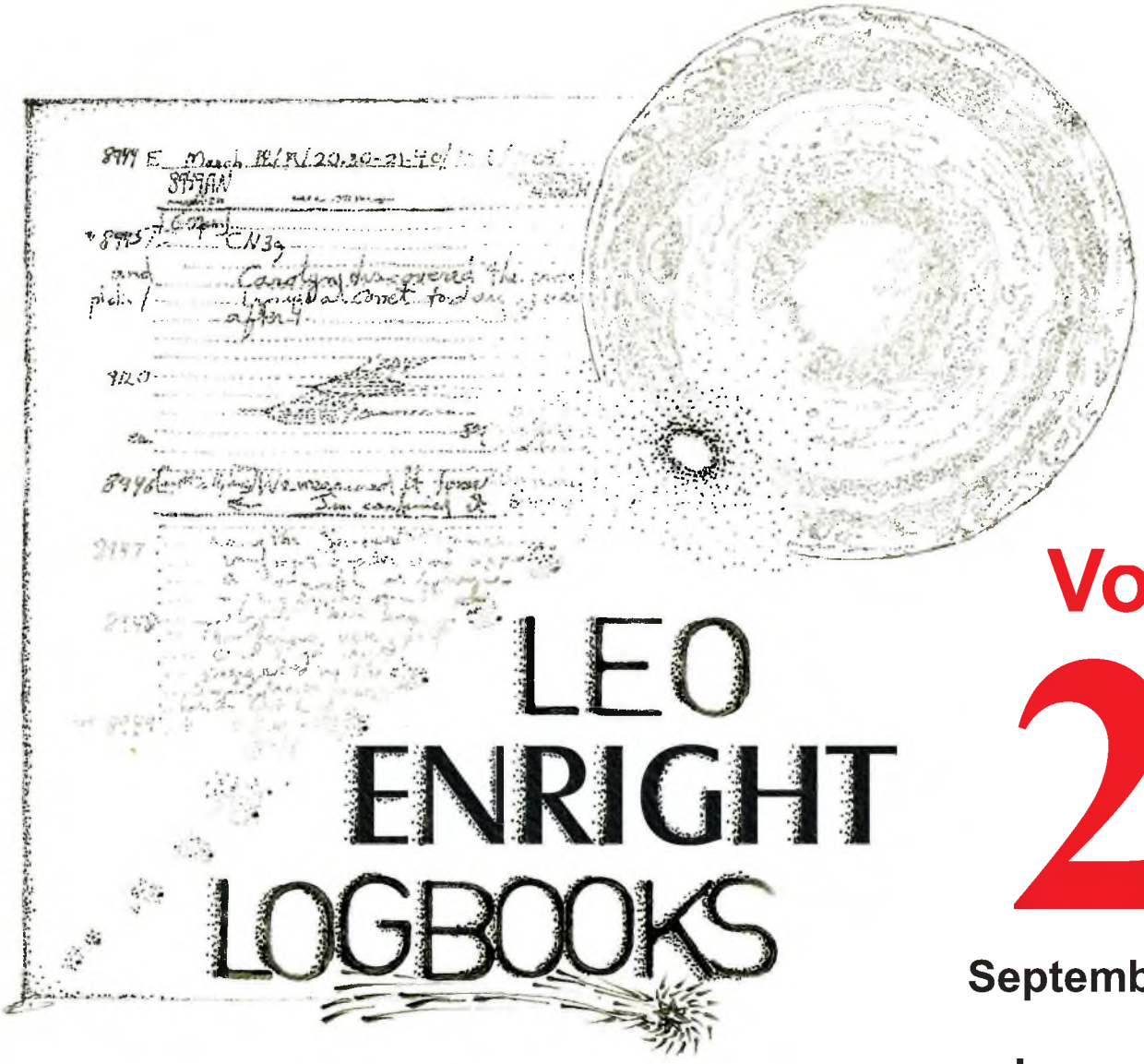

LEO ENRIGHT LOGBOOKS

Volume 23

September 7, 2004
to
January 29, 2005

23

Hilroy

- Heavyweight paper
- Papier épais

Leo Enright

Observing Log

Sept. 7, 2004

Jan 29, 2005

80 Pages

26.7 x 20.3 cm

MATHS/SCIENCES

MADE IN CANADA
FABRIQUÉ AU CANADA ™

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AAVSO

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2004

JULIAN DAY CALENDAR

2,450,000 plus the value given under each date

JULY

Sun	Mon	Tue	Wed	Thu	Fri	Sat
○ 2	◑ 9	● 17	◐ 25	1 3188	2 3189	3 3190
4 3191	5 3192	6 3193	7 3194	8 3195	9 3196	10 3197
11 3198	12 3199	13 3200	14 3201	15 3202	16 3203	17 3204
18 3205	19 3206	20 3207	21 3208	22 3209	23 3210	24 3211
25 3212	26 3213	27 3214	28 3215	29 3216	30 3217	31 3218
○ 31						

AUGUST

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 3219	2 3220	3 3221	4 3222	5 3223	6 3224	7 3225
8 3226	9 3227	10 3228	11 3229	12 3230	13 3231	14 3232
15 3233	16 3234	17 3235	18 3236	19 3237	20 3238	21 3239
22 3240	23 3241	24 3242	25 3243	26 3244	27 3245	28 3246
29 3247	30 3248	31 3249	◑ 7	● 16	◐ 23	○ 30

SEPTEMBER

Sun	Mon	Tue	Wed	Thu	Fri	Sat
◑ 6	● 14	◐ 21	1 3250	2 3251	3 3252	4 3253
5 3254	6 3255	7 3256	8 3257	9 3258	10 3259	11 3260
12 3261	13 3262	14 3263	15 3264	16 3265	17 3266	18 3267
19 3268	20 3269	21 3270	22 3271	23 3272	24 3273	25 3274
26 3275	27 3276	28 3277	29 3278	30 3279		○ 28

OCTOBER

Sun	Mon	Tue	Wed	Thu	Fri	Sat
◑ 6	● 14	◐ 20	○ 28		1 3280	2 3281
3 3282	4 3283	5 3284	6 3285	7 3286	8 3287	9 3288
10 3289	11 3290	12 3291	13 3292	14 3293	15 3294	16 3295
17 3296	18 3297	19 3298	20 3299	21 3300	22 3301	23 3302
24 3303	25 3304	26 3305	27 3306	28 3307	29 3308	30 3309
31 3310						

Observing Log

Code:

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

Time:

UT = Universal Time

n = night
m = morning
f = forenoon
a = afternoon
e = evening

Places:

oo = Oso Observatory
nd = north deck
sd = south deck
sh = shoreline of lake
ss = solar Station
t = table at solar station
in = indoors
r = roof of house
ice = ice on lake
y = yard
la = laneway by=backyard
FL = Florida pl = at condo swimming pool

Sky Conditions:

S = Seeing
T = Transparency
0-10 Scale: 0 = nil or extremely poor
10 = absolutely superb
cml = crescent moonlight
gml = gibbous moonlight
fml = full moonlight
l/p = light pollution

Instruments:

C-14 = Celestron 14 - 35.5 cm SCT
C-8 = Celestron 8 - 20 cm SCT
Ast = Astroscan 2001 - 10.5 cm RFT
12½" = Denise's 32 cm Meade
20x100b = 20x100 binoculars
11x80b = 11x80 binoculars
9x63b = 9x63 binoculars
7x35b = 7x35 binoculars.
18x50 ISb = 18x50 IMAGE STABILIZED binoculars

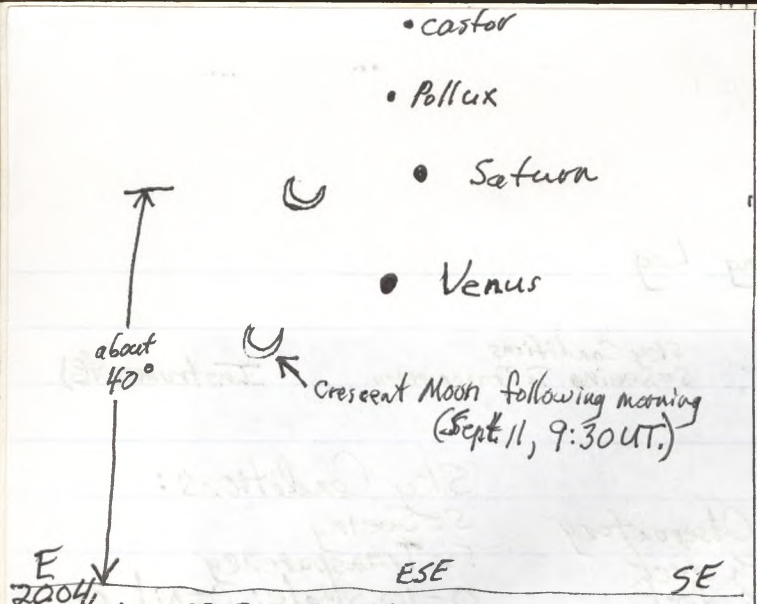
32 = 32 mm ocular
32-2 = 32 mm 2" ocular
K = Kellner
O = Orthoscopic
Ko = König
WA = Wide Angle
P = Plössl
ph = photography
P/b = Piggyback
o/a = off axis
Ba = Barlow
APF = Astro-Physics Solar Filter
T.O.F = Thousand Oaks Solar Filter

Objects:

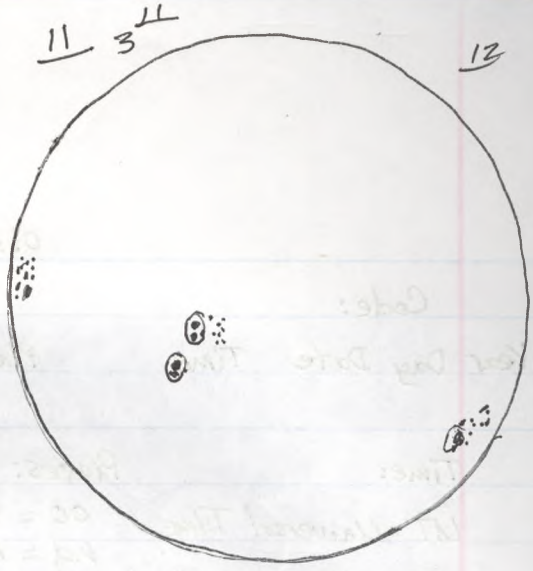
PN = Planetary Nebula
GC = Globular Cluster
OC = Open Cluster
SG = Spiral Galaxy
EG = Elliptical Galaxy
D = Double Star
LPV = Long Period Variable

Atlases:

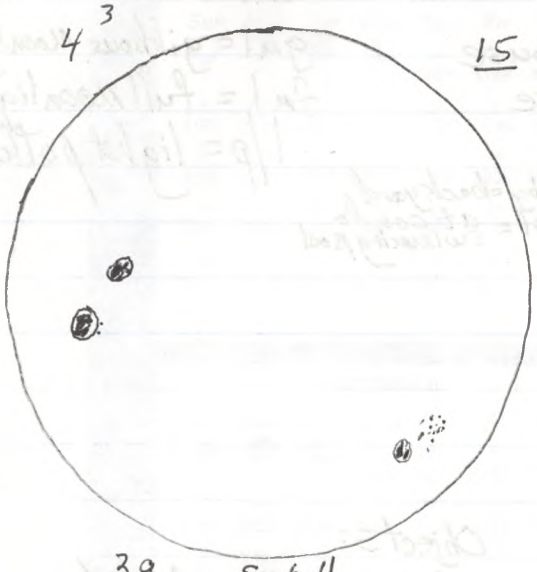
U = Uranometria 2000.0
U210 = Uranometria 2000.0 Chart 210
AAVSO = AAVSO Variable Star Atlas
Cam = Cambridge Star Atlas (2000.0)
MSA = Millennium Star Atlas



2004 Sept, 10; 09:38 UT View to ESE of the triangle formed by Saturn, Venus and crescent moon.



49 Sept. 10
37s 16:15-16:20 UT
RSN 77



39 Sept 11
22s 16:15-16:20 UT
RSN 52

2004 Tu.-W. Sept 7-8 02:00-02:25 UT y S?T2 (cloud,haze) ne
- amid the clouds, the Summer Triangle and some other stars, mainly in the higher parts of the sky.

5:30-5:38 a.m. E.D.T.
m.Th.-F. Sept. 9-10 09:30-09:38 UT in twl ne
- Looking out to the south through the bedroom window first and then looking out to the east through the dining room window, I saw the bright stars of Orion well up in the SE and then in the ESE the array of Castor and Pollux, Saturn, Venus, and the crescent moon. (See diagram.)

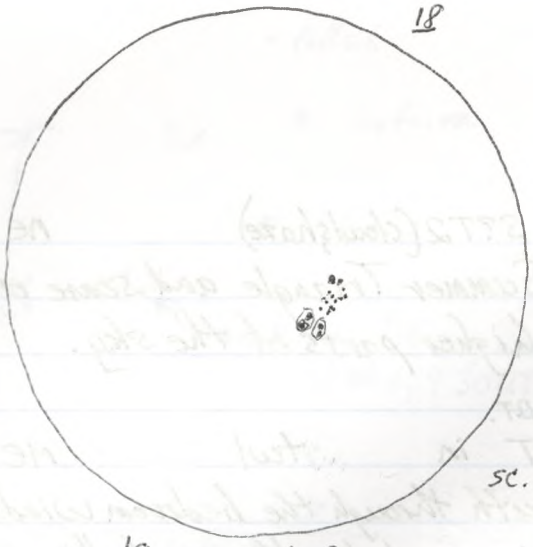
-F. Sept. 10 16:15-16:20 UT t C-8, 32
Sun 4g 37s RSN 77 T.O.F.

5:~~30~~ - 5:30 a.m. E.D.T.
m.F.-S. Sept. 10-11 09:27-09:30 UT in twl ne
-From indoors, as on the previous morning, I observed Orion well up in the SE and the array of Castor and Pollux, Saturn, Venus and the crescent moon. (See diagram.)

Sa. Sept. 11 16:15-16:20 UT t C-8, 32
Sun 3g 22s RSN 52 T.O.F.

place near Makerly
Sa.-Su. Sept. 11-12 00:45-04:00 UT at Fred Barrett's, ne; 20x100b
ne: Before the regular observing session I chatted with Fred Barrett, talked with some of his guests, and saw him "cut the ribbon" for the new observatory he had built near his house. At about the time of sunset at about 23:24 UT (7:24 p.m. E.D.T.) I pointed out the earth's shadow in the E. and we watched it rise in the clear sky. We ate a very informal dinner,

18

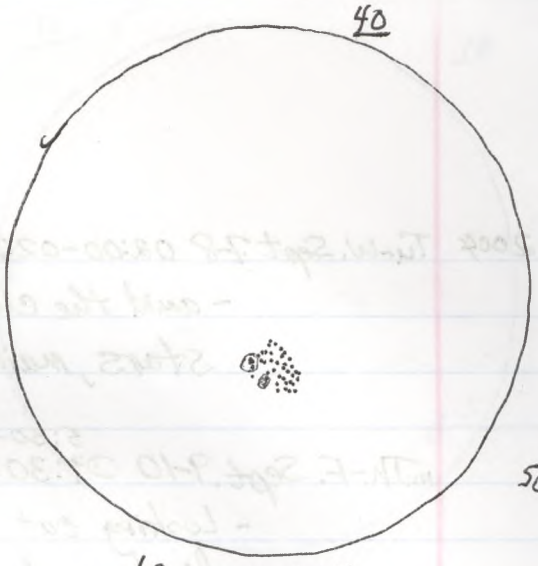


sc.

1g
18s
RSN28

Sept. 13
20:00-20:05 UT

40



sc.

1g
40s
RSN50

Sept. 14
16:10-16:15 UT

and afterward began observing under good skies. Using the green laser pointer I showed some people the bright stars and a number of Constellations. We watched a passage of the International Space Station at about 00:54 UT (8:54 p.m. E.D.T.), until it disappeared into the earth's shadow.

20x100b: I showed a number of people some objects that they could see in my binoculars or a 12½" Meade Dobsonian, or another person's 14x70 binoculars which were mounted on his homemade device that allowed them to be easily moved up and down. Objects which I pointed out: Uranus Neptune, Kemble's Cascade, Kemble 2, Barnard's Star, M13, M92, NGC 7789, Pleiades, M31, M33, Double Cluster, Stock 2.

