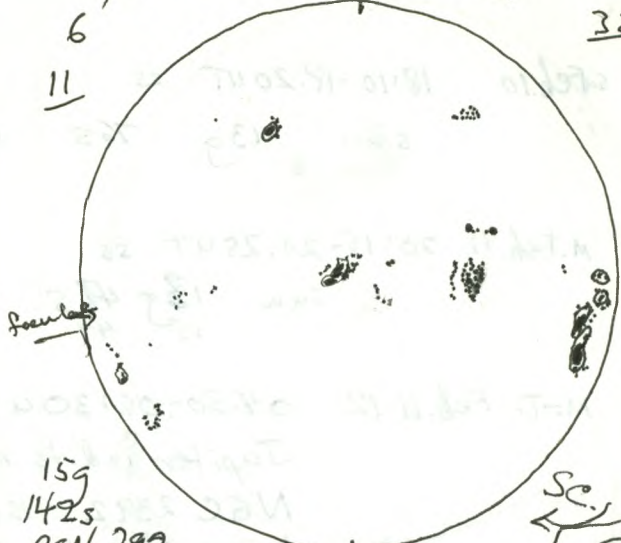
3 4 11 8 8 7 4 14



99
505
RSN 140

Feb. 17
18:25-18:35 UT

1 5 30 12
6 1 6 2 P2 28 2
11 32

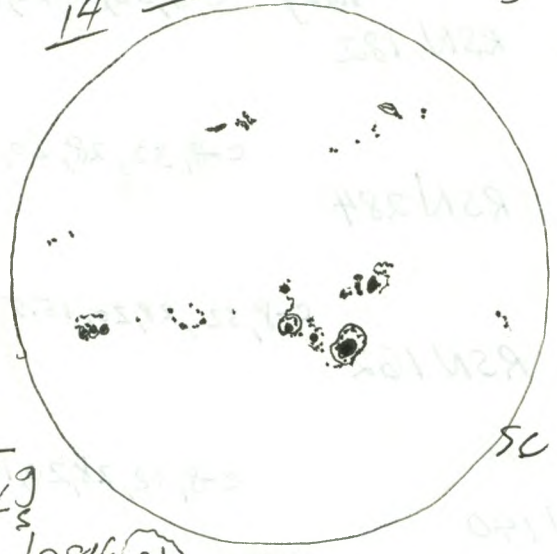


15g
142s
RSN 292

Feb. 18
18:30-19:00 UT

SC
Jupiter
Feb 22-23
04:10 UT

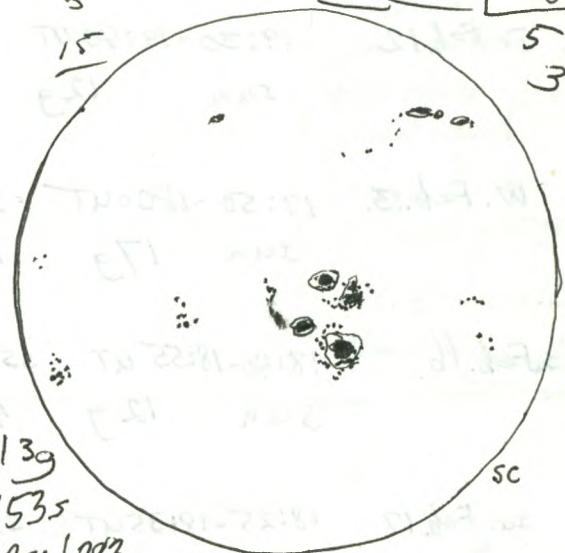
22 1 12 1 56 26 3
14



15g
134s
RSN 284

Feb. 22
20:50-21:05

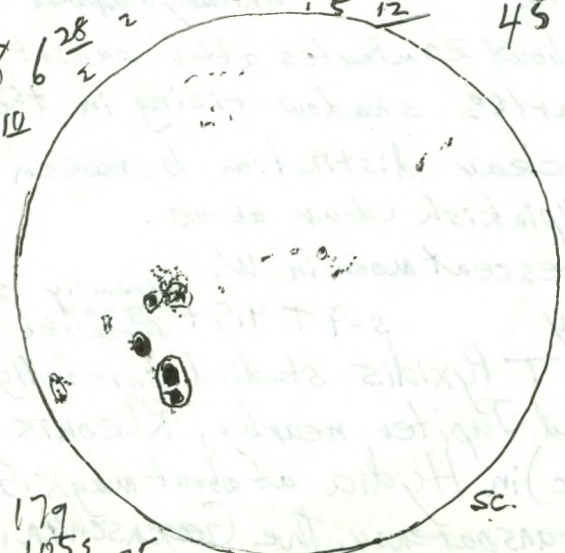
3 11 56 43 32
15 5 3



13g
153s
RSN 283

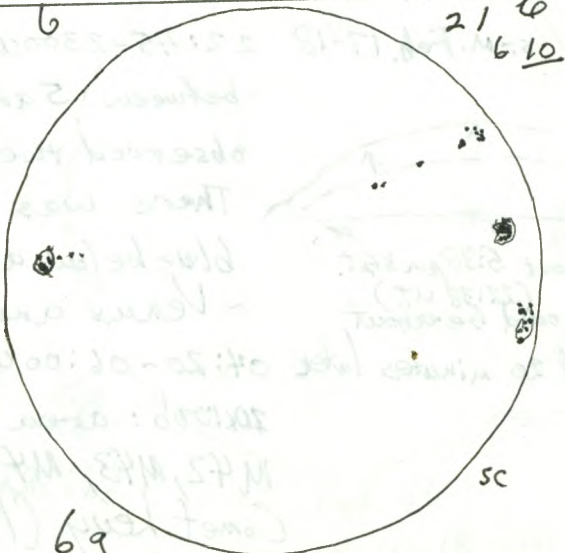
Feb. 23
17:20-17:40 UT

9 8 6 28 2 10 15 12 45



17g
105s
RSN 275

Feb. 27
17:50-18:10 UT



6g
31s
RSN 91

Mar. 5
19:10-19:20 UT

1991 M. Feb. 18 18:30-19:00 UT SB S-good T-good. C-8, 32, 28, 20, 15.5
sun 15g 142s RSN 292

F. Feb. 22 20:50-21:05 UT SS C-8, 32, 28, 20, 15.5
sun 15g 134s RSN 284

F.-S. Feb. 22-23 04:05-04:40 UT t gml. ^{windy} very cold C-8, 32, 19, 15, 12
Jupiter and 3 Galilean moons. Io had begun a transit
and shadow transit. The shadow was visible by times
in the 19^{mm} ocular (105.3X) and the 12^{mm} ocular (166.7X).

Sa. Feb. 23 17:20-17:40 UT SS. C-8, 32, 28, 20, 15.5
sun 13g 153s RSN 283

S.-S. Feb. 23-24 01:30-03:50 UT 00 gml ^{increasing} haze C-14, 19 camera, 20^{mm} epp

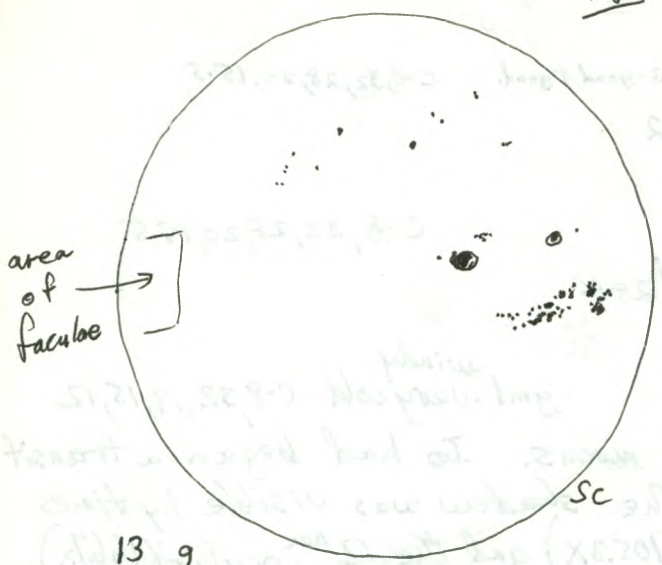
Jupiter - seen after occultation disappearance of Io
and later just seconds after eclipse reappearance of
Io at 3:28 UT
- photographed Jupiter and craters along terminator of the
moon (and increasing haze and some clouds) with e.p.p. using
the 20mm ocular

M.-T. Feb. 25-26 01:00 UT y gml ne
Jupiter in Cancer with moon nearby - conjunction 8 hours
later (at 9^{hr} UT)
06:45 UT (approx.) in gml ne
Jupiter and moon quite close - only 2^h 15^m before conjunction.

W. Feb. 27 17:50-18:10 UT SS C-8, 32, 28, 20, 15.5
sun 17g 105s RSN 275

Tu. Mar. 5 19:10-19:20 UT SS C-8, 32, 28, 20, 15.5
sun 6g 31s RSN 91

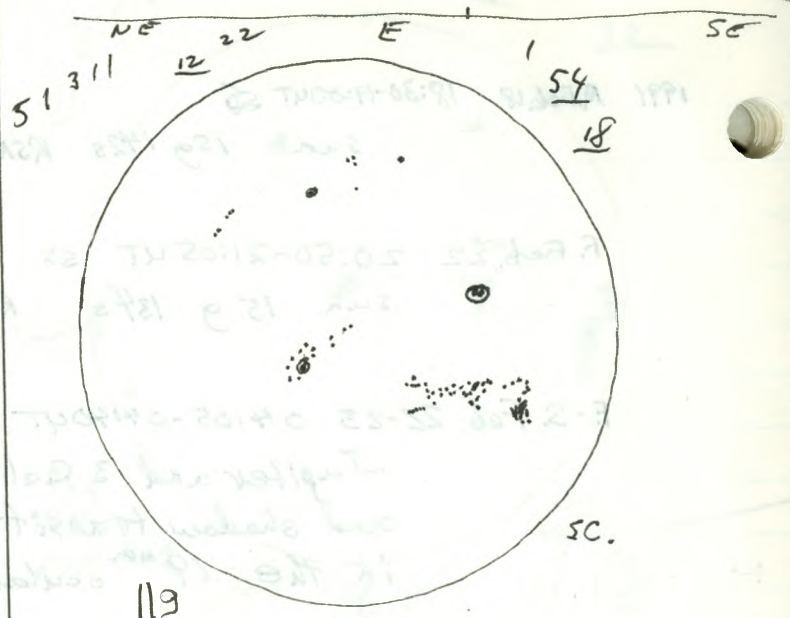
6 11 12²² 6 411 44
18



13 9
89 S
RSN 219

Mar 8.
19:10 - 19:25 UT

EARTH'S SHADOW.



113
100 S
RSN 210

Mar 9
18:15 - 18:25 UT

1991

T-W Mar. 5-6 23:15-23:25 on lake

(5-8-9?) T-9.5 (!) ^{excellent.} twilight ne

• very good view of earth's shadow in the east and slightly south of east, extending up about 10° - 15°

- 23:30 - 23:50 t

twilight C-8, 32, 15.5, 12.

• Venus - gibbous phase, emergence of Orion's Belt stars.

• Jupiter - Europa and its shadow in transit

- 00:36 - 00:45

C-8, 32,

• - reappearance at 00:38 of Europa after its transit

- Zodiacal Light very clearly seen

20x100b

04:30 - 05:15

• Comet Levy (1890c) in Hydra at about mag. 9, quite faint and hardly any tail visible.

M35, M13, M92, Jupiter, M44.

F. Mar 8

19:10-19:25 UT ss

C-8, 32, 28, 20, 15.5

Sun 13g 89s RSN 219

F.-S. Mar. 8-9 06:00-07:45 UT y

58T8-9

20x100b

Auroral glow in N, white, slightly yellowish, perhaps, slightly reddish about 50° wide and extending from 30° to 40° up, occasionally more intense but not spectacular and few or no spikes.

- area of R Corvi, but star not seen (mag 6.7-14.4),

- PN-NGC 4361 Corvi (mag. $10\frac{1}{2}$) - quite faint,

- R Leonis - very bright.

- Jupiter and 3 of its moons, the 4th one ^(I) being very near the planet and about to begin a transit. (I \rightarrow In - 6:49)- areas of α Librae (a very wide double - 231" sep.) and β Lib, the so-called green star.

I-4665, the sparse open cluster in Oph

- area of Deneb, β Cyg - easily separated - beautiful,

M57, M13, M92, M107 GC Oph, one of the other GC in Oph - either M10 or M12.

S Mar. 9

18:15-18:25 UT ss

C-8, 32, 28, 20, 15.5

Sun

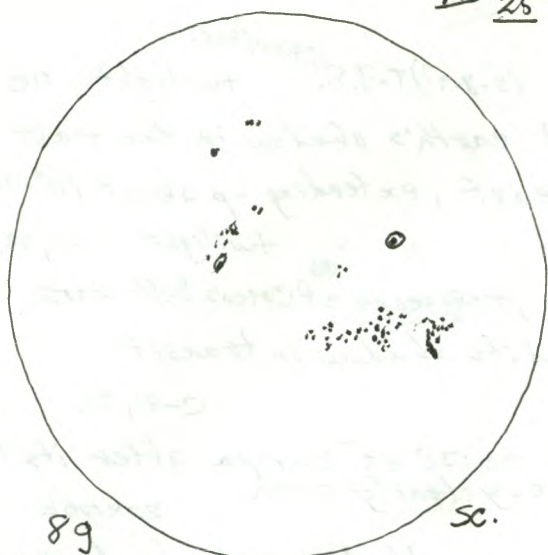
11g

100s

RSN 210

2 12
14

3 1
45 25



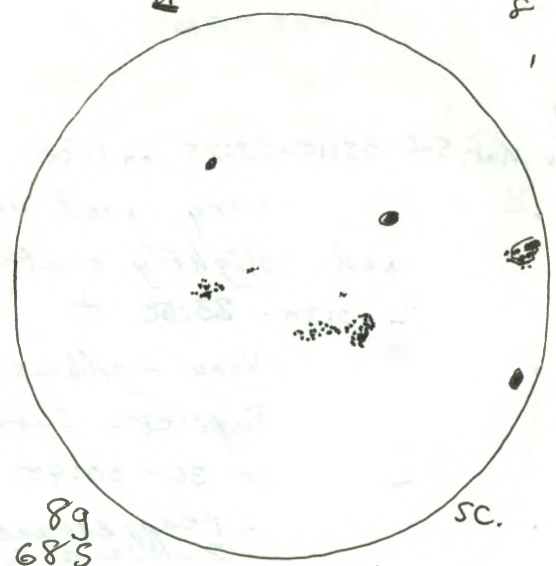
89
93 S
RSN 173

Mar. 10.
18:45-18:55 UT

sc.

4 31 ~~40~~ 13

2
1



89
68 S
RSN 148

Mar. 11.
19:25-19:40 UT

sc.

[Faint, mostly illegible handwritten notes in the bottom-left quadrant.]

[Faint, mostly illegible handwritten notes in the bottom-right quadrant.]

1991 S.-S. Mar. 9-10 00:30-06:30 UT y and t S 8 T 9 to 6 ne; 20x100b; + Ast J5

ne: Aurora becoming very intense in spots between 01^h UT and 01:45 UT with bright red patches in NE and later in N., several strong spikes amid more or less constant wide glow extending up 20° or so. perhaps some hints of yellow or other colours, arc low - about 30° up - for a while. Later in the night it became less intense or active, but the glow remained - about 50°-70° wide and up about 30°. Near the end of the session some patches became more intense and active

- Zodiacal light very bright for first $\frac{1}{2}$ - $\frac{3}{4}$ hr of the session - considerably brighter than the Milky Way. The Light Bridge extended up from it at certain distance along the zodiac.
20x100b. M44, Jupiter and 3 of its moons, area of R Lep, RxEri, R Lep, R Leonis, area of T Pyxidis, CK Ori, M42, M43
slight haze seemed present - looked for Comet Levy (1990c), but did not identify it with certainty.

NGC 2244 and perhaps part of Rosette Nebula, NGC 2264 (the Christmas tree cluster)

Ast.: Jupiter, Mars, Alcor and Mizar.

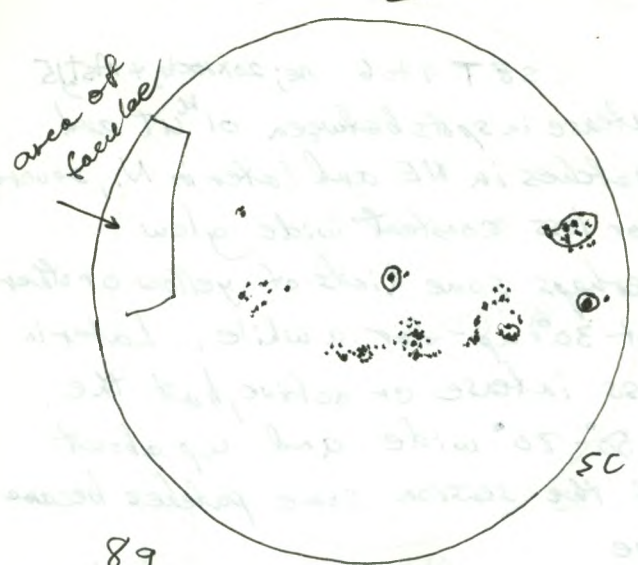
Sun Mar. 10 18:45-18:55 UT ss C-8, 32, 28, 20, 15.5.
sun 8g 93s RSN 173
photographed sun.

S.-M. Mar ¹⁰⁻¹¹ 03:30-06:30 UT y S 8(?) T 9.5-10 (Superb!) - 20x100b

- T Pyxidis area - faint star about mag 10-10.5 observed just ENE of where T Pyxidis is probably located (according to the Sky and Telescope map of Feb 1987).
- 2 Pallas - very bright about mag 5.5 in Sextans S. of ϵ Leonis
- Comet Levy (1990c) in Hydra, about mag 9.5, found by "star-hopping" S from "the head of Hydra" (See Uranometria p 232.) - R.A.: 8^h 51.8^m Dec.: -1° 56' (position for 0^h UT Mar. 11)
- M 92, M 13, β Lib - the "green star"

S. Mar. 11 19:25-19:40 UT ss C-8, 32, 28, 20, 15.5
sun 8g 68s RSN 148

1 1 2 27
10 63 32 2



89
 138S
 RSN/218

Mar. 12
 1920 - 19:35 UT

[Faint, mostly illegible handwritten notes on the left side of the page, possibly describing observations or calculations.]

[Faint, mostly illegible handwritten notes on the right side of the page, possibly describing observations or calculations.]

1991 M.-T. Mar. 11-12 01:30-04:00 UT y

5-9(?) T 9.5-10

Superb(!),
but
occasional
clouds

20x100b

- Pleiades study - saw stars down to and including the ones marked mag. 10.39 and 10.55, but not the one marked 11.40 which is near Celaeno (Gegenschein)
- Comet Levy (1990c) in Hydra S. from "the head of Hydra" (Uranometria, p 232) at about R.A.: $8^h 49.5^m$; Dec.: -1.3° , movement very noticeable from previous night. also nearby 14-KX Hya
- area of T Pyxidis, again seeing the faint star just ENE of the probable location of T Pyxidis.
- Jupiter, area of M42, M43, area of CK Orionis and RX Lep, Hyades area, M46, M47

Tu. Mar. 12 19:20-19:35 UT ss

c-8, 32, 28, 20, 15.5

Sun 8g 138s RSN. 218

T.-W. Mar. 12-13 02:00-04:30 AND 06:15-08:15 UT y

Superb!!! c-8, 17
mc, 20x100b, r_n

ne.: Zodiacal Light - very bright, also light bridge and Gegenschein easily seen in area of constellation Leo

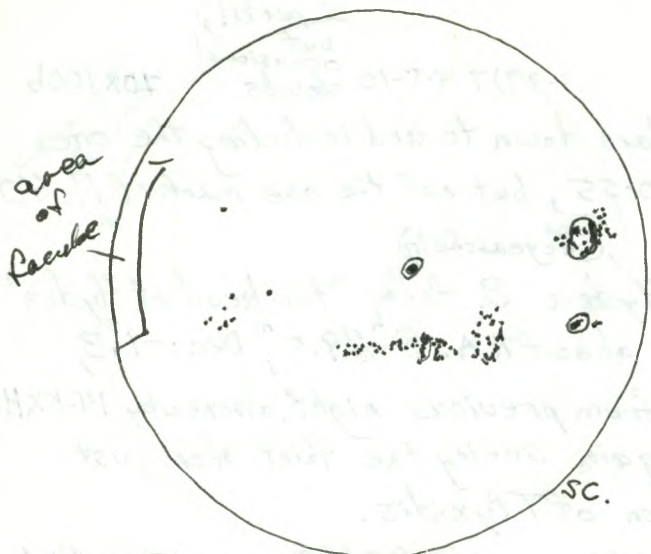
Aurora - quite active from 0:30 UT to 2:30 UT with patches, some curtain-like effects in the N over about 80° , some red areas, some white and perhaps slightly yellow, extending up 30° . Then it died down to a whitish arc and later a slight glow until about 6:00 UT when it again became active. From then until 8:00 UT approx there were spikes extending almost to the zenith and patches over a wide area in NE to E and near zenith and S of the zenith. There was some flaming. The colour tended to be slightly reddish, blending in with the whitish glow

- Pleiades, Jupiter, Mars, winter Milky Way very bright throughout and Summer Milky Way near end of session.

20x100b.: Comet Levy (1990c) easily found without charts, seen now the 4th night in a row and 5th of the last 6 nights, now at position R.A. $8^h 47.8^m$ Dec. $-0^\circ 32'$ (Uranometria, p 232), area of 14-KX Hya - clearly moving about a degree a day. - now at mag. 9.5. - tail, if any visible, very faint in

171

66 37 30
2

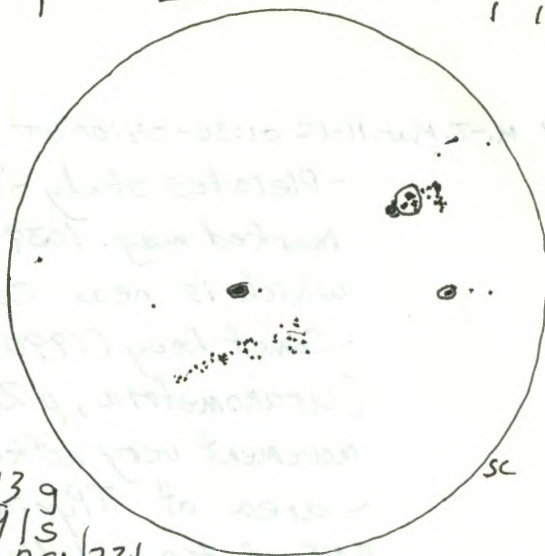


8g
1925
RSN 222

Mar. 13
18:50-19:05 UT

11 118
29

34 111
111



13g
915
RSN 221

Mar. 14
15:55-16:05 UT

check
NEC 1931 near M36
(Ur. p. 97)
(probably saw it)

the binoculars. - a joy to see its day-to-day movements so clearly.

- area of τ Pyxidis area easily found now without charts; faint star of about mag 10.0-10.5 again seen ENE of area of τ Pyxidis

- 2 Pallas, S of ϵ Leonis - very bright at mag about 5 and clearly moving N from day to day.

- R Leonis area, M42, M43, Orion's Belt, RX Lep area, κ Orionis area, δ Orionis area, NGC 2244 area and Rosette Nebula, the N part of which was easily seen, ^(probably) Haskett's star in Cr 106) the Christmas tree configuration - NGC 2264 incl. S Mon, M35, M36, M37, M38 - all resolved beautifully (!), M1, M104 - the Sombrero in Virgo, the Realm of the Galaxies, β Lib - quite green, M4, M80 in Scorpius, M10, M12, M14, I 4665, α Oph, α Her, M107, M27, M57, area of Deneb, M92, M13, ϵ Lyr, R Cor Bor, α Lib - double

C-8: M42, M43, Jupiter, after end of transit of II Europa, but while its shadow transit was still in progress - could be seen in moments of good seeing

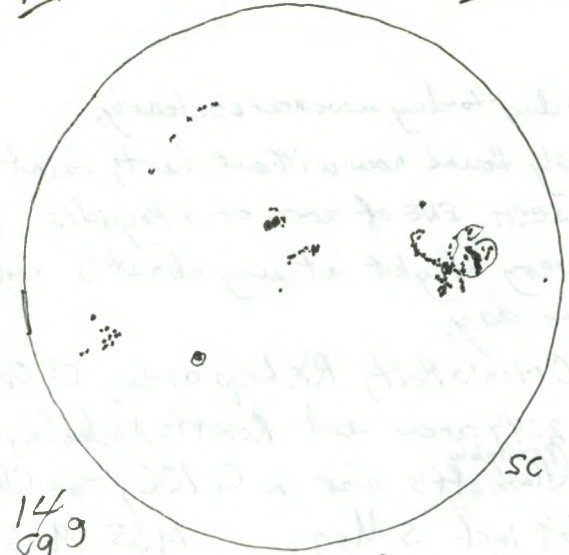
photographed: areas of Orion and Cass Major and Aurora

W. Mar. 13 18:50-19:05 UT SS C-8, 32, 28, 20, 15.5
sun 8g 142s RSN 222
- photographed sunspots.

W-Th Mar. 13-14 02:00-04:00 UT γ S 7(?) T9 ne, 20x100b
ne: Zodiacal light - quite good, Gegenschein in Leo area
20x100b: R Lep (faint - about mag. 9-9.5) RX Lep, ϵ R Eri, κ Ori, FO Ori, W Ori, V430 Ori, FN Ori, V351 Ori, R Leo
- Comet Levy (1990c) now seen for the 5th night in a row at about R.A. 8^h 46.6 Dec +0° 20' at about mag. 9.7
- area of τ Pyxidis monitored; 2 Pallas S of ϵ Leo
- M42, M43, M78, M1, M35, M36, M37, M38, M41, M46, M47, M50, M44, M67, M51, M101, NGC 5195 near M51 NGC 1907 near M38, M104

Th. Mar. 14 15:55-16:05 UT SS C-8, 32, 28, 20, 15.5
sun 13g 91s RSN 221

1 2 2 2 5
 2 10 1 10 1 45 1



14
 89.9
 89.5
 RSN 229

Mar. 20
 19:00-19:10 UT

Crescent
 moon
 S.M. Mar 17, 18
 + T.W. Mar 19-20

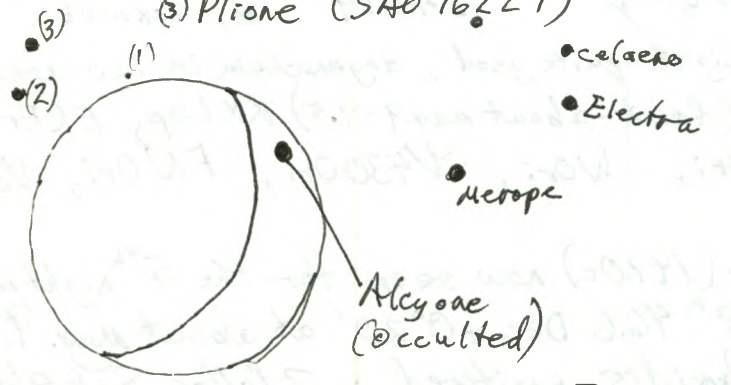
Pleiades
 Occultation of
 Mar. 20-21, 1991

See map of Pleiades S. & T. Mar. 1991 p. 292.

Predictions for	disappearance	reappearance	Toronto Dis. Re.	Dis. Re
Alcyone SA076199	00:08 UT	00:45 UT	23:56 00:49	00:02 00:47
Atlas SA076228	00:45 UT	01:38 UT	00:38 01:40	00:41½ * 01:39
Plione SA076229	00:56 UT		00:46	00:51**

Disappearances:	Watch time	-Correction 2½ sec.	UT
(1) Star between Atlas + Alcyone	7:31:11	7:31:8.5	00:31:8.5
(2) Atlas (SAO 76228)	7:41:42	7:41:39.5	00:41:39.5*
(3) Plione (SAO 76229)	7:51:16	7:51:13.5	00:51:13.5**

*,** - very close
 correspondence



Moon about 7:25 AM EST
 00:25 UT.

1991 s.-s. Mar. 16-17 22:55-23:45 UT in Syracuse 60-3° in alt. 7x50b
park along Bear Rd., cloud low in W., ne. t

looked for very young moon which was about 15 hours old at sunset. - did not see it.

sunset was ^{perhaps} later than calculated time for my usage (6:12 pm. E.S.T.). Moonset for my usage was to be at 7:02 pm. E.S.T. New Moon had been at 8:10 UT - 15 hours 2 minutes before the time of sunset that I was using.

w. Mar. 20 19:00-19:10 UT ss c-8, 32, 28, 20, 15.5
sun 14g 89s RSN/229

w.-th. Mar. 20-21 23:55-02:00 UT nd, ss t cml ne; 7x50b; Ast, 215
ne: observed Mercury in the WNW below + right of Venus; photographed it.
7x50b: observed moon amid the Pleiades

Ast: moon amid the Pleiades, including the disappearance of 2 bright stars of the Pleiades, ^{Atlas & Alcyone} which disappeared in spectacular fashion on the dark side of the moon.

c-8: moon amid the Pleiades, Jupiter, M42, M43 - also used C-8 to photograph the moon and Pleiades.

Occultation Timings In the Pleiades:

(1) For a star between Atlas and Alcyone marked on the S.+T map Mar. 1991 (p. 292):

disappearance : 00:31:8.5 UT

(2) For Atlas : 00:41:39.5 UT

(3) For Alcyone : 00:51:13.5 UT

All are very close to what would be expected from the interpolated predictions from S.+T. Mar. 1991 (p. 292).

F.-s. Mar. 29-30 23:50-00:20 UT near SHARBOUR LAKE Marina twilight ne

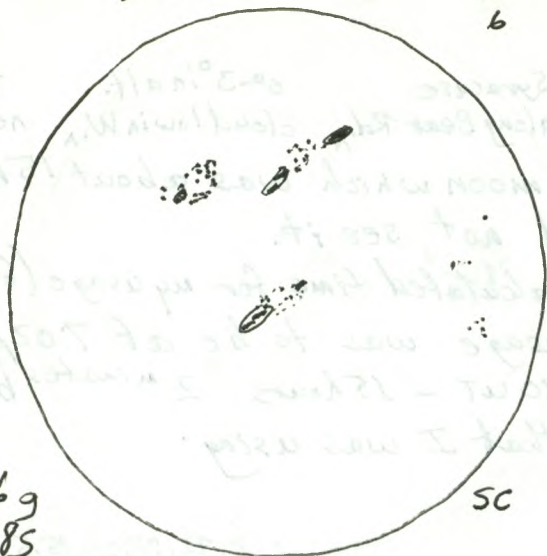
observed and photographed planets Venus and Mercury in western sky, trying to get Mercury near the Mercury outboard sign. One letter, M, was missing from the sign.

T.-W. Apr. 2-3 01:30-04:00 UT y s-8 T8.5 20x100b

area of T Pyxidis, M44, Jupiter and 3 moons, M35, M36, M37, M38
area of Cone Nebula, S Mon, Pleiades Star, NGC 2244, R Leonis, M92, M13, M67.

25 19 23

4 1
6

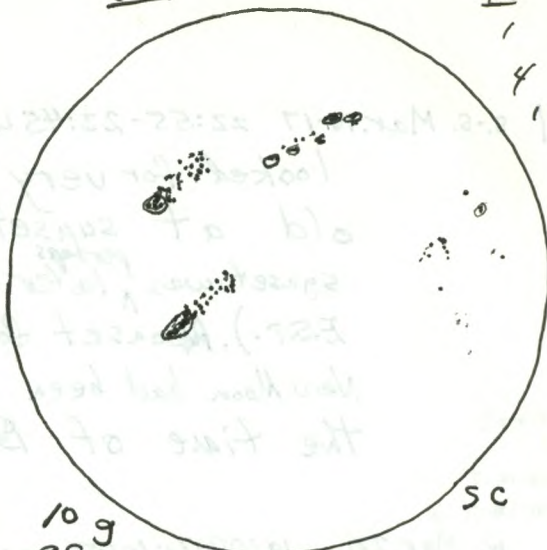


6g
78s
RSN 138

Apr. 3.
19:50-20:00 UT

27 28 23

10 1
1 2
4 1



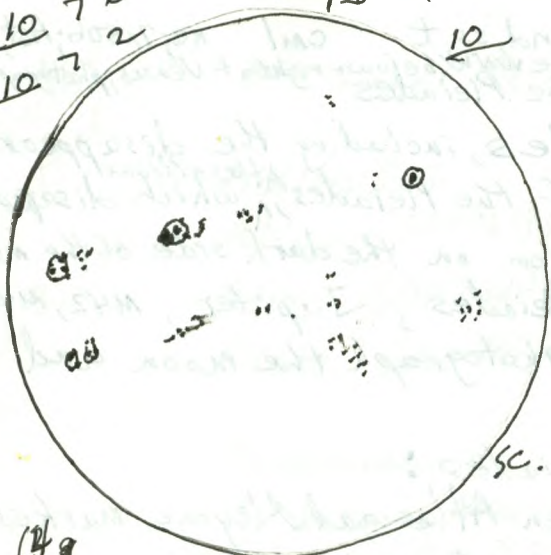
10g
98s
RSN 198

Apr. 4.
19:45-19:55 UT

10 7 6
10 7 2

2 3 1 1 1

10



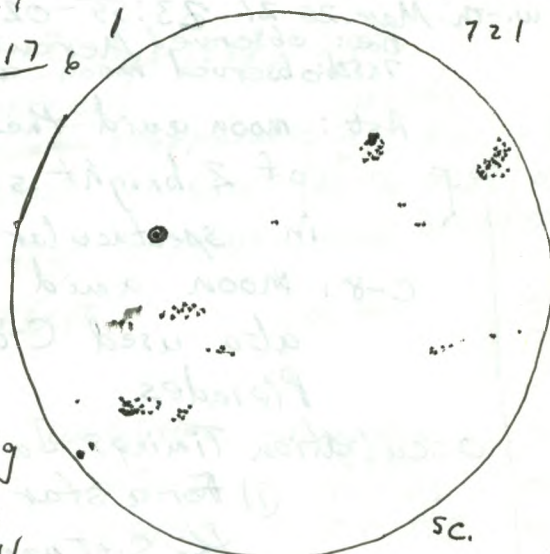
14g
78s
RSN

Apr. 7
18:30-18:45 UT

31 16 4
1 1 1
1 17 6

2 17 2 3

7 2 1



19g
97s
RSN

Apr. 11.
19:05-19:15 UT

1991 w. Apr. 3 19:50-20:00 UT ss c-8, 32, 28, 20, 15.5
sun 6g 78s RSN 138

Th. Apr. 4 19:45-19:55 UT ss c-8, 32, 28, 20, 15.5
sun. 10g 98s RSN 198

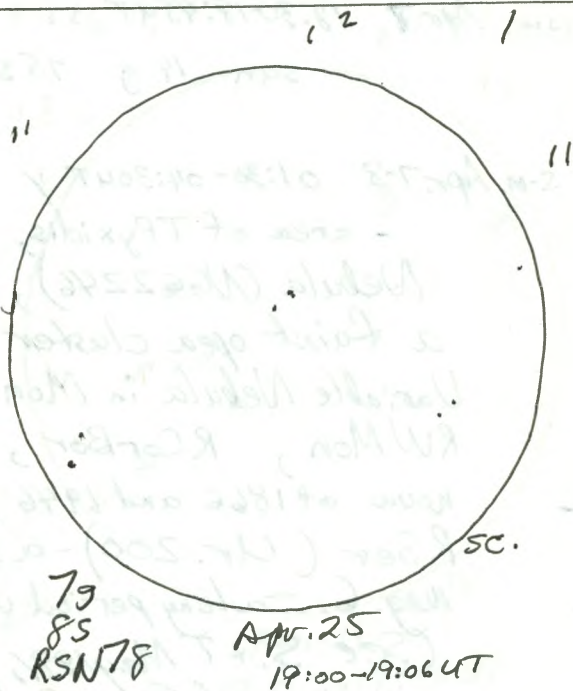
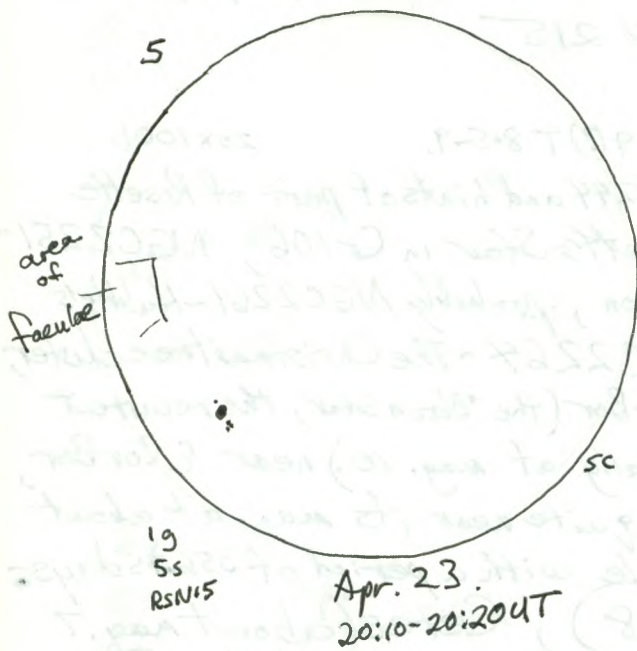
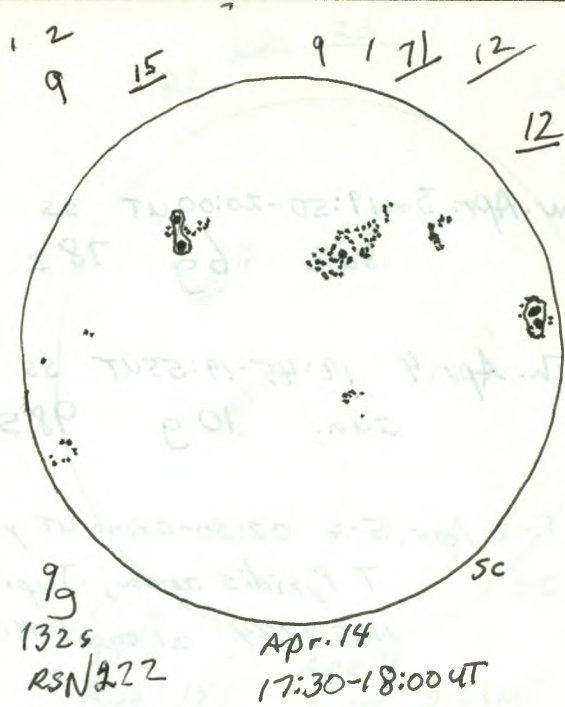
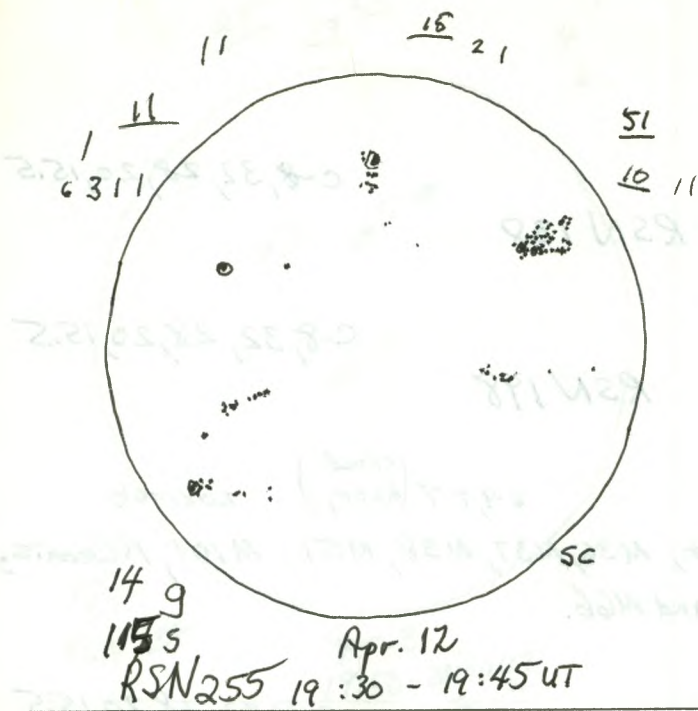
F.-S. Apr. 5-6 02:30-04:00 UT y s.9, T 7 (cloud haze,) 20x100b
T Pyxidis area, Jupiter, M36, M37, M38, M51, M101, R Leonis,
NGC 2244, area of M65 and M66.

su. Apr. 7 18:30-18:45 UT ss c-8, 32, 28, 20, 15.5
sun 14g 75s RSN 215

Ur. 182
s.-m. Apr. 7-8 01:30-04:30 UT y s.9(?) T 8.5-9. 20x100b
- area of T Pyxidis, NGC 2244 and hints of part of Rosette
Nebula (NGC 2246), Plaskett's Star in Cr 106, NGC 2251 -
a faint open cluster in Mon, probably NGC 2261 - Hubble's
Variable Nebula in Mon, NGC 2264 - The Christmas tree cluster,
RW Mon, R Cor Bor, T Cor Bor (the 'blaze star', the recurrent
nova of 1866 and 1946, usually at mag. 10) near E Cor Bor,
R Ser (Ur. 200) - a star quite near its max. at about
mag. 6. - a long period variable with a period of 356.75 days -
(See S. + T. May 1991, p. 518), Ceres (about mag. 7
in Virgo (See S. + T. May 1991, p. 523 and Ur. 241)
at R.A.: 14^h 8^m Dec.: 1.9. - east of T Vir, M65, M66,
Pallas in Leo E. of R Leonis (See S. + T. Apr. 1991 p. 410
and Ur. 190) at about R.A.: 10^h 37^m Dec.: 9.5 and at about
mag. 7.5., M81, M82, Jupiter and 4 moons, M44,
M67, M92, M13, M104.

Th. Apr. 11 19:05-19:15 UT ss c-8, 32, 28, 20, 15.5
sun 19g 97s RSN 287

Th.-F. Apr. 11-12 00:15-00:20 UT t Ast: 21.5, 8
Venus - gibbous and Jupiter with 4 moons on one side.



1991 Th.-F. Apr. 11-12 00:30-03:40 UT y 59(?) T 9 (few clouds) 20x100b

area of T Pxydis and area of T Cor Bor, NGC 2244 and just a hint of the Rosette Nebula, Plaskett's Star and area of S Mon, Ceres (in Virgo - See S. & T. May 1991 p. 523 and Ur. 241) Jupiter, M44, M35, M36, M37, M13, M92, M65, M66, R Cor Bor, many of the stars of Bootes, R Ser (See S. & T. May 1991, p. 518) R Leonis.

F. Apr. 12 19:30-19:45 UT ss C-8, 32, 28, 29, 15.5
sun 14g 115s RSN 255

S.-S. Apr. 13-14 04:30-5:50 UT t andy 59(?) T 9.5 C-8, 32.5; 20x100b
C-8: Jupiter and 4 moons; area of Leo I - not seen for sure; M65, M66
20x100b: area of Leo I - not seen for sure, M65, M66, R Leonis, R Ser, R Cor Bor, T Cor Bor, M13, M92, M12, M14, M27, Col 399

Sun. Apr. 14 17:30-18:00 UT ss C-8, 32, 28, 20, 15.5
sun 9g 132s RSN 222

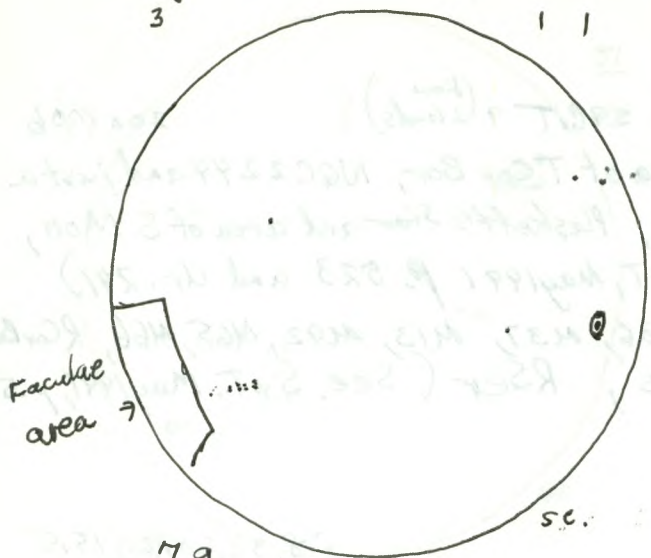
Tu. Apr. 23 20:10-20:20 UT ss C-8, 32, 28, 20, 15.5
★ sun 1g 5s RSN 15 (Amazing decrease in spots)

T.-W. Apr. 23-24 03:10-03:16 UT t gal Ast, 15
Jupiter and 4 moons, Mars, Moon.

Th. Apr. 25 19:00-19:06 UT ss C-8, 32, 28, 20, 15.5
sun 7g 8s RSN 78

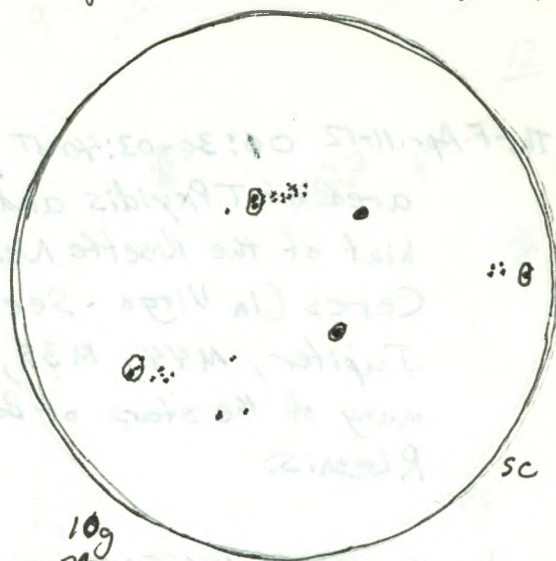
Th.F. Apr. 25-26 01:20-02:15 UT t gml C-8, 19^m
Venus - clearly gibbous; Mars; Jupiter and 3 moons (Io was in transit), bands very clearly visible and one northern band quite wide and dark; lunar craters; two of the open clusters in Auriga.

3 8 1 1 1 1 1



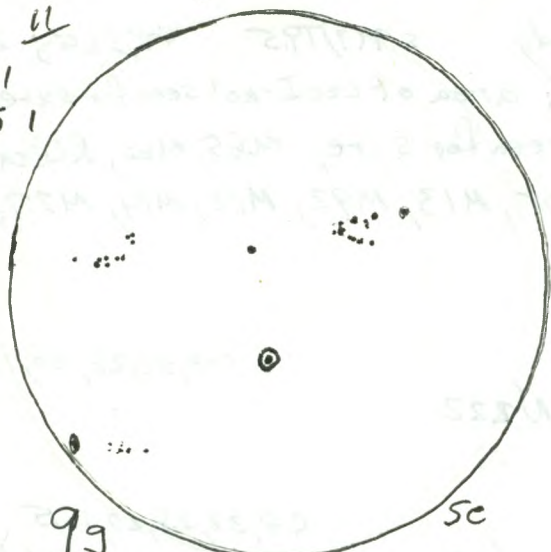
79
165
RSN 86, 1
Apr. 26
16 2

8 2 1 1 19 1 4 1



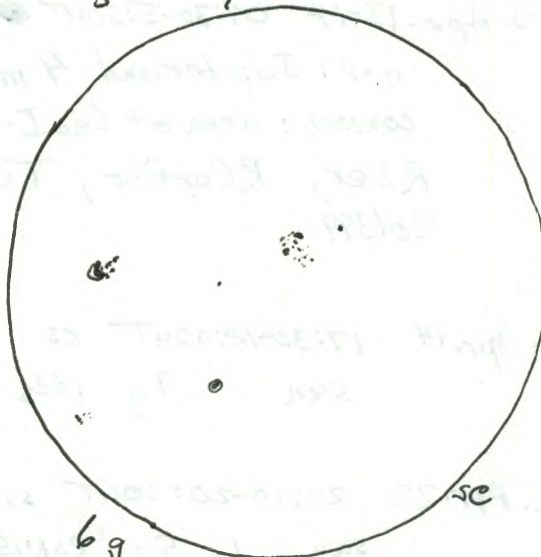
109
375
RSN 139
Apr. 30
19:00-19:15 UT

11
1
2 5 1



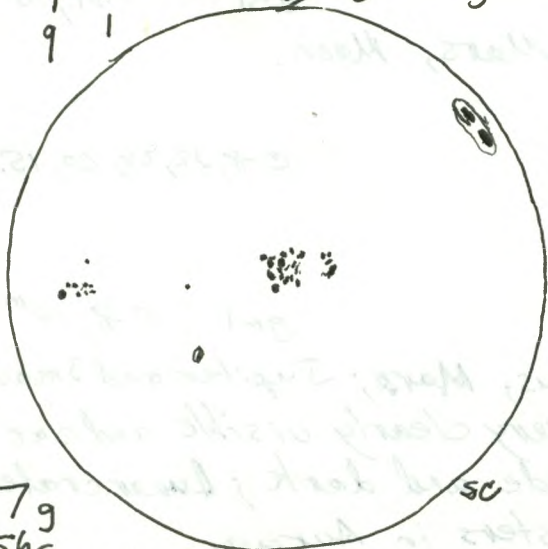
99
405
RSN 130
May 3
18:30-18:55 UT

7
5 1 16 1



69
315
RSN 91
May 4
15:10-15:25 UT

1 1 35 6 3
9 1



79
565
RSN 126
May 5
17:40-17:50 UT

1991 F. Apr. 26 19:10-19:20 UT SS C-8, 32, 28, 20, 15.5
sun 7g 16s RSN 86

Tu. Apr. 30 19:00-19:15 UT SS C-8, 32, 28, 20, 15.5
sun 10g 34s RSN 134

Tu.-W. Apr. 30-May 1 01:40-02:50 UT γ and ϵ s-9(PT)8 Ast, 21.5, 5; ne
Ast. Venus - somewhat gibbous, in Taurus; Mars, Jupiter and
3 moons - bands distinct, M44, M51 and area, Alcor and
Mizar and area, Polaris and area, R Leonis.
ne: - Constellations, and at least two meteors seen.

F. May 3 18:30-18:55 UT SS C-8, 32, 28, 20, 15.5
sun 9g 40s RSN 130

F.-S. May 3-4 01:45-04:00 UT 00 s-6 (Poor to Fair) T8 C-14, 19, 32
Venus (gibbous, near dichotomy), Mars, Jupiter (3 moons)
M104 (Sombrero), M13, M92, ϵ Her, R Leonis, R Cor Bor,
M65, M66, ~~M66~~, M5, M10, M12, M14, M51,
Alcor and Mizar, NGC 6205 near M13, NGC 3628 near
M65 and M66.

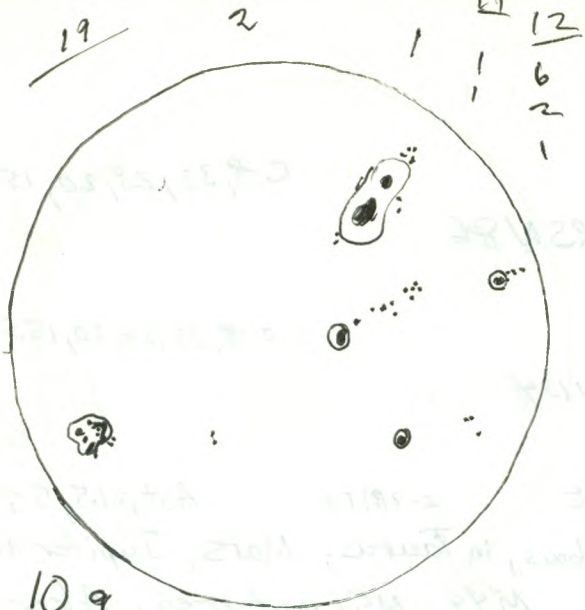
Sa. May 4 15:10-15:25 UT SS C-8, 32, 28, 20, 15.5
sun 6g 31s RSN 91

Sa.-Su. May 4-5 04:15-05:20 UT γ s-9(PT)9(+) 20x100 b.
M10, M12, M14, M5 area, Deneb area, M4, M80.

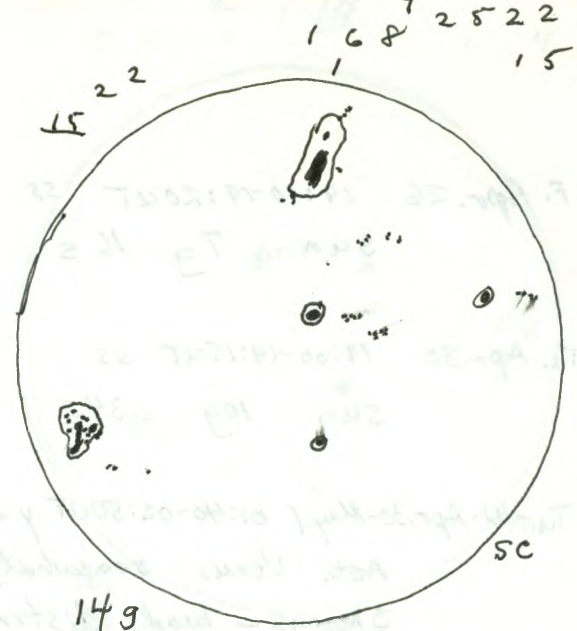
Su. May 5 17:40-17:50 UT C-8, 32, 28, 20, 15.5
sun 7g 56s RSN 126

W.-Th. May 8-9 03:20-05:20 UT s-9(PT)7 (base, cloud) C-8, 12^m
 γ Leonis, Jupiter and 4 moons, M57, β Lib
- from 03:36 to 03:38 UT - observed 4 EIA (Callisto
eclipsed Io partially) causing a drop in mag. by 1.6 mag
over about 2 to 3 min.

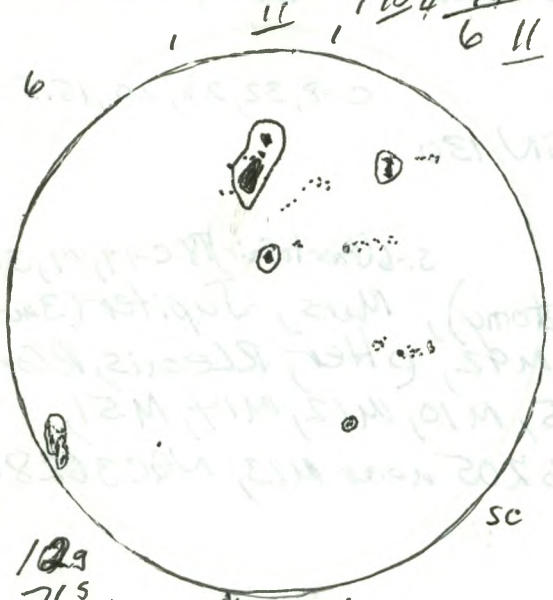
3 4 12
↑ ↑ 0
Mutual Phenomena of
Jovian Satellites.



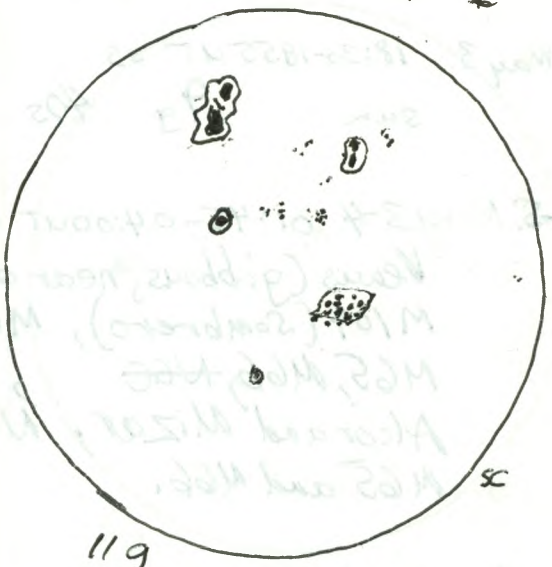
10g
56S
RSN 156 May 9
19:45-19:55 UT



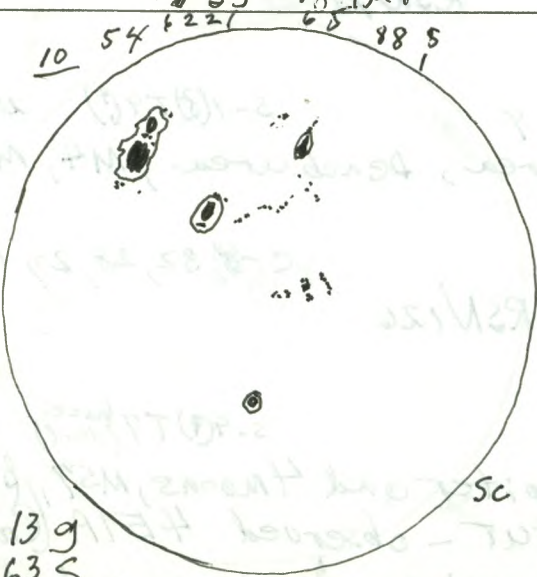
14g
61S
RSN 201 May 10
2 3 3
8 3 7 15, 25 4 2



10g
71S
RSN 191 May 11
18:35-18:45 UT



11g
75S
RSN 185 May 12
18:00-18:15 UT



13g
63S
RSN 193 May 13
17:45-17:55 UT

SC

1991 Th. May 9 19:45-19:50 UT

C-8, 32, 28, 20, 15.5

sun 10g 56s RSN 156
- one very large spot.

F. May 10 18:30-18:40 UT

C-8, 32, 28, 20, 15.5

sun 14g 61s RSN 201

Sa May 11 18:35-18:45 UT

C-8, 32, 28, 20, 15.5

sun 12g 71s RSN 191

S.-S. May 11-12 02:50-03:40 UT y

58(B) T 6-8 (some haze, cloud)

uc + 7x35b

- constellations

- Jupiter, M44, M13, Col 399, Alcor and Mizar, areas of R Cor Bor, R Leonis, R Ser

Sun. May 12 18:00-18:15 UT ss

C-8, 32, 28, 20, 15.5

sun 11g 75s RSN 185

S.-M. May 12-13 01:00 UT - 00

58(B) T 9-9.5 (good.)

C-14, 19"; 20x100b

C-14: Jupiter and 4 moons, Venus - near dichotomy, Mars

NGC 4565, M51, searched area of Pluto but not

located with certainty, M5, M65, M66, and NGC 3628

near M66 with its dark lane seen clearly with averted vision

20x100b: M5 and area of Pluto, R Ser, R Leonis, R Cor Bor, M4, M80.

M. May 13 17:45-17:55 UT ss

C-8, 32, 28, 20, 15.5

sun 13g 63s RSN 193

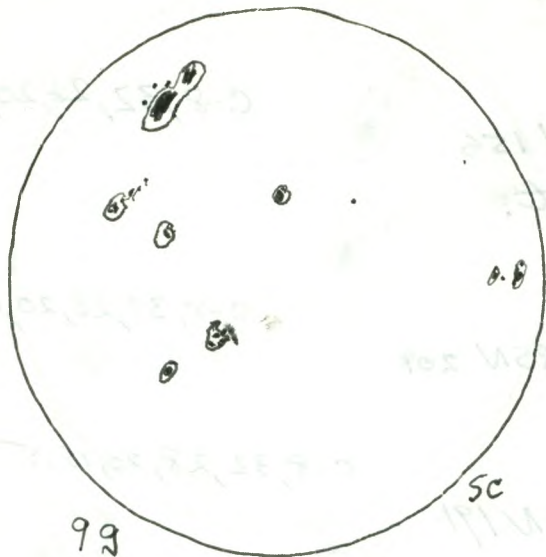
M.-T. May 13-14 01:35-01:50 UT

intermittent cloud

C-8, 19m

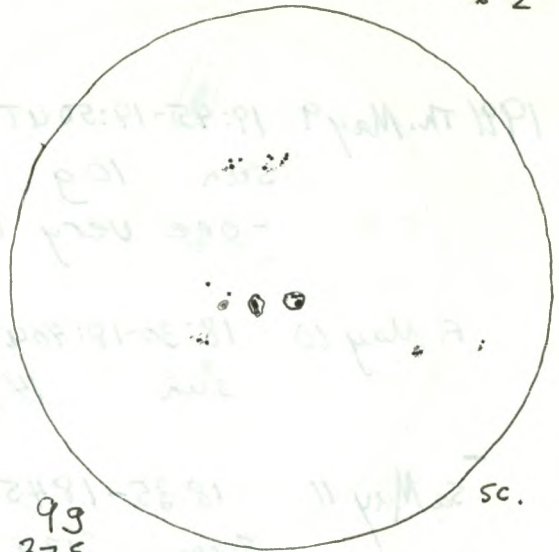
- attempt to observe a mutual phenomenon of Jovian satellites (I E 2 P), Io eclipsing Europa partially, but clouds were persistent and the planet could be seen only for seconds during the scheduled time for the event (1:40-1:43 UT) (S. + T.); Venus near "quarter-phase"

11 4 7 1 1 1 22



99
305
RSN 120 May 15
18:28-18:35 UT

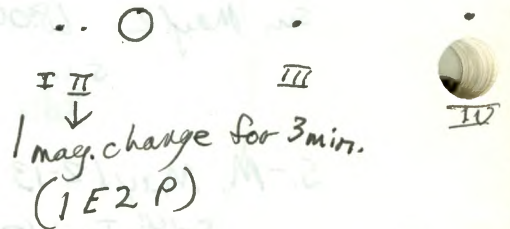
44 6 1 2 1 9 2



99
375
RSN 127 May 21.

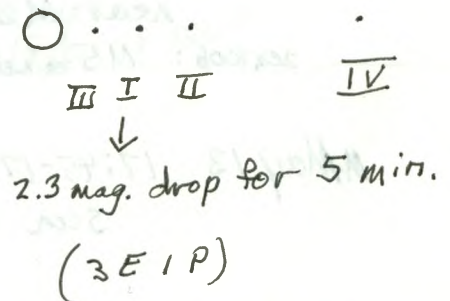
Jupiter May 21 3:56 UT

sc view



Jupiter May 22 2:13 UT

sc view



1991T. May 14-15 00:50-01:20 UT roof 7x50b
- in twilight, searched unsuccessfully for young moon - one
that was 20 - 21 hours old

03:15 - 04:15 UT y 20x100b
areas of R Leonis, R Ser, R Cor Bor, T Cor Bor, β Cyg,
Co 1399, M5 and area of Pluto S of M5, M57

W. May 15 18:28-18:35 UT ss
sun 9g 30s RSN 120 C-8, 32, 28, 20, 15.5

W-Th May 15-16 05:10-06:10 UT y 20x100b
M5 and area of Pluto, M10, M12, M14, M4, M80, M8, M20, M17,
M51, M22, M28, β Lib, β Cyg, R Ser, R Cor Bor, T Cor Bor area,
M107 Oph (GC.)

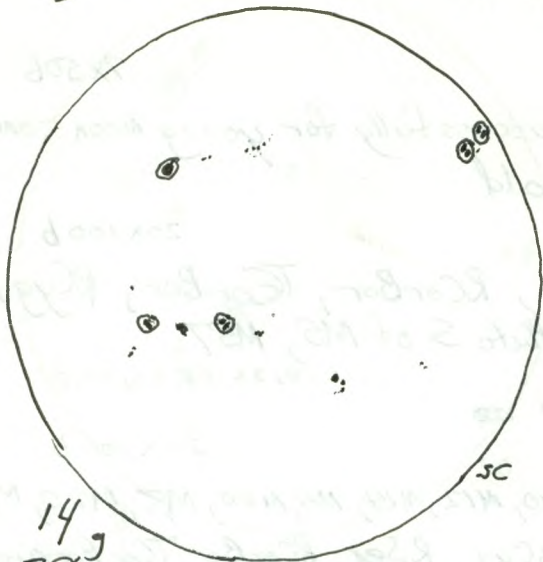
M.-T. May 20-21 01:30-01:50 and 03:45-04:45 UT y ne; 11x80b; C-8, 19m
ne: constellations, Mars now in line with Castor and Pollux,
Jupiter, Venus

11x80: Jupiter, lunar craters, M44, M51, Alcor and Mizar,
 β Cyg-split, M4, β Lib, R Ser
C-8, 19m: 3:56 - 3:59 UT (1E 2P) Jovian moon Io
eclipsed Europa partially for 3 min. causing a
drop in mag. by 1 mag.
lunar craters

Tu. May 21 18:10-18:20 UT ss C-8, 32, 28, 20, 15.5
sun 9g 37s RSN 127

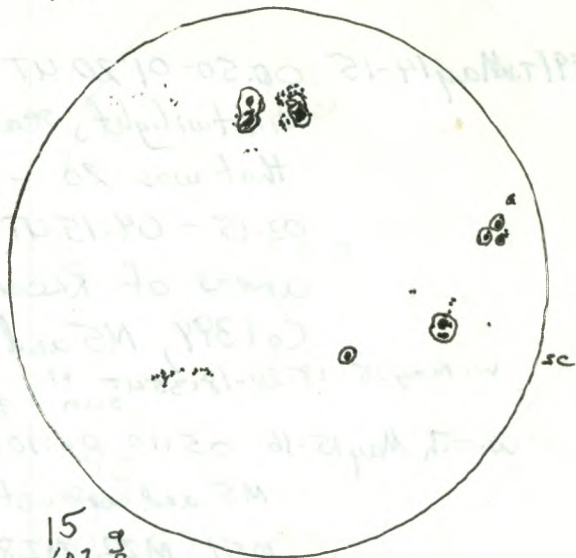
T.-W. May 21-22 01:50-02:30 UT t S 9 T 2 ^{very cloudy, hazy} C-8, 19m.
Venus (near dichotomy), Mars, Jupiter including
a mutual phenomenon of Jovian satellites -
(3E 1P) Ganymede eclipsed Io partially, 02:13-02:18
according to S.+T., but it may have been $\frac{1}{2}$ to 1 min
later than these times; predicted drop of 2.3 mag.
made Io almost disappear at mid-eclipse.
It "almost disappeared" for about 2 min. at
time of "mid-event". The very poor transparency
may have contributed greatly to the faintness of the
satellite at mid-eclipse.

1 29 2
3 3
2 1 1
5 2



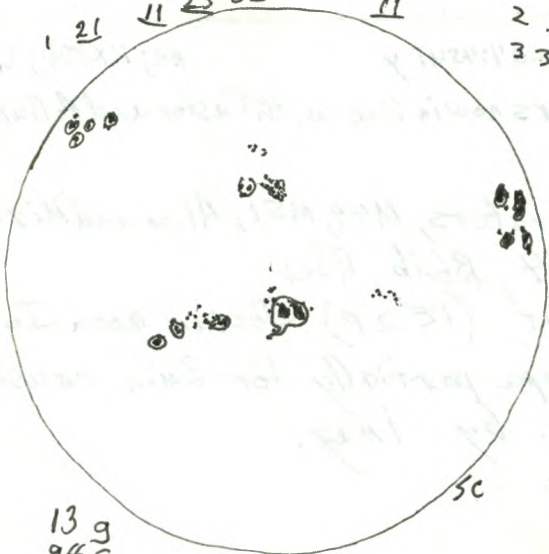
14
38 5
RSN 178
May 22
18:40-18:50 UT

4 2 12 11 11 28
19 2 9 17 4
1



15
103 3
RSN 253
May 28
20:25-20:35 UT

7 3
1 21 11 23 33 11 2 3
3 3



13 9
94 5
RSN 224
June 1
20:00-20:15 UT

June 1-2

Jupiter: SC.
IV 1 11

Venus: SC.

Mars

Jupiter
2:48 UT
 III O.R.

1991. W. May 22 18:40-18:50 UT SS haze C-8, 32, 28, 20, 15.5
sun 14g 38s RSN 178

Tu. May 28 20:25-20:35 UT SS C-8, 32, 28, 20, 15.5
sun 15g 103s RSN 253

W-Th. May 29-30 03-03:30 UT t Inl Ast, P
Jupiter and 4 moons

Th.-F. May 30-31 02:50-03:10 UT y t-5 (haze) ne
summer constellations, and planets Jupiter, Mars, Venus.

F.-S. ^{May 31-June 1} 03:00-04:00 UT y 57-8(?) T8 20x100b
M10, M12, M4, M80, α Lib, β Lib, M5, Jupiter and at least 2 moons,
M13, R Ser, M57, M27, Col 379,
A sky glow in the N. indicated a faint Aurora (There
had been a small solar flare) ^{on} May 29.

Sa. June 1 20:00-20:15 UT SS C-8, 32, 28, 20, 15.5
sun 13g 94s RSN 224

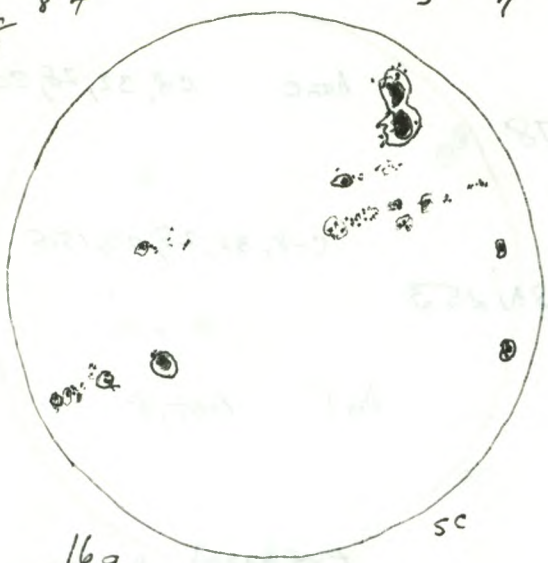
Sa-Su. June 1-2 01:15-04:40 UT oo 56 T9 C-14, 12, 32 20x100b
C-14, 12: Jupiter and 3 moons III occulted. (1:15 UT)
Venus near "quarter phase"
Mars seemed slightly gibbous, M44 in finder
- ~~Polaris~~ - 9th mag. companion seen
2:48 UT - Jupiter. III C&R - seen about 2^m later than
predicted for 2:46 UT
M57, γ Leonis, M53 GC in Com, ϵ Lyrae, δ Lyrae, δ Lyrae,
M51, M4, β Lyrae, α Lyrae
20x100b: β Lyrae, α Lyrae, M27, M4, M80

Auroral glow and faint spikes and patches seen through much
of the session. "Flaming" and more intense aurora were seen
after, at about 6:00 UT when the gibbous moon was well up in
the sky.

432

6 14 24
16 4 83 4
3 7

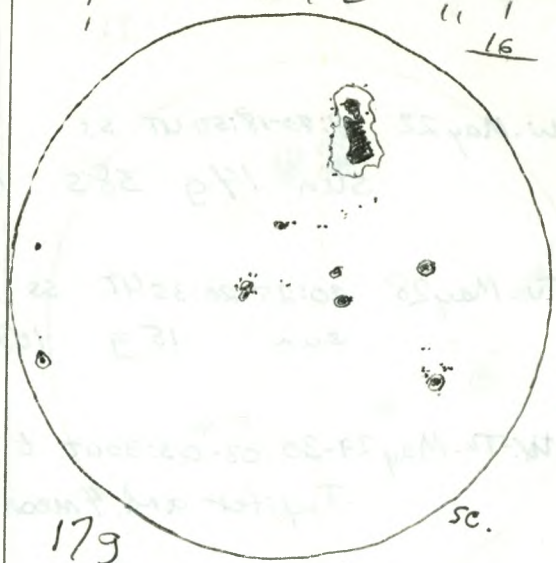
8 84



16g
118s
RSN 238 June 4
20:45-21:00 UT

sc

52 3 11 12 16
12 16



17g
68s
June 6
RSN 238 21:30-21:45 UT
The large spot was seen ne
with welder's glass #14.

sc.

1991. June 2-3 ⁹⁻¹¹ 03:30-05:00 UT y s-(7-8)(?) T9 20x100b.

α Lib, β Lib, M4, M80, M27, β Cyg, area of North America
Nebula, area of γ UMa, M53 GC in Com, R Ser area,
M71 OC in S

M.-T. June 3-4 03:30-05:00 UT y s7(?) T9.5 ^{excellent but intermittent clouds} 11x80
~~20x100b~~

α Lib, β Lib, M4, M80, ω Sco, M10, M12, β Cyg, M27,
M51, M22, M11, area E of M22 near area of Uranus,
but its precise position was not checked while observing,
R Ser, area of M8 and M20.

Very bright meteor seen at 3:01 UT - going from area
of Altair to area of Delphinus - very green in colour
and about mag. - 4.5

T. June 4 20:45-21:00 UT ss e-8, 32, 28, 20, 15, 5.
sun 16g 118s RSN 278

T.-W. June 4-5 03:00-04:10 UT y s7(?) T9 in S ^{Aurora in N} 9x63b

M5, M4, α Lib, β Lib, M10, M12, M13,

Bright Auroral glow in N. with two or three wide bands.

05:00-05:30 UT nd ne

Extremely active Aurora ~~glow~~ in N. had become an
almost all-sky Aurora with activity in most of the sky
- considerable flaming and pulsation and activity in
the zenith. Colours were mainly faint green and yellow.

W.-Th June 5-6 02:00-04:00 UT in Perth ^{Algonquin College} s8(?) T7 but Aurora Ast, 1588 ^{ne 11x80b}

ne: constellations, Mars, Jupiter, Venus.

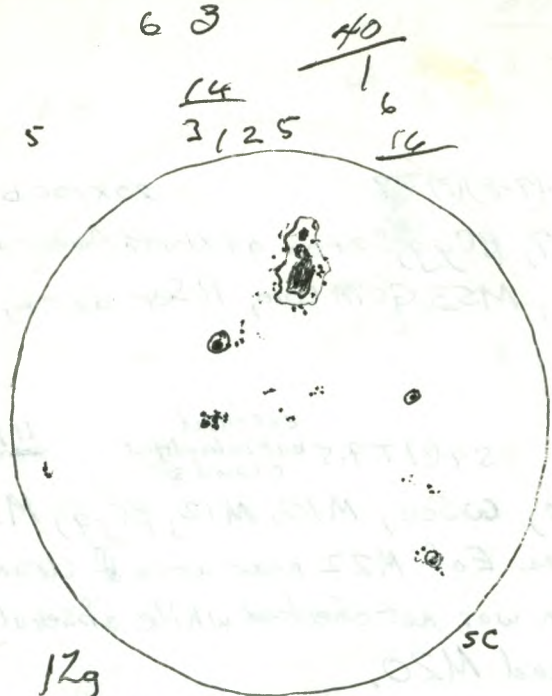
11x80b: α Lib, β Lib, M4

Ast: Jupiter, M5?, M27, Alcor and Mizar, β Cyg

A very intense Aurora filled ^{about} half the sky from 3:00-4:00 UT.
It produced red and green colours, bands, and numerous flames ^{spikes} and

Th. June 6 21:30-21:45 UT c-8, 32; ne
sun 17g 68s RSN 238
with welder's glass 1 spot was seen ne
w.g.

The "Three Leaps of the Girdle"

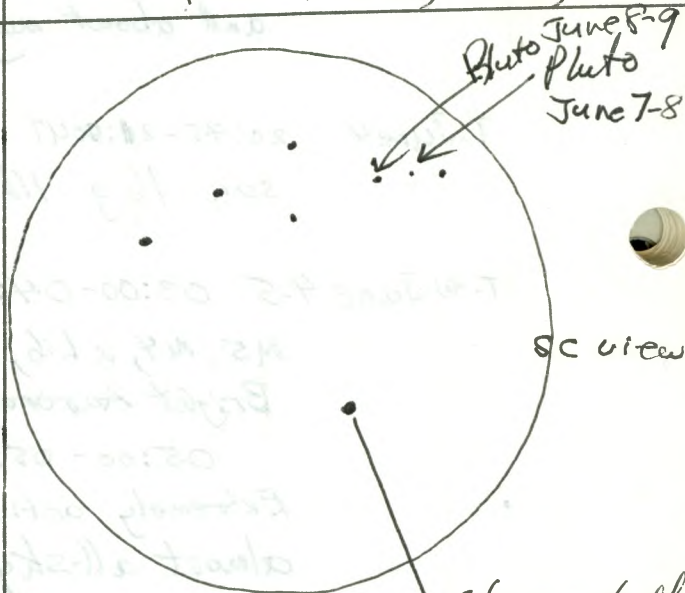


12g
1025 ~~200~~ June 7
RSN. 22nd 19:25 - 19:35 UT

- D
- E
- λ
- μ
- K
- I

- D - double 7.2 sep. in 1958 mag. 4+10
- E - close binary - now about 1" separation. Each of which is a spectroscopic binary
- λ - single (in "Taurus Stream")
- μ - red giant - spectroscopic binary. Near NGC 3184
- I - red 10 mag. companion 4.4 in 1969 and decreasing is its orbital close binary
- K - very close binary system 0.3 sep.

Doubles: γ Vir, ϵ Boo, δ Ser, γ Leo
 ν UMa, ζ CrB, μ Boo, ν Sco
 β Sco, α Sco, α CVn, Mizar



Pluto area
 Star marked on Uranometria and Sky Atlas 2000.0
 at position $15^h 20.8^m - 20^{\circ} 23'$
 on Chart 244 of Uranometria

1991. ^{Th-F.} June 6-7 03:00-05:15 UT 00 SBT 7-9 ^{intermittent} Cirrus or haze C-14, 19, 32, 5, 12, 8.

Jupiter and 4 moons, γ Leonis (split with 19m), ϵ Boo (split with 12m), δ Ser (very good double - split with 19m), γ Vir (superb double, all the stars of the "3 leaps of the gazelle", namely ν , ξ , λ , μ , ι , κ UMa of which the companion star of ν could be easily seen about 7" from the primary, and ξ seemed to be elongated (there being about 1" sep. between the members of the binary system) ξ Cor Bor ($15^{\circ}39' + 36.8$) a mag. fixat double w. of μ Boo, ν Sco - a double double, but difficult to split one of them since the sep. are 2" and 1", β Sco - a very wide pair like ~~the~~ Mizar 14" apart, α Sco - Antares which seemed elongated though hardly split, M4, Mizar, Saturn, Uranus near ν Sco, α CVn. - some Auroral glow

F. June 7 19:25-19:35 UT SS

sun 17g 102s RSN 222

C-8, 32

(photographed sun)

F.-S. June 7-8 02:25-06:00 UT 00 S-7-8 T8-9 C-14, 32; 20x100b

Jupiter and 3 moons (II in occultation), Mars amid M44, Venus near $\frac{1}{2}$ phase, M57 (looked for central star using 5m ocular - not seen for sure), NGC 3184 (spiral galaxy near μ UMa), searched for Pluto and finally, using map in Observer's Handbook, was able to provide almost certain identification, Saturn

8 planets

20x100b: Uranus, Neptune, M10, M12, M22, M28, M8, M20.

Auroral glow & light and in N.

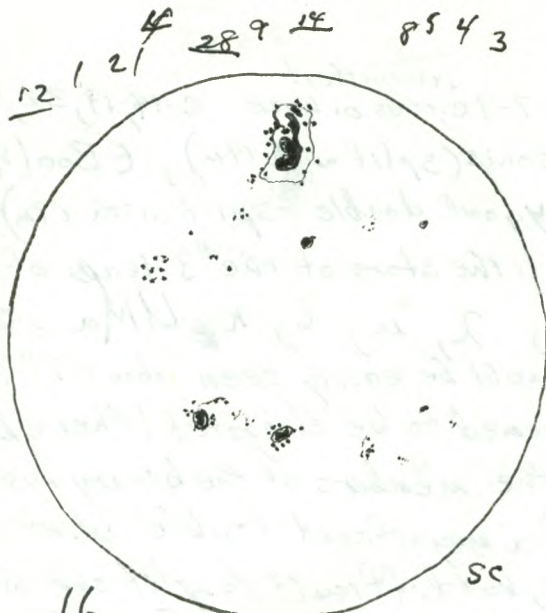
S.-S. June 8-9 03:00-05:00 UT yaad 00 S-7-8 T9-9.5 for Aurora ^{except} Ast, 15 C-14, 32 20x100b

Ast.: Jupiter and 3 moons, Venus.

C-14: NGC 3184 near μ UMa, ξ Cor Bor - a fine double, Pluto found easily after seeing it the previous night, γ Vir, M51, M5.

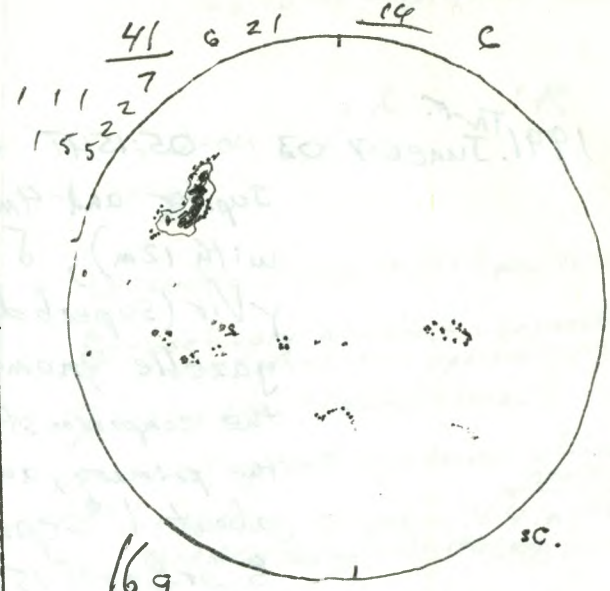
Mars: ne
8 planets

40 161



16 9
1395
RSN 299
June 9
17:45-17:55 UT

11



16g
1065
RSN 266
June 12
20:40-20:50 UT

[Faint, mostly illegible handwritten notes and bleed-through from the reverse side of the page.]

1991

20x1006: Uranus, Neptune, M10, M12, M27, North America
Nebula area, Col 399, M8, M20, M22, M28,
M17 (the Omega Nebula)

A very intense Auroral display was seen. From well before the end of twilight until 3:50 UT, it was mainly a very bright wide arc in the north up about 30 to 40 degrees - very defined for an arc. At about 3:50 UT it changed to numerous spikes and wide bands of varying intensity. It continued throughout very intense in the N.W. with considerable redness in the N.W.

Sa. June 9 17:45-17:55 UT

C-8, 32, 28, 20, 15.5

sun 16g 139s RSN299

S.-M. June 9-10 02:15-02:20

tw

ne

3 planets Venus, Mars, and Jupiter within about 7 degrees in NW sky.
- photographed them.

M.-T. June 10-11 03:00-04:30 UT Periodically ^{hazy} T2 partly cloudy ne

In spite of heavy haze and clouds, there was a very strong Aurora. Considerable coronal activity was present and pulsation and flaring in several directions including south. Colours were subdued (clouds, haze), some reddish-ness.

07:05 UT in

ne

- considerable "flaming" of the Aurora in N.

W. June 12 20:40-20:50 UT ss

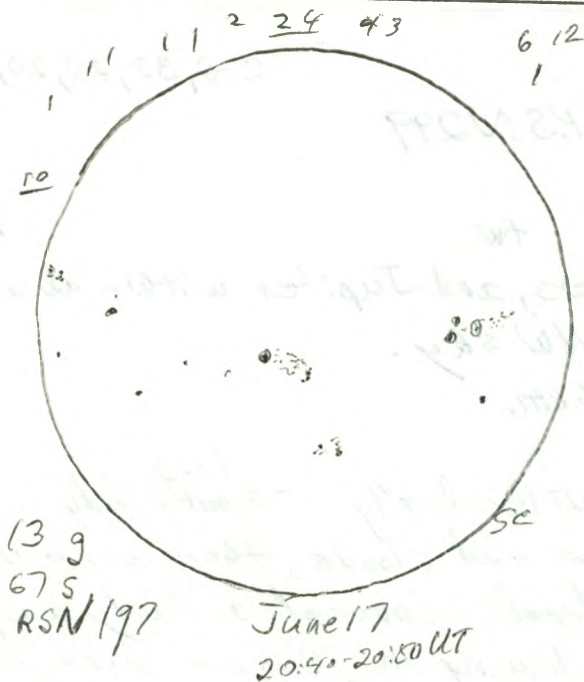
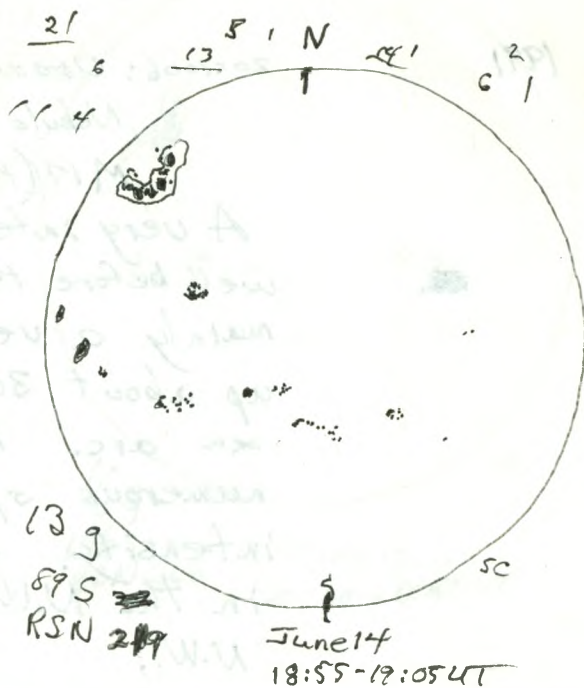
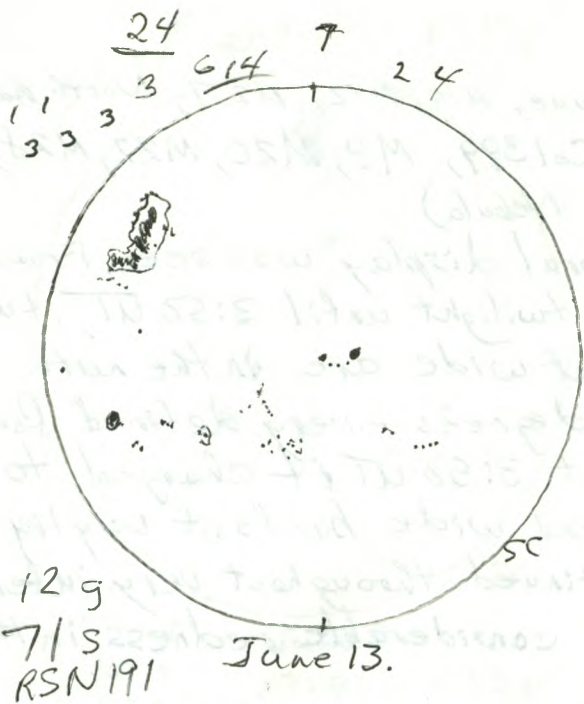
C-8, 32, 28, 20, 15.5

sun 16g 106s RSN266

W.-Th. June 12-13 03:50-04:15 UT nd

ne

- a very good Auroral display featuring a very bright large arc in the N, with spikes shooting up almost to



8:40 UT
Comet Levy (1991g) Fri. June 14, 1991.
-discovered 2:40 am (Arizona time)
by David Levy with 16" telescope
after searching for 1-2 minutes.
-discovered near M74
at RA $1^h 44^m$ Dec $13^\circ 34'$
mag. 7.8 3" coma
(David's 7th visual comet and
12th comet.)
Area "rises" about 1:30 am local
time.

1991

the zenith. It covered half or more of the sky. Red and green colours were present, especially red in the N.W. The glow made the sky quite bright. Clouds moved in at about 04:15 UT.

Th. June 13 19:40-19:50 UT SS C-8, 32, 28, 20, 15.5
 sun 12g 71s RSN 191
 - photographed sun.

Th.-F. June 13-14 03:35, 03:55-04:00, 05:20-05:30 S7? T9 ne
 - constellations, Saturn in Cap. in last session
 - very little Auroral glow in N.
 - tried to see M13 ne, but unsure of doing so.

F. June 14 18:55-19:05 UT SS C-8, 32, 28, 20, 15.5
 sun 13g 89s RSN 219

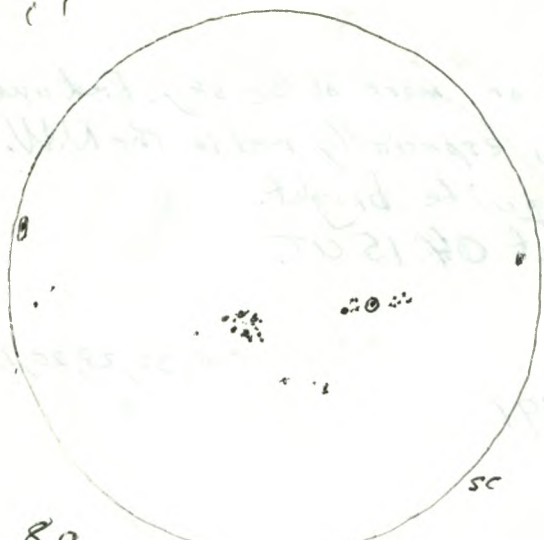
M. June 17 20:40-20:50 UT SS C-8, 32, 28, 20, 15.5
 sun 13g 67s RSN 197.

M.-T. June 17-18 01:25-02:00 ^{in car} from Bedford to S.L. tw ne
 Venus, Jupiter, and Mars on date of their closest approach to each other at time of current "conjunction." They were within a circle of 1.8°.

— 02:55-07:15 UT y S8(?) T9 ne and 20x100b
 ne. - excellent Auroral display from 3:00-4:00 UT with redness in NW and spikes to the zenith - covering N half of the sky with some green and yellow colour. Thereafter it was subdued with glow and arc and a few spikes up to about 45° - much less spectacular after midnight

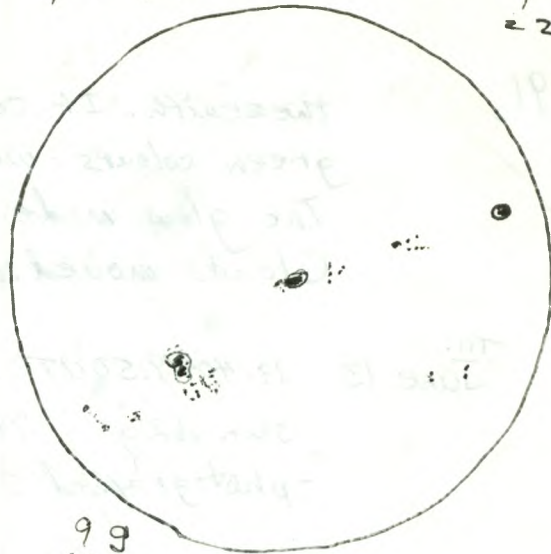
20x100b. M4, M8, M5, M6, M7, Uranus, M27, M11, R Sauri, M22, M28, M8, M20, M15, M31, M33, M17, 69, M70,
 - searched in area of Pisces-Aries border for the newly discovered Comet Levy (1991g) but did not see it. There were trees in the area and twilight was approaching.

1 23 6 8 1

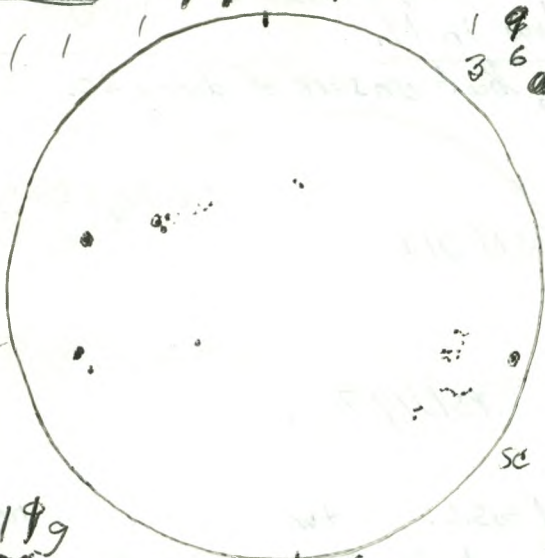


89
42S
RSN 122 19 June 18
18:55-19:05 UT

73 29 75 7 1
22



99
63S
RSN 153 June 20
18:20-18:25 UT



199
37S
RSN 144 June 24
21:30-21:45 UT

1991 Tu June 18 18:55-19:05 UT SS
sun 8 g 425 RSN122

C-8, 32, 28, 20, 15.5

T.-W. June 18-19 02:45-04:30 UT y

ne and 9x636

M.
V
J

ne: - very close conjunction of Mars, Venus, and Jupiter in NW
- photographed them about 3:20 UT - at about the end of astronomical twilight when they were up about 5° - 8° .

9x636: M4, M22, Uranus, M11, RScuti, Saturn, M13, M92, β Cyg, Col 399.

A moderate Aurora was seen during the session. It flared up a little during the period about 3:40-3:50 UT when spikes in N reached up about 60° . Then it continued as a glow up about 30° and a few periodic weak spikes and slight flaming and pulsation.

Th June 20 18:20-18:25 UT SS
sun 9 g 635 RSN153

C-8, 32, 28, 20, 15.5

S.-S. June 22-23 03:00-03:15 UT

gml. ne, 9x636

M.
V

Mars, Venus, and Jupiter in N.W. with Mars and Uranus very close - too close to be distinguished ne. They were about $\frac{1}{2}^{\circ}$ apart.

J ←

S.-M. June 23-24 01:50-01:55 UT

tw + gml 9x636

NW

Venus, Mars, and Jupiter ~~very~~ in the twilight with Venus and Jupiter very bright. Mars seemed too close to Venus or was too faint by contrast to be distinguished. It was listed as being only $0^{\circ}.26$ from Venus at 12^h UT on June 23 about 14 hours previous (Venus $0^{\circ}.26$ N. of Mars)

M.
V

J ←

NW

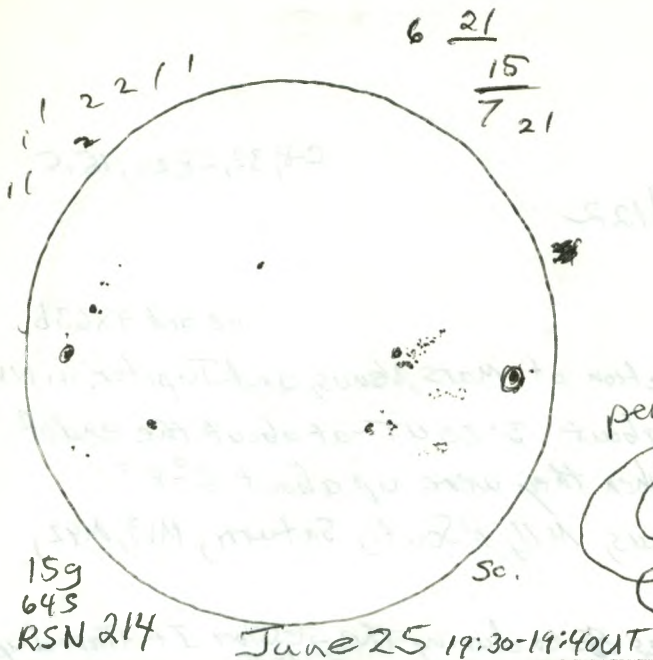
M. June 24 21:30-21:45 UT SS
sun 11 g 375 RSN144

C-8, 32, 28, 20, 15.5

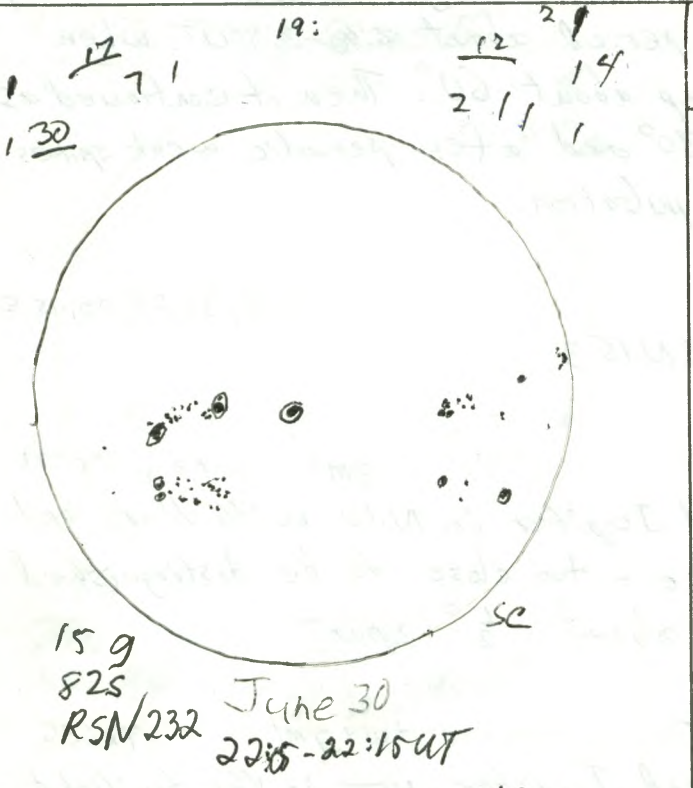
M-T June 24-25 00:30-01:50 UT silver Lake Prov. Park

ne

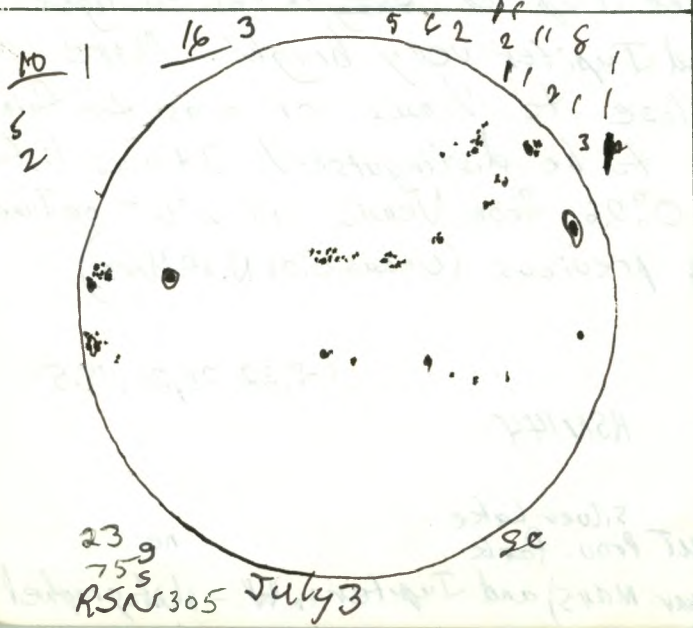
Venus (very near Mars) and Jupiter in NW - photographed



Penumbral Lunar Eclipse
 June 27, 1991.
 moonrise 855 pm E.D.T.
 (June 26, -27)
 Penumbral
 First Contact 01:46.5 UT
 9:46 pm - EDT.
 Mid-eclipse 03:14.7 UT
 11:14.7 pm - EDT.
 mag. 0.339 (33.9%)



Last Contact 04:43.1 UT.
 12:43.1 am EDT.
 16g
 94s
 RSN 254 July 1
 19:48-20:00 UT



Star chart for July 3. Magnitudes listed: 23g, 75s, RSN 305. Date: July 3.

1991. Tu. June 25 18:30-19:40

C-8, 32, 28, 20, 15.5

sun 15 g 45s RSN 214

W. Th. June 26-27 01:25-04:00 UT 00 s. 90 + 5
tw, haze C-14, 19m, 7x35b
 C-14 Venus - crescent; Jupiter and 3 moons (Io in transit)
 7x35b: ^{Alcor and Mizar,} moon before and during slight penumbral eclipse.
 This Penumbral Eclipse was not detectable
 ne. even at mid-eclipse. However, there was
 considerable haze.
 I photographed the ^{moon} shortly after Mid-eclipse
 using the C-14[^] at first focus.

Sa. June 30 22:05-22:15 UT SS

C-8, 32, 28, 20, 15.5

sun 15 g 82s RSN 232

S.-M. June 30-July 1 02:45-04:00 UT ^{Read to Shoshone Lake} on road from tw x gail ne
 - intermittent viewing of Aurora - faint glow, but
 mainly periodic spikes and vertical bands up to
 about 50° or more in N

M. July 1 19:48-20:00 UT

C-8, 32, 28, 20, 15.5

sun 16 g 94s RSN 254

M.-T. July 1-2 03:00-03:15 y

tw. 9x63b

M11, Col 399, area of North America Nebula,
area of Cor Bor and Lyra.

T.W. July 2-3 03:30 UT y

partly cloudy ne

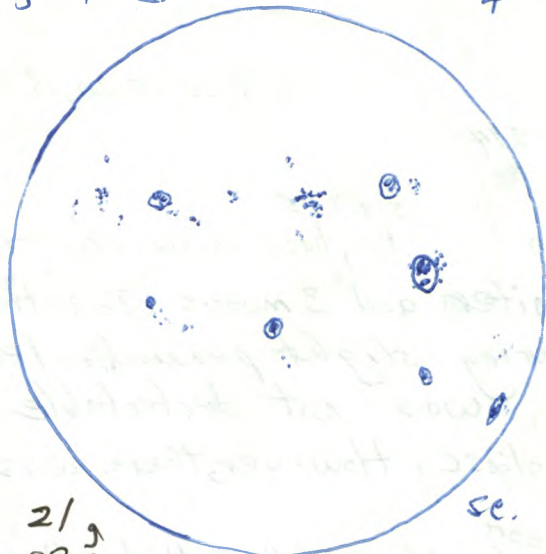
- in spite of considerable cloudiness, good evidence of strong
Auroral glow in the N. area of the sky and up
about 60°. Later at about 7:30 UT, after beginning
of morning astronomical twilight there was a glow in N up about 30°

W. July 3 16:45-17:00 UT

C-8, 32, 28, 20, 15.5

sun 23 g 75s RSN 305

$\frac{1}{2} \frac{11}{3}$ 7 2 6 $\frac{2}{2} \frac{15}{2}$ 9 4 6
 2 3 2 2 3
 25 1 3 4

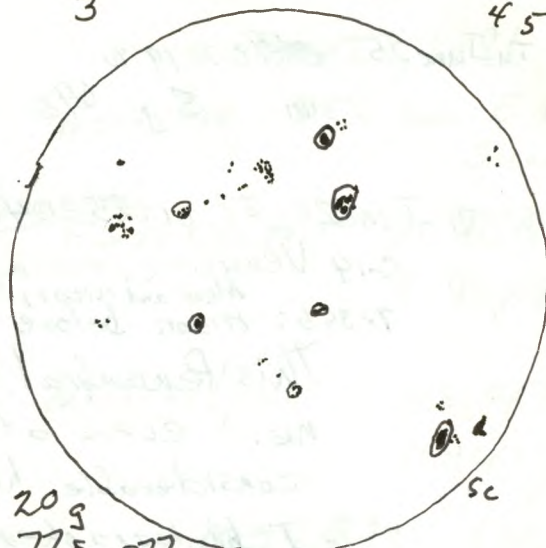


21
 925
 RSN 302

July 6
 22:05-22:15 UT

sc.

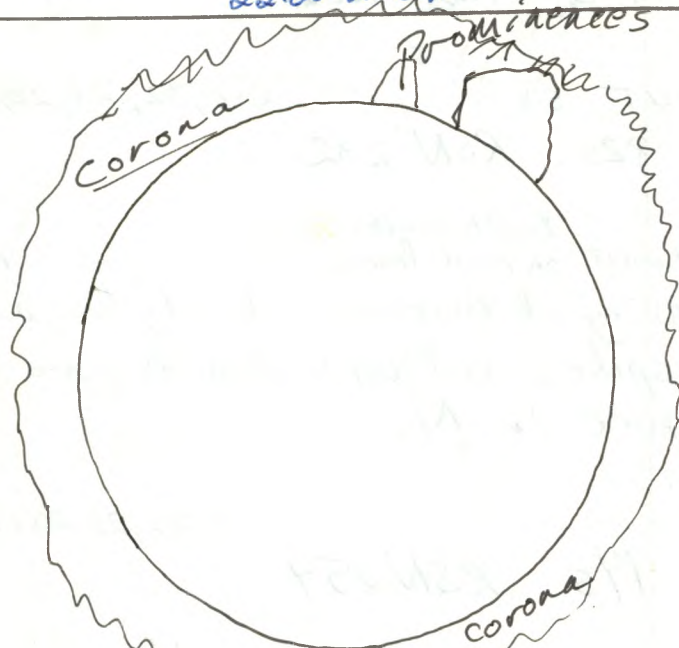
4 1 2 2 2 15
 3 1 2 5 3
 3 1 4 4
 45 4



20
 775
 RSN 277

July 7
 18:00-18:10 UT

sc

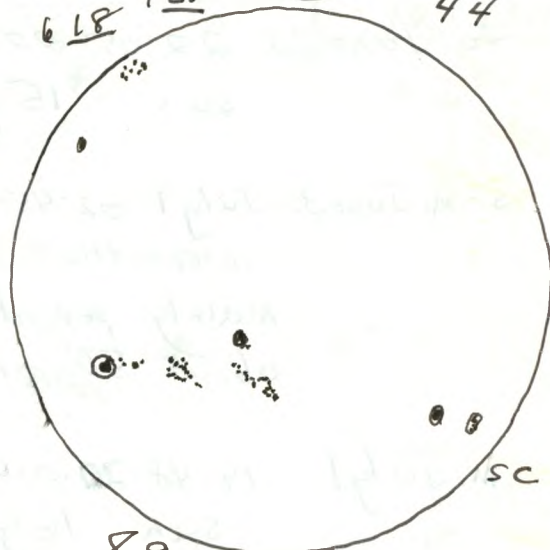


Total Solar Eclipse
 AT SANTIAGO

Duration: 6^m 52^s
 Alt. of Sun: 82.5°
 Az. of Sun: 100°
 Mag. of Eclipse: 1.038

- - Venus
- - Regulus
- - Mars
- - Jupiter
- - Mercury

6 18 4 25 44



89
 713
 RSN

July 14
 21:00-21:15 UT

sc

near Cabo San Lucas Pacific Coast.

1991 W-Th. July 3-4 03:40-04:20 UT γ s-8(P)T8 20x1006
M22, M28, Uranus, Saturn, Cor Caroli (split), Alcor and
Mizar (split Mizar), M101, M51, M12, R Cor Bor, β Lib,
 α Lib, α Cap, β Cap, Saturn.

Sa. July 6 22:05-22:15 UT ss c-8, 32, 28, 20, 15.5
sun 21g 92s RSN 302

Su. July 7 18:00-18:10 UT ss c-8, 32, 28, 20, 15.5
sun 20g 77s RSN 277

Th. July 11 (8:30 - 13:30 MST) Santiago
15:30 - 20:30 UT Baja California Sur Mexico clear except Ast. +
near and 19mm
during totality epp. to
when clouds camera;
interfered 400mm
(200+2x)
ne

Long.: $109^{\circ} 44.0' W$
Lat.: $23 27' N$

15:30 UT - arrival, setting up at soccer field
- clear skies

17:24:52 UT First Contact - clear skies
- very hot

18:49:33 UT Second Contact - clouds near zenith!
- dark, but not very dark

18:56:25 UT Third Contact - clouds were intermittent
- short diamond ring.

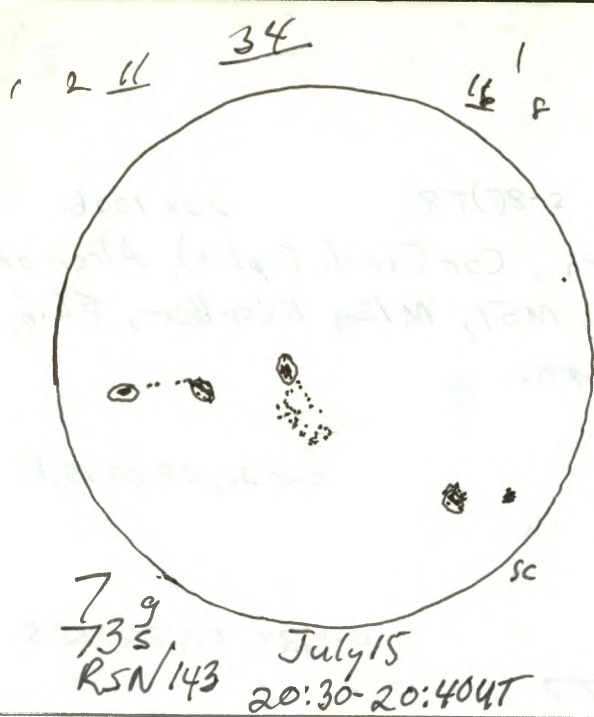
20:20:58 UT Fourth Contact - Clouds have cleared;
Temperature returned to about $40^{\circ} C$.

Spectacular eclipse seen at 5 or 6 intervals during
cloud cover during totality.

Corona: only $\frac{1}{2}$ solar diameter in width because of cloud.

Th.-F. July 11-12 03:00-04:00 UT ^{boat near} Cabo San Lucas clear skies ne
off coast of Baja
California, Mexico
- during 3^{hr} cruise - numerous constellations of S. sky
and 4 planets in W.: Venus, Mars, Jupiter, Mercury

Sa.-Su. July 13-14 05:00-05:30 UT ^{intense Aurora, spikes + flaring to Zenith in S. Sky}
Su. July 14 21:00-21:15 UT c-8, 32, 28, 20, 15.5
sun 8g 71s RSN 151



1991 Su.-M. July 14-15 03:30-06:00 UT y S-9(?) T 8-9 ne; 20x100b

ne: some Aurora early in session particularly with glow in N., not as intense as last night; pulsation and spiking not as apparent.

20x100b: Uranus, Neptune, Saturn, M22, M28, M80, M11, M8, M20, RScu, NGC 6704 (OC-Paint in the binoculars, Bas 1 (also OC-Paint in the binoculars - near RScu), DM Del (easily seen), EE Peg (easily seen near E Peg), M15.
- a very bright meteor going downward in Boo.

M. July 15 20:30 - 20:40 UT ss

C-8, 32, 28, 20, 15.5

sun 7g 73s RSN 143

M.-T. July 15-16 03:00 - 07:10 UT y S 7-8(?) T 9-9.5 ^{Excellent.} 9x63b and 20x100b

Neptune, Uranus, Saturn, M28, M22, M11, M26, M16, M17, M18, M25 including USag, area of M24, WZ Sag (see AAUSO ATLAS CHART 120), M8, M20, M21, M15, M31, M33, M13

Comet Levy (1991g) seen for the first time - at about mag. 8.5. in constellation Taurus.

Tu. July 16 18:30-19:40 UT ss

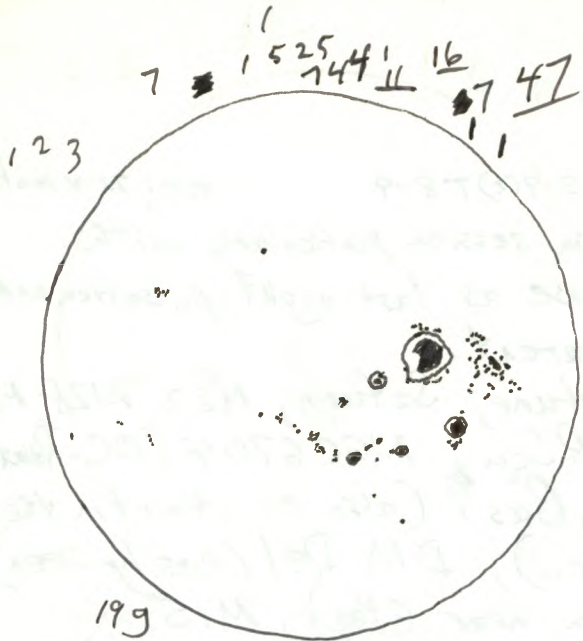
C-8, 32, 28, 20, 15.5

sun 9g 50s RSN 140

T.-W. July 16-17 03:00 - 05:00 UT y S 8(?) T 8 9x63b and 20x100b

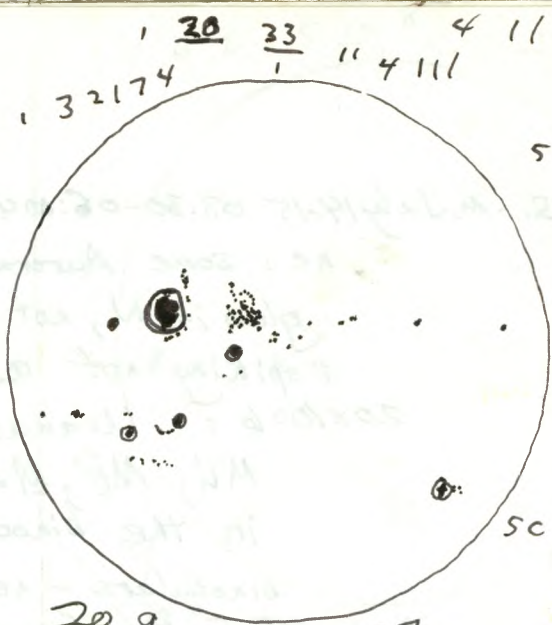
Uranus, Neptune, Saturn, M22, M28, M8, M20, M21, M11, M16, M17, M18, M24 area, M25, M15, M33, M31, Alcor and Mizar.

A glow of Aurora persisted throughout the session in the North, occasionally becoming spikes and with some flaring and pulsation, generally up to 35°-40°, but occasionally up to 60°. It did not become very active in the zenith, and did not show much colour.



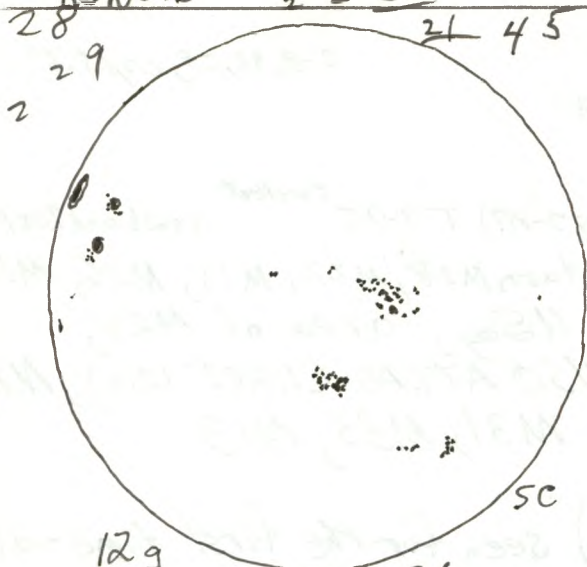
199
1265
RSN316

July 23
22 32 1



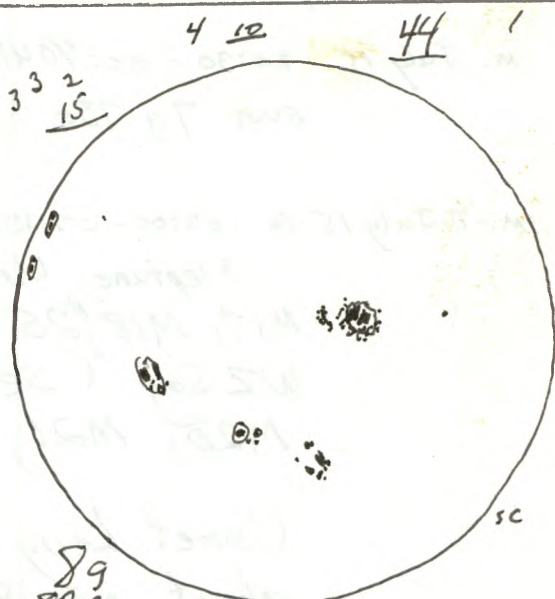
209
935
RSN293 : : UT

July 27



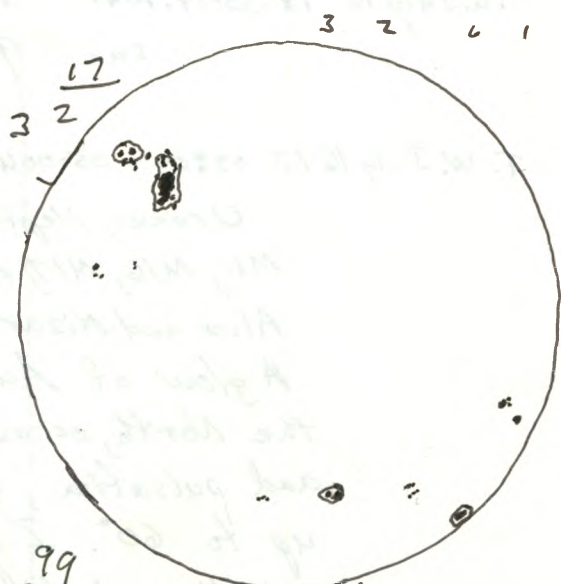
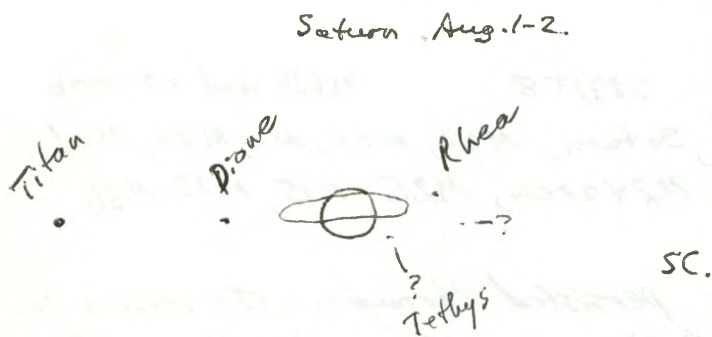
129
905
RSN210

July 31.
21:10-21:20 UT



89
825
RSN162

Aug 1.
22:10-22:20 UT. 31



99
385
RSN128

Aug. 6.

1991 s.-s. July 20-21 03:00-03:10 UT ^{some} gml; cloud ne

Some Aurora was seen in N. Two spikes, one wide, reached upward, up to about 45° . There was little colour, and some interference from clouds.

Tu. July 23 19:00-19:10 UT ss c-8, 32, 28, 20, 15.5.

sun 19g 126s RSN 316

Sa. July 27 16:05-16:20 UT ss c-8, 32, 28, 20, 15.5

sun. 20g 93s RSN 293

w. July 31 21:10-21:20 UT ss c-8, 32, 28, 20.

sun 12g 90s RSN 210

Th. Aug. 1 22:10-22:20 UT ss c-8, 32, 28, 20, 15.5.

sun 8g 82s RSN 162

Th.-F. Aug. 1-2 02:00-03:15 UT s-8-9(?) T8.5 e.a.t ^{after} 9x636 c-14, 32;

M27, M57, M22, M17, M8, M20, M11, M13, M92, M4,
Saturn and several of its moons, Albiteo,
cluster associated with C01389.

A M.-T. Aug 5-6 02:00-03:30 UT y ne

- Intense Auroral display in N. for about 1 hour - glittered in NW with spikes in NW to NE up to 60° in alt. - very bright band and glow in N.

- also summer constellations and about 6 or 7 meteors, mainly Perseids.

Tu. Aug. 6 20:30-20:40 UT ss c-8, 32, 28, 20, 15.5

sun 9g 38s RSN 128

w.-Th. Aug. 7-8 04:00-05:40 UT y s (8-9?) T8.5 20x100b

M17, M22, M13, M11, M15, M31, M33, Uranus, Neptune, Saturn,
Double Cluster in Perseus

1991. s.-s. Aug. 10-11 ^{Syracuse Summer Seminar} ^{Barling Hill, N.Y.} int. cloud 11x80b
03:00-04:00 UT Uranus, Neptune, star fields; persistent cloud at the
Syracuse Summer Seminar observing session

s.-M. Aug. 11-12 03:00-04:30 UT y s 7(?) t 9.5 (excellent) ne, 9x63b
M22, Uranus, Neptune, North America Nebula area.
Several Perseid meteors were seen; however, the
number seemed to be low.

m.-T. Aug. 12-13 00:20 UT boat in Hawley Bay just after sunset ne
New Moon in west, a slender crescent
up about 8° - 10° above the horizon, about
70 hours old (New Moon was Sat. Aug 10 at 2:28 UT.)

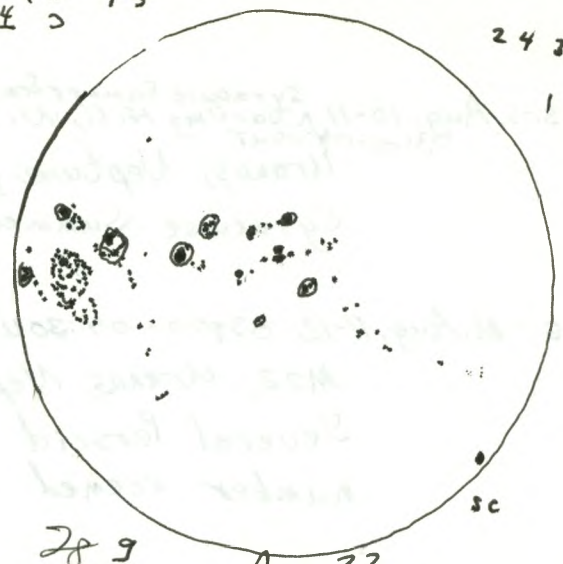
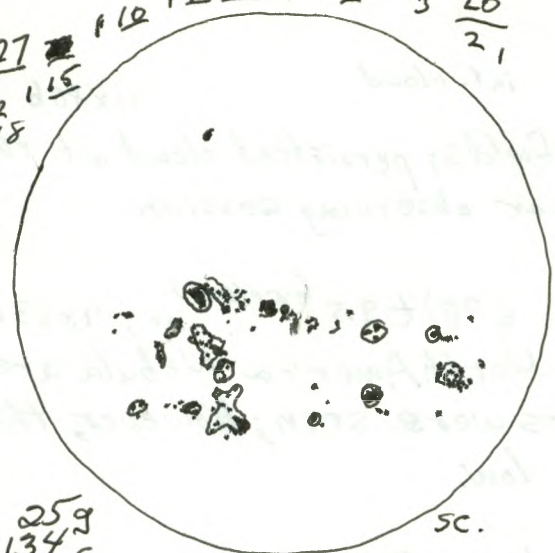
03:00-04:30 UT y ne Denise and I.
With Denise facing N and me facing S, we observed
the Perseid Meteor Shower near maximum.
There were a good number of Perseids, perhaps
averaging 1-2 per minute for both of us. The
average was probably less than 1 per minute for our
individual observations. Several were bright (mag.
1-0- -1). A few left trains.

T.-W. Aug. 13-14 03:00-04:30 UT 00 s-8 T-8 ^{then} cloud C-14, 32m
M27, M57, M71, β Cyg, NGC 6826, the Blinking
Planetary, Saturn - amid clouds so bad that no
moons could be seen.
Several bright Perseid Meteors were seen (mag. -0 to 1)
with trains of 3 or 4 seconds.

w.-Th. Aug. 14-15 02:45-05:30 UT 00 s-8(?) T 8-7 ^{Auroral} ^{ne} brightness 20x100b; C-14, 32E
A ne: Aurora - beginning with low glow in N, then glow
extending upward to about 40° - becoming quite bright,
after 4:00 UT becoming active with spikes, vertical
bands, flaring and pulsations; some coronal activity;

1
 27 112 144 114 12 3 41
 22 115 3 20
 118 21

11 11 148 1 11
 157 24 12 15 6 221 312
 11 243



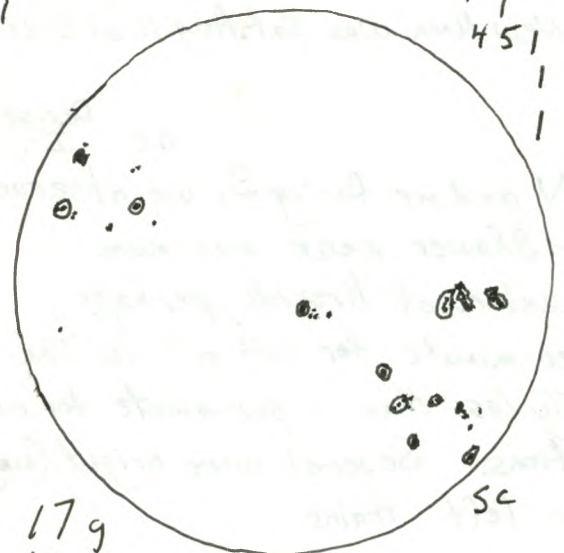
25g
 134s
 RSN 384
 42
 3111
 1

28g
 170s
 RSN 450

Aug. 20
 17:05-17:20UT

Aug. 22

71 17 586
 451
 1
 1



17g
 42s
 RSN 212

Aug. 26
 20:10-20:30UT

sc

activity in almost whole of N half of the sky, up to zenith at least; colours subdued yellow, green, pink.

20x100b: M22, M28, M8, M20, search for variable stars in area of M20, Uranus, Neptune, M11, R Scuti and X Scuti - not far from M11, M15

~~☾~~: Saturn, ~~tot 2~~ bright Perseids

c-14: Saturn, M31, M57

ne.: 1 or 2 bright Perseids, considerably reduced in numbers apparently from previous night.

Th.-F. Aug. 15-16 01:00-02:00 ^{Long Bay on Bob's Lake} at Muslim Camp for children before eat cmt. Ast., 8m.
- crescent Moon, Saturn, 1 bright meteor - mag. -2.

F.-S. Aug. 16-17 02:00-03:15 UT ^{Charleston Lake} Provincial Park ^{58° 37' 6" N} some cloud Ast., 21.5, 8.
- After hearing part of Terence Dickinson's talk, we showed objects in the sky to interested people:
crescent moon, Saturn and Titan, Alcor and Mizar, ε Lyr.

A
S.-M. Aug. 18-19 02:30-03:30 UT nd ^{clouds} gml ne
In spite of largely overcast skies, I saw an Aurora in the N, with a very bright glow and some indication of one or more spikes.

S
M.-T. Aug. 19-20 02:30-04:30 UT 00 gml c-14, 19m
- observed and photographed lunar craters
- photographed Saturn, observing it through the camera with eyepiece projection.

T. Aug. 20. 17:05-17:20 UT 55 c-8, 32, 28, 20, 15.5
sun 25g 134s RSN 384

Th. Aug. 22 18:45-19:05 UT 55 c-8, 32, 28, 20, 15.5
sun 28g 170s RSN 450

M. Aug. 26 20:10-20:30 UT 55 c-8, 32, 28, 20, 15.5
179 42s RSN 212

Relative Sunspot Numbers

1990	My Observation	AAUSO	SIDE, Brussels	My observation	AAUSO	SIDE, Brussels	My observation	AAUSO	SIDE, Brussels		
Aug. 30	248	176	196	Feb 1	324	211	205	May 12	185	124	133
31	251	157	161	3	184	176	180	13	193	116	116
Sept. 7	119	110	103	10	206	136	136	15	120	102	119
11	122	130	116	11	187	135	140	21	127	99	97
12	169	132	124	12	182	159	153	22	178	115	117
17	137	156	142	13	284	179	166	28	253	149	158
18	173	150	136	16	162	169	159	June 1	224	154	177
20	153	147	135	17	140	160	142	4	278	170	179
27	133	104	77	18	292	193	191	6	238	162	172
Oct 5	146	137	123	22	284	232	214	7	222	154	171
16	222	210	192	23	283	208	200	9	299	183	251
24	144	135	131	27	275	186	175	12	266	176	228
26	100	113	102	Mar. 5	91	99	74	13	191	150	175
29	113	106	98	8	219	144	146	14	229	152	177
Nov. 3	188	124	108	9	210	168	167	17	197	128	149
13	113	125	129	10	173	167	159	18	122	141	148
15	130	116	107	11	148	156	167	20	153	106	113
17	145	131	103	12	218	164	163	24	144	126	135
18	122	116	97	13	222	165	145	25	214	135	137
23	110	136	114	14	221	177	161	30	232	178	175
26	121	110	111	20	229	181	166	July 1	254	192	188
30	131	143	153	Apr. 3	138	119	118	3	305	227	238
Dec. 2	153	174	160	4	198	137	139	6	302	197	204
10	206	195	157	7	215	159	174	7	277	203	209
14	173	112	98	11	287	178	195	14	151	121	132
1991 Jan. 4	92	97	95	12	255	197	227	15	143	109	117
7	107	123	105	14	222	210	211	16	140	84	98
8	77	103	99	23	15	58	72	23	316	194	212
10	128	103	97	25	78	46	39	27	293	182	183
13	274	144	145	26	86	70	77	31	210	164	165
22	147	99	106	30	134	115	116	Aug. 1	162	131	132
25	167	157	149	May 3	130	85	99	6	128	119	119
26	274	192	179	4	91	99	95	20	384	294	291
28	238	236	237	5	126	108	89	22	450	292	294
30	339	253	239	9	156	137	140	26	212	157	177
				10	201	129	134				
				11	191	135	145				

NGC Checklist

- 6818 PN Sgr
- 253 SG Scl
- 288 GC Scl
- 6210 PN Her
- 6572 PN Oph
- 1055 SG Cet
- 6826 PN Cyg
- 7009 PN Aqr
- 7814 G Peg
- 7742 G Peg
- 7743 G Peg
- 7448 G Peg
- 7454 G Peg
- 7479 G Peg
- 7619 G Peg
- 7626 G Peg
- 7541 G Pis
- 7585 G Pis
- 95 G Pis
- 16 G Peg
- 7782 G Pis
- 750 G Tri
- 23 G Peg
- 697 G Ari
- 404G And
- 891 G And
- 890 G Tri
- 925 G Tri
- 750 G Tri
- 2251 OC Mon
- 2244 OC Mon
- 2264 OC Mon
- 2261 BN Mon(?)

(Faint mirrored text from the reverse side of the page is visible in the background)

NGC Number	Object Type	Constellation	RA (h m s)	Dec (d m s)	Mag	Other
6818	PN	Sgr	18 00 00	-30 00 00	10.0	
253	SG	Scl	17 00 00	-25 00 00	11.0	
288	GC	Scl	17 00 00	-25 00 00	11.0	
6210	PN	Her	18 00 00	-10 00 00	10.0	
6572	PN	Oph	17 00 00	-10 00 00	11.0	
1055	SG	Cet	12 00 00	-10 00 00	12.0	
6826	PN	Cyg	21 00 00	-20 00 00	11.0	
-7009	PN	Aqr	21 00 00	-10 00 00	12.0	
7814	G	Peg	00 00 00	00 00 00	13.0	
7742	G	Peg	00 00 00	00 00 00	13.0	
7743	G	Peg	00 00 00	00 00 00	13.0	
7448	G	Peg	00 00 00	00 00 00	13.0	
7454	G	Peg	00 00 00	00 00 00	13.0	
7479	G	Peg	00 00 00	00 00 00	13.0	
7619	G	Peg	00 00 00	00 00 00	13.0	
7626	G	Peg	00 00 00	00 00 00	13.0	
7541	G	Pis	00 00 00	00 00 00	13.0	
7585	G	Pis	00 00 00	00 00 00	13.0	
95	G	Pis	00 00 00	00 00 00	13.0	
16	G	Peg	00 00 00	00 00 00	13.0	
7782	G	Pis	00 00 00	00 00 00	13.0	
750	G	Tri	00 00 00	00 00 00	13.0	
23	G	Peg	00 00 00	00 00 00	13.0	
697	G	Ari	00 00 00	00 00 00	13.0	
404G	And	And	00 00 00	00 00 00	13.0	
891	G	And	00 00 00	00 00 00	13.0	
890	G	Tri	00 00 00	00 00 00	13.0	
925	G	Tri	00 00 00	00 00 00	13.0	
750	G	Tri	00 00 00	00 00 00	13.0	
2251	OC	Mon	00 00 00	00 00 00	13.0	
2244	OC	Mon	00 00 00	00 00 00	13.0	
2264	OC	Mon	00 00 00	00 00 00	13.0	
2261	BN	Mon(?)	00 00 00	00 00 00	13.0	

TELESCOPE MAGNIFICATION

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

STELLAR MAGNITUDES FOR COMPARISON PURPOSES

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

A PAGE FROM MY OBSERVING LOG SHOWING
TYPICAL DRAWINGS OF THE SOLAR DISK AT
A TIME OF CONSIDERABLE SOLAR ACTIVITY

These are drawings of the solar disk made at the times of observations on the following dates: 1991, February 17, 18, 22, 23, and 27, and March 5.

The size of the disk in all drawings is 72 mm (in diameter).

The numbers above each drawing are the numbers of spots observed in each of the sunspot groups.

The letters "sc" to the lower right of each drawing are a note, in personal code, that this drawing was made directly from the view in the eyepiece of a "Schmidt-Cassegrain Telescope". The drawing is, therefore, a mirror-image of the true disk of the sun. It is a "reversed left-to-right" image as seen in all such telescopes when a diagonal is used.

Below each drawing, the date and the Universal Time of the observation are recorded.

To the lower left of each drawing, there are three numbers:

- (1) the number of sunspot groups - g,
- (2) the number of sunspots - s, and
- (3) my Relative Sunspot Number - RSN,

for that particular observation. For example, the numbers for February 17 are

9g

50s

RSN 140.

No k-FACTOR has been employed to adjust the Relative Sunspot Number.

Leo Enright
Kingston Centre