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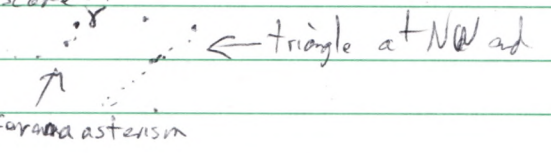
538e 19991213-14 17:35-17:55 EST Oriale 7 10cm rr
10cm rr: Nova Aquilae 1999-2 17:45 EST (=22:45 Dec 13 UT) 25x
59 (7) Nova (1) 67 = 6.6m
Jupiter & δ Aql 167x 250x pinched optics seem less with cell loosened, but seeing poor.
→ 18:30-1850 EST Oriale 7-3 10cm rr 15cm rl
Comparison of Jupiter & Saturn in the 2 scopes — shadow of ? Io slightly easier in 10cm, satellites of Saturn easier in 15cm
→ 19:25-1940 EST Oriale 2 10cm rr 15cm rl
Passing clouds, very poor seeing. Could not see Io in either scope until it started to move off planet — Io's shadow very difficult to see in both scopes.

539n 19991217-18 03:45-0355 EST Corbeil 9 7x50b
7x50b: Deep sky: M48 03:50 EST large & bright — much larger than M50 or M93.
Also M42, M35, M67, Double Cluster, M81, Rosette Nebula (03:55)
04:15-0425: → nebulosity clearly visible, M38, M36, M37
→ ? Kemble's Cascade ?:



Rosette nebulosity confirmed. M83 region too low.
04:45-04:55 Trying to confirm Kemble's Cascade
05:00-05:10 Kemble's Cascade — finally seen ~5:00 — much fainter than I had expected — one bright star ~2/3 way along chain from SE to NW. Asterism drawn above is just W of γ Cam (brightest star in corona asterism. M83 still too low. Could not see M51 in binoculars. Head & body of Hydra easy to see & trace.

740 e 1999 12 18-19 17:45-17:55 EST Corbeil 8 7x50b

7x50b: Nova Aquilae 1999-2 – bright moonlight ~~made it~~ put nova just at limit of visibility of 7x50s, making a light estimate impossible

5[illegible]1 e 1999 12 23-24 17:30 – 18:00 EST Oriole 6 25cm rl –8°C

25cm rl: Nova Aquilae 1999-2 too low to observe – in trees.

Pleiades: observed c & s Paracorr – star images much tighter in 40mm & 22mm c Paracorr – planetary images poor with 5mm.

Jupiter: quick look @ 230x – lots of detail, SEB dark & broad

Saturn: Iapetus easy, brighter than background star (H 645.1198 Mag 11.75)

⟶ 19:40-20:20 EST Oriole 6 25cm rl 15cm rl 10cm rr

Mainly a comparison of 10cm rr & 15cm rl on Jupiter & Saturn. 15cm rl does not seem anywhere near as sharp as it did in the summer – I wonder if the cold affects the figure of the mirror. The only place it was superior was in seeing Dione & Tethys, which were much more readily seen. Rhea was quite easy in 10cm, Tethys more difficult, & Dione only suspected. On the other hand the 10cm was significantly better on planetary detail on both planets, with the RSH and NEB s festoon detail clearly seen. There is a slight blue edge at 167x, but the detail on the planets is sharp and contrasty – much closer to the appearance in the 25cm rl. 200x was too much on both Jupiter & Saturn. 188x seemed too much with the 15cm, but even at 150x the image didn't sharpen up. The 15cm had well over an hour to cool down, so that wasn't the problem.

——→21:00-21:40 EST→25cm rl 10cm rr——

25cm rl: Jupiter RSH approaching CM — SEB appears pinched off to nothing at p end of RSH. 230x. Again the STB appears to darken just f the RS — seeing was not good enough to see anything of RS other than slight pinkish cast.

10cm rr: Jupiter: pinching off of SEB very clear at 167x

Moon: tried 250x, but it seemed a bit too much, better at 167x.

25cm rl: Moon: very fine at 285x. 1.6 days past full. Rille in Petavius really spectacular. 3 craterlets in Plato

Conclusions: On basis of tonight's observations, the 10cm rr is clearly superior to the 15cm rl in resolving fine planetary detail. The 15cm rl is superior in light grasp, making Saturn's satellites easier to see. I will remount 10cm on 15cm EQ mount, and continue testing it. One thing I'd like to try is some deep sky observations with it at a dark site, though I'll give priority to the 25cm rl, since it's just so much better in every way. Still waiting for Parallax rings & dovetail plate to arrive. Another thing to try is recollimating the 15cm, since I'm sure it was giving me better images in the summer.

19991231 I disassembled the 15cm rl mirror cell to see whether it could be responsible for the poor performance the other night. The mirror appears to be glued to the central 11cm torus of the mirror backing plate — this appears to be a surface to surface gluing, not dabs of silicone with no spacing. Since a large surface area is involved, and the mirror is fairly thin (20mm), this could be destroying

the figure at low temperatures. Parallax tube rings to mount 10" on Losmandy arrived today — I had to remove Orion tube balance to attach them — will have to shorten Orion track.

562 e 20000101-02 17:40-18:15 EST Oriole 5 10cm rr 15cm rl
Jupiter: seeing poor due to neighbor's chimney. Detail in Festoons in EZ better in 10cm, though 15cm seems much improved — collimation must be really critical
Saturn: better than Jupiter, since further east. Views in 10cm @ 200x and 15cm @ 188x very similar — Cassini perhaps slightly sharper in 10cm, but image dimmer. Tycho visible in both. Rhea suspected in 15cm. No others (haze). Improvement in 15cm may be due to warmer temperature (+2.3C) compared to ~ -10C on 19991223-24.

563 e 20000108-09 18:25-18:35 Est Oriole 4-5 25cm rl
Saturn: 230x too powerful — better at 190x because of poor seeing & wind — 25cm rl mounted on Losmandy for first time — it is a little too heavy for the 22lb counterweight — will try adding a barbell weight
Jupiter: 190x — seeing poor
→ 19:20-19:50 Est Oriole 7 25cm rl
Saturn: 230x seeing still poor Iapetus appears almost as bright as Titan. Can't see Enceladus.
Orion nebula: 60x & 150x with Paracorr. Tried 6mm Radian with (220x) & without (190x) Paracorr. Star images appear better without Paracorr.
I think I prefer the ease of setup of the Dob mount

over the G-11. Somehow the 10" seems much bulkier than the 8" on the G-11. I also prefer the comfortable sitting position at the Dob mount. I think the G-11 will only be practical if I can set it up permanently on a pier in the garden (probably with the 8").

544e 20000114-15 18:15-18:30 EST Oriole 7 10cmrr
Moon: spectacular at 167x – chromatic aberration not noticable – Plato looks almost circular due to strong libration – shadows of huge peaks on its rim cast across the floor. Rupus rectus spectacular
Jupiter: 167x – seeing poor – satellite diffraction patters still 3 lobed
Saturn: could easily see Titan, Rhea & Iapetus @ 167x.
– remounted 10cmrr on SkyView Deluxe mount before tonight's session – bitterly cold – 9C (wind chill -18C).

→ 19:25-19:50 EST Oriole 3 10cmrr
~~Saturn~~
Jupiter: RSH approaching CM – could not see RS – SEB nearly invisible & RSH. 167x
Saturn: Confirmed Rhea & Iapetus @ 167x & 200x, but could not see ~~the~~ Tethys or Dione. Cassini's division and shadow of planet on rings clear & sharp.
Moon: spectacular at 200x, shadows in Plato much shorter than an hour ago. Neat little crater chain directly S of Rupus Rectus. Hadley rille system clearly seen. (in Deslandres)

545e 20000115-16 21:15-21:20 EST Oriole 4 10x50b
Checked out area of occultation by Pales 49 tomorrow night, but sky very hazy.

red = S+T predicted times

546e 20000116-17 ~20:00 EST Oriale 7 ne.
I chickened out on observing the occultation by Pales 49. The temperature at 20:00 was -12.5C, the wind N at 31.7 km/h and the windchill -30.1C. I'm getting soft in my old age!

547e 20000120-21 21:15-23:15 EST Oriale 6-7 10cm rr ne David, Louise
Lunar eclipse: 21:15 62x no shading visible
21:35 ~~one~~ first penumbral shading noted (not yet visible in scope)

O-C		
+2	22:01	22:03 62x umbra definitely on Moon (slightly late
0	22:07	22:07 62x Aristarchus (because David was observing
-1	22:19	22:18 62x Copernicus
0	22:20	22:20 62x Plato. ~~Shad~~ Umbra looks pale yellow near limb
		22:35 62x Posidonius
-1	22:42	22:41 62x Tycho
0	23:05	23:05 62x Moon fully in umbra

-switched to 25x to look at M44.
Temperature -16C Windchill -32C (but observing site well protected from wind (from N)

→ 23:45-23:50
-at mid eclipse, Moon is yellow on S edge, coppery red on N edge — very obviously not in centre of umbra both ne & c 10cm rr @ 25x between 3 & 4 on Danjon scale.

→ ~~23:15-00:30~~ 00:15-00:30

0 00:22 — 00:22 3rd contact — first penumbral light on limb 67x
— -called it a night due to extreme cold & need to work
was 0 in the morning.
The C102 on Premiere mount was a real joy to use, except for low

2000 asteroids

007 Iris 2000-01-26/27
002 Pallas 2000-02-07/08
001 Ceres 2000-02-28/29
015 Eunomia 2000-03-26/27
051 Nemausa 2000-04-23/24
044 Nysa 2000-04-23/24
020 Massalia 2000-04-23/24
004 Vesta 2000-07-23/24
008 Flora 2000-07-23/24
003 Juno 2000-07-23/24

eyepiece position towards end when Moon was close to the meridian. A taller tripod would help.

568e 2000-01-26/27 18:45-19:15 EST Oriole 7 25cm rl
~~25cm rl~~ Saturn: Dione right below Rhea & both S of Saturn 190x
Aligned new Celestron 7x50 finder. 8.
M42 & M45 in 22mm & Para carry = 60x
Bitterly cold: -12C, wind chill -30C
Scope much better balanced with 2lb wt at bottom of tube, though 22mm & Para carry still front-heavy. Azimuth motion much smoother with addition of 1 metal washer between the two plastic ones.

→ 21:40-21:55
Asteroid 7 Iris: observed right at predicted position at 21:53 at 28x — as far as I can recall, this is the first two I've seen as asteroids

→ 22:25-22:45
Asteroid 7 Iris: re-observed @ 28x & 130x.

569e 2000-01-27/28 21:~~40~~30-21:45 EST Oriole 7 25cm rl
Asteroid 7 Iris: observed @ 28x in predicted position at 21:40 EST - equal in brightness to #811, 1616 Mag 7.8

→ 22:20-22:35 EST -14C
Asteroid 7 Iris: observed at 22:30 with 28x, 130x, 190x — definite movement over the past 50 minutes.

570e 2000-01-28/29 18:~~15~~25-18:25 EST Oriole 7 25mm rl
Jupiter: 190x - Jupiter is in the middle of a bright star field.
Saturn: 190x - Dione, Tethys, Rhea & Titan arrayed at 4 points of compass around Saturn

→ 19:00 - 19:30 EST Oriale 7 25cm rl & 10cm rr

Jupiter - ~~230x~~ could not see Io in transit - Io's shadow noted at 19:09, 2 minutes before predicted 25cm @ 230x - getting close to root - 10cm rr @ 167x - Jupiter dimmer but not as affected by seeing & proximity to root. Io's shadow a perfect black dot.

Saturn - Titan, Rhea, Tethys, Dione, & Iapetus all easy with 25cm @ 230x - Enceladus could be glimpsed from time to time, nasty with averted vision. I may even have caught a glimpse of Mimas!