M. Sept. 13 20:00-20:05 UT t C-8, 32
sun lg 18s RSN 28 T.O.F.

M.-T. Sept. 13-14 01:20-04:20 UT 00 S8(!)T 8-9 ne; ph

ne: stars of late summer; several bright meteors, some of which may have been from the area of the Constellation Aquarius.

ph: photographed various areas of the sky using EKtachrome P1600 film and the C-14 with the Lumicon Giant Easy Guider with the lens in the forward position.

Tu. Sept. 14 16:10-16:15 UT t C-8, 32
sun lg 40s RSN 50 T.O.F.

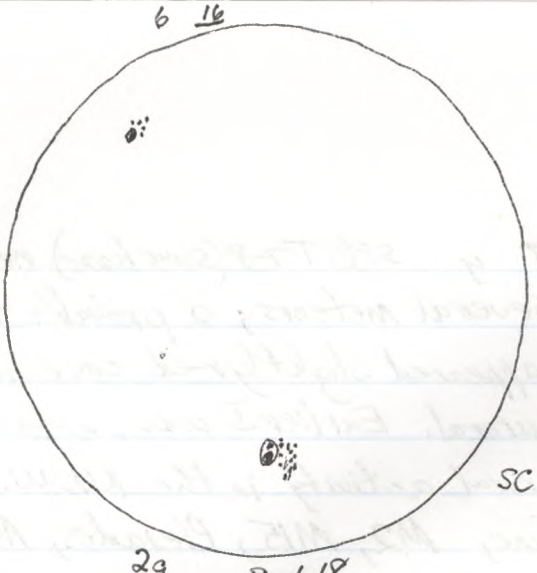
2004 T.-W. Sept. 14-15 02:55-04:10 UT y S8(?)T7-8(some haze) ne; 18X50SCb
ne: stars of late summer; several meteors; a probable faint glow in the N. that appeared slightly red once or twice and may have been auroral. Earlier I was certain that I had seen some auroral activity in the NNW.
18X50 SCb: Uranus, Neptune, M2, M15, Pleiades, M31, M33.

W.-Th. Sept. 15-16 01:45-03:20 UT y S8-8(?)T8-9 ne; 18X50SCb
ne: stars of late summer, M31, Double Cluster, β Lyrae observed to be similar in brightness to γ Lyrae (mag. 3.3) and δ Cephei observed to be brighter than ε and ζ Cephei (about mag. 3.5)
18X50SCb: Uranus, Neptune, M15, M2, M11 and R Scuti, Barnard's Star, M13, M92, T Cor Bor, S Cor Bor and its area from U112, including UU Cor Bor and U Cor Bor, all three of these variable stars being found roughly in the area between β Cor Bor and δ Boötis. (See U112.), Pleiades, Double Cluster and Stock 2, Kemble's Cascade, Kemble 2, M31, M33.

Th.-F. Sept. 16-17 04:15-05:10 UT nd S7(?)T7-8(some haze) ne
- After returning from the Fundraising Dinner for Liberal MPP Leona Dombrowsky at South Fredericksburg Town Hall south of Napanee, I observed for a while noting a fairly good Aurora in the N., up about 15° from the horizon or perhaps a bit more. The intensity varied slightly, but during the session it did not change dramatically. Also observed were many of the stars of late summer, and M31 very high and fairly near the zenith.

Aurora

6 16

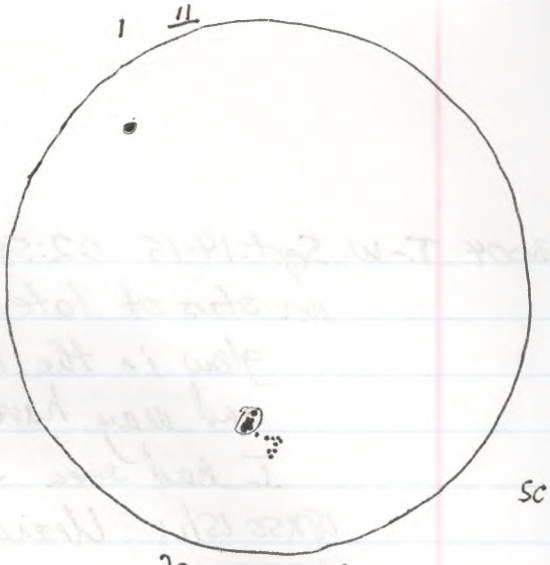


SC

2g
22s
RSN42

Sept. 18
15:20-15:25 UT

1 11



SC

2g
12s
RSN32

Sept. 19
14:15-14:20 UT

2004

β Persei was seen at, or very near, minimum. (Minimum was listed as being at 5h01m UT on Sept. 17, which was during the observing session.

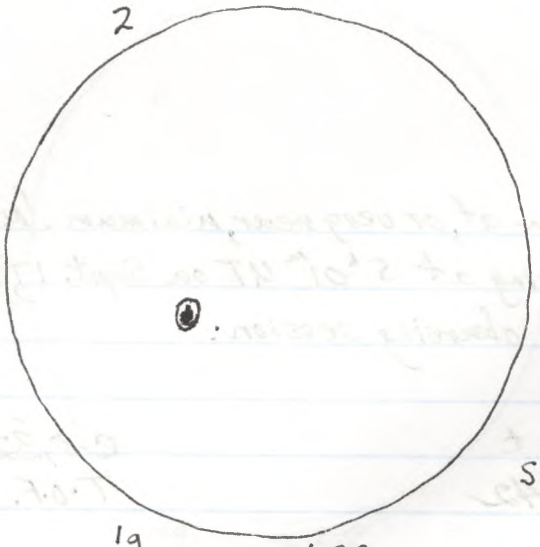
Sa. Sept. 18 15:20-15:25 UT t C-8, 32
sun 2g 22s RSN 42 T·O·F.

Sa-Su. Sept. 18-19 02:05-03:45 UT 00 S8(?)T8-9 ne; 18X50ISb
ne: stars of late summer, one bright meteor
18X50ISb: Uranus, Neptune, (M15), M2, M31, M33, Pleiades, Barnard's Star, RCorBor, TCorBor, SCorBor, area near SCorBor including UUCorBor and UCorBor, both of which are also near δ Boötis, Kemble's Cascade, Kemble 2, Double Cluster and Stock 2, Helix Nebula. - also noted the passage of 3 satellites moving together

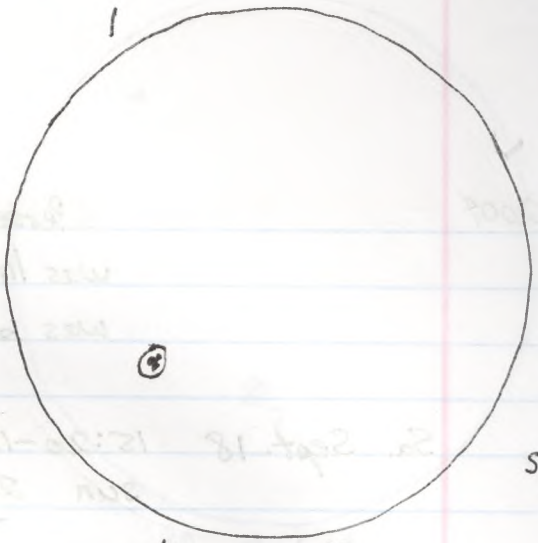
Su. Sept. 19 14:15-14:20 UT t C-8, 32
sun 2g 12s RSN 32 T·O·F.

Su.-M. Sept. 19-20 00:50-03:30 UT 00 S-8(?)T8-9 ne; ph
ne: stars of late summer, a couple of meteors,
ph: photographed various areas along the Milky Way and some objects not in the Milky Way, using the Lumicon Giant Easy-Guider on the C-14 with the lens in the Guider in the "back position" of the two possible positions for the lens placement.

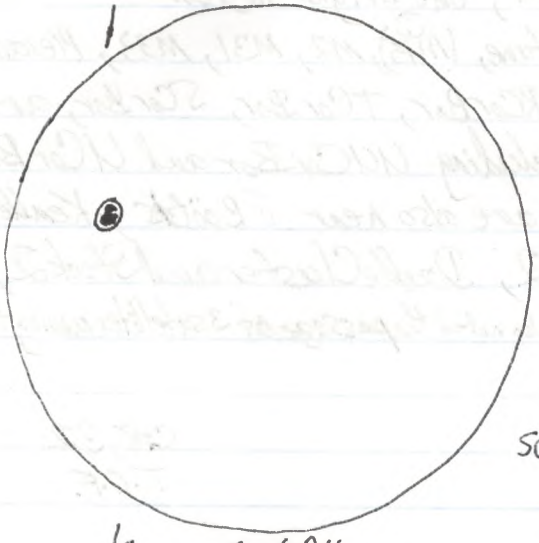
M.-T. Sept. 20-21 02:40-03:55 UT ½ S8(?)T6-9 (varied; ∧ cloud and haze) ne; 18X50ISb
ne: stars of late summer and autumn; a meteor.
18X50ISb: Uranus, Neptune, M15, Stock 2 and Double Cluster,



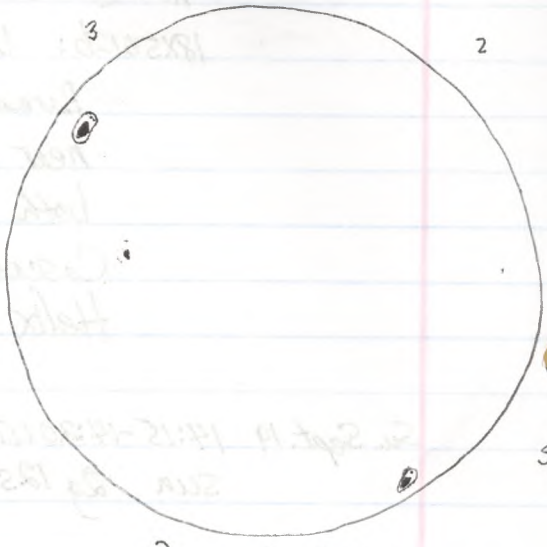
1g
2s
RSN12 Sept. 22
14:10-14:15 UT



1g
1s
RSN11 Sept. 23
17:50-17:55 UT



1g
1s
RSN11 Sept. 24
15:55-16:00 UT



2g
5s
RSN25 Sept. 26
14:25-14:30 UT

2004 M31, M32, M110, M33, Kemble's Cascade, Kemble 2, ν Draconis DS; ψ Draconis DS, Pleiades.

T.-W. Sept. 21-22 02:05-03:25 UT y S8(?)T7-8.5(fqm lesp. in the SW.) ne & 18X50ISb
ne: stars of ~~September~~; two meteors, one of which may have been a Perseid; possible faint glow in the N., which may have been auroral.
18X50ISb: Uranus, Neptune, M2, M15, M31, M33, Pleiades, Stock 2 and Double Cluster, NGC7789, Kemble's Cascade, Kemble 2, ν Draconis DS, ψ Draconis DS, M13, M92

W. Sept. 22 14:10-14:15 UT t C-8, 32
sun lg 2s RSN12 T.O.F.

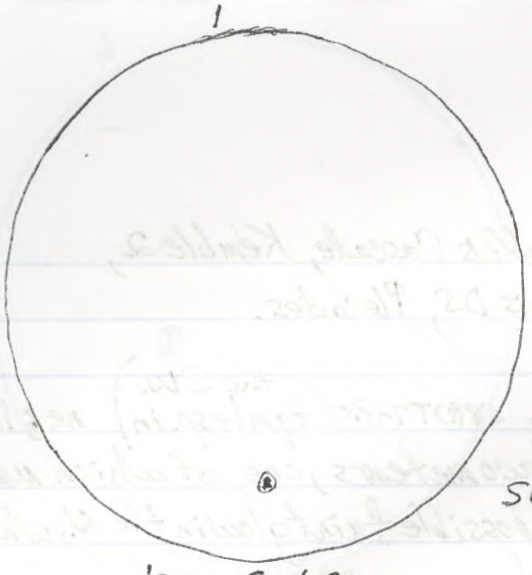
Th. Sept. 23 17:50-17:55 UT t C-8, 32
sun lg 1s RSN11 T.O.F.

Th.-F. Sept. 23-24 01:20-02:35 UT y S8(?)T5-6(gm!) ne
- With very bright moonlight, I observed the Summer Triangle of stars and other bright stars, mainly in the northern part of the sky. There may possibly have been a slight auroral glow, but I was not certain of it.

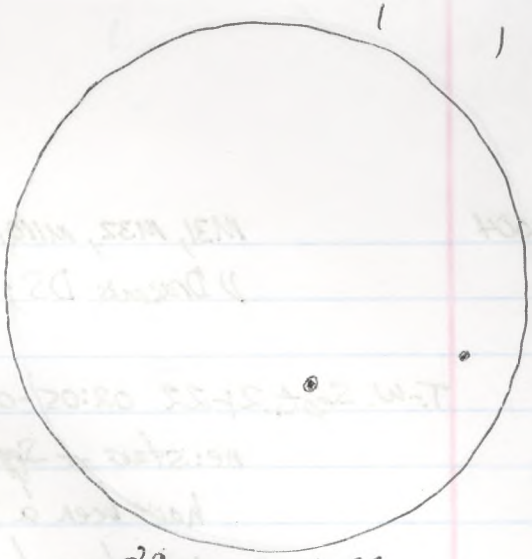
F. Sept. 24 15:55-16:00 UT t C-8, 32
sun lg 1s RSN11 T.O.F.

Su. Sept. 26 14:25-14:30 UT t C-8, 32
Sun 2g 5s RSN25 T.O.F.

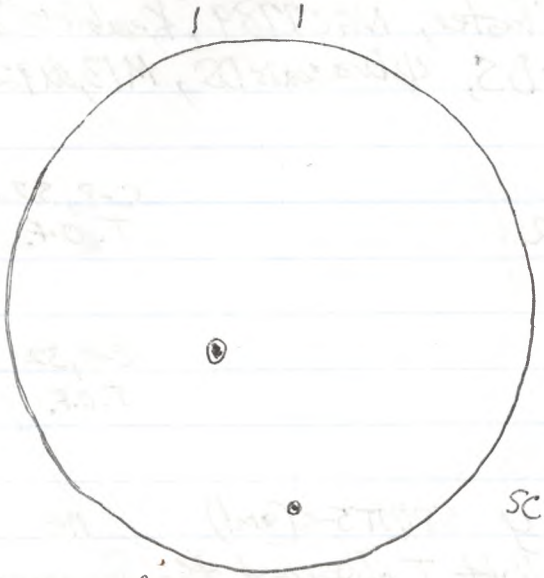
Su.-M. Sept. 26-27 01:35-04:00 UT y S8(?)T6(gm!) ne
Under very bright moonlight I observed the bright stars of



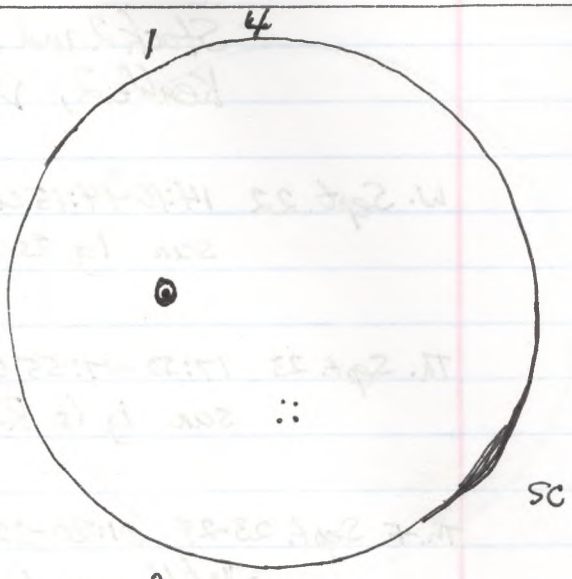
1g
1s
RSN11 Sept. 29
14:35-14:40 UT



2g
2s
RSN22 Sept. 30
19:45-19:50 UT



2g
2s
RSN22 Oct. 1
15:10-15:15 UT



2g
5s
RSN25 Oct. 3
16:20-16:25 UT

2004

autumn, mainly in the N. part of the sky. There was one bright meteor of perhaps mag. 1.

M.-T. Sept. 27-28 02:10-02:55UT nd S8(?)T4(ful) ne
- Under a very bright Full Moon, I observed the N. part of the sky, seeing the Summer Triangle and some very bright stars. A flash low in the N. sky was probably a "point meteor."

W. Sept. 29 14:35-14:40UT t C-8, 32
Sun 1g 1s RSN11 T.O.F.

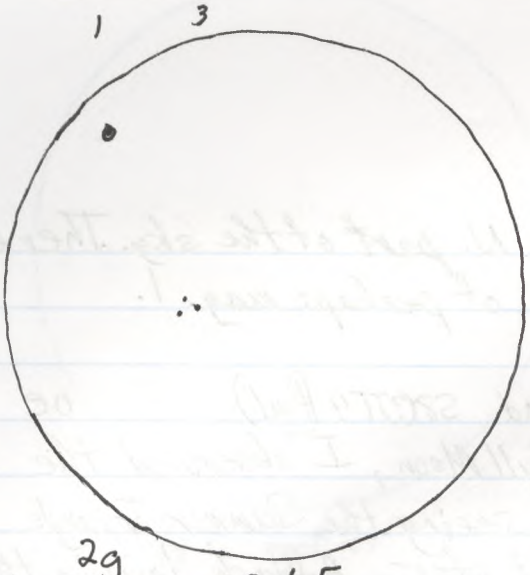
W.-Th. Sept. 29-30 03:10-03:45UT nd S8(?)T5-6(ful) ne
- Under a bright almost-Full Moon, I observed the stars of autumn in the N. part of the sky. For probably the first time I noticed a fairly bright light to the east of the observatory from near, or at, one of the places between John Vandesande's place and Vopni's place.

Th. Sept. 30 19:45-19:50UT t C-8,32
Sun 2g 2s RSN22 T.O.F.

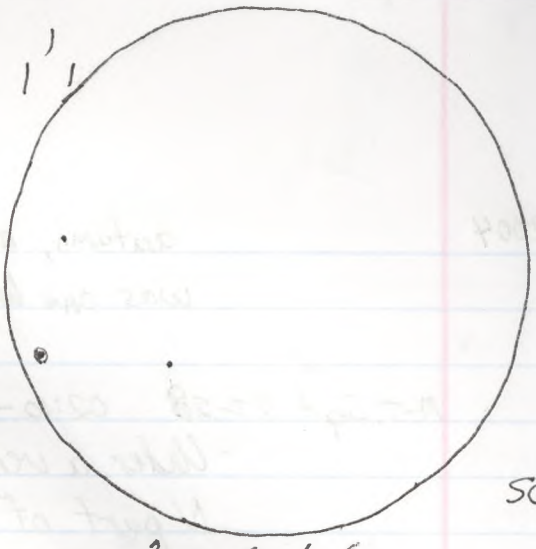
F. Oct. 1 15:10-15:15UT t C-8, 32
Sun 2g 2s RSN22 T.O.F.

Su. Oct. 3 16:20-16:25UT t C-8, 32
Sun 2g 5s RSN25 T.O.F.

M.-T. Oct. 4-5 01:35-02:15UT y S7T8-9 ne; 18X501sb
ne: Stars of autumn; M31.



2g
4s
RSN24
Oct. 5
14:25-14:30 UT



3g
3s
RSN33
Oct. 6
19:19-19:24 UT

1g
1s
RSN11
Oct. 7
15:50-15:55 UT

2004

18X50ISb: Uranus, Neptune, M15, M31, M33, Kemble's Cascade, Kemble 2, Double Cluster, Stock 2, M13, M92, Pleiades. (The moon rose at 01:54 UT, during the observing session.)

Tu. Oct. 5. 14:25-14:30 UT t — C-8, 32 T.O.F.
Sun 2g 4s RSN 24

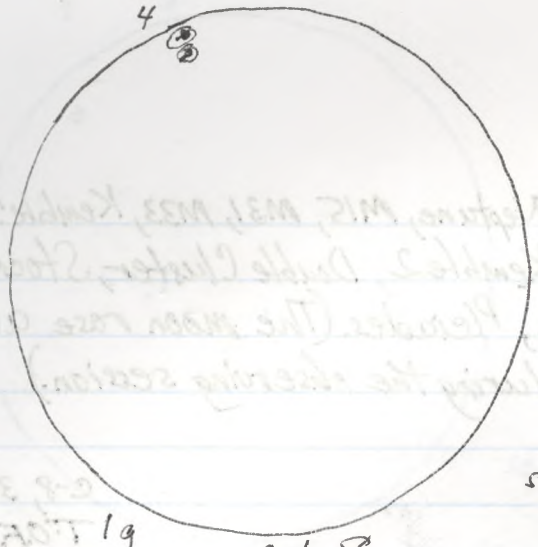
T.-W. Oct. 5-6 02:20-03:00 UT y S-8(?)T8-9 ne; 18X50ISb
ne: stars of autumn
18X50ISb: Uranus, Neptune, M11 and RScuti, M2, Double Cluster, Stock 2, NGC 7789, Pleiades, Kembles Cascade, Kemble 2, M13, M92, U Del and E U Del, M71.

W. Oct. 6 19:19-19:24 UT t — C-8, 32 T.O.F.
Sun 3g 3s RSN 33

W.-Th. Oct. 6-7 03:25-03:50 UT nd S-7T7-8.5 (some cloud and haze) ne
- stars of autumn, especially in the N. part of the sky, M31.

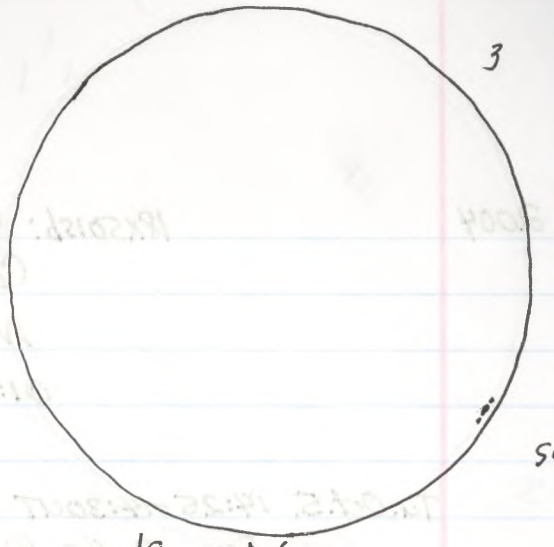
Th. Oct. 7 15:50-15:55 UT t — C-8, 32 T.O.F.
Sun 1g 1s RSN - spot extremely close to rim.

Th.-F. Oct. 7-8 01:35-03:30 UT y S-7(?)T7-8.5 (some haze) ne; 18X50ISb
ne: stars of autumn; one bright meteor, about mag. 1 or 0, in the area of the constellation Capricornus.
18X50ISb: Uranus, Neptune, M2, M15, Helix Nebula, Pleiades, M13, M92, Double Cluster, Stock 2, NGC 7789, Kembles Cascade, Kemble 2, Psi Draconis - DS, M31, M33.



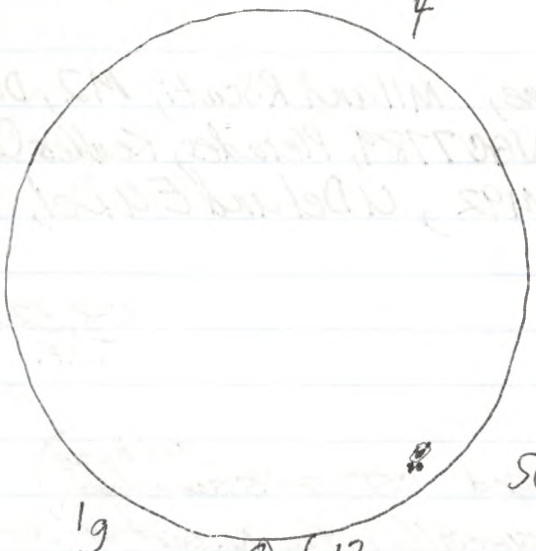
1g
45
RSN14

Oct. 8
14:55-15:00 UT



1g
35
RSN13

Oct. 12
17:15-17:20 UT



1g
45
RSN14

Oct. 13.
16:10-16:15 UT

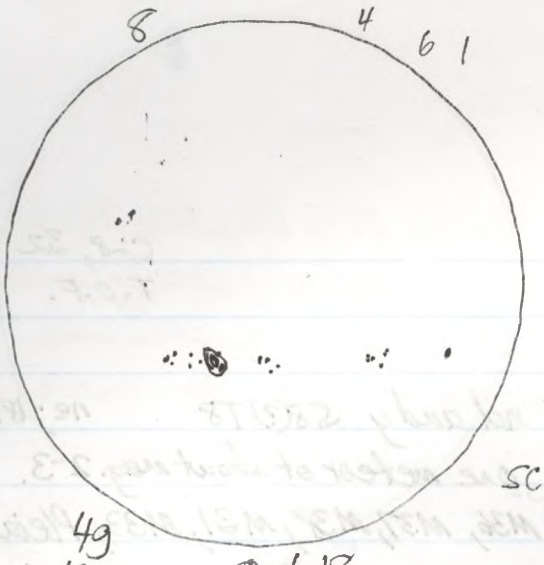
2004 F. Oct. 8 14:55-15:00UT t C-8, 32
sun lg 4s RSN14 T.O.F.

M.-T. Oct. 11-12 03:35-04:35 UT nd and y S8(?)T8 ne; 18X50156
ne: stars of autumn; one meteor of about mag. 2-3.
18X50156: M2, M35, M36, M37, M38, M31, M33, Pleiades, Hyades.
There may have been a slight glow in the N, possibly auroral.

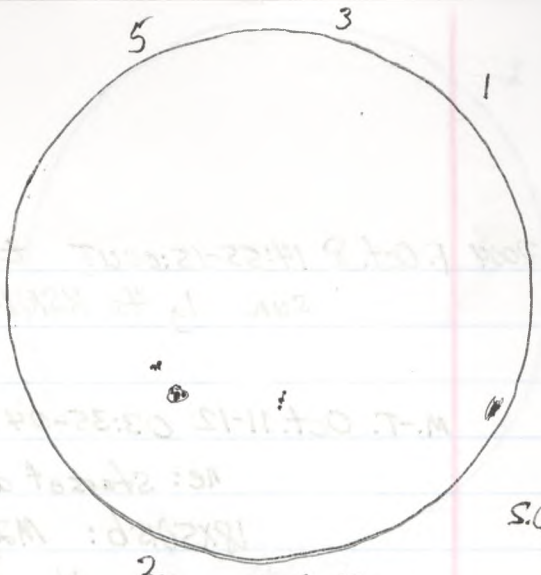
Tu. Oct. 12 17:15-17:20 UT t C-8, 32
sun lg 3s RSN13 T.O.F.

T.-W. Oct. 12-13 01:00-03:45 UT 00 S8(?)T8-9 (some light haze & water vapour) 20X100b ne; 18X50156; N
ne: stars of autumn; one bright meteor of about mag. 1; some auroral brightness in the N., and in fact, for a short while around 02:00 I noticed a faint vertical spike or two.
-brief Aurora
18X50156: Uranus, Neptune, M2, M15, Barnard's Star, T Cor Bor, Kemble's Cascade, Kemble 2, M13, M92, Double Cluster, Stock 2, NGC 7789, α Persei Cluster, M31, M33...
20X100b: Pleiades, Hyades, Mira and area (Mira was faint at about mag. 8.5; area of R Ceti (See U219 and U220.) which was faint at about mag. 9.5 or 10; M36, M37, M38, NGC 253 in Sculptor S. of β Ceti (See U306)

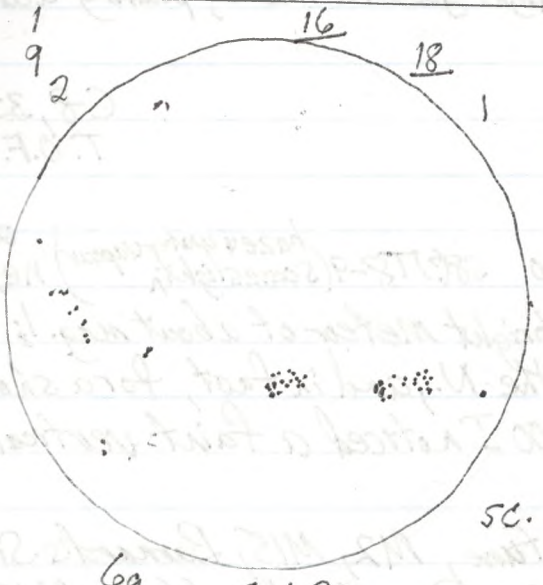
W. Oct. 13 16:10-16:15UT t C-8, 32
sun lg 4s RSN14 T.O.F.



49
195
RSN59 Oct. 18
18:40-18:45 UT



39
95
RSN39 Oct. 19



69
475
RSN107 Oct. 22
16:45-16:50 UT

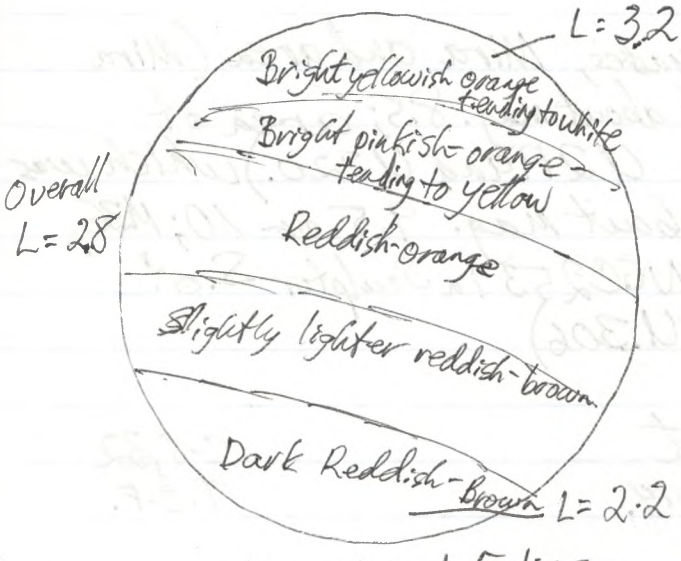
Lunar Eclipse of October 27-28, 2004

	UT	E.D.T.
P1	0:06	8:06 p.m
U1	1:14	9:14
U2	2:23	10:23
M	3:04	11:04
U3	3:45	11:45
U4	4:54	12:54 a.m.
P4	6:03	2:03

← M.R. at Skarbot Lake: 5:52 pm

See next page for report of eclipse.

~~See next page for repeat of this information~~



Moon at Mid-Eclipse
2004, Oct. 28, 03:04 UT

2004 Sa.-Su. Oct. 16-17 02:45-03:05 UT y S-[illegible] T3-6 (increasing cloud) ne; 18x50 15b

ne: some stars of autumn, in spite of some clouds which increased considerably during the session.

18x50 15b: M2, χ Persei group.

M. Oct. 18 18:40-18:45 UT t C-8, 32
Sun 4g 19s RSN 59 T.O.F.

M.-T. Oct. 18-19 03:00-03:05 UT y S[illegible] T3 (clouds + haze) ne

- some of the stars of autumn, but there was considerable haze and cloud.

Tu. Oct. 19 15:55-16:00 UT t C8, 32
Sun 3g 9s RSN 39 (clouds and haze) T.O.F.

T.-W. Oct. 19-20 03:35-04:20 UT y S 7 T 7-9 (some haze, + cloud) ne; 18x50 15b

ne: stars of autumn; several meteors

18x50 15b: M35, M36, M37, M38, M42, M43, Pleiades, Hyades, M31, M33, Double Cluster, χ Persei group, Kemble's Cascade, Kemble 2, Stock 2, 4 Draconis - D, o Ceti (Mira) and area, λ Orionis area.

F. Oct. 22 16:45-16:50 UT t C-8, 32
Sun 6g 47s RSN 107 T.O.F

F.-S. Oct. 22-23 02:45-02:05 UT nd S[illegible] T5 (gml.) ne

- bright stars of autumn, especially in the N. sky.

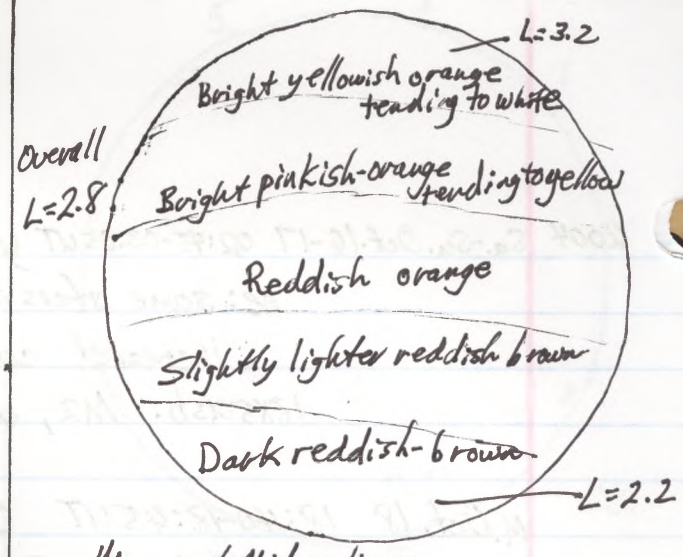
Estimate for β Lyrae: mag. 3.4 [illegible]; estimate for δ Cephei: magnitude 3.7.

T.-W. Oct. 26-27 02:50-03:10 UT nd S(?) T 1-2 (haze, cloud, + gml.) ne

- under considerable moonlight and cloud, very few stars, probably only

Lunar Eclipse of 2004, Nov. 27-28.

	U.T.	E.D.T.
Moonrise at Sharbot Lake:	21:52	5:52 p.m.
P1	0:06	8:06 p.m.
U1	1:14	9:14
U2	2:23	10:23
M	3:04	11:04
U3	3:45	11:45
U4	4:54	12:54 a.m.
P4	6:03	2:03



Moon at Mid-eclipse.
2004, Oct. 28, 03:04 UT

Danjon Scale Estimates:

- At U2+11min (2:34 UT): overall: 3.0 (2.4 – 3.6)

- At Mid-eclipse (3:03 UT): overall: 2.8 (2.2 – 3.2)

- At U3 (3:45): overall: 3.1 (2.5 – 3.7)

2004. 3 or 4, including Vega and Deneb in the NW.

Oct. 27-28. 00:35-05:15 UT, with break from 04:20 to 05:00, 00 and sometimes 9 at Mid-Totality ne; C-8, camera

ne: stars of autumn during the eclipse. The first slight indication of "less glare" on the left side of the lunar disk could be detected at about 00:46 UT to 00:47 UT. More extensive darkening at "left quarter" of the lunar disk was seen at about 00:55 UT. At the time of U1, 01:14 UT, the left limb was noticeably darkened. After U1, there was an indication that the eclipse might be a bright and slightly reddish-orange or pinkish-orange colour. U2 was at 02:23 UT.

- detected: 00:46 UT (28 min. before U1)

Total Lunar Eclipse.

Danjon est. at 02:34 UT (U2+11 min.):

Danjon estimates at 02:34:00 UT were: overall L=3.0, southern limb - L=2.4, northern limb - L=3.6. It was indeed a fairly light and reddish eclipse. At about mid-eclipse (03:03 UT) the Danjon estimates were: overall - L=2.8, southern limb 2.2, northern limb - L=3.2. (See diagram.

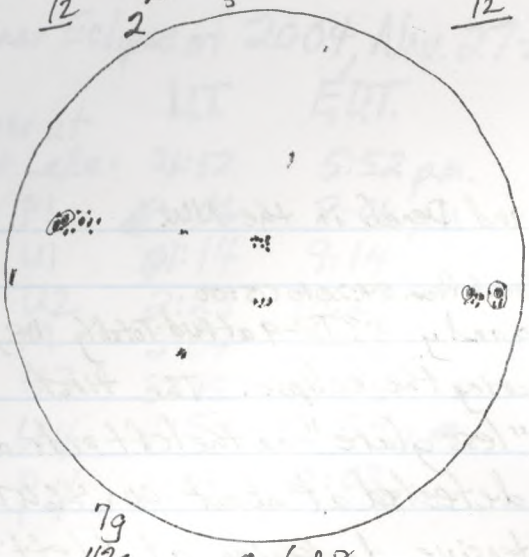
at Mid-eclipse:

at U3:

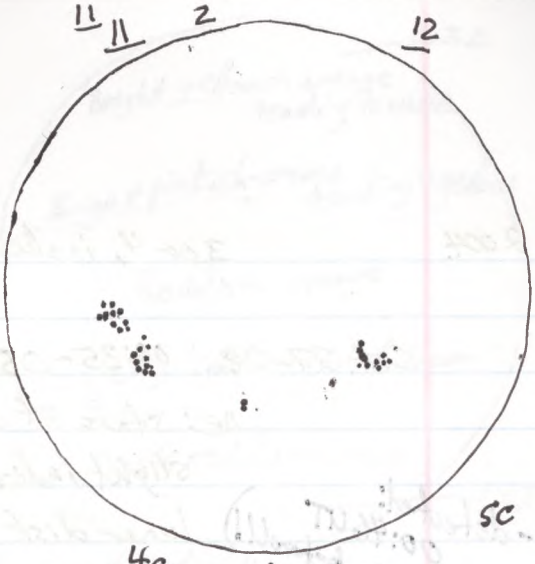
The estimates made slightly after U3 (3:45 UT) for the time of U3 were these: overall 3.1; southern limb - L=2.5; northern limb - L=3.7. I thought that the lunar disk was brighter than at the time of U1. Overall, the eclipse was about as bright as had been expected during the 82 minutes of totality.

ph.: I photographed using the C-8 and first focus photography and the 50mm f/1.2 lens. The C-8 was used from 01:02:57 UT to 02:47:45 UT. The 50mm f/1.2 lens was used from 02:57:37 UT to 03:18:30 UT. Then before U3, the C-8 was used again and for a while during the partial phase after the total phase.

Overall, it was an enjoyable event.



7g
425
RSN 112
Oct. 28
18:15-18:20UT



4g
365
RSN 76
Nov. 3
16:10-16:15UT

2004 Th. Oct. 28. 18:15-18:20 UT t C-8, 32
Sun 7g 42s RSN112 T.O.F.

W. Nov. 3 16:10-16:15 UT t C-8, 32
Sun 4g 36s RSN76 T.O.F.

W-Th. Nov. 3-4 00:10-01:40 UT y S-8 ~~T~~9 ne; 18X50156
ne: Stars of autumn
18X50156: Uranus and area, Neptune and area, M2, U and EU Del, M13, M92, Stock 2 and Double Cluster, NGC457 and NGC281 in Cas (See U36), Pleiades, Hyades, Kemble's Cascade, Kemble 2, ψ Dra DS, M36, M37, M38.

Su-M. Nov. 7-8 00:00-06:30 UT y and nd ne

Extremely intense Aurora.

For a large part of the evening I observed and photographed an extremely intense auroral display. I first noticed it as a brightness in the sky while I was driving from Read to Sharbot Lake, perhaps seeing it at about 23:15 or even before that, certainly before the end of astronomical twilight which was at about 23:29 UT. After arriving home I observed in 3 main sessions over about the following times 00:00 to 02:00 UT, 03:00-04:30 UT and 05:20-06:30 UT. The auroral display was over approximately the entire sky for a very large part of the session, and generally very active, and at times extremely active with very rapid pulsations and flaming and a very large and very active coronal display. At times there were pink and reddish colours, but when colours were present, they were often a greenish or greenish-yellow colour. There were patches and

— Cr. moon

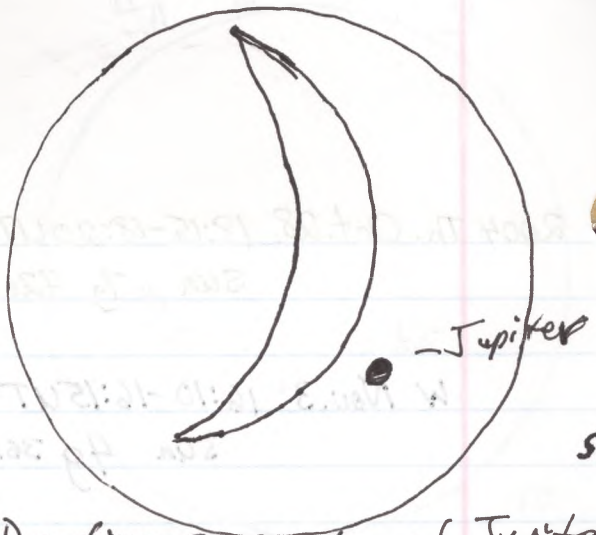
— Jupiter

• Arcturus

— Venus

E ESE SE

View to ESE at 2004, Nov. 9, 10:34 UT.



SC

Daytime Occultation of Jupiter at about 15:50 UT, 5 min before disappearance. View in C-8 with 28mm ocular (71.4X)

spikes and very long "strings of aurora." For a while there was considerable auroral activity in the area of Orion rising in the SE and near Castor and Pollux and Saturn which formed almost a straight line in Gemini. Though not the most colourful, it was probably among the most intense and active and "widespread across the sky" of any aurora I had seen.

ph: photographed the aurora with 4-36 exposure rolls, using Kodak Ektachrome P1600 and Fujichrome Provia 400.

M.-Tu. Nov. 8-9 04:15-04:25 UT nd S8(?)T9 ne

- stars of autumn, Saturn in Gemini, auroral glow in N. up about 15° above the horizon.

- auroral glow

M. 10:34-10:36 UT (5:34-5:36 a.m. E.S.T.) in ne

Through the bedroom window I saw the beautiful lunar-planetary array in the ESE morning sky — one that involved the crescent moon, Jupiter and Venus. (See diagram.)

Tu. Nov. 9 15:45-16:05 UT (10:45 a.m.-12:05 p.m. E.S.T.) y and nd ne; 18X50ISb; C-8, 32, 28

ne: I scanned the sky to the right of the sun and was able to see the crescent moon about 3 days before new.

C-8, 32, 28: With the C-8 on the observing table which I had moved near the house in order to have the view of the sun blocked by the house for safety reasons, I observed the moon approaching Jupiter and first contact and the disappearance which probably took about 1 minute. Disappearance was probably from about 15:55 to 15:56 UT (10:55 to 10:56 a.m. E.S.T.) Bands could be seen on Jupiter with the 28 mm ocular. (See diagram.) They

Daytime Occultation of Jupiter

2004

were not noticed with the 32mm ocular. ~~Prior to the~~

18X50 IS: Before the time of the reappearance, which was to be at about 17:04 UT (12:04 p.m. E.S.T.), I scanned the sky with the 18X50 IS binoculars, hoping to see Jupiter after its reappearance at the end of the occultation, but I was not able to see the crescent moon. There were scattered clouds to the right of the sun in the SSW sky and a general increasing cloudiness.

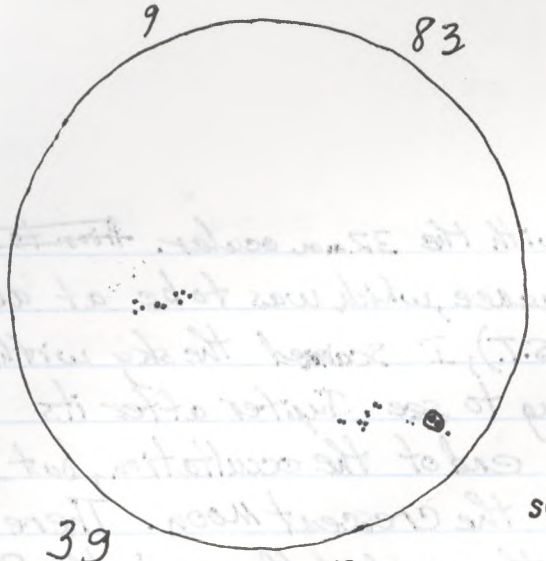
ph: I tried to take a few photographs of Jupiter and the crescent moon before the disappearance. I had difficulty locating the camera battery and ~~had to~~ eventually took about 3 or 4 exposures using only the exposure time which is the "fall back" if no battery is in the camera, probably $\frac{1}{60}$ sec. I was not sure that acceptable photographs would result.

Overall, I was happy at being able to see the disappearance part of this Jupiter occultation.

T.-W. Nov. 9-10 02:15-02:35 UT y and nd S(?)T 5-8 (some cloudy areas) ne.

- I observed an auroral glow in the N. Then it developed into a more extensive display that was easily seen in spite of areas of some cloud in parts of the sky. The NW part of the sky began to have vertical spikes and vertical bands and some "flaming" activity and pulsations. Then there was some pinkish or reddish colouring noticeable in the NW. Then there was a large extensive glow covering most of the NW sky and later it seemed to cover almost the whole N.

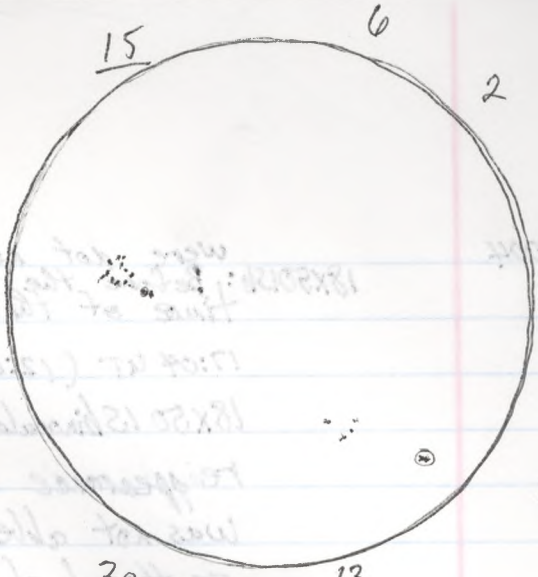
Aurora - for 3rd night in a row.



SC

39
20[redacted]
RSN50

Nov. 12
18:05-1810UT



Sc.

39
235
RSN53

Nov. 13
15:45-15:50UT

2004

half of the sky. Also spikes and some flaming activity was evident in the E. part of the sky, in areas about the constellation Auriga which was well up in the E. sky.

Th.-F. Nov. 11-12 03:54-03:56UT y 5?(?)T?(some haze) ne

aurora glow in N. stars of autumn, glow of some aurora in the N.

F. Nov. 12 18:05-18:10UT t C-8, 32
Sun 3g 20s RSN 50 T.O.F.

F.-S. Nov. 12-13 4:30-5:30UT on road returning from Kingston S(?)T 8.5-9. ne

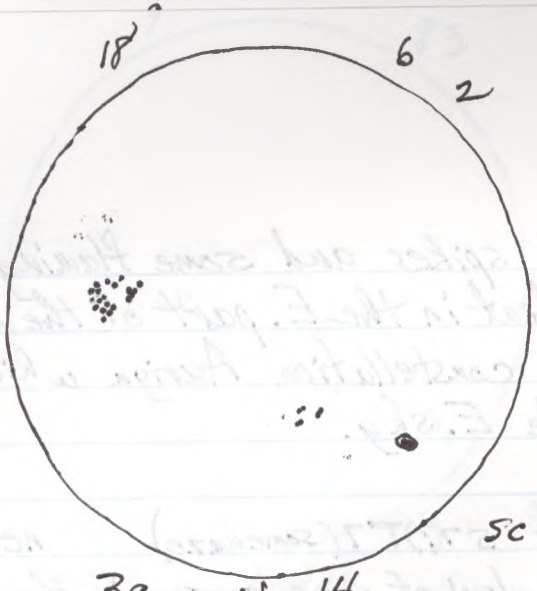
Aurora: 5 of last 6 nights!

While driving home from the R.A.S.C.-Kingston Centre meeting, I saw clear evidence of aurora activity in the form of bright areas or vertical bands in the W. or NW mainly. After arriving home, I noticed a glow in the N and a horizontal bar of aurora or auroral glow in the NW to the N.

Sa. Nov. 13 15:45-15:50UT t C-8, 32
Sun 3g 23s RSN 53 T.O.F.

Sa.-Su. Nov. 13-14 00:30-02:30UT (Ellis Hall, Queen's University) roof of A S8(?)T 5-6 (V/P) ne; V5, 8 AST, Z8, 21 K

ne: Along with others of the Kingston Centre, I went to a Public Star Night at Queen's University on the roof of Ellis Hall. I was very disappointed with the observing conditions. Light pollution was a problem, but there seemed to be an additional haze or possibly mist from Lake Ontario. It was especially disappointing since conditions seemed



39
25
RSNSC Nov. 14
17:05-17:10UT

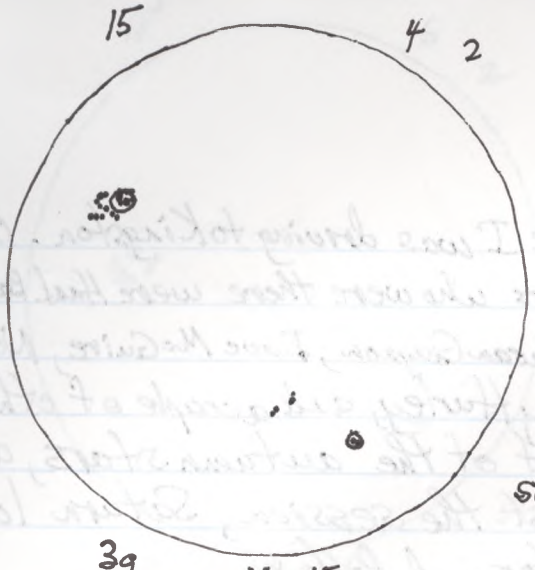
2004

to be very good while I was driving to Kingston. Other Kingston Centre members who were there were Hank Bartlett, Kim Hay, Kevin Kell, Susan Gagnon, Dave McGuire, Norm Wellbank, John and Peggy Hurley, and a couple of others. We saw the brightest of the autumn stars, and in the latter part of the session, Saturn low in the SE below Castor and Pollux.

Act: With the Astroscan I observed several objects and showed them to some members of the public. They included the χ Persei cluster, the Pleiades, the Hyades, the M42 area in Orion, and M31, the Andromeda Galaxy, which, although it was in the zenith or near it, was not well seen, probably because of the light pollution and/or the slight haze or moisture in the atmosphere. I heard that the number recorded by someone was about 80 people, I think. The attendance was good, and I think that the Queen's observatory was in use and a movie or slides were being shown.

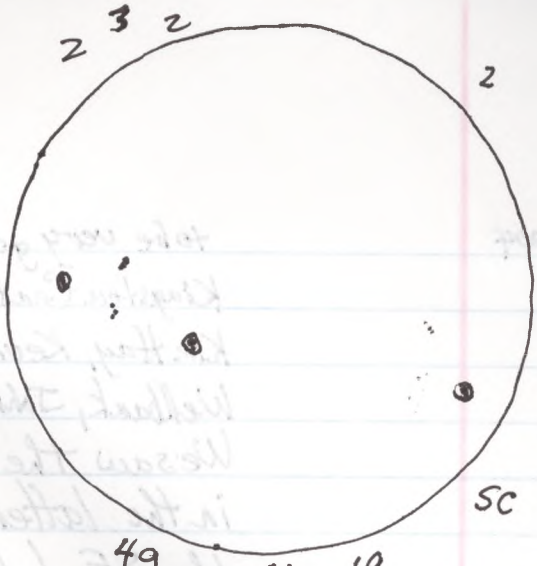
Su. Nov. 14 17:05-17:10UT t C-8, 32
Sun 3g 26s RSN 56 T.O.F.

S.-M Nov. 14-15 03:25-04:25 UT y SRT8-9 ne; 18x50 sb
ne: stars of autumn, Saturn in Gemini
18x50 sb: M35, M36, M37, M38, M42, M43, areas of RLep and REri, and RS Eri, M81, M82, Pleiades, Hyades, χ Per group, Kemble's Cascade, Double Cluster, Stock 2, area of Mira (o Ceti), M15.



3g
215
RSN51

Nov. 15
16:00-16:05 UT



49
95
RSN 49

Nov. 19
16:30-16:35 UT

2004 M. Nov. 15 16:00-16:05 UT t C-8, 32
Sun 3g 21s RSN 51 T.O.F.

M. T. Nov. 15-16 00:40-03:20 UT y 58T8-9.5! ne; 18X50 15b

ne: stars of autumn, Saturn after it rose; 2 meteors which may have been Taurids.

18X50 15b: Uranus (which had ceased its retrograde motion on November 12), Neptune which had ceased its retrograde motion on October 24), Pleiades, Hyades, α Persei cluster, Mira (o Ceti) and area, M31, M32, M110, M33, M42, M43, M35, M36, M37, M38, Kemble's Cascade, Kemble 2, Φ Dra - DS, Double Cluster, Stock 2, μ Cep - Herschel's Garnet Star, M1, M2, NGC 247 (S. of β Ceti - Diphda), NGC 253 (which was much easier to distinguish than NGC 247), R Lep and area (The star R Lep was very faint - probably about mag. 9.), R Eridani and area, area of RX Eridani, Saturn after it rose.

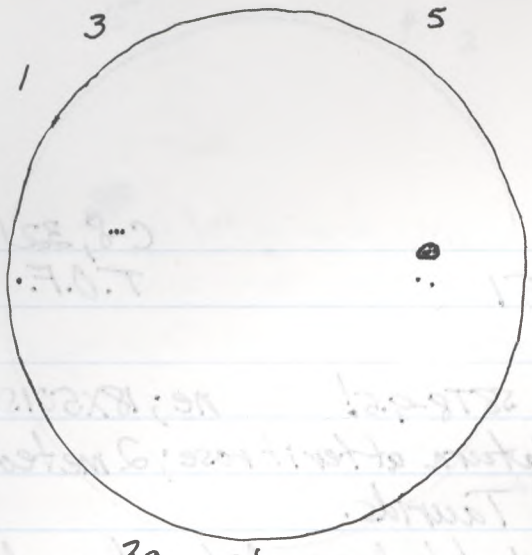
06:10-06:25 UT y 58(?)T8-9 ne; 18X50 15b

ne: stars of autumn/winter; Saturn

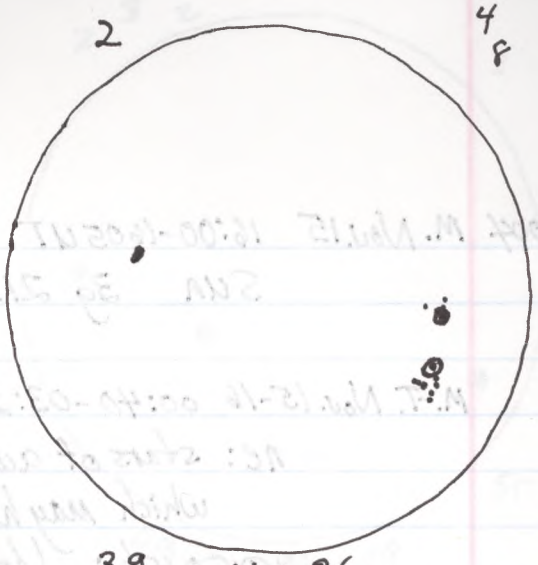
18X50 15b: Comet Macholz (C/2004 Q2) which was discovered on August 27, 2004 by Don Macholz was seen in the constellation Columba, south of the star μ Lep. (See U358.) It was about at R.A.: 5h 9m, Dec.: -30° 8', and about at mag. 7.3. It appeared as a fairly large "snowball," but no clear tail was evident.

Comet Macholz (C/2004 Q2)

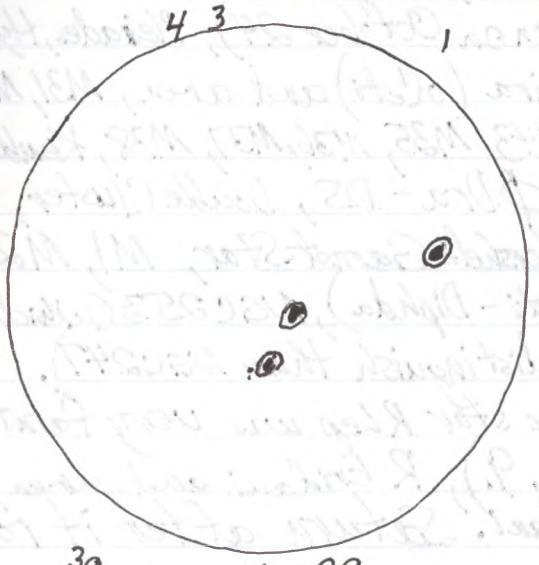
F. Nov. 19 16:30-16:35 UT t C-8, 32
Sun 4g 9s RSN 49 T.O.F.



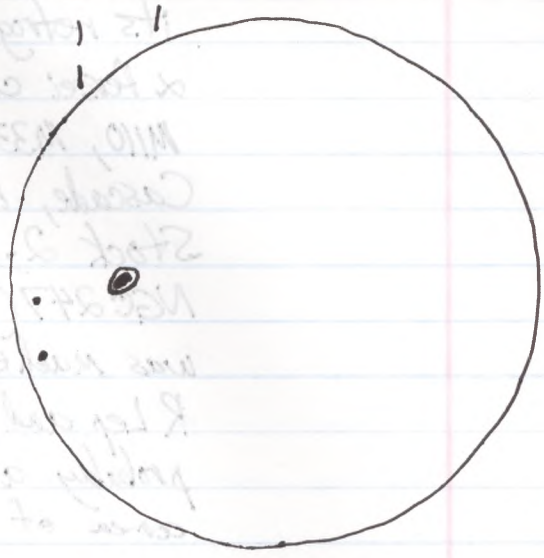
3g
9s
RSN39
Nov. 22
17:15-17:20 UT



3g
14s
RSN44
Nov. 26
17:45-17:50 UT



3g
8s
RSN38
Nov. 29
18:00-18:05 UT.



3g
3s
RSN33
Dec. 5
17:35-17:40 UT

2004 M Nov. 22 17:15-17:20UT t C-8, 32
Sun 3g 9s RSN39 T.O.F.

F. Nov. 26 17:45-17:50UT t C-8, 32
Sun 3g 14s RSN44 T.O.F.

M. Nov. 29 18:00-18:05UT t C-8, 32
sun 3g 8s RSN38 T.O.F.

F-S. Dec. 3-4 02:45-03:05 UT y S-8(?)T5-8(some cloud; ^ increasing cloud) ne; 18x50 15b
ne: Stars of Winter; Saturn in Gemini.
18x50 15b: Comet Machholz (C/2004 Q2) very easily seen SSW from Rigel by about 15° and in the constellation Eridanus at about R.A.: 4h 50m Dec.: -25° (see U314.). It was large and bright - approaching naked-eye visibility, at about mag. 6.0.*
- also M42, M43, NGC2244, S Mon and the Christmas Tree asterism, Pleiades, Hyades, M35, M36, M37, M38, area of RLep, with RLep being faint - at or near its minimum.

Comet Machholz (C/2004 Q2)

Su. Dec. 5 17:35-17:40UT doorstep at observatory C-8, 32
Sun 3g 3s RSN33

S.-M. Dec. 5-6 03:20-03:50UT y S7-8T8(slight haze) ne; 18x50 15b
ne: Stars of Winter, Saturn in Gemini; one meteor of about mag. 3 in the E. sky
18x50 15b: M42, M43, NGC 1981, area of M78, area of λ Orionis, Comet Machholz (C/2004 Q2) at about mag. 6, easily seen, but if there was any hint of a tail, it was extremely faint at best,

Comet Machholz (C/2004 Q2)

2004

of about R.A.: 4^h47^m, Dec.: $-24°32'$; also M35, M36, M37, M38, Pleiades, Hyades, Rlep (very faint, probably at mag. 9 or a bit fainter, R Eri, RX Eri and area, Alcor and Mizar, M81, M82, Saturn, Kemble's Cascade which was near the zenith.

Dec. 12-13 03:55-04:00 UT FL: 1a S?T6(1/p) ne; 18X50ISb

ne: stars of winter

18X50ISb: Belt of Orion, M42, area of R Eridani, Comet Machholz (C/2004 Q2) which was large and easy to find and not too far from the R Eridani area.

Comet Machholz C/2004 Q2

Dec. 13-14 02:30-02:40 UT FL: from Lanai S8(?)T6(1/p) ne

-observed for two short sessions and saw two meteors, the one of which I regarded as certainly a Geminid and the other of which I was uncertain, but later I decided that it was almost certainly a Geminid. The uncertainty was because of where it was seen, but I had not been absolutely certain of the location of the radiant. The time of the Geminid maximum was given in the O.H. as Dec. 13, 22h UT, and the radiant as R.A.: 7^h28^m Dec.: $+33°$ – which was slightly NW of the star Castor

Peak of Geminid Shower: 10 Geminids Seen

04:30-05:15 UT FL: by-near Lanai S8(?)T6(1/p) ne

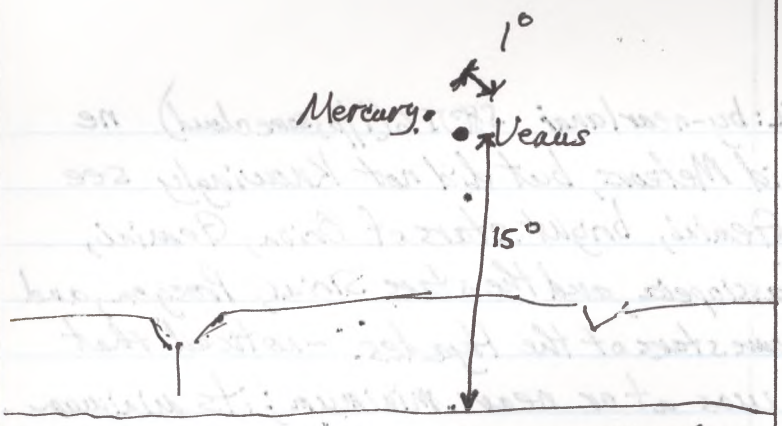
-observed for about $\frac{3}{4}$ of an hour and saw 8 Geminid Meteors in the NE part of the sky. I was looking generally to the left of Gemini and the planet Saturn in a part of the sky that was not as light-polluted as some others were. Most of the Geminids were mag. 3 to 2, or even 1.

2004 Dec. 14-15 02:20-02:45 UT FL: by-near Lanai S8(?)T6(1/p, some cloud) ne
- looking for Geminid Meteors, but did not knowingly see any; Saturn in Gemini, bright stars of Orion, Gemini, Auriga, Perseus, Cassiopeia, and the stars Sirius, Procyon, and Pleiades, and some stars of the Hyades. - noticed that β Persei (Algol) was at or near minimum; its minimum was listed as being at 02:17 UT.

Dec. 15-16 02:35-03:35 UT FL: la S8(?)T6(1/p) ne; 18X50LSb; 12½", 32, Λ
ne: stars of winter; Saturn in Gemini
18X50LSb: Comet Machholz (C/2004 Q2) quite bright - listed as being at mag. 5.1, but it was not seen knowingly naked-eye, nearby stars in Eridanus and Lepus.
12½", 32: Comet Machholz, with a distinct coma, but tail was not seen with certainty, though there might have been a very slight hint of a tail; M42 including the Trapezium; Saturn and Titan; Pleiades which were an outstanding sight - seen very close to the zenith.

Comet Machholz (C/2004 Q2)

Dec. 22-23 03:27-03:32 UT FL: la S8(?)T4.5(1/p; gusty) ne
- Under a very bright gibbous moon very near the zenith, I observed the very bright stars of winter high in the E. and SE.: the bright stars of Orion, Sirius, Procyon, Castor and Pollux, Capella, Aldebaran, and also Saturn below Castor and Pollux. The moon was likely near the Pleiades, but they were not seen, with the moon being so very bright.



2004, Dec 28, 11:40 UT - View to E. showing Venus and Mercury about 1° apart.

2004 Dec. 27-28 01:20-01:25 UT FL: by and lanai S-8(?)T4 (1/p; bright, near Full Moon) ne; 18X50SB

ne: under very bright moon, just a little over 34 hours after Full Moon, looking toward the E and NE, I saw the bright moon and Saturn down and to the right from it (with moon about 20° above the NE horizon), brightest stars of Orion and Auriga, Sirius, Procyon, and Aldebaran

18X50ISb: Moon, Saturn, M42, looked for Comet Machholz, but was not sure of seeing it.

M. 11:05-11:10 UT FL: lanai S8(?)T2 (1/p; considerable cloud) ne

- In the E. I saw Jupiter high in the sky and Arcturus and Spica, and high in the NE the stars of the handle of the Big Dipper, but thick clouds prevented me from seeing the lower part of the sky where I hoped to be able to see the planets Mercury and Venus in close proximity to each other.

M. 11:40-11:45 FL: lanai by twl ne; 18X50ISb

Venus-Mercury ne - After twilight began, I saw Venus and Mercury in close proximity (only about 1° apart) and about 15° above the E. horizon, and also the very bright "still nearly Full" Moon well up in the W.

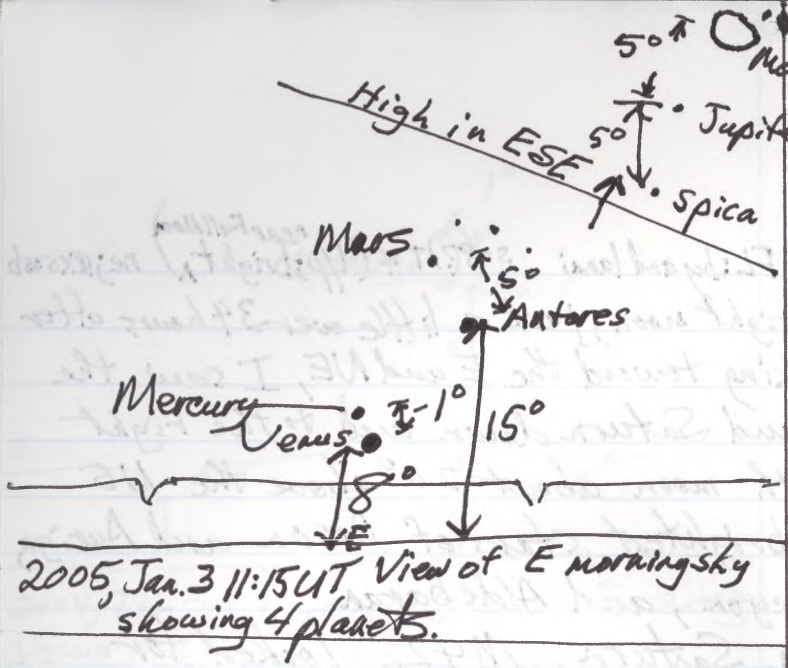
18X50ISb: Venus, Mercury, the moon

W-Th. Dec. 29-30 02:35-02:45 UT S8(?)T4-5 (1/p; gml) ne; 18X50ISb

ne: bright stars of Orion, Sirius, Procyon, Castor, Pollux, Saturn, Pleiades; bright gibbous moon in NE, about 15° above the horizon.

Comet Machholz (C/2004 Q2)

18X50ISb: Comet Machholz (C/2004 Q2), fairly large coma, but not much, if any, tail seen, probably because of the light pollution or the moonlight or both; M42 and area, the Pleiades.



2005, Jan. 3 11:15 UT View of E morning sky showing 4 planets.

2004 Th.-F. Dec. 30-31 01:00-01:10 UT FL:1a S8(?)T5(1/p) ne; 18x50 15b

ne: bright stars of Orion in the ESE.

18x50 15b: Comet Machholz (C/2004 Q2) at R.A.: 3h 54m Dec.: +6° 51' (at 0h UT), quite bright and with a large coma, but was not knowingly seen naked-eye from this location, though it was predicted to be at mag. 4.3; also Pleiades, Hyades, and M42 and area.

Comet Machholz (C/2004 Q2)

2005 Sa.-Su. Jan. 1-2 02:45-03:10 UT FL:1a S8(?)T5-6(1/p; cloud; some) ne; 18x50 15b

ne: bright stars of Aries, Taurus, Orion, Sirius (seen earlier), Procyon, Castor and Pollux, Saturn.

18x50 15b: Comet Machholz (C/2004 Q2) quite bright and near a fairly bright star, with a large coma, not sure of seeing the ion tail or the dust tail; also M42 and area, M35, λ Orionis area, Pleiades, Hyades, Saturn.

Comet Machholz (C/2004 Q2)

Su.-M. Jan. 2-3 03:10-03:50 UT FL:1a S8(?)T5(1/p; some haze + cloud) ne; 18x50 15b

ne: bright stars of Aries, Taurus, Orion, Gemini, and Saturn

18x50 15b: Comet Machholz (C/2004 Q2) quite bright and about 5°-6° from the Pleiades, but the tails were not clearly visible probably because of the light pollution and the haze; M42 and area, area of Rho Geminis, M35, Pleiades and Hyades.

Comet Machholz (C/2004 Q2)

M. 5:10-6:40 a.m. E.S.T. 10:10-11:40 UT FL:1 and 1 S8(?)T6(1/p; gibbous m.l.) ne

- Under clear conditions and with a bright gibbous moon, about 7h before Last Quarter,

2005

1 Quadrantid Meteor

I observed hoping to see some Quadrantid Meteors. I saw one that was almost certainly a Quadrantid. There may have been another one, but I did not count it as such. The one that I saw was in the E and about mag. 2. I also saw the stars of the Big Dipper in the N. and Polaris and Kochab, and 4 planets in the E.: Jupiter very high and about 5° or 6° from the moon, Mars about 20° above the horizon at 11:15 UT and in Scorpius, and Venus and Mercury about 1° apart at 11:15 UT and with Venus about 8° above the horizon. (See diagram.)

4 planets. Venus-Mercury

M.-T. Jan. 3-4 03:25 - 04:40 UT FL: la S8(?)T5(1/p) ne; 18X50 lsb

ne: bright stars of Aries, Taurus, Orion, Gemini, Sirius, Procyon, Saturn.

18X50 lsb: Comet Machholz (C/2004 Q2) bright but tails not clearly seen likely because of the light pollution, M35, M42 and area, 2 Orionis area, S Mon and the 'Christmas tree' asterism, NGC 2244, Pleiades, Hyades, area of Rlep, Saturn.

Comet Machholz (C/2004 Q2)

M. 5:50 - 6:05 a.m. E.S.T. 10:50 - 11:05 UT FL: lanai S8(?)T4(1/p; haze, lg mi) ne

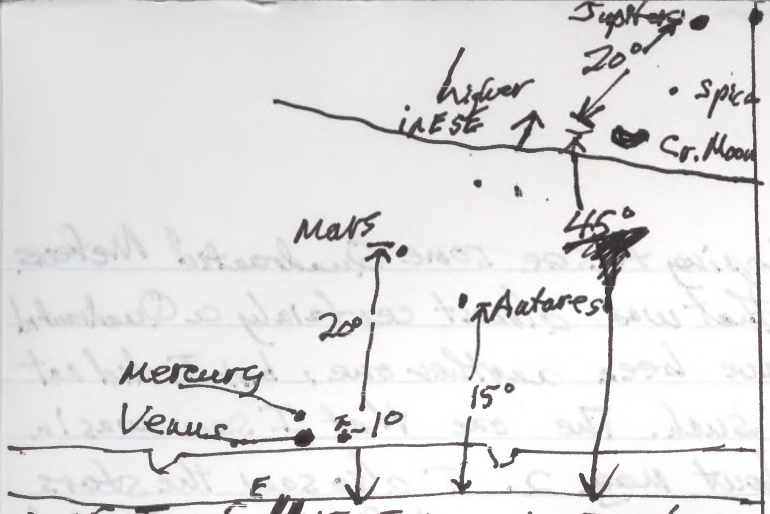
- Last Quarter Moon high in the ESE and about 5° below Jupiter (Compare with the diagram for yesterday's view of the E. sky - on the previous page.); bright stars of Scorpius in the E. with Mars to the left; Vega in the NE; the Big Dipper high in the N. and Polaris and Kochab.

Jupiter, Mars,

M. 6:35 a.m. E.D.T. 11:35 UT FL: lanai twl ne

Venus and Mercury in the E. with Venus about 10°

Venus, Mercury



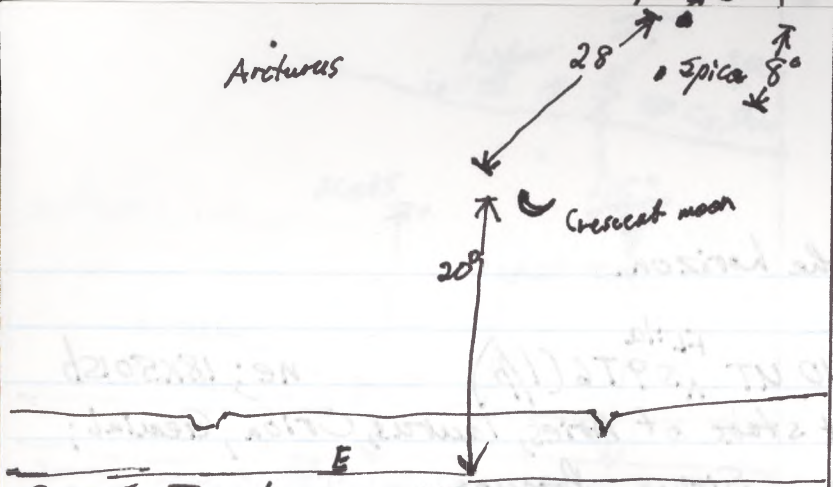
2005, Jan. 5. 11:15 UT. View to E. showing 4 planets: Venus, Mercury, Mars, and Jupiter

2005 above the horizon.

T.-W. Jan. 4-5 03:50-05:10 UT FL:1a ^S9T6 (1/p) ne; 18X50lsb
ne: bright stars of Aries, Taurus, Orion, Gemini; Saturn, Sirius, Procyon
Comet Machholz (C/2004 Q2) 18X50lsb: Comet Machholz (C/2004 Q2) bright and now only about 4° or 5° from the Pleiades, and possibly a hint of a tail, but I was not sure of seeing it; M42 and area, area of R Lep, M35, Pleiades, Hyades, NGC2244 and S Mon and the Christmas Tree asterism; Saturn, area of λ Orionis.

6:05 - 6:19 a.m. E.S.T.
M. 11:05-11:19 UT FL:1aaai twl ne
- Big Dipper, Polaris, Kochab in N.; in E. Mercury and later Venus just rising above the roof of the house across the pond, some stars of Scorpius including Antares, Mars, and higher in the sky Jupiter, Spica and the cresceat moon, less than 2 days after last Quarter. (See diagram.)
4 planets Venus-Mercury

W.-Th. Jan. 5-6 02:45-05:30 UT FL:1a S9T6 (1/p) ne; 18X50lsb; 12½", 25", 32"
ne: bright stars of Taurus, Orion, Gemini, Saturn, Sirius, Procyon.
Comet Machholz (C/2004 Q2) 18X50lsb: Comet Machholz (C/2004 Q2) bright and about 1 binocular field S. of the Pleiades, with a possible hint of a tail exteading northeastward, near the time of its minimum distance from Earth (Δ being 0.347 a.u.); Pleiades, Hyades, M41, M42 and area, area of R Lep, NGC 2244, S Mon and the 'Christmas



2005, Jan. 6, 10:15 UT View to E. Two planets seen among the clouds

2005 tree asterism in Monoceros, Saturn, area of Castor and Pollux

12½", 32, 25, 12: Comet Machholz with a hint of tail possibly extending to the northeastward; M44 (the Beehive Cluster); part of M45 (the Pleiades). I did some sweeping through the constellation Orion since finding objects was difficult because the 'Rigel was not operating properly since the battery was dead.

M. 5:10-5:15 a.m. E.S.T. 10:10-10:15 UT FL: Ianai S(?)T (considerable cloud cover) ne

-In spite of considerable cloud cover, I could see Arcturus, and Spica high in the E, and also Jupiter about 8° above Spica and the crescent moon about 20° above the horizon in the E.

F.-S. Jan. 7-8 03:50-04:00 UT FL: la SQTS(l/p; some cloud) ne; 18X50 15b ne: bright stars of Aries, Taurus, Gemini; Orion, Sirius, Canopus in SE, Saturn, Procyon; bright stars of Auriga.

18X50 15b: Comet Machholz (C/2004 Q2) - very bright but still not certain of being able to see it naked-eye, only about 1½° from the Pleiades and in a WSW direction from the centre of the Pleiades cluster, listed as being at mag. 4.2 on Jan. 5 and mag. 4.1 on Jan. 10.; Pleiades, Hyades, M42 and area, area of R Lep., NGC 2244 and area, S Mon and the Christmas Tree asterism, Saturn, M35 in Gemini; M36, M37, M38 in Auriga, area of 2 Orionis. ✱ I tried to see if I could distinguish a tail on the comet, but I was not sure of doing so, perhaps because of the light pollution.

Comet Machholz (C/2004 Q2)

2005 S.-S. Jan 8-9 03:50-05:00 UT FL:la S85-9T6 (1/p) ne; 18X50 15b

ne: bright stars of Aries, Taurus, Gemini, Orion, Lepus, Canis Major, Canis Minor, Auriga, Saturn, Canopus.

Comet Machholz (C/2004 Q2)

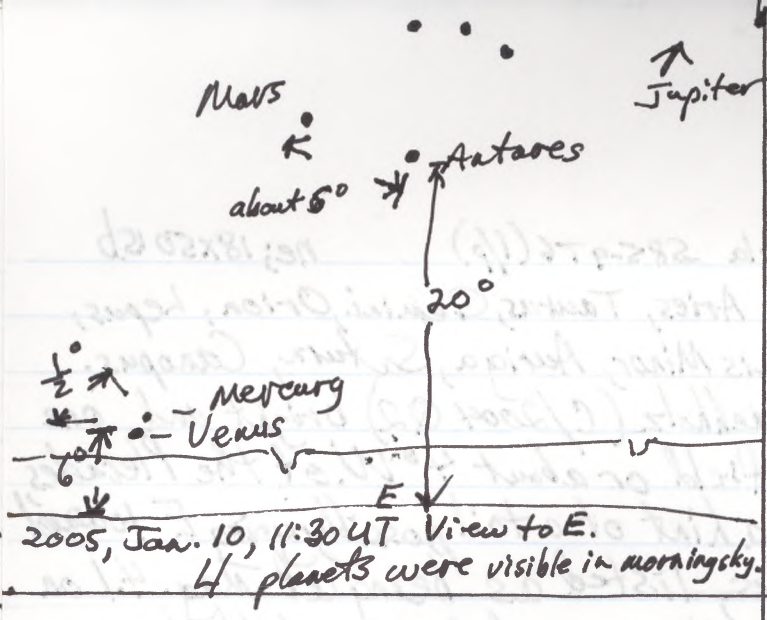
18X50 15b: Comet Machholz (C/2004 Q2) bright and one binocular-field or about 4° W. of the Pleiades, with only a hint of a tail possibly going E toward the Pleiades, listed as being at Mag. 4.1 on Jan. 10 but not seen naked-eye probably because of the light pollution; Pleiades, Hyades, M42 and area, area of R Lep, NGC 2244 and S Mon and the "Christmas Tree asterism", M35, M36, M37, M38, M44 (Praesepe or the Beehive Cluster), Saturn.

S.-M. Jan. 9-10 03:50-05:00 UT FL:la S9?T5 (1/p) ne; 18X50 15b

ne: bright stars of Aries, Taurus, Gemini, Orion, Saturn, Sirius, Procyon, Canopus.

Comet Machholz (C/2004 Q2)

18X50 15b: Comet Machholz (C/2004 Q2) bright and very slightly more than 1 binocular field from the Pleiades, with a possible hint of a tail especially a hint of a wide V-like "separation of two tails" with this hint of two tails extending out about ½°. again I was convinced that only the light pollution prevented the possible viewing of this comet with the naked eye; Pleiades, Hyades, M42 and area, M44, area of R Lep, NGC 2244 and nearby S Mon and the "Christmas tree asterism," M35, M36, M37, M38, M44 (Praesepe or the Beehive Cluster, Saturn.



2005, Jan. 10, 11:30 UT View to E.
4 planets were visible in morning sky.

2005 M 5:55 - 6:35 a.m. E.S.T.
10:55 - 11:35 UT FL: lanai + by twl ne

Venus-Mercury

- observed Jupiter about 6° from Spica high in the SSE and after 11:23 UT Mercury and Venus rising above the roof to the E. (See diagram.) Mars and Antares were an interesting pair.

ph: photographed areas of the E. sky.

M.-T. Jan 10-11 02:30 - 04:30 UT FL: la S 9(?) T5 (1/p) ne; 18X50 sb

ne: bright stars of Aries, Taurus, Gemini, Auriga, Orion, Canis Major, Canis Minor; Saturn.

18X50 sb: Comet Machholz (C/2004 Q2) bright and about 5 degrees WNW of the Pleiades with perhaps more evidence of a gas tail than the "hint" I had thought I had seen previously. This time it appeared more definite and perhaps about 3 to 4 degrees long. There was possibly also some evidence of the dust tail very considerably separated from the gas tail and perhaps ½ to 1 degree long. Also, Pleiades, Hyades, M42 and area, area of R Lep, NGC2244 and S Mon and the 'Christmas tree' asterism, M35, M36, M37, M38, M44 (Praesepe or the Beehive Cluster); Saturn.

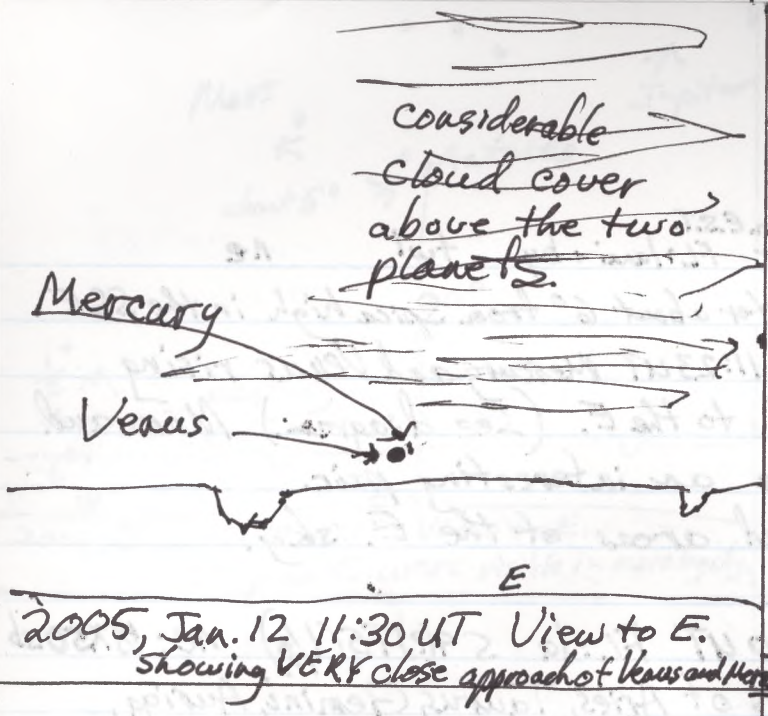
Comet Machholz (C/2004 Q2)

M. 5:55 - 6:32 a.m. E.S.T.
11:55 - 12:32 UT FL: lanai + by twl ne

- observed Jupiter high in the ESE as on the previous morning and after 11:21 Mercury and Venus rising above the roof to the E, this time Mercury being only about ¼° above and to the right from Venus. Above and to the right from them, Mars and Antares were an interesting pair. (See diagram for previous morning.)

Venus, Mercury

ph: photographed the E. sky.



2005, Jan. 12 11:30 UT View to E.
showing VERY close approach of Venus and Mercury

2005 T.-W. Jan. 11-12 02:35 - 04:00 UT FL: la S9T5 (l/p; some cloud) ne; 18x50b ne

ne: bright stars of Aries, Taurus, Gemini, Orion, Lepus, Auriga, Canis Major, Canis Minor, Satara.

18x50b: Comet Machholz (C/2004 Q2) bright and about 2 fields of view of the ~~the~~ binoculars (or about 8 degrees) to the NW from the Pleiades, with a hint of a gas ~~g~~tail stretching about 3 or 4 degrees in an ENE direction and perhaps a less definite hint of a dust tail about $\frac{1}{2}$° in length perhaps stretching in a SE direction; Pleiades, Hyades, area of λ Orionis, area of M42, area of R Lep, NGC 2244 and the 'Christmas tree' asterism in Monoceros, M44, M35, M36, M37, M38, Saturn.

Comet Machholz (C/2004 Q2)

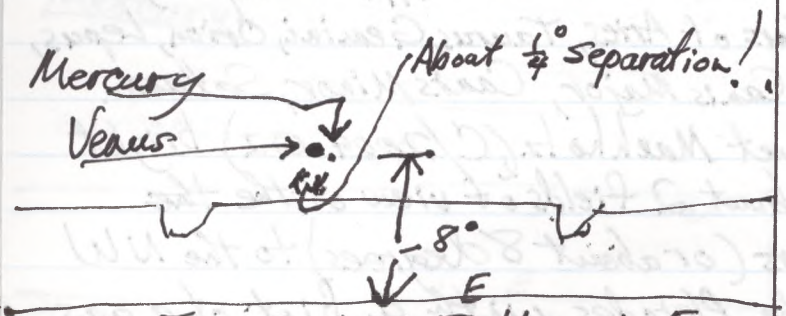
6:05 - 6:35 a.m. E.S.T.
11:05 - 11:35 UT FL: lanai + by tw/ ne

M.

- Vega in NE, some of the stars of the Big Dipper in the N., and later Jupiter very high in the SSE, and Arcturus high in the E, in spite of a considerable amount of cloud. After about 11:24 UT (6:24 a.m. E.S.T.) Venus and Mercury were seen rising above the roof across the pond. They appeared VERY close, probably less than $\frac{1}{4}$° apart. (See diagram.)

Venus and Mercury VERY close.

- I took the camera and tripod out into the ~~back~~yard hoping to photograph Venus and Mercury, but before I took any photographs clouds covered them. I did not take any photographs at that time.



2005, Jan. 13 11:32 UT View to E,
showing VERY close approach of Venus and Mercury.

2005 W.-Th. Jan. 12-13 03:00-04:00 UT FL: la S9(?)T 3-2 (becoming cloudy) ne; 18x50 lsb

ne: During the partly clear part of the session, for the first 10 minutes or so, I saw Aldebaran, the bright stars of Orion, Castor and Pollux, Procyon, Sirius, and Saturn. Then the clouds thickened and the skies were generally very cloudy for the remainder of the session.

18x50 lsb: During the first five minutes or so of the session, I observed Comet Machholz (C/2004 Q2) quite bright and about 2½ to 3 binocular fields (about 8 to 10 degrees) to the NW of the Pleiades, with probably a slight hint of a tail in the NE direction, also the Pleiades and several areas of Orion, including the area of 2 Orionis and of M42.

Comet Machholz (C/2004 Q2)

M. ~~6:22~~ 6:40 p.m. E.S.T. / 11:22-11:40 UT FL: [illegible] by twl ne; 18x50 lsb

ne: Venus and Mercury about 8° above the E. horizon and only about ¼° apart. The Observer's Handbook listed the 2 planets as being in conjunction on Jan. 14 at 0h UT, about 17.5 hours hence. The separation was listed as being 0.3 degrees at that time. I also saw Vega in the NE and Jupiter very high in the ESE.

18x50 lsb: Venus and Mercury.

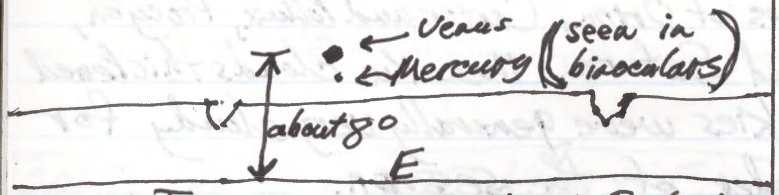
Venus and Mercury VERY close.

Th.-F. Jan. 13-14 02:45-03:45 UT FL: la S9(?)T 4→0 (l/p; considerable cloud) ne; 18x50 lsb

ne: Amid very considerable cloud, I saw the bright stars of Orion, Aldebaran, Sirius, Procyon, Castor and Pollux, Saturn.

18x50 lsb: Comet Machholz (C/2004 Q2) bright and about 10° NW of the Pleiades; little time to study the tail structure if any was visible or if there was a hint of any

Comet Machholz (C/2004 Q2)



2005, Jan. 17, 11:40 UT View to E showing Venus about 2° above roof, and Mercury about 1° below.

2005

being visible; also some areas of Orion such as the area of λ Orionis, area of M42; area of R Lep, NGC2244 and the area near it.

S.-M. Jan. 16-17 03:35-04:05 UT FL:1a S8(?)T5(1/p; fq ml) ne; 18X50156

ne: With a bright moon, just about 3 hours short of First Quarter, I observed the bright stars of Orion, Auriga, and Gemini, as well as Castor and Pollux, Regulas, Procyon, Canopus, Pleiades and Saturn.

18X50156: Comet Machholz (C/2004 Q2) bright and only about 1½° to 2° from β Persei — now in the constellation Perseus, with a possible hint of a short tail extending to the eastward; also areas in Orion including M42, area of R Lep, Pleiades, Hyades, NGC2244, Christmas Tree asterism and S Mon, M35, M36, M37, M38, M44 - the Beehive Cluster, Pleiades, Hyades, Saturn

Comet Machholz (C/2004 Q2)

6:32 - 6:40 a.m. E.S.T.

M. 11:32 - 11:40 UT FL:lanai + by twl ne; 18X50156

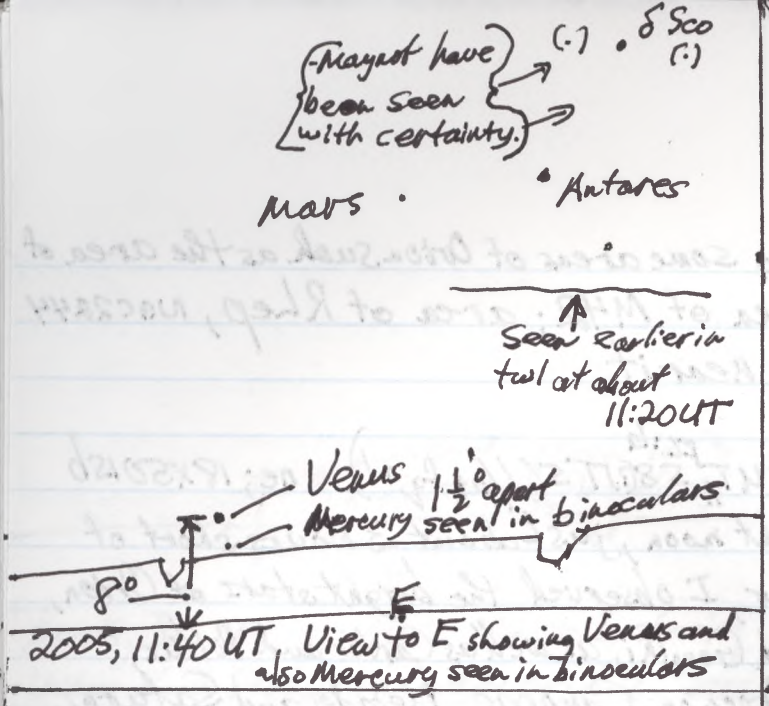
ne: Venus just rising above the roof of a house across the pond and later it was about 2 degrees above the roof of the house, (*)

18X50156: From the lanai, I observed Venus, and Mercury below and slightly to the right from Venus by about 1 degree. Although Venus was easily visible in the fairly bright twilight, Mercury was not seen for sure with the unaided eye. (See diagram.)

Venus, Mercury

ph.: photographed E. sky in order to show Venus and I hoped Mercury also.

(*) also a bright meteor in the NE sky going from left to right and slightly downward - probably of about mag. -3 since it was seen in bright twilight.


(May not have been seen with certainty.)
δ Sco
Mars
Antares
Seen earlier in twl at about 11:20 UT
Venus
Mercury
1½° apart
seen in binoculars
8°
V
E
2005, 11:40 UT, View to E showing Venus and also Mercury seen in binoculars

2005 M.-T. Jan. 17&18 02:00-02:30 UT FL: la S9(JT5(1/p;gml) ne; 18x50 15b

ne: bright gibbous moon shortly after First Quarter - in the Constellation Aries, about 10° from α Arietis, two of the bright stars of Aries, bright stars of Orion, Gemini, Auriga, Sirius, Procyon, Castor and Pollux, Aldebaran, Pleiades, Saturn.

18x50 15b: Comet Machholz (C/2004 Q2) still bright and about 1/3 of the distance between β Persei and α Persei, and with a hint of a tail perhaps going eastward and possibly a degree or two; the α Persei group of stars, Pleiades, Hyades, areas of Orion including M42, area of Rlep, M41, M44 (Beehive Cluster), M35, M36, M37, M38, NGC2244, 5 Mon and the Christmas Tree asterism, the asterism Dolidze 17 - a group of 5 stars about 1° NW of Bellatrix (See S. & T. Feb. 2005, page 86 & 87.)

Comet Machholz (C/2004 Q2)

M. 6:20 - 6:42 a.m. E.S.T. 11:20 - 11:42 UT FL: binoculars twl ne; 18x50 15b

ne: Antares and one or two more stars of Scorpius, Mars, Vega in NE, some stars of the Big Dipper high in the N; Jupiter and Spica about 5 or 6 degrees apart very high in the SSE; Venus rising at about 11:33 UT above the roof across the pond.

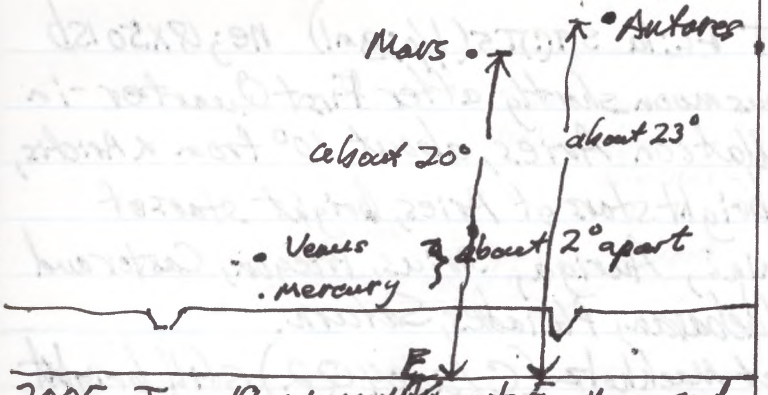
18x50 15b: Mercury was seen with the binoculars about 1 1/2° down and very slightly to the right from Venus. Mercury rose over the roof at about 11:39 UT. (See diagram.)

Venus, Mercury

ph: photographed E sky hoping to show Venus and Mercury.

T.-W. Jan. 18-19 02:50-03:45 UT FL: la S9(JT5(1/p;gml) ne; 18x50 15b

ne: bright gibbous moon about 10° from the Pleiades and about



2005, Jan. 19. 11:44 MST, view to E. Mars and the stars of Scorpius had been seen better earlier

2005

25° from Comet Machholz which was seen in the binoculars; bright stars of Orion, Canis Major, Auriga, and Gemini, also 2 brightest stars of Aries, the Pleiades, Aldebaran, Procyon, Saturn

18X50ISb: Comet Machholz (C/2004 Q2) easily seen in spite of the fact that the bright moon was about 25° away, a hint of a tail on the comet, perhaps one or two degrees long. The comet was about 40% of the distance from β Persei to γ Persei. – also Pleiades, Hyades, areas of Orion including M42, area of Rlep, NGC2244 and S Mon and the Christmas Tree asterism, M35, M36, M37, M38, Saturn.

Comet Machholz (C/2004 Q2)

6:08 - 6:44 a.m. E.S.T.

m. 11:08 - 11:44 UT FL: lanai and by twl ne; 18X50ISb

ne: at the beginning of the session: Mars and Antares and some of the other bright stars of Scorpius; Jupiter and Spica very high in the SSE; also some of the stars of the Big Dipper in the N., Vega in the NE, and to the left of Scorpius some of the stars of Ophiuchus. Venus was seen rising above the roof across the pond at 11:34 UT

Venus and Mercury

18X50ISb: Mercury was seen rising above the roof across the lake at 11:41 UT

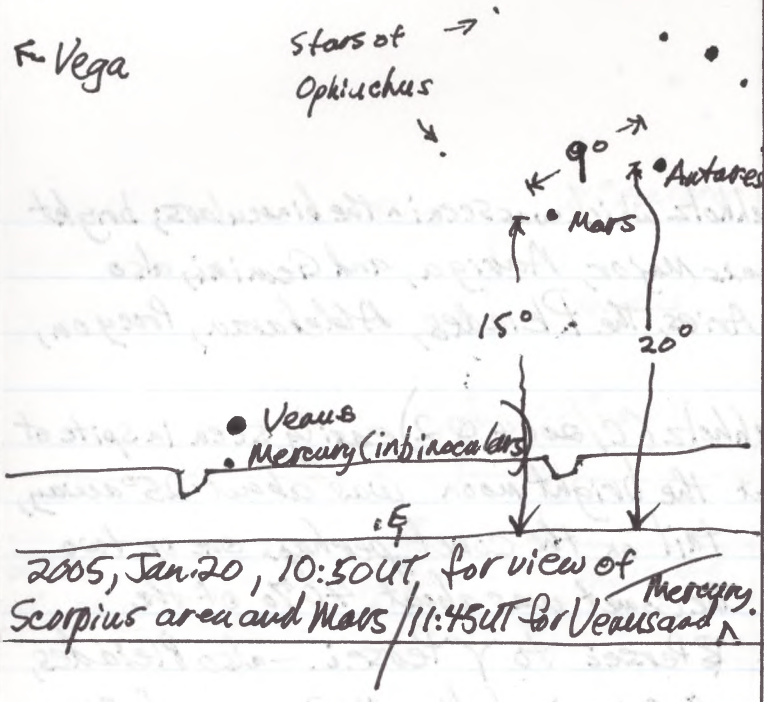
ph: photographed areas of the E. sky to show area of Mars and later Venus and Mercury.

W.-Th. Jan. 19-20 03:00-03:35 UT FL: la S9 BJT 4-5 (1/p; bright gnl) ne; 18X50ISb

ne: bright gibbous moon about 10° NW of Aldebaran and about 2° ENE of the Pleiades. Aldebaran was near the zenith. – Also bright stars of Orion, Canis Major, and Auriga, Castor and Pollux, Sirius, Procyon, Canopus, Saturn

Comet Machholz (C/2004 Q2)

18X50ISb: Comet Machholz (C/2004 Q2) about 3° from α Persei with perhaps a slight hint of tail toward the E,



2005, Jan. 20, 10:50UT for view of Scorpius area and Mars / 11:45UT for Venus and Mercury.

2005.

areas of Orion, including M42 and area of λ Orionis, area of RLep, M41, NGC2244 and S Mon and the Christmas Tree asterism, M44 (the Beehive Cluster), M35, M36 in Auriga but it was difficult to see M37 ~~37~~ and M38 and I could not be sure of a good view of them; also Pleiades, though it was difficult to see all of them because of the brightness of the moon so close by; Hyades.

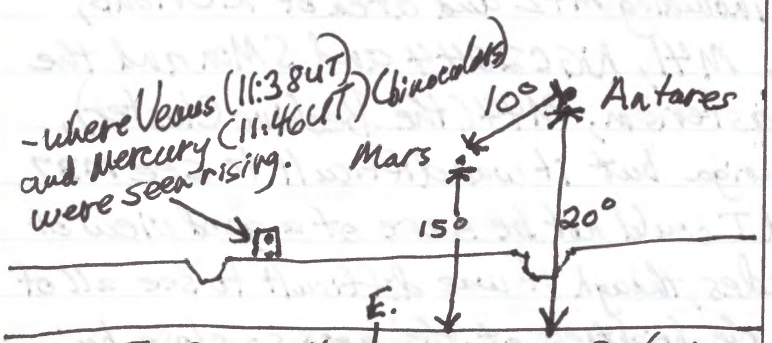
M. 5:46 - 6:48 a.M. E.S.T. 10:46 - 11:48 UT FL: lanai & by SC(T)T5(1/p); later twl ne; 18X50lsb ne: Before the beginning of astronomical twilight and for a while thereafter, I was able to see Mars and Antares separated by about 9° and up about 15° and 20° in the E. - also Vega, the stars of the Big Dipper in the N., some stars of Ophiuchus, Deneb low in the NE, Jupiter and Spica separated by about 5° high in the SSE. After about 11:36 UT Venus was seen rising above the roof across the pond.

Venus, Mercury 18X50lsb: At about 11:44 UT Mercury was seen rising above the roof across the pond. (See diagram.)

Th.-F. Jan. 20-21 03:30-04:15 UT FL: la SC(T)T45(1/p; gml) ne; 18X50lsb ne: very bright gibbous moon, only about 5° W. of the zenith, Aldebaran, bright stars of Orion and Canis Major, Procyon, Castor and Pollux, Capella, Aldebaran, Saturn.

Comet Machholz (C/2004Q2) 18X50lsb: Comet Machholz (C/2004 Q2) only about 3° from α Persei and about 30° from the bright moon with a "hint of a tail" on the comet going eastward to an area near the α Persei cluster; Pleiades, Hyades, areas of Orion like M42, M41, M44 (the Beehive Cluster), area of RLep, NGC2244 and S Mon and the Christmas Tree asterism, Saturn,

← Vega



2005, Jan. 21, 10:40 UT. View to E showing Mars and Antares

2005 lunar craters. The Moon was about 9° N. of Aldebaran.

5:35 - 5:45 am E.S.T.

M. 10:35-10:45 UT FL: lanai +by 5"(?)T4-5 (l/p; mist) ne

- Mars and Antares and some other stars of Scorpius seen in the E, as well as the Big Dipper high in the N, and Vega in the NE; Jupiter and ~~the~~ Spica very high in the ESE. (See diagram.)

ph: photographed area of Mars and Antares in the E.

M. 11:35-11:50 UT FL: lanai twl ne; 11x80 ~~&~~ sb

ne: At 11:38 UT Venus was seen rising over the roof across the pond. (See diagram.)

Venus and Mercury

18x50 15b: At 11:46 UT Mercury was seen rising over the roof across the pond. Mercury appeared about 1 ½° below Venus, after they both had risen. (See diagram.)

F.-S. Jan. 21-22 03:40-04:25 UT FL: la S8T4-5 (l/p; bright gal) ne; 18x50 15b

ne: very bright gibbous moon very near the zenith, Aldebaran, bright stars of Orion and Canis Major, Canopus, Procyon, Saturn, Castor and Pollux, Capella, Regulus. Moon was about 15° NNE of Aldebaran and about 20° N. of Betelgeuse

Comet Machholz (C/2004 Q2)

18x50 15b: Comet Machholz (C/2004 Q2) about 4° W of the very bright moon, with the comet slightly less than 1 binocular field from α Persei. (If the field is 3.7°, then the distance between the comet and the star is about 3.5°. - a slight hint of a tail from the comet in the direction of α Persei and the α Persei Cluster; also area of Orion including M42 and area of λ Orionis, M41, area of R Lep, NGC 2244 and S Mons and the Christmas Tree asterism, M44 (the Beehive Cluster), Hyades, Pleiades.

2005 M. 6:44 - 6:54 a.m. E.D.T
11:44 - 11:54 UT FL: lanai and by twl ne; 18X50 15b

ne: Venus in E. from 1° to about 2° above the roof of the house across the pond; Jupiter very high near the zenith or perhaps slightly SW of the zenith, did not see Mercury with the naked eye.

Venus, but not Mercury

18X50 15b: Venus from about 1° to about 2° above the roof of the house across the pond; searched for Mercury below Venus, but did not see Mercury. There appeared to be some cloud below Venus.

S.-S. Jan. 22-23 02:15-02:50 UT FL: la S 9(?)T 4 (1/p; gml; ^ some cloud) guest: Frank Rioux ne; 18X50 15b

ne: With Frank Rioux who was visiting with his wife, Olivia (Helen), I observed for a while in front of the garage. I was able to see Orion, Castor and Pollux, Sirius, Saturn, Aldebaran.

18X50 15b: Comet Machholz (C/2004 Q2) about 3° from α Persei and the α Persei Cluster with a slight hint of a fanning tail to the E. toward the α Persei Cluster with the upper edge of the tail pointing toward α Perse. This very faint "hint of a tail" went only about a ½ degree from the comet. -also Pleiades

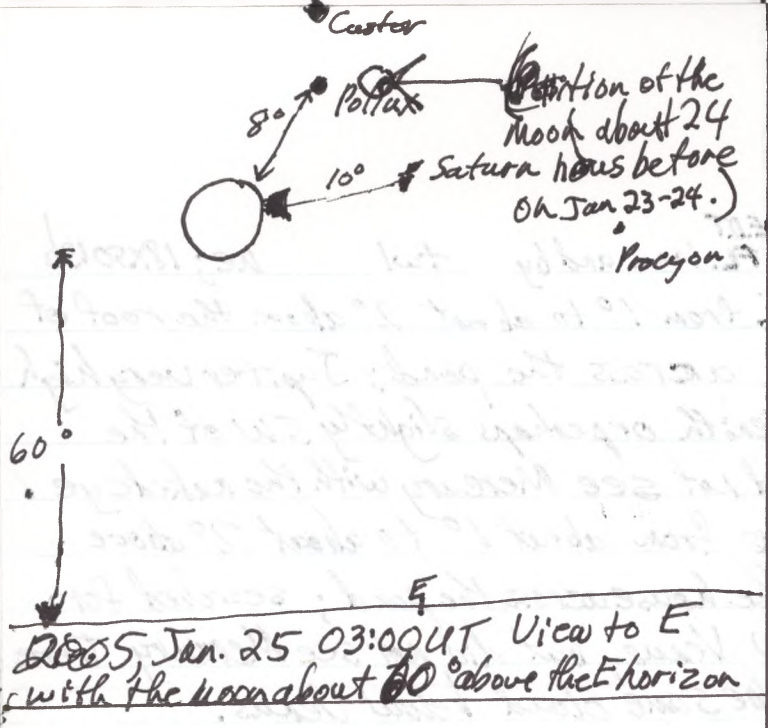
Comet Machholz (C/2004 Q2)

S.-M. Jan. 23-24 03:05-03:20 UT FL: la S 9(?)T 4-5 (1/p; gml)

ne: very bright gibbous moon in Gemini only 2° W. of Castor, Castor and Pollux, Orion, Canis Major, Saturn, Canopus, Aldebaran.

18X50 15b: Comet Machholz (C/2004 Q2) in Perseus about 1° SSW of the star γ Per with a hint of a fanning tail going approximately in the direction

Comet Machholz (C/2004 Q2)



2005, Jan. 25 03:00 UT View to E with the moon about 60° above the E horizon

2005

of the star α Persei. Though the moon was very bright, it was about 30° E of the zenith and about 55° E of the comet. -also areas of Orion, including λ Orionis area and the area of M42, area of R Lep, M41, Pleiades, Hyades.

m. 11:45 UT (6:45 a.m. E.S.T.) on US 41, between Bonita Springs and Fort Myers twl ne

- While in the car with Denise going from Bonita Springs to Fort Myers on the way to Tim and Betty Brennan's place at Windmill Village north of Fort Myers, I saw Venus very bright in the E. about 10° above the horizon during the twilight

Venus

M-T. Jan. 24-25 03:00-03:35 UT FL: la 5-8(?)/T 4-5 (some cloud) 18x50 lsb ne; ne: Orion, Canis Major, Aldebaran, Pleiades, bright Full Moon, Procyon, Castor and Pollux, Saturn, Canopus. (See diagram.)

Comet Machholz (C/2004 Q2)

18x50 lsb: Comet Machholz (C/2004 Q2) still bright but not impressive because of light from moon about 65° away, and very little, if any, indication of the tail as seen or "hinted at" previously, the comet being about 5° from the star α Persei; Pleiades, Hyades, areas of Orion such as the area of M42. The comet was about 1° from the star γ Persei and in a NW direction from the star. The comet was also about 65° from the bright Full Moon which was fairly near the stars, Castor and Pollux.

m. 6:25 - 6:30 a.m. E.S.T. 11:25 - 11:30 UT FL: lanai twl ne

- looked for Venus in the E., but did not see it yet; saw Vega and Deneb in the NE.

m. 6:42 - 6:54 a.m. EST 11:42 - 11:54 UT FL: lanai twl ne; 18x50 lsb

ne: saw Venus rising above the roof of the house across the pond,

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at 11:42 UT, and later looked for Mercury but did not see it.

18X50ISb: scanned the area below Venus, after it had risen more than a degree or more, hoping to see Mercury possibly, but did not see it.

T.-W. Jan. 25-26 03:10-03:35 UT FL: la 58?T5 (fml; 1/p) ne; 18X50ISb

ne: bright stars of Orion and Canis Major, Procyon, Castor and Pollux, Canopus, Aldebaran, Pleiades, Saturn, bright Full Moon in the constellation Cancer.

Comet Machholz (C/2004 Q2)

18X50ISb: Comet Machholz (C/2004 Q2) in Perseus, about 3° NNW of γ Persei, with perhaps a very faint tail fanning toward the E. for about ½°; also Pleiades, Hyades, α Persei Cluster, areas of Orion including λ Orionis area, area of M42, area of R Lep, M41, M35, Saturn, lunar craters on a very bright Full Moon.

m. 5:55-6:00 a.m. E.S.T. 10:55-11:00 UT FL lanai + by fwl ne; 18X50ISb

ne: Mars about 20° above the E. horizon and Antares about 28° above the E. horizon and about 10° to the right and above Mars, Jupiter and Spica very high in the S. and near the zenith; the Full Moon up high in the W. sky.

m. 6:32-6:50 a.m. 11:32-11:50 UT FL: lanai fwl ne; 18X50ISb

Venus.

ne: Venus rising above the roof across the pond at 11:42 UT.

18X50ISb: - I scanned the area below Venus, but did not see Mercury.

W.-Th. Jan. 26-27 02:15-03:15 UT FL: la 58?T 4-5 (1/p; gml; scattered cloud λ) ne; 18X50ISb.

ne: bright stars of Orion, Canis Major, Auriga, Pleiades, Aldebaran, Castor and Pollux, Procyon, ~~Sirius~~ Canopus, α and β Persei, Saturn.

2005 Comet Machholz (C/2004 Q2)

18X50ISb: Comet Machholz (C/2004 Q2) almost exactly one binocular field (3.7 degrees) to the NNW of the star γ Persei, with a hint of a tail fanning out to the E, perhaps for ½ degree; also α Persei Cluster, Hyades, Pleiades, areas of Orion such as λ Orionis and M42 and M43, area of R Lep, M41, Saturn; lunar craters on a bright gibbous moon, just 40 hours approximately after Full Moon.

M. 5:55-6:05 a.m. E.S.T. FL: lanai + by twl ne
10:55-11:05 UT

- Antares and some other stars of Scorpius in the E. with Antares about 28° above the horizon; Mars in the E. about 20° above the horizon and about 12° to the left and down from Antares; Vega high in the NE; Jupiter and Spica very high in the S. not far from the zenith; the very bright gibbous moon quite high in the W.

Mars

M. 6:40-6:50 a.m. E.S.T. FL: lanai twl ne; 18X50ISb
11:40-11:50 UT

ne: - searched for Venus above the roof of the house across the ~~lake~~ pond, but was not sure of seeing it very clearly, but possibly very faintly.

Venus

18X50ISb: - Venus clearly seen slightly above the roof of the house across the pond at 11:43 UT and seen after that among the clouds in that part of the sky.

Th.-F. Jan. 27-28 02:30-02:35 UT FL: Norris Center S8(1T3(1/p; 9 mi.) 8" Dob

: At the Norris Center in downtown Naples where Denise and I had attended the monthly meeting of the Everglades Astronomical Society, hearing a talk on the topic of "Time", and where I had also shown some slides of the past year including some of the Aurora of

2005

Nov. 7-8, 2004, Denise and I joined the observing group after the meeting outside the building and we had a chance to observe the two objects that were being view in the 8" Dobsonian with a 25mm eyepiece, namely Saturn with the moon Titan very easily visible, and Comet Machholz (C/2004 Q2). Denise said she saw at least 4 other moons closer to the planet than Titan. The images appeared very crisp and sharp in the telescope.

- 03:30 - 04:00 UT FL: la S&T 4-5 (Y/p; gm; some cloud ^) ne; 18X50 15b

ne: bright stars of Orion, Canis Major, Auriga, Pleiades, α and β Persei, Aldebaran, Procyon, Castor and Pollux, Canopus, Saturn, bright gibbous moon near the border between Cancer and Leo.

Comet Machholz (C/2004 Q2)

18X50 15b: Comet Machholz (C/2004 Q2) still fairly bright and about 4½° NNW of the star γ Persei, with very little, if any, hint of a very short fanning tail to the E - certainly questionable, if seen at all; also Pleiades, Hyades, areas of Orion such as λ Orionis area and M42 area, R Lep area.

m. 6:00 - 6:10 a.m. E.S.T. 11:00 - 11:10 UT FL: lanai and by twl ne

- did not see Mars or any stars of Scorpius because of clouds in the E. sky, but saw Jupiter very high in the sky not too far from the zenith and the very bright gibbous moon about 30° W. of Jupiter.

m. 6:40 - 6:45 a.m. E.S.T. 11:40 - 11:45 UT FL: lanai twl ne; 18X50 15b

ne: looked for Venus, but did not see it because of the clouds ^

18X50 15b: looked for Venus, but did not see it, because of clouds.

F.S. Jan. 28-29 02:30 - 04:30 UT FL: la S&T ^ TO ne

Hoping that the sky would clear, I sat waiting under clouds of an overcast sky. Earlier in the evening at about 01:00 UT I had seen Sirius, Procyon, Castor and Pollux and Saturn. I did not get to see Comet Machholz this evening.

Relative Sunspot Numbers

Date 2004	My Observations
Sept. 10	77
11	52
2290 — 13	28
~~14~~	~~50~~
18	42
19	32
~~22~~	12
23	11
~~24~~	11
26	25
29	11
2300 30	22
Oct. 1	~~22~~
~~3~~	~~25~~
5	24
6	33
7	11
8	14
12	13
13	14
18	59
19	39
22	107
28	112
Nov. 3	76
12	50
13	53
14	56
15	51
19	49
22	39
2320 ~~26~~	44
29	38
Dec. 5	33