- only Titan & Rhea visible in 10cm rr (didn't look for Iapetus) @ 167x Cassini's division easy.

→ 19:~~45~~ - 20:10 EST Oriale 7 10cm rr

Jupiter: 10cm rr @ ~~200~~ 200x - watched to see when I could detect Io as it moved off disk. First saw it at 19:58, 3 minutes before scheduled egress. Egress finished at 20:03 - striking 3D effect of Io just off limb & shadow close to CM

Saturn: 10cm rr @ 200x - Iapetus clearly visible - could not see Tethys or Dione. Cassini very clear. Switched down to 115x, still could not see Tethys or Dione

Jupiter: gorgeous @ 115x in star field!

→ 21:00 - 21:40 EST Oriale 7 10cm rr 25cm rl -9°C

Jupiter: 10cm rr @ 200x 21:13 Wp RSH - into trees

Saturn: 10cm rr @ 167x & 115x Iapetus, Rhea & Titan

Deep sky: M42 ≈ 25cm rl @ 70x. ~~6~~ 6 stars seen in Trapezium 230x & 285x - could not see companion to Rigel

Asteroid 7 Iris 25cm rl @ 25x, then 130x 21:34 EST.

UT		
23:34	I, Ec, R	18:34
1:10	II Sh E	20:10
2:03	III Sh I	21:03
4:03	III Sh E	23:03

551e 2000-01-29/30 18:15-1825 EST Oriole 7 25cm rf

Jupiter: Ganymede & ~~Callisto~~ Europa just off planet, Europa's shadow tiny spot 190x - turbulence from neighbor's chimney

Saturn: 130x & 190x turbulence from chimney

→ 19:00-19:10 EST Oriole 7

Jupiter: Europa's shadow a tiny pinhole @ 230x (Saturn over chimney)

→ 19:50-20:10 EST Oriole 6

Jupiter: Europa's shadow still visible ~~at~~ close to limb, but quite tiny & hard to see @ 230x - moons are nice little disks

Saturn: Could not see Enceladus, but very close to N limb of planet 230x

→ 20:30-20:45 EST ~~Jupiter~~ Oriole 6

Jupiter: now below the chimney, but into a bad of bad seeing, probably the jet stream, since the moving ripples are sharply in focus - can't take more than 190x

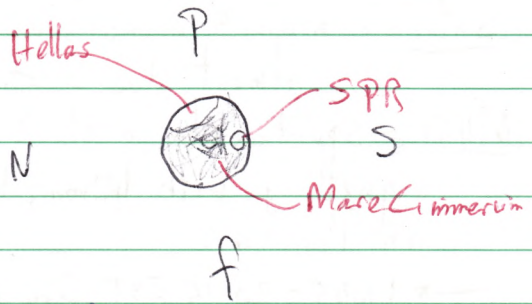
Saturn: satellites seem best at 130x: the 8.8 UWA has remarkable contrast - the sky is inky black, so the moons stand out really well. Cassini visible all around @ 190x

Deep sky: M42 nice @ 130x - can see E in Trapezium really clearly at this power, but F requires more magnification.

→ 21:40-21:55 EST Oriole 3 -5°C at 21:50

Asteroid 7 Iris: sky becoming hazy. Spotted Iris @ 28x, and while checking its position with respect to stars W of it, they become really hard to see - when I looked up I saw that large puffy clouds ~~mark~~ moved in from SE. Very damp and misty.

552e 2000-02-07/08 18:15-18:30 EST Oriole 7 25cm rl 10x50b
Jupiter & Saturn - seeing poor from chimneys - 130x
~~→ Jupiter RSH coming~~
→ 18:45-19:00 EST Oriole 7 -8C
Jupiter: RSH coming into view - can now use 190x
Saturn: main 5 moons seen - Iapetus nearing conjunction, almost due S of p end of rings
M45: - spectacular with 22mm & Paracorr - Para corr causes vignetting with ~~40~~mm, but may be because of short barrel on Para corr.
→ 19:45-20:15 EST Oriole 6
Jupiter: 230x RS definitely pink tonight. Dark material from p end of RSH seems to be working its way past the RSH: the SEBs & the RSH is definitely darker than it was a few weeks ago.
Saturn: could not see Enceladus at any power tonight. 130x-285x
~~007 Iris~~
002 Pallas: looked for it c 10x50s - I think I may have seen it, but it appeared brighter than Starry Night plotted it.
M45: just above neighbor's roof - saw E in Trapezium but not F.
→ 20:55-21:25 Oriole 7
002 Pallas: what I saw earlier was a star - this time I saw Pallas just at the limit of 10x50s (at least in city haze) at 21:05 EST & 130x Mag ~6.8
007 Iris: 25cm rl @ 30x - 21:15 EST - slightly brighter than Starry Night shows = star just NE of it (H 810.1802z 7.4m)



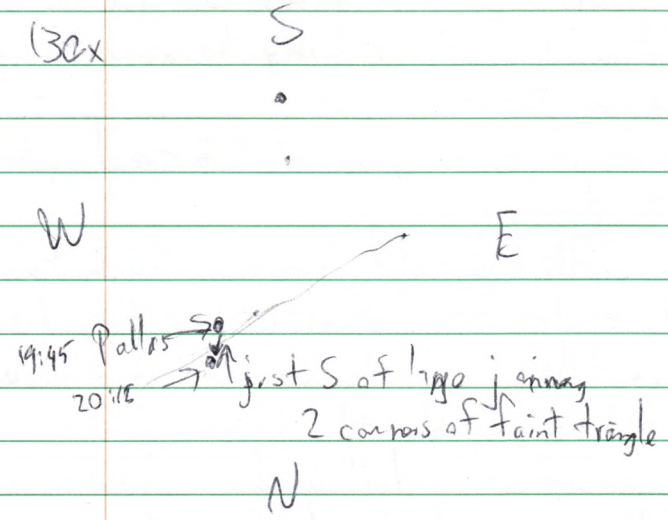
f

diameter = 4.5"

553 e 2000-02-08/09 18:05-18:20 EST Oriole 7 25cm rl (+10cm rr)
Saturn: star S of planet ~ same brightness as Titan-Iapetus
seems quite dim tonight, probably because it's quite
close to Saturn 130x & 190x
Jupiter: 190x: large festoon on S edge NEB reaching to EB
→ 18:30-18:45 EST Oriole 7
Mars: in conjunction with 2 day old Moon. Much to my
← amazement I could see detail on the tiny disk
@ 285x! Dark triangular mark in middle of disk, white
area on p limb & possibly the S polar cap
Moon: 285x amazing amount of detail visible on dark side:
f limb must be librated towards us — large crater
(? Grimaldi) clearly visible — I thought it was
Plato, until I found Sinus Iridum & real Plato
Aristarchus very plain. Neat isolated mountaintops hit
by sunlight near S pole. "Bridge" area on f edge of
M. Crisium clearly visible as interleaving spurs.
→ 19:30-19:45 EST Oriole 7
Jupiter & Saturn: 230x: wind shaking telescope but seeing quite
good - much fine detail in NEB & NTB — Enke's division
suspected.
→ ~~18:30~~ 20:30-20:45 EST Oriole 6-4 10cm rr
002 Pallas 10cm rr @ 25x - observed exactly in position plotted by
Starry Night ~ racing against clouds moving in from NW
- equal in brightness to star just NW of it 20:40 EST
H 5992.3645 = 7.6m — not as bright as predicted* (6.4)
- clouds moved in preventing observation of 007 Iris.
* by Starry Night, but in good agreement ē OH (7.4m)

@ 19:45:

130x



18:30 - 18:50 Jup Sat

19:20 - 19:30 " "

19:45 - 20:10

exactly 3 months old

2000-02-26. Traded C102 in on a Celestron CR150 f/8 refractor OTA
After unpacking discovered dozens of tiny flecks of metal on the inside of the objective. 4" aperture just wasn't enough.
2000-02-27. Ray Khan will exchange OTAs.

554e 2000-02-28/29 @19:00-19:45 EST Oriole 7 25cm rl
Jupiter: 190x - nothing remarkable
Saturn: 190x - Enceladus relatively easy at 190x, but not visible at either 130x or 230x - visibility seems to depend quite critically on magnification
Pallas: located 19:30 just N of M47 - position drawn at 19:45
→ 20:10-20:45 EST Oriole 7 25cm rl
Pallas: at 20:15 had moved so that it was just N of line between 2 faint stars in triangle. 30x
Iris: 30x Much fainter than a few weeks ago.
M46: located planetary nebula in cluster - best at 130x with UltraBlock filter. NGC 2438 20:25
Pallas: by 20:45 had moved farther still.
→ 22:30-22:45 EST Oriole 7 10x50b
Caves: located with binoculars between 34 Vir & 41 Vir

2000-03-01 exchanged 150mm OTA. at Khan's.
N end of yard

555e 2000-03-04/05 18:30-18:50 EST Oriole 3 15cm rr
Jupiter & Saturn: seeing poor over our chimney. Quite a bit of colour on Jupiter, much less on Saturn 135x & 200x
→ 19:20-19:30 EST
Jupiter: 200x is the most it can bear, but it's acceptably clear.
- moons show tiny diffraction patterns
Saturn: can see Rhea & maybe Tethys at 200x

→ 19:45-20:10 EST

Jupiter in trees

Saturn - seeing has improved, can push magnification to 300x before image starts to deteriorate. Strangely enough, color is more noticable at 135x, but Tethys & Dione are easier to see at this lower power.

M45: beautiful at 30x

γ Leonis - split cleanly at 200x

→ 20:45-21:10 EST Oriole 2-3

M42: unable to see E & F, even at 300x, but passing cirrus clouds hampering view.

Rigel: split nicely at 200x; companion well outside of Rigel's diffraction rings. Clouds getting heavier.

Comments: First light with the CR150 was as good as conditions allowed. Color was only intrusive on Jupiter. On Saturn, the color was noticeable @ 135x, but seemed to fade at higher powers (200x to 300x). ~~Saturn~~ Image of Saturn did not break down at 300x, but was better at 240x. As others have noted, there is a different aesthetic to refractors. What I notice the most with all of them (50mm, 102mm, 150mm) is the diffraction rings visible around point sources, even fairly small ones like Jupiter's moons and Titan. Just looking at Rigel and γ Leonis, I can see why double-star observing was so popular in the heyday of the refractor. With reflectors, I'm never aware of diffraction rings, even at the highest powers. It will be interesting to do a direct comparison of the CR150 with the Lin 6" f/5 Newt. The G-11 works supremely well with the CR150. Vibrations damp down in about a second. The 9x50 finder is more than adequate. I'm pleased. Height of G11 seems about right with legs at full extension.

I can observe Jupiter & Saturn sitting on either bioenergetic stool or garden chair. I didn't try observing anything close to over head because of clouds moving in - might be problematic. Perhaps the pier extension is a good idea, as I could observe low objects without diagonal (all observations tonight were without diagonal). Drawtube doesn't have enough in travel to use 16mm & 8.8mm eyepieces in 1.25" adapter - must be used in 2". I need to try 24.5mm in adapter. Pleiades in 22mm (55x) were sharp right to edge of field - this should be a great deep sky eyepiece with this scope.

N yard

556c 2000-03-05/06 18:25-1840 EST Oriole 7 15cm rr

Jupiter: 200x & 240x. SEB is almost invisible, and p 1/3 of NEB has also faded. Shadow of Ganymede on S polar region large and clear

Saturn: 240x. Titan & Rhea visible in twilight.

⟶ 19:25-20:25 EST Oriole 7-3 15cm rr 10x50b

Saturn: moons seen best @ 135x - Iapetus not seen for sure, but Tethys & Dione easy

2 Pallas: 30x → 300x 19:35 EST - orange colour

μ Gem: unable to resolve: ~~16" but very different~~ wide pair but B is very dim 9.4m vs 3.2m M35 quick look @ 30x

η Gem: also unable to resolve, also very different magnitudes

7 Iris: easily seen at 30x, close in brightness to star just p it 20:08 EST

~~M81~~ M81-82 - best at 135x, but not in same field - both easy with direct vision, racing against clouds moving in

557e 2000-03-12/13 18:15-19:20 EST Oriole S driveway 6 15cm rr

Moon: Triesnecker rillos perfectly placed 300x. Blue purple cast over Moon due to twilight & chromatic aberration - surface itself looks yellowish. Despite this, detail is phenomenal.

Jupiter: In trees - couldn't see Ganymede in transit.

Saturn: Can tolerate 300x in good seeing

Aldebaran: 300x - diffraction rings assymetrical - brighter rays on one side but seeing poor.

Castor: cleanly split @ 135x into two white stars, almost equally bright

Satellite?: saw one that looked like an Iridium satellite at 19:18 EST low in E moving N, but couldn't identify it at Heavens Above.

→ 20:00-20:10 EST → 4 15cm rr

Moon: sky has become very hazy, killing contrast, even on Moon

From proposed observatory site, NE corner of yard, Sirius is just touching smaller evergreen at 20:20 EST, and Orion is entirely behind larger evergreen except for Betelgeuse peeking over top. Jupiter just setting over neighbor's house, in trees; Saturn above trees.

558e 2000-03-17/18 18:55-19:25 EST Oriole N yard 7 15cm rr

~~Moo~~ Saturn: seems best @ 240x - Cassini clear all around, equatorial belt & polar region well marked, detail within Ring B. Moons best @ 135x: Titan, Rhea, Tethys, & Dione easy. Can't see Iapetus yet - sky still light.

Moon: Vallis Schroteri well placed @ 240x (300x too much)

Mizar & Alcor 135x well split, 4th star between & to one side.

→ 19:50-20:45 EST

Moon: tried stopping down aperture with lens cap, but prefer full aperture

-area W of Marius looks like a gherkin! Tons of little domes and hills.

Double stars θ_1 Orionis E was really easy to see, but F was a lot more difficult — seemed best at 240x, but once seen, I could also see it @ 135x!

θ_2 Orionis wide pair 135x almost equal in brightness

δ Orionis wide pair 135x σ Orionis: triple 2 very close, dim far away 240x

σ Orionis triple: two close & uneven, third far away 135x

ι Orionis nice colour contrast 135x

Struve 742 just S of ι, almost equal in brightness 135x

Double cluster getting low — quick look @ 30x

M45 — nice @ 30x

→ 21:15 - 21:35 EST 7

Moon: 240x — Moon will be behind tallest evergreen at time of occultation (22:06 EST) of 7 mag star — it's really cold & seeing is poor, so I packed it in. -5C

Reflections: I'm really pleased with the performance of this scope on the G-11. It's really fun hopping around and then letting the G-11 take over tracking. Splitting a bunch of doubles is a new observing experience for me — something that's aesthetically pleasing in this big refractor. I'll be really interested to see how it performs under dark skies. There was a remarkable amount of detail in M42 tonight, & θ_1 was about as good as in 8" Cave.

Eagle 2000-03-25/26 19:00 - 20:30 EST Oriole Nyard 7 15cm rr

Saturn in trees @ 1900

Regulus — star test with at diagonal - diffraction rings muddled but not assymetrical, so collimation problem may be with diagonal

γ Leonis: pretty @ 135x
Rigel - clean at 135x
Trapezium E easy, F difficult @ 135x M42 observed at various powers & S. UltraBlock
Scanned area around ζ Ori & ι Ori for nebulosity c UltraBlock with no luck
NGC 2194 faint OC in Orion, seen as mottling c averted vision using Phil Harrington's finder chart,
δ Gem nice double: One bright, companion very faint @ 135x
NGC 2392 Eskimo Nebula - very bright & easy - could see with 30x, best @ 135x & 200x, UltraBlock didn't make much difference. Definite concentration in centre. 20:25 EST

→ 21:00-22:15 EST Oriole 6 15cm rr
Deep sky: could not see M65 or M66
Ceres: observed at plotted position @ 21:15 @ 30x. Could not see M88 nearby. Could just barely see M87 @ 135x, Could not see M51. Observed M3 & could see it easily at all powers, but couldn't resolve it into stars at any power (incl. 135x, 200x, 300x) - sky becoming quite milky.

560e 2000-03-26/27 18:30-18:45 EST Oriole NE yard 6 15cm rr
Jupiter - excellent @ 200x despite low altitude - into trees

→ 19:10-19:20 EST 6
Saturn: - best @ 200x but still OK @ 240x

→ 19:30-20:50 EST 6 15cm rr 10x50b
2 Pallas 20:00 EST 30x

20:40 M65,66, 3628
20:50 M97, 108

21:10 M51 5195
21:05 M101
21:25 M46, 47

22: M81 82
22:10 M95, 96, 105, 33

M42/43
M45

2392 Eskimo

Galaxies ||||-|||-|||
Planetary ||
OC |||
Diff ||

M 16
NGC 4

Deep Sky: Eskimo Nebula revisited, but almost overhead.
M44: 30x – better in binoculars – too wide spread in 15cm rr
M67: best at 135x – lots of faint stars, irregular shape
ζ Iris: Required 75x to see well. Equal in brightness to star just SE of it

→ 21:10-21:50 EST 6 15cm rr 10x50b
15 Eunomia: hard to find because it's down at the bottom of Sextans a constellation I've never looked at before – located it with 30x at 21:45 – equal in brightness to two nearby field stars: HIP49919.734=8.5m, SAO137711=7.7m μ=8.1m
– couldn't stay up to find Ceres again, as I have to take David to SickKids in the morning to get his casts removed. Four asteroids in under 25 hours isn't bad!

561e 2000-03-31/04-1 20:30-22:30 EST Forks of the Credit 9 15cm rr 10x50b
Saturn: 20:30 – too low – very fuzzy @ 135x
Deep Sky: 20:35 M42/43 – absolutely spectacular – huge wings
20:40: M65&66 bright & easy, NGC 3628 faint granularity @ 55x
20:50: M97 & M108 in same field @ 55x – both better @ 75x
21:05: M101 best @ 75x – huge & faint
21:10: M51 hint of bridge @ 135x – 2 components well separated
21:25: M46&47 – couldn't see planetary in M46 @ 75x and 135x
? M45 – no sign of nebulosity
? M81&82 bright & easy – both in field @ 75x, but more detail seen in M82 @ 135x
22:10: M95, 96, 105 & NGC3384 all bright & easy @ 55x
22:30: NGC 2392 Eskimo – nice & bright @ 135x

Reflections: First time @ Forks of Credit — sky was mostly quite good except for light domes to E & W. I was able to find everything I looked for. The 6" rr proved to be an excellent deep sky scope — probably equivalent to 8" rl in light gathering power. Secondary colour not noticeable at any time, even looking at Sirius @ 30x! Probably the 3 hrs driving (139 km round trip) for 2 hours observing was worth it. A warm-up hot would have kept me going a while longer. There were 6 guys doing a Messier marathon at the site when I didn't know. Mark, Brian, Steve, ? — obviously a group who observe together regularly.

562e 2000-04-09/10 20:00-20:40 EDT Oriole front yard N 7 10cm mm
Testing LOMO 102 mm f/5.5 Mak-Newt for Khan.
Jupiter: 2 belts visible, not much else 140x
Saturn: 140x — Cassini not visible } close conjuction
Mars: 140x — disk but very tiny.
Moon: 140x Image sharp, but not enough magnification
(140 x max.)
Comments: because of focal point very close to tube, most eyepieces wouldn't work. I ended up using 28mm Edmund Plössl (20x) for low power & 4mm Radian (140x) for high power. Finder is built into secondary support & switched by rotating 180° ⇒ mirror image in finder — I find this very confusing — would need 1x finder to get scope pointed the right way. Could not focus any eyepieces w/ Ultima Barlow, so max. magnification limited to 140x — not enough to test optics on Moon — planets now too low to serve as test. I much prefer the Celestron 102

rr or even the Première 4.5" reflector. Dovetail supplied by Khan unusable because of stripped threads on locking screw, so I mounted it c̄ rings from CR150, which were the right size! None of my newer wide field eyepieces would reach focus (24.5 SWA, 16mm Nagler, 8.8mm UWA) - only eyepieces that would work were 28mm Plössl & 16mm Jaegers Erfle.

563e 2000-04-12/13 20:00-22:00 EDT Albion Hills CA 8 25cm rl Guy Nason, Randy Atwood, Leslie Harvey, Tony Horvatin
Star party for Grade 9 students from Bramalea. 105 km round trip
Moon, Jupiter, Saturn, M42, M45.

564d 2000-04-15 10:00-5:00 EDT Central Peel HS Brampton 7-1 8cm rr Jay Haynes, Leslie Harvey
Sun 25x - counted 25 spots, including one large double spot within single penumbra — bright areas near limb very noticeable. RASC display at Gem & Mineral Show.

565e 2000-04-23/24 21:20-22:16 EDT Oriole NE 6 25cm rl
15 Eunomia 21:39 EDT 70x ~ = brightness to star SE of it = 10.6m
1 Ceres: 21:52 EDT 30x brighter than H 872.923 → 8.3m, Could not see M98 in field, even @ 70x
M94: bright & star-like @ 30x - needed 70x & 130x to see that it was non-stellar
→ 22:45-23:25 EDT Oriole NE 6 25cm rl
γ Vir - 2 equally bright stars, close together, needed 130x to see clearly
51 Nemausa: 22:53 EDT 70x M61 not visible. Checked area of 3C273, but sky too bright to see that faint obs mag 10.0
44 Nysa: 23:14 EDT 70x observed mag = 11.5
20 Massalia: 23:21 EDT 70x observed mag 10.0

2539 < 2249 21:35
2261 22:00
1931
2371/2
Clown face
M65/66/NGC
M83

341 km round trip

Guy Nason, Leslie Harvey + 3 other

566e 2000-04-24/25 21:30-23:30 EDT Forks of the Credit 8 25cm rl 7x50b

NGC 2539: 21:35 EDT 70x Fills field with many tiny stars.

NGC 2244: Observed cluster, but couldn't see nebulosity.

NGC 2261: 22:00 EDT 70x Small triangular patch.

NGC 1931: 22:30 EDT 130x faint fuzzy glow. Hard to find because star fields so rich.

NGC 2371-2: 22:45 EDT 70x & 130x faint peanut-shaped — visible without UltraBlock

NGC 2392: bright, central condensation clear 130x.

M65/M66/NGC 3628: M65 & 66 really bright & easy — NGC 3628 tougher but clearly seen — all 3 fit in 70x field

M83: in right spot @ 23:20, but couldn't be sure of it — Guy also couldn't see it. 10 minutes later I was almost sure I saw it @ 52x as faint mottling on sky background.

Tonight was windy & cold — sky to SW was quite good, but light dome to SE.

567e 2000-04-28/29 21:30-23:55 EDT CAO 9 25cm rl 7x50b *

← M44, M45, M65, M66

NGC 3242: 21:55 Bright & large @ 70x

NGC 3115: 22:15 Small, bright, slightly elongated @ 70x

NGC 3521: 22:30 Very bright, condensed nucleus 70x

NGC 3607-8: 22:40 both easy @ 70x — couldn't see NGC 3605

M104: big & bright @ 70x - no sign of dark lane

NGC 4699: 23:05 small fuzzy patch @ 70x

NGC 4697: larger than 4699 @ 70x

NGC 4038-9: "Antennae" 23:15 V-shaped @ 70x

NGC 4361: 23:35 small & fuzzy planetary @ 70x

M83: 23:45 big & easy @ 70x under dark skies! Last of revisited Messiers

* Rusty, Mike Wirths, Tim, Stuart, Brian, Bob Chapman, etc.

⑤ 01:35 4216

③ 01:20 4567-8

4564

M87

M86

M84

④ 1:24 4388

4387

4438

4435

① { 00:40 4517 ~~3C273~~

⑥ 00:45 M49 4526

4535

② 01:05 4762

4754

M60

M59

⑦ ~~⑥~~ 02:00 5746

⑧ ~~⑦~~ 02:05 M83

~~HA 00:50 3C273~~

24 NGC

~~16~~ Messier ~~Objects~~

~~3~~ 1 quasar

~~39~~ 41 DSO

→ 00:30 – 02:05 EDT CAO 8 25cm rl 30x & 70x (all)

NGC 4517 00:40 Faint streak

3C273 00:50 Personal first – farthest object I've ever observed!

NGC4762 01:05 Looks like a moth caught in a web of 3 stars.

4754 " Larger than 4762

M60 "
M59 "
M58 "
} guide posts for "galaxy-hopping" bright!

NGC4567-8 01:20 Quite large

4564 " Smaller than 4567-8

M87 "
M86 "
M84 "
} guideposts for "galaxy-hopping" bright!

NGC4388 01:24 Large, diffuse, faint

4387 " Small & faint

4438 "
4435 "
} "The Eyes" Look more equal visually than on chart.

4216 01:35 Long spindle, can't see 4206 or 4222

M98 "
M99 "
M100 "
} all big & bright!

M49 01:45
NGC4526 "
4535 "
} These form nice series M49→4535→4526: bright→dim, big→small

NGC5746 02:00 Nice big edge-on!

repeat M83 02:05 Had to take a second look – conditions have deteriorated so it looks just like at Parks of Credit Valley night.

Remarks my best ever night 24 new NGCs & 3C 273, plus at least 16 Messiers revisited. Also zodiacal light & a bit of aurora! 341 km round trip. Had good looks at M51 & M13 in 12.5" Meade Dob.

568e 2000-05-03/04 22:00-23:50 EDT Oriole NE yard 5 10cm rr 75x50b
Testing Sky-Watcher 102mm f/5 achromat on loan from Khan
M44: finder is a joke — same fov as 40mm eyepiece! (12x, 5°36' field)
field of view huge, no vignetting even @ 40mm
~~Regulus~~
2 Pallas: observed @ 125x as it passed between 2 stars in Hydra
22:55 ~85% of distance
23:20 ~95% " "
23:30 now past star
1 Ceres: observed at 2310 @ 31x
γ Leonis: split at 125x, but diffraction patterns poorly formed.
Focus travel limited compared to other refractors. Can't focus Radian + Barlow + TV 2" diagonal — needed to switch to Orion 1.25" diagonal to focus. Also can't focus any eyepieces without any diagonal — need 2" extension tube. Based on these tests, I think this scope, like the 80mm f/5 will be superb for low power rich field views, but very limited at higher powers. Secondary spectrum not a problem on Procyon & Regulus, but star images themselves lack the snap & sharpness of the 6" f/8.

569e 2000-05-06/07 20:30-21:45 EDT Oriole E yard 6 10cm rr
Testing Sky-Watcher 102mm f/5 achromat.
Moon: Earthlight spectacular @ 57x
Petavius: radial rille & rille along W wall very clear. Terracing of E wall very complex. Most of time, could use 250x (4mm Radian + Barlow), but had to go down to 200x as Moon got lower.
Endymion: very similar to Plato — shadow of huge mountain peak

stretching right across floor. 200x - 250x
-almost no secondary spectrum visible - less than with 6" f/8 - image seems a little soft @ 250x, but Moon is quite low. 200x is certainly completely usable. I wish Jupiter & Saturn were around!

Doubles α Gem - split @ 57x!
α Leo - wide pair, very different brightness 125x ~~200x~~
γ Leo - both reddish compared to α Gem - harder to split because of color & magnitude difference, 250x
- diffraction patterns look much better than the other night
- some ~~focus shift~~ image shift with focuser - limited travel is a nuisance. Need extension tube for straight through viewing, and can't use 2" diagonal ± Barlow.

57od 2000-05-07 10:45-11:15 EDT Oriole NE 2 10cmrr
Testing Sky-Watcher 102 f/5 by day.
Sun: 1000 Oahs ETx filter just fits inside dew cap! Passing clouds provided brief glimpses @ 20x.
Checked FTE body with T-ring attached to scopes 1¼-2" adapter - focused fine on distant objects, but minimum focus was about 100 feet away. 45° erecting prism works fine, focuses to within ~10 feet ± 24.5 mm SWA.

57le 2000-05-08/09 @ 21:45-22:15 EDT Oriole E 2 10cmrr
2000-05-08 tested 80mm f/5 rr for 102mm f/5 rr
Testing TeleVue 102 f/8.8 APO on Up-Swing/Bogen
Moon: seeing very poor - couldn't go above 220x - Posidonius on terminator - nowhere near as much detail as 2 nights ago ± Sky Watcher
Up Swing/Bogen is not nearly steady enough for this scope. I will mount it on the G-11 for future tests.

23:00 - 23:55

+23:00 - 2355 EDT

Sue 2000-05-10/11 21:45-22:20 EDT, Oriole N 7 10cm rr x2
Head-to-head between TeleVue 102 & Sky-Watcher 102
Moon: initial impression: SW awash ~ haze, contrast much lower, highlands yellow, shadows blue. ~~At higher power detail was about the same~~ TV razor sharp, absolute black and white, astonishing contrast. At higher powers (TV 4mm 220x & SW 5mm + Barlow = 200x) actual level of detail almost the same, but easier to see in TV because of higher contrast. Mainly looking at rilles. Higginus easy in both. Ariadaeus could be traced all the way to crater Ariadaeus. Triesnecker more difficult due to lower contrast. Sulpicius Gallus most difficult of all, but still seen in both scopes. 200x was right at the limit for the SW, but the TV could take 5mm + Barlow = 350x with ease, though 4mm + Barlow = 440x seemed too much, mainly because of poor seeing & dim image.
M13: neither scope has a finder at present, but low power/wide field capability made it ~~easy~~ relatively easy to find in both. View best in SW with 4mm (125x) & TV with 6mm (147x). Just beginning to resolve into stars in both scopes - a few stars like fireflies — slightly better view in TV.
Remarks: The two scopes have very different "feels" because of their difference in length & weight. Surprisingly, TV ~~has~~ also has very small focuser range, but able to handle all eyepieces ~ 2" diagonal in place — no way it could be used for direct viewing without extension tube. Not sure how camera would focus — will try another night. TV looks small atop G-11, but really nice to use — would be great for

photography. SW is so much smaller & friendlier - it has the same appeal as the AP Traveller.

573e 2000-05-13/14 20:00-20:30 EDT Oriole NE driveway 13cm rr =f/9.4
Testing "130mm f/10" D&G apochromat - actually measures 128mm x 1200mm
Moon: seeing very poor, so measured actual focal length of scope.
~~2000-05~~ → 21:00-21:30 EDT " 13cm rr, 10cm rr, 15cm rl
Moon: seeing still terrible - compared 13cm first with 10cm f/5 rr
- color along limb ≈ 10cm, image very unclear
- replaced 10cm rr on Lin mount with 15cm rl - image as achromatic as 13cm, but not as sharp - probably needs to cool down
- seeing so bad, any comparisons are pointless
- scanned Moon's limb ≈ 13cm - no color. There seems to be a lot more scattered light in field than I remember from TV102.

574e 2000-05-14/15 21:10-22:05 EDT Oriole NE driveway 3-0 13cm rr 15cm rl
Testing 128mm f/9.4 D&G APO
Moon: seeing a bit better than last night, but clouds began moving in soon after I was set up. Terminator just past Gassendi & right at Aristarchus. Most observing done at 300x (4mm Radian), though I tried all the Radians with the Ultima Barlow, just to see how it would look. Seemed OK up to 480x but 600 was definitely too much. There is a slight color fringe on the ~~edge~~ limb of the Moon all around, and the highlands are slightly yellow compared to Newtonian. Much more detail was visible in D&G. Clouds became solid ~ 10pm so I packed it in.

575e 2000-05-15/16 21:00-22:30 EDT Lake Aquitaine Park, Mississauga 5 15cm rl
Brian Cheaney, Tony Horvatin, Dave Sage, Allan , grade 9 students
teachers & parents (including Rich Green)
Moon: Aristarchus & Schroter Valley @ 155x
Double stars Mizar & Alcor @ 45x, γ Leonis @ 100x
Went to Tim Hortons after.

576e 2000-05-26/27 21:45-22:15 EDT Oriole N 6 13cm rr
ε Boo: cleanly split @ 300x B is very blue and dim
→ 22:30-23:05 EDT
ε Lyr split cleanly at 200x - stars are all tiny disks & diffraction
rings
M13 - beginning to resolve @ 135x - better @ 200x
Antares - bubbling blob
→ 23:30-24:00
M57: - central darkening clearly seen @ 75x & 135x - 200x dims
it too much
Conclusions re: D&G 5": while it's a nice scope, I think I
prefer the TV102: the latter seems more contrasty, and
has less secondary colour. I think I also prefer the
CR-150 - again it seems to have more contrast. I
can't figure out why the D&G seems lacking in snap & sparkle.
Somehow I can't get excited ~~by~~ by it.

577e 2000-05-27/28 21:45-22:40 EDT Oriole NW 6 10cm rr (sky-W, other)
ε Lyrae: image sharp up to 57x - gets a little hazy above this
- stars split at 167, but not as cleanly as ε 5" D&G
M57: best @ 57x - central darkening not seen (but sky
not fully dark)
- high cirrus coming in from W.

578e 2000-06-03/04 21:15-21:55 EDT Coor Observatory 8 19x50b 25cm rl
Moon: very thin crescent (1.5 days old) @ 130x - seeing too poor for anything higher
Mercury: about 6° N of Moon - phase looks slightly less than 50% @ 130 - can't tolerate 190x because of seeing
→ 22:15-00:30 EDT CAO 8 10x50b 25cm rl
Deep sky: 22:25 NGC 2903 just visible in twilight @ 70x - large
22:44 NGC 3344 smaller & more condensed than 2903 @ 70x - foreground star
22:55 NGC 2683 clearly an edge-on @ 70x
23:15 (NGC 3003) can't see it @ 30x, 50x, 70x, 130x
23:30 NGC 2841 quite bright & condensed @ 70x
23:40 NGC 3079 nice edge-on next to isosceles triangle @ 70x
23:50 NGC 3184 large & diffuse @ 70x
23:55 NGC 3877 had to go to 190x & put Y out of field to see it - edge on.
Pluto 00:15 could see it with averted vision ~30% of the time @ 190x
- two firsts tonight: first view of Pluto & thinnest crescent Moon I've ever observed - 37 hours old
- met a friend of Leland Dolan's from Houston: Hanna

579e 2000-06-06/07 21:00-22:05 EDT Oriole N 6 15cm rr
Moon: nice tour of the terminator @ 300x: Vallis Rheita, Metius Fabricius, Janssem Rimae Janssen, Fracastorius, Mare Nectaris, Daguerre, Rimae Gutenberg, Mare Tranquillitatis, Aryabhata, Rupes Cauchy, Cauchy, Rimae Cauchy, Sinus Amoris, Romer, Rima Romer, Franklin, Cophous, Atlas, Rimae Atlas, Hercules, Keldysh, Endymion

→ 22:45 - 23:15 EDT Oriole N7 15cm rr

ε Lyrae: cleanly split @ 135x — much cleaner than 13cm D&G apo

ε Boötis: split @ 135x. At 300x the diffraction patterns were much cleaner on both of those doubles than ε 13cm D&G apo

M13: nicely resolved @ 135x

M57: hole in doughnut obvious @ 75x, beautiful @ 135x. This is as good a view of M57 as I've seen through any scope.

Reflections: This scope is even better than I remembered! It's so satisfying to use. It puts the D&G 13cm apo to shame. Admittedly, there is more colour on the Moon, but its resolution & contrast are much better, and it is truly superior on doubles and DSOs.

580e 2000-06-07/08 21:15 - 21:50 EDT Oriole N3 25cm rl

Moon: I thought it was cloudy & then was suprised to see the Moon out, so I quickly set up the 25cm rl. Seeing was very good allowing 285x. Much more detail & more easily seen than last night with the 15cm rr. Rimae Burg, rupus just S of R. Burg very prominent, Posidonius, Rimae Posidonius, Rima G. Bond, Rimae Plinius, Rimae Hypatia, Theophilus, Cyrillus

581n 2000-06-17/18 23:50 - 00:05 EDT Oriole N2 15cm rr

Moon: — one day past full, viewed through sucker hole in cloud banks, very low in S (~~sol~~ 1 day past solstice Full Moon) 135x & 240x. Mainly I wanted to test the Vixen GP-DX mount I bought on Thursday. Mount seems wobbly with legs fully extended; probably due to aluminum legs — I retracted them about 6" to see if that's steadier. At full extension GP-DX is 4" taller than G-11 at

Cosmos 1697 Rocket

full extension, so shortening legs should be Ok except for objects close to zenith. Slow motions very smooth, but a long stretch with the 15cmrr. Drives will be my next priority — problem is that Orion is out-of-stock on dual axis controller until end of July, and I would really prefer Vixen drives over Chinese clones. Mount is reasonably portable with counterweights (2×8.2 lb) removed.

582e 2000-06-21/22 21:30-21:45 EDT Oriole N yard 6 15cmrr
ε Lyrae: neatly split @ 135x
→ 22:45-23:30 EDT also Albireo
Doubles: Zeta, Beta Lyrae & struve 525 all split easily @ 135x
M57, ~~M27~~ C01399, M27, & M56 all ε 16mm 75x. M56 was the only difficult object — needed averted vision @ 75x.
Both M27 & M57 were enhanced by UltraBlock.

GP-DX — a little steadier ε legs shortened. Really need motor drives as my arms aren't long enough to reach from eyepiece of CR150 to Slow motions!

583e 2000-06-22/23 21:~~30~~-21:40 EDT Oriole N yard 7 15cm rr
ε Lyrae — tested new Chinese 2-axis drive on GP-DX.
→ 23:15-23:50 EDT 15cmrr, 10×50b
M57, M27, M71, M11 — latter best @ 135x
Nice view of pass through Lyra of Cosmos 1697 Rocket, mag. 3.5.

[slept from 00:15 → 03:00]

584m 2000-06-22/23 03:00-04:45 EDT Oriole N yard 7 15cm rr 10x50b
Moon: 300x Rimae Ariadaeus well placed close to terminator.
First worked N. Julius Caesar. Rima. Fresnel. Rima Hadley
only visible in NS portions, some E Rima Bradley. Archimedes
Autolycus, Aristillus, Montes Spitzbergen, Cassini, Mons Piton,
Vallis Alpes (rima not visible), Plato, Protagoras, Archytas,
Timaeus, W. Bond. Back to Rimae Ariadaeus working S:
Agrippa, Godin, Lade, ~~Werner~~ Halley, Hind, Albategnius,
Vogel, Burnham, Argelander, Airy, Werner, Aliacensis, Walter,
Stofler, Faraday, Licetus, Heraclitus, Tycho, Clavius. First
bird song @ 04:24. Packed up scope @ 4:30, spotted Jupiter
low in trees @ 4:40. Will not be high enough to observe
for another hour - best location close to drain spout.
Motor drive: quite a bit of backlash, esp. in RA, but I
deliberately left gears loose. Really improves observation,
even at 300x, mount seemed quite steady. Need to tie
wires together, & add velcro spots to hold paddle.

585e 2000-06-23/24 21:30-23:45 EDT David Dunlap Observatory 5 15cm rr
E Lyrae briefly, then M57 for rest of night 75x + UltraBlock
- assisting at public star night at DDO E Guy Nasm.

586e 2000-06-25/26 21:50-22:05 EDT Oriole N yard 6 15cm rr
E Lyrae & M57 - amazing to see M57 @ 75x E
UltraBlock while twilight so bright - 1.5 hr till end of
astronomical twilight!
→ 22:45-00:10 EDT Oriole N yard 5 15cm rr 10x50b
Double stars (see next page)
23:15 Barnard's Star identified @ 75x using Ron Wodenski's CCD image

Double stars

✓ 90 Her 5.2+8.5 1.6" 22:50 240x Tiny pinpoint close to primary,
✓ π Aql 6.1+6.9 1.4" 23:25 300x Clean split, almost equal brightness
✓ δ Cyg 2.9+6.3 2.5" 23:30 200x Clean split
x λ Cyg 4.9+6.4 0.9" 23:45 400x Couldn't split - seeing poor, hard to tell comes from diffraction pattern lobe.
✓ 61 Cyg 5.2+6.0 30.3" 23:55 30x + 135x Wide pair of orange stars, easy at 30x
x ζ Cyg 3.8+6.4 0.8" 00:05 400x Couldn't split - again diffraction pattern doing contortions

-37m 2000-06-25/26 03:40-04:40 EDT Oriole N yard 4 15cm rr, n.e

Moon 240x, seeing poor. Sinus Iridum, Promontorium Laplace, Prom. Heraclides, Bianchini, Sharp, C. Herschel, Heis, Dawes, Helm, Maupertuis, La Condamine, Bouguer, Foucault, Harpalus, Harpalus, J. Herschel, Robinson, Anaximander, Carpenter, Mons La Hire, Euler, Montes Carpatus, T. Mayer, Delisle, Diophantus, Montes Harbinger, Prinz, Mons Vinogradov, Kepler, Encke, Milichius, Hortensius, Lansberg, Montes Riphaeus, Bullialdus, Lubiniezky, König, Agatharchides, Gassendi, Campanus, Mercator, Capuanus, Ramsden, Rimae Ramsden, Heinzel, Bayer, Schiller, Segner, Zucchius. Poor seeing plus dew on objective cut contrast & resolution, so that fine detail was not visible.

Jupiter naked eye. Just N of downspout looks like best location.

#88e 2000-06-27/28 22:30-01:00 EDT Forks of the Credit P.P. 8 25cm rf
ne 10x50b Leslie Harvey, Alan Hill, Guy Nason ~~10x50b~~
NGC - all found ~ 30x, observed ~ 70x

LMi (3003) } skipped these because of low altitude, twilight, and aurora
LMi (3432) }

Com 4494 23:15 Bright patch
Com 4565 23:17 Bright streak
Com 4725 23:24 Large oval patch
Com 4274 23:36 Very faint - couldn't see 4278/83/86.
Com 4559 23:42 Large & bright
CVn 4631 23:51 Huge edge-on
CVn 4656 23:52 Also huge - much fainter than 4631
Com 4414 23:58 Small bright ellipse
CVn 4244 00:10 Long thin streak
CVn 4214 00:12 Elliptical patch - brighter than 4244
UMa 3941 00:20 Small and bright
CVn 4490 } 00:25 "Mother and daughter" - neat pair
CVn 4485 }
CVn 4449 00:39 Big bright ellipse
CVn 4111 00:49 Bright star-like nucleus
CVn 5005 00:55 Bright, condensed
CVn 5033 00:55 Larger than 5005, more diffuse

Sky reasonably good - Milky Way readily visible. Bright rayed aurora in NW 22:00 - 22:30. ~~Befor~~ While waiting for twilight to end, observed ε Lyrae & M81/82. 17 new galaxies tonight including 16 Dyer "Finest NGC" - 33 to go!

E89e 2000-06-30/1 23:10 - 00:25 EDT Carbeil 8-3 25cm rft 10x50b
NGC all 30x → 70x
2403 Cam 23:15 huge, hints at spiral structure
(3003) LMi in trees
3432 LMi 23:24 faint smudge between two stars
2655 Cam 00:08 bright condensed nucleus
6946 Cep 00:22 huge faint galaxy } in same 70x field
6939 Cep 00:22 nice open cluster
Clouds encroaching from West
Pluto: 23:50 130x visible 90% of time in Starry Night position with direct vision

2 → ~~00:00~~ 00:50 - 02:00 EDT 8 25cm rft 10x50b
NGC all 30x → 70x
4157 UMa 01:02 Faint but definite
4088 UMa 01:05 Brightest & largest of 3 (4026, 4088, 4157)
4085 UMa 01:05 Very faint & small
4026 UMa 01:08 Second brightest of 3 (4026, 4088, 4157)
4605 UMa 01:16 Bright oval patch - nice!
(5907) - too high - observe later
5466 Boo 01:25 Large unresolved @70x, disappears @ 130x!

Comet ~~[illegible]~~ C/1999 S4 LINEAR picked up easily at 01:40 just N of M34. Quite bright, stubby wide tail, very close to Starry Night position for 03:00 EDT. At 30x, it is in same field as M34. Best @130x

≅ 40mm

590e 2000-07-04/05 21:30-23:20 EDT Morningside Park 5 25cm rl 10x50b

NGC 663 Cas 22:30 Nice cluster with stars of various brightness 70x
Neptune: Pale blue dot @ 280x just over trees.
ε Lyrae, Albireo, Brocchi's Cluster, M57, M27.

591e 2000-07-05/06 20:45-21:55 EDT Oriole NE 3 20cm rl
Moon: 280x Rheita Valley, Rheita, Metius, Fabricius, Brenner, Young, Mallet, Reinarus, Janssen, Steinheil, Watt, Biela, Rosenberger, Vlacq, Hagecius, Nerich, Reichenbach, Neander, Snellius, Petavius, Wrottesley, Manga, Cook, Colombo, Magelhaens, Bellot, Crozier, Godenius, Goclenius, Rima Gutenberg, Ibn Battuta, Lindbergh, Lubbock, Messier, Secchi, Montes Secchi, Taruntius, Cauchy, Lawrence, Watts, Vinci, Yerkes, Proclus, Macrobius, Tisserand, Cleomedes, Franklin, Cepheus, Atlas, Hercules, Endymion. Seeing deteriorating.

→ 22:30-23:00 EDT
Deep sky: ε Lyrae, M57, ε Boötis, Albireo, Brocchi's Cluster, M27, M13, Antares (comes not seen), M4.
20cm Cave seems very close to CR 150 in most respects. CR150 is better on doubles, but Cave is slightly better on Moon. Greater height of 20cm on G11 vs 25cm on Dob makes high objects like M13 much easier to find, as I can easily get under finder. I think I need to move finder on 25cm closer to front of tube to make eyepiece more accessible.

592e 2000-07-06/07 2045-2200 EDT Oriole NE yard 7 25cm rl
Moon mostly 230x, later 285x. Posidonius, Rima Posidonius, Daniell, Chacornac, Rima Chacornac, Luther, Grove, Williams, Atlas, Hercules, Mason, Plana, Burg, Keldysh, Baily, De La Rue, Gartner, Democritus, Endymion, le Monnier, Mons Argaeus, Dawes, Plinius, Carrel, Janssen, Cajal, Romer, Brewster, Franck, Littrow, Rima Littrow, Vitruvius, Mons Vitruvius, Gardner, Beketov, Lucian, Rima Janssen, Lyell, Cauchy, Rima Cauchy, Rupes Cauchy, Sinas, Mashelyne, Wallach, Aryabhata, Menzel, Censorinus, Leakey, Rima Gutenberg, Torricelli, Isidorus, Capella, Vallis Capella, Gaudibert, Daguerre, Madler, Theophilus, Beaumont, Fracastorius, Rosse, Bohnenberger, Weinek, Piccolomini, Meander, Rheita, Rheita Vallis, Metius, Fabricius, Janssen, Steinheil, Rothmann, Stiborius, Wöhler, Riccius, Rima Janssen, Lockyer, Dawe, Pitiscus, Hommel, Vlacq, Rosenberger, Biela, Noordt, Hagecius.
2000-07-06/07 22:30-23:00 EDT Oriole NE yard 6 25cm rl
Deep sky: ε Lyrae split @ 130x, M57, M27, M4, Albireo, M11 (Box)
Antares not split (poor seeing)
Today I moved the finder ~5" towards front of tube & 2" closer to eyepiece holder, approximately the same as on the Cave. This makes it much easier to get behind the finder. Also collimated the scope.

15cm rr
593e 2000-07-07/08 21:30-23:50 EDT David Dunlap Observatory 6-2 RASC
Mostly Moon @ 200x, concentrating on Mare Tranquillitatis.
Also ε-Lyra & M57

nx50b
594e 2000-07-10/11 21:30-23:30 EDT Morningside 5 15cm rl, RASC star party
Moon (Clavius, Copernicus, Plato) @ 190x, M57, Bracchi's Cluster, M11
~23:30 tried to find Comet LINEAR without success - hazy near horizon

15cm rl does not draw crowds like the 15cm rr! Most people were lining up to look through 12 Meade SCT.

595e 2000-07-11/12 21:00-22:00 EDT Oriole NE 7 15cm rr
Moon: 200x seeing 1-3 Colong 35°. Plato, Fontenelle, Philolaus, Vallis Alpes, Montes Teneriffe, Montes Recti, le Verrier, Landsteiner, Helicon, Sinus Iridum, C. Herschel, Dawson Heim, Lambert, Pythias, Euler, Montes Caspatus, T. Mayer, Mons Vinogradov, Bradley, Natasha, Archimedes, Autolycus, Aristillus, Cassini, Copernicus, Reinhold, Landberg, Milichius (domes), Hortensius, Kunowsky, Montes Riphaeus, Euclides, Darney, Bullialdus, König, Kies, Rima Agatharchides, Agatharchides, Loewy, Hipparchus, Rima Hipparchus, Prom Kelvin, Rupes Kelvin, Campanus, Mercator, Rupes Mercator, Palus Epidemiarum, Dunthorne, Ransden, Rima Ransden, Capuanus, Cichus, Hainzel Mee, Longomontanus, Clavius, Rutherfurd, ~~Hainzel~~ Scheiner, Blamcanus, Klaproth, Casatus, Gruemberger, Moretus, Cysatus, Short, Newton, Tycho. I was quite surprised to be able to see Rima Hyginus very clearly as white feature on grey background (including Hyginus itself) plus traces of Rimae Triesnecker. Once again I'm struck by how pleased I am with the 15 cm refractor. Half-pier shelf for GP-DX arrived today. I feel so lucky to have a large refractor of excellent quality for such a reasonable price!

596e 2000-07-13/14 22:30-23:30 EDT Oriole NE 5-6 25cm rl
Moon: ~~240~~ 230x seeing 1-2 Colong 60° Gassendi, Rima Mersenius, Rupes Liebig, Mersenius, de Gasparis, Rima de Gasparis, Cavendish, Harpalus, Henry Freres, Vieta, Fourier, Palmieri, Lagrange, Piazzi, Lehmann, Schröter, Drebbel, Naggerath,

Stopwatch reading: 16".78
WWV 5mhz 04:26:00.00
Occultation: 04:25:43.22

Map Blast:
Lat: 43.701523 43°42'05.4" 43.701634 43°42'05.8"
Long: -79.404013 -79°24'14.4" -79.404056 72°24'16.4"
(Topo Map 1:25000 43°42'05" -79°24'20")
Mean:
Lat: 43°42'06" ±1"
Long: -79°24'15" ±1"
Altitude: 163m. ±4m

[Wargentin beyond terminator], Nasmyth, Phocylides, Schiller, Bayer, Segner, Zucchius, Bettinus, Kircher, J. Herschel, Anaximander, Carpenter, Pythagoras, Babbage, South, Robinson, Herrebow, Harpalus, Bonpland, Foucault, Bianchini, Maupertuis, Sharp, Sinus Iridum, Prom Laplace, Prom Heraclitides, Maraldi, Gruithuisen Mons Gruithuisen γ + δ, Mons Rumker (brooding on the terminator), Aristarchus, Herodotus, Vallis Schroteri, Freud, Schiaparelli, Vaisälä, Rupes Toscanelli, Rima Aristarchus, Krieger, Van Biesbroeck, Rocca, Prinz, Montes Harbinger, Delisle, Diophantus, Louise, Marius, Reiner, Reiner γ, Stoss (could not would not see the Rima Stoss), Sirsalis D + E, Rima Sirsalis, Hansteen, Mons Hansteen, Billy, Letronne, Winthrop, Flamsteed, Lupus, Fontana

→ 00:05-00:30 EDT

Occultation of 58 Oph by Moon 285x seeing 1-2. Occultation timed at 04:25:43.2 ±0.1" — appeared instantaneous: no stepping.

597e 2000-07-19/20 22:50-23:20 EDT Oriole SE 7 10cm rr 10x50b Comet LINEAR C/1999 S4: Just visible in 10x50b close to SAO 145800 22° above N horizon. Easily visible at all powers in 10cm rr, best view @ 57x. Nicely condensed nucleus, faint fan-sloped tail to N. A couple of young raccoons were not happy with my observing location, close to the composter! Brightness = H4127.37 = 7.8m

David

598e 2000-07-21/22 22:50-23:05 EDT Oriole SE 7 25cm rl 10x50b Lavisa Comet LINEAR C/1999 S4: Moving noticeably against stars @ 190x — nice sharp nucleus & fuzzy triangular tail. Orbit seems ~5's of predicted path.

[ ] = tried but not seen

→ 23:35 - 00:20 EDT
LINEAR: just disappearing into tree.
DSO: M81, 82, [M51], M27, [Veil nebula]

599e 2000-07-22/23 21:30-00:50 EDT David Dunlap Observatory 6 10cmrr 10x50b
Comet LINEAR: observed @ 20x ~~&~~ 83x, ~~[illegible]~~
Helped people find various Messiers. Observed for first time c̄ John Gender's Obsession 15: M57 (brilliant), M81, M82, LINEAR, M27, M13, 180x M11. The planetaries and open & globular cluster were the best under hazy skies, especially M13, M11, M57. Observed part of Veil Nebula (the part next to 51 Cyg) with OIII filter — interesting that it makes the stars red, not green.

600e 2000-07-23/24 21:45-22:35 EDT Oriole SE 6 25cmrl 10x50b
Comet LINEAR: motoring along close to TX UMa, Best @ 130x — occasional hints of long ion tail. Very bright condensed star-like nucleus

→ 23:00-23:35 EDT Oriole E 7
Comet LINEAR: getting low — hard to move scope N to clear trees. ~~Moved to NE corner for~~
4 Vesta: moved to NE corner to see it 30x, Neptune still in trees. Vesta = 51 Sgr = 5.6m @ 23:25 EDT
→ 00:00 - 00:35 EDT Oriole NE 6
Neptune: tiny disk @ 285x in same field as α Cap, nice double
8 Flora: 00:12 @ 30x Mag = H6356.1055 = 10.6
3 Juno: 00:26 @ 30x moved on to
M2 in same low power field, beginning to resolve @ 190x
Uranus: much bigger & brighter than ~~α Cap~~, Neptune — went back to Neptune for comparison.

601e 2000-07-24/25 21:30-22:30 EDT Oriole E 5 25cmrl 10cmrr 10x50b
Comet LINEAR: for some reason the comet was much more difficult to spot tonight than in the past few nights. It was only a faint smudge in the 10cmrr, so I dragged out the 25cm rl. It looked as if the nucleus has dispersed — the bright condensation of the last few nights was gone even @ 190x, leaving just the smear of the coma. There may have been a bit more haze to the NW, but overhead was quite good for the city. [LINEAR "ran out of gas" between last night & tonight.]

2000-07-25 Nephrectomy

602m 2000-08-24/25 02:15-02:20 EDT Oriole NW 5 10x50b
Jupiter & Saturn — size & shape difference obvious in 10x50.
— no satellites seen
M31 — first look at season
M33 — suspected as granularity

603e 2000-08-25/26 21:30-21:50 EDT Oriole NW 5-3 15cm mn
First test of Orion Argonaut 6" Mak Newt = Intes MN61 bought at FOA today
Albireo: checked focus & vignetting w standard eyepiece set
40mm König must be slid outward ~1cm to reach focus. 16mm Nagler & 8.8mm UWA must be used in 1.25" adapter to reach focus. 22mm Nagler & Radians use fine. Some vignetting @ 40mm, very slight @ 22mm.
M57: can easily span the two bottom stars of Ilyrae @ 40mm. "Hole in doughnut" easy at 100x.
ε Lyrae easily split @ 100x
→ I went up to 450x using Barlow. This is the first time I've ever seen diffraction rings in a reflector. They appear a bit asymmetrical, probably due to collimation

RS transited at 2:14 am EDT, so was 1 hr 26 min past CM

error. I didn't collimate, but it looked like secondary was slightly off (primary not quite central in secondary). So far I'm impressed — can hardly wait to see Jupiter & Saturn. Sky clouding over & humidity very high so I packed up.

604e 2000-08-27/28 21:00-21:15 EDT Oriole NW 5-4 15cm mm
Deneb: Viewed @ 22x, ~~45x~~ 102x, 225x to align finderscope. Very murky & humid, seeing poor, diffraction rings moving constantly

605m 2000-08-30/31 03:30-04:40 EDT Oriole NW 4 15cm mm
Sky very hazy, humidity very high, seeing excellent.
Saturn: exquisite! 5 bright satellites visible easily at all powers. Iapetus due north of Saturn. Saturn was best at 300x (4mm Radian + Barlow) although Barlow seemed to diminish sharpness somewhat — I can see there's a 3mm Radian in my future. Cassini division absolutely sharp all the way around the ring. Encke minima clearly visible. Crepe Ring not seen, but this may be due to scattered light from mist.
Jupiter: best at 225x. Extremely fine mottling visible in EB. RS appeared to be just going out of sight on p limb when observations started at 03:40 EDT. NEB appeared "wavy", due to shallow notches on S edge & barges on N edge. STB & SSTB easy. No festoons on N edge NEB — quite remarkable. Diffraction rings are concentric
M45: absolutely no vignetting visible in 22mm Nagler (91x) — no sign at coma or astigmatism right to very edge of field.
M42/4 belt of Orion only visible @ averted vision, Mag 2 nebu

Ultra Black to be visible @ 41x!

Notes: as expected, performance of MN61 on planets is spectacular. Some haze cut contrast a bit. Really aware that eye lenses on Radians need cleaning. GP-DX works very well ergonomically, except would be nice to have slew speed lower than 32x. LED on paddle is way too bright & needs to be muted. Dew shield worked OK; lots of dew on tube, but none on corrector plate. I tried "stupid high" powers like 450x, which was more than atmosphere/optics could bear, though 360x seemed OK. I think part of problem is Ultima Barlow: it seems to make image slightly mushy. I may need to get Radian 3 (300x), as 225x (Radian 4) is far from limit of resolution. Image of Saturn was very reminiscent of ET's at its best, but with much higher resolution. Diffraction patterns around Jovian moons did not seem as distinct as I remember them in CR150. I'll have to set up GP-DX for CR-150 (longer legs, pillar extension) for next clear morning.

6066 2000-09-04/05 20:10-21:00 EDT Oriole SE 7 15cmmn

Moon: Seeing 2-3-mostly, 300x, later 225x as seeing deteriorated - Moon low in SW - studied area centred on Julius Caesar. Three raised areas on floor of Julius Caesar. Far E end of Ariadaeus Rima just visible. Rima Sosigenes. S end of Rima Ritter. Dome N of Menelaus. NS section only of Rima Menelaus. Possible rima to E of Alfraganus - crater chain to S. Amazing detail on floor of Cyrillus. Rupes Altai nicely lit from E. Moon setting behind neighbor's house. Moved scope to NW corner for planets in morning. Seeing was

too poor to make any comparisons, but resolution of fine detail appeared excellent.

Oriole

→ 22:50-23:05 EDT, NW 7 15cm mm

Deep sky: M31 & 32 but not 110. Best view @ 56x

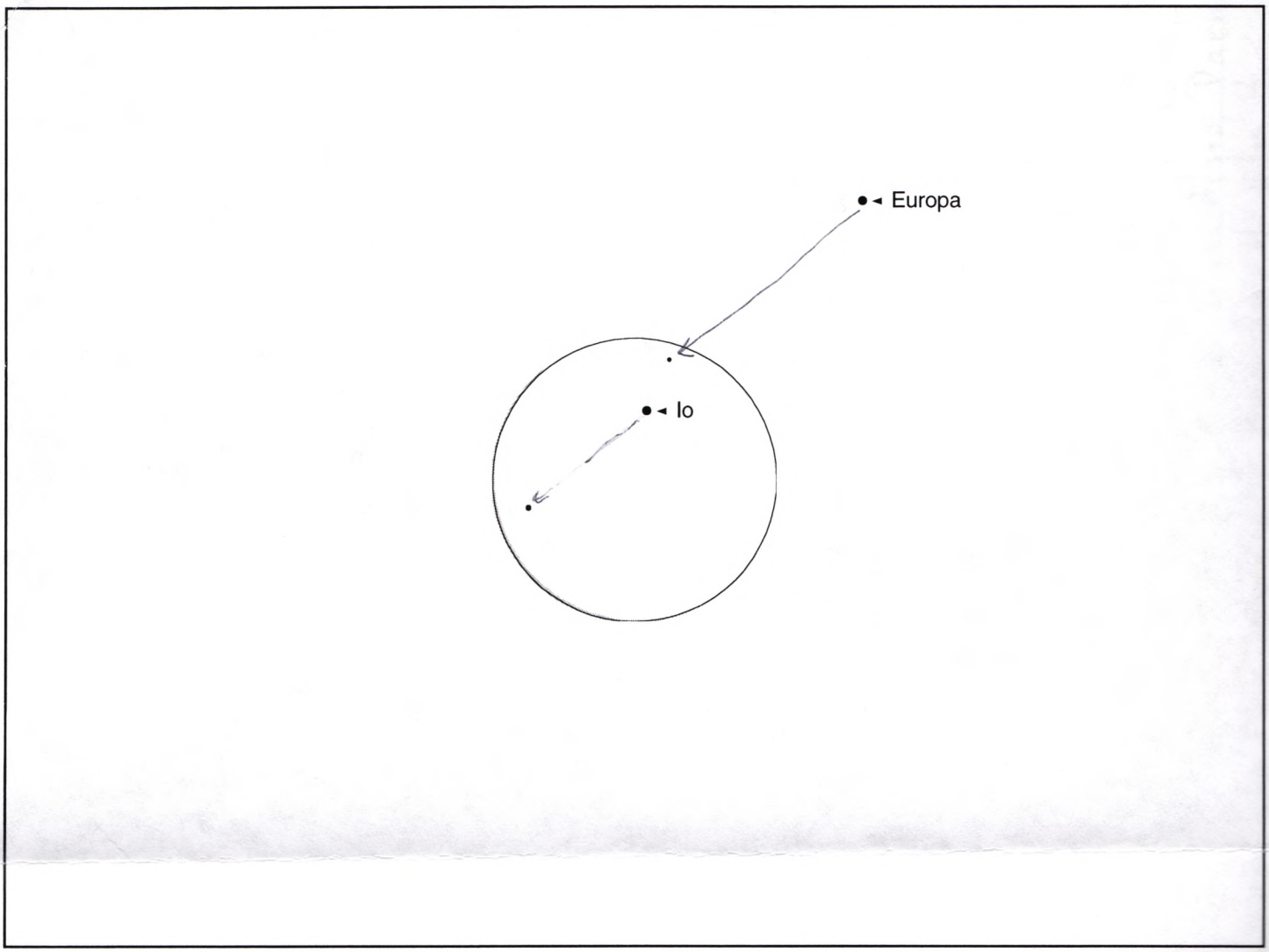
Double Cluster Perseus Best @ 41x (2° field!)

→ 01:25-02:20 EDT Oriole NW 7 15cm mm

Jupiter: 225x RS just past CM - predicted transit @ 01:16 EDT. RS is pale pink, better defined than last year (darkish border) clearly sitting in a white hollow in the SEBs. Large proj. on S edge NEBs. STB poorly defined at this longitude, but NTB & NNTB very clear. Seeing was not as good as last week - fine detail in EZs & NEB not evident. Jupiter has 6 "moons" tonight? stars flanking Ca[illegible]

Saturn 225x & 300x. Again, detail not as clear as last week. Hyperion well placed w.r.t. Titan & Iapetus, but not visible, even c Saturn out of field, Dione easy, close to Rhea at E elongation, Tethys more difficult, close to ring.

Remarks: It is clear that I'm starting to have problems c my left eye. Vision definitely better in R eye. L eye shows haziness & halo around LED on control paddle. Tethys was much easier to see c R eye than L. It still feels like L eye has better resolution, but poorer contrast. MN6 impressive, though seeing not as good as last week. I like the solid precision feel of the scope - makes Chinese/Taiwanese scopes feel like tin cans, reminds me of TV 102.



Viewing from Toronto
9/6/2000 3:55:00 AM (Local)
9/6/2000 07:55:00UT
FOV: 3'

easiest, bright white — bright white

0.9" 1.2" 86" 1.0"

EDT

1:55 I. Sh. $I_{<03:}$ 3:16 I. Tr. $I_{<04:20}$ 3:37 II. Sh. I 6:23 II Tr I
4:04 I. Sh. E. 5:24 I. Tr. E. 6:11 II. Sh. E. 8:56 II Tr E.

03:37 - 04:04 2 shadows + Io 27 minutes

02:30 obs began 225x Io's shadow already in transit seeing 1-2 small clouds
03:07 shadow on CM — visible @ 100x
03:13 Io half a disk right on SEBs
03:17 Io invisible
03:55 Europa's shadow finally seen 1/2 as big as Io's, further S in STrZ
04:01 Io sh eg 1st contact — seeing → 3-4 suddenly Eu sh vis @ 180x, not @ 150x
04:05 Io sh eg 2nd contact
04:20 Clouds solid obs ended

607e 2000-09-5/6 20:00-20:20 EDT Oriole SE 7 15cm mm

Moon: 225x Seeing much worse than last night, boiling like a witches cauldron. Hyginus & Triesnecker Rimae & Hadley region perfectly placed, alas!

→ 20:50-21:05 EDT 7

Moon: seeing still bad - tried 300x but it's a waste of time

→ 21:40-21:45 EDT 7

Moon: seeing even worse. Moved scope to NW corner of yard for plants.

→ 02:30-04:20 EDT Oriole NW 3-0 15cm mm

Jupter: double shadow transit

02:30 225x Io's shadow already in transit, seeing 1-2, small cbd.

03:07 shadow on CM right on SEBs - shadow visible @ 100x

03:13 Io half on disk

03:17 Io has disappeared into cloud background

03:55 Europa's shadow finally seen 1/2 as big as Io's, further S in STrZ

04:01 Io's shadow egress 1st contact - seeing suddenly improved to 3-4. Europa's shadow visible at 180x, not @ 150x

04:05 Io shadow egress 2nd contact.

04:20 Clouds solid, observations discontinued.

608e 2000-09-07/08 20:30-21:30 EDT Oriole NE 6 15cm mm

Moon: 225x. Montes Recti, Montes Teneriffe, Plato, Rimae Plato (Nasty), Fontanelle, Birmingham, Epigenes, Anaxagoras, Goldschmidt, Barrow, Eratosthenes, Copernicus, Gay-Lussac, Rima Gay-Lussac, Fauth, Reinhold, Gambart, Fra Mauro, Bonpland, Parry, Talamky, Guericke, Kuiper, Mons Mara, Darney, Lubiniezky, Bullialdus, Kies, Rima Hesiodus, Hesiodus, Pitatus, Wurtzelbauer, Gaericus, Heinsius, Tycho, Sasserides, Street, Picter, Saussure, Orontius, Huggins, Nasireddin, Proctor, Maginus,

Longomontanus, Clavius, Rutherfurd, Porter, Blancanus, Gruemberger, Maraldus, Cysatus, Short. Seeing 2-3
→ 22:50-23:05 EDT Oriole SE 2
Moon: engulfed with clouds — seeing 0-1 @ 225x — best @ 100x.
— packed up scope, as sky deteriorating: haze & clouds in west.

609e 2000-09-09/10 20:30-22:00 EDT Oriole NE 4-3 15cm mm
Moon: 225x-300x: Gassendi, Rimae Gassendi, Rima Dappelmayer (hard) Dappelmeyer, Puiseux Vitello, Hippalus, Rima Hippalus, Agatharchides Rimae Mersenius (3), Rupes Liebig, Lee, Dunthorne, Ramsden (no rima) Heinzel, Epimenedes, Bayer, Schiller, Rost, Weigel, Zucchius, Bettinus, Longomontanus, Scheiner, Blancanus, Klaproth, Casatus, Gruemberger, Cysatus, Maraldus, Short, Newton, Herigonius, Rima Herigonius (parts), Wichmann, Letronne, Flamsteed, Kunowsky, Encke, Kepler, Maestlin, Suess, Rima Suess (small glimpses of section, esp. near Suess D), Marius, Aristarchus, Prinz, Krieger, Van Biesbroeck, Vera Ivan, Montes Harbinger, Arismavich, Diophantus, Delisle, Mons Delisle, Fedorov, Gruithuisen, Mons Gr. Delta & Gamma, Mairan, Sharp, Bianchini, Maupertuis, Foucault, Bouguer, la Condamine, Robinson, J. Herschel, Herrebow, Anaximander, Anaxamenes, Philolaus, Fontanelle Anaxagoras
I was just about to switch to 15cm rr when clouds covered the Moon. Sky mostly overcast, packed up. Earlier I installed Silica Gel packets in lens caps of 15cm mm & 15cm rr & their finders, plus eyepiece case.

610e 2000-09-12/13 22:40-22:50 EDT Oriole N 7 10x50b
Moon: full harvest Moon. Much detail visible in 10x50s, mainly Plato, Aristarchus, Grimaldi, Copernicus, Tycho & its rays. I sat in

forget the simple pleasures of looking at a full Moon on a clear crisp fall night with a simple pair of binoculars. It's remarkable that you can see more of the Moon with 10x50s than of any other world with any telescope.

611e 2000-09-16/17 21:15-21:45 EDT Oriole NW 7 15cm mn

Deep sky: M57 - nice even @180x

χ-h Persei - best @ 41x

M31-32 - M32 visible @ 22x - 100x (still in field w. M31 nucleus) - M110 not visible

→ 22:30-22:45 EDT Oriole NW 3-0 15cm mn

Moon: 180x - 225x - seeing poor, passing clouds - not enough time for serious "tourism"

612e 2000-09-17/18 20:55-21:15 EDT Oriole NW 6 15cm rr

Deep sky: ε Lyrae: easily split @ 135x - needed my glasses to split it @ 75x, but it was possible.

M57: nicest @ 135x

χ-h Persei: best @ 75x.

Comments: Sky background seems brighter than last night ε MN61, but there was a bit of haze & the last of twilight. CR150 on GP-DX ε pier extension, legs retracted ε 15cm seems solid & high enough for comfortable observing at zenith - had to kneel to use finder, but could sit in normal chair to observe ε Lyrae & M57.

→ 23:50-23:10 EDT Oriole NW 5 15cm rr

Deep sky: M31+32 - nice at all powers from 30x to 135x M110 not seen. M32 seemed a little more contrasty than last night ε MN61.

No sign of aurora seen earlier this evening in Halifax & Ottawa.

→ 23:45 - 00:40 EDT Oriole NW 6 15cm rr ne

Moon: spectacular @ 135x. As Moon rose, could gradually use higher powers 200x, 240x. Experimented ē #8 light yellow filter which is supposed to help ē secondary spectrum. It seemed to increase the contrast a bit, but I prefer the unfiltered view. Although seeing was poor, at better moments an amazing mass of detail came through, eg. just N of Theophilus. Observing without diagonal because Moon is low.

Saturn: initially too low to see much, then gradually steadier. - experimented ē reduced aperture in lens cap — really reduced chromatic aberration, but also detail. Equatorial band clearly visible @ 240x.

Moon: also experimented ē reduced aperture ē same effect: less colour, less detail

Aurora: large irregular arc just below Polaris ~ 00:00 - at first I mistook it for cloud, but showed occasional flickering. One ray shot up briefly below arc. At 00:40, there was just a smudge in the NW below Polaris, pulsating occasionally.

→ 01:00 - 02:00 EDT Oriole NW 6 15cm rr 15cm mn

Jupiter: initially ē CR150 - lots of colour, definition poor

At 01:15 I decided to put away CR150 & switch to MN61. It took 15 minutes to swap OTAs, remove half pier, shorten legs. The difference with the MN61 was staggering! All false colour gone, except for limb of Jupiter from atmospheric refraction. Much fine detail visible in SEB & EZ @ 180x & 225x.

Saturn: Tethys & Dione jumped out, where before they were barely there with averted vision. All false colour & unsharpness gone!

Moon: 2 craterlets in Plato jumped out @ 225x, where none were

seen with CR150. Rilles all over the place that were invisible in CR150. This looked like the TV102 image in terms of sharpness and contrast, but with much more detail. Absolutely spectacular!

Remarks: this test wasn't 100% fair since scopes were compared sequentially rather than simultaneously & all three objects were somewhat higher when viewed with MN61. But still these differences were at least a couple of orders of magnitude. I think the CR150 may still be better on dark sky objects because of greater light throughput, but the MN61 wins on contrast, resolution, and comfort in use. All CR150 observations tonight on Moon & planets were made without a star diagonal, & I had to constantly fiddle with cushions & two different seats to reach the eyepiece. Tube rotation on MN61 meant all observations were totally comfortable. The acid test will be to compare the MN61 with the Cave & the 10" Meade Dob...

613n 2000-09-18/19 ~~02:30~~ 00:20-01:15 EDT Oriole NW 5-3 15cm mn

Saturn: best at 225x - seeing not as good as last night

Moon: Ariadaeus Rima spectacular on terminator. Could not see rima in Valles Alpinus.

Jupiter: best at 180x

Remarks: seeing much worse than last night - hard to focus - played a stupid high powers (450x) on Saturn & Moon. Very obvious on Moon that resolution was being limited by seeing rather than telescope.

→ 04:45-04:55 EDT Oriole NE 5 10x50b ne

[IC 5 & Atlantis] not seen.

614d 2000-09-22 ~0910 EDT Oriole driveway 7 ne
Sun: naked eye sunspot seen ē eclipse glasses

615e 2000-09-26 20:00 - 21:00 EDT Oriole N 7-4 7cm rr
- testing ETX-70AT for Khem
Initial alignment: Arcturus was in field but Altair was not.
Second alignment: Arcturus in field, Altair not, but properly identified
Found M11, M13, went haywire on M57; went to zenith & began to circle. Had to switch off & realign
Third alignment: way off on Altair, once aligned, it chose Alioth (ε UMa), beeped when it got there but kept on slewing right past & down to horizon diagonally of Altair
Clouds moving in so not able to test much. Image in 9mm looked OK but it's only 40x. M13 was plainly visible ē 25mm, but couldn't see it second time I tried. 2 eyepieces differ by 14mm in focus point → at least 20 turns of focus wheel. I ended up sliding out 25mm by this amount to make it parfocal, but not much barrel left. Clouds prevented testing @ higher powers.
AutoStar interface is extremely confusing: way too many options & only 10 buttons to navigate with. Guided Tour includes many bizarre objects such as invisible quasars & "stars with planets". Alignment fails if star chosen is too high (e.g. Altair) or too low (Alioth)

2000-09-27 Fresh batteries seemed to fix AutoStar problems. Intermediate slew speeds now work & there are no "overslew" problems. Ray says I can keep it another day to check optics. Three guided tours are available & seem OK, except for blackholes, stars with planets, & quasars!

bar la

25 mm	14×	
9 mm	39×	78×
6 mm	58×	117×
4 mm	88×	175×

616n 2000-09-28/29 23:00-00:20 EDT Oriole NW 7 7cm rr

Further test of ETX-70AT. M45,

Alignment went fine on Capella and Vega. Viewed M52, M31, M32, Double Cluster, M52, M34, Saturn, Jupiter. All objects were well within 25mm field & usually within 9mm field. With 9mm & Ultima Barlow, had good views of Jupiter & Saturn: 2 belts on Jupiter, shadow of ~~ring~~ Saturn on rings very clear, but no Cassini division. Titan very clear to right. View with 6mm Radian (88x) & 6mm Radian + Barlow (117x) were also pleasing, but 4mm & Barlow (175x) was too much.

Pros: mount very solid*, Auto Star is fun to use

Cons: focussing knob tiny & badly located, & must be turned many times to see any change. — mostly I focussed by sliding eyepiece in focuser & then using knob for fine focus. Needs dewcap — objective very exposed.

I used kitchen stool for "tripod" & this worked quite well.

* much better than usual shaky ~~6cm~~ Tasco type mount.

Temp. 4°C — batteries seemed begining to give trouble at end of session, possibly due to cold.

617n 2000-09-29/30 00:20-01:40 EDT Oriole NW 6 15cm mn 15cm rr

Head-to-head comparison of MN61 & CR150, plus test of Gary Russell mirror binoviewer borrowed from Pedro Braganca, along ~ 220mm eyepieces, Barlow, & 2" Barlow interface. The subjects were Jupiter & Saturn. MN61 tested first, then CR150 (reversing previous tested). MN61 had slight edge on both planets due to scattered light in CR150 at high power, esp. ~ Jupiter. On Saturn the images in the two scopes were virtually identical, though CR150 seemed a bit warmer. Seeing except. really good very steady for long periods, 7-8.

GRO binoviewer: focused & difficulty in MN61 using GRO barlow. ~~Sliding~~ 20mm eyepieces seemed ~ 10mm w/ Barlow. Sliding out Barlow gave slightly more magnification. Switching to my Celestron Ultima at maximum extension gave about 4x magnification ~ 5mm, ~~Par~~ almost parfocal w/ Radians. This worked really really well with MN61, but was a little too powerful w/ CR150, especially on Jupiter. Binoviewer really helped cut chromatic aberration on ~~the~~ CR150; Saturn showed absolutely no color, & Jupiter had a very slight fringe. Views in MN61 were absolutely astounding. I've got to order one of these right away! I had a brief look at M57 with GRO Barlow, in MN61, but it looked quite dim. GRO Barlow doesn't quite reach focus w/ CR150, thus extending Barlow might do it. I think I will order LOMO straight-through version + pair of 20mm eyepieces, and use my Ultima Barlow since its mainly for lunar & planetary I want it.

617n 2000-10-01/02 23:45-02:10 EDT Oriole NW/N 5 15cm mn/25cm rl

GRO binoviewer: 20mm "RK" eyepieces have a bit too much eye relief. Magnification w/ GRO Barlow is betwixt & between; not high enough for Moon & planets, not low enough for DSOs.* Ultima Barlow works really well on both MN61 & 10" Dob. It's a bit heavy for Dob, which is already front heavy. (*Dob: Cl + M45)

MN61 vs Meade 10" - resolution on Jupiter & Saturn w/ binoviewer & Ultima Barlow very close. Contrast ever so slightly better on MN61, eg. elongated black nodules within reddish brown NEB alternating on N & S edge clearly seen, cf NEB looking "wavy" in 10". Seeing was ~ 4-5 tonight, not as good as 2 nights ago.

- measured backfocus on MN61 @ 24mm from minimum focus.

618e 2000-10-3/4 19:30-21:30 EDT Burnanthorpe P.S. 215cmmn Bob Taylor, Tom Ginter, Brian Cheaney

Moon: Theophilus region @ 225x, mainly. 6th graders, teachers, parents & siblings.

619e 2000-10-10/11 20:25-21:50 EDT Oriole N 5-6 15cmmn

Moon: ~2 days from full - Japanese binoviewer & 20mm eyepieces Rima Sirsalis (S part), Wargentin (one prominent w rille ridge) Aristarchus, Vallis Schroteri, Rima Aristarchus, Mons Rümker. Seeing was absolutely terrible: like the Moon was under water, but binoviewer seems to help. A lot of glare reflected inside binoviewer, mainly in L eyepiece. It was much harder to hold the exit pupils on the Moon than on Jupiter & Saturn, probably because my pupils are contracted & closer in size to eyepiece exit pupils.

620e 2000-10-11/12 21:00-22:00 EDT Oriole NW 7 15cmmn 20cm rl

Moon: ~1 day from full. Initial view through MN61 & binoviewer looked very promising for seeing so I quickly set up 8" Cave on GII for comparison. Once both were set up, it was clear that seeing had deteriorated. Cave seemed more affected by seeing, harder to focus, while MN61 snapped into focus. For comparison I used 232x on Cave, 225x on Intes. Also tried binoviewer (~4mm f.l.) on both scopes. Mainly looking at rimae & rimae-like structures: Catena Krafft (looks like rima to me) Rima Haverlius, rima between Lahrman A & D I also noticed a striking black shadow close to N pole - looked like a speck of dust on the eyepiece, very dark, sharp, & far from other shadows

→ 22:20 - 22:40 EDT

Moon: Attempted to "crater hop" down to black shadow on N pole. Got as far as Democritus, then ran out of land marks. Shadow is probably in one of the craters NW of Strabo

Saturn: risen within view of 8", but seeing poor due to low altitude

→ 23:20 - 00:10 EDT

Saturn & Jupiter: continuing comparison of Intes & Cave. Seeing continued poor → Cave harder to focus, image more blurred. Intes image showed more contrast, finer detail most of the time compared to Cave. Considering how much more work it is to set up Cave & G-11 compared to Intes & GP-DX, the optics are so closely tied, that the Intes/GP-DX will be much more likely to be used. However, will have to repeat test under better seeing to see whether Cave has an edge then, though I suspect not.

~~621n~~

621n 2000-10-14/15 23:10-23:45 EDT Oriole NW 5 15cmmn, Louise Daid Tupak

Moon: dorsum on E edge of M Crisium perfectly in view, but seeing poor (1-2), Rima Petavius lit by Sun.

Saturn: Cassini just barely visible

Jupiter: NTB visible

→ 00:00 - 02:00 EDT Oriole NW 5-3 15cmmn

Moon: bmaviones @ ~200x Yerkes, Cleomedes, Rima Cleomedes, Burckhardt, Geminus, Messala (old ring on floor & much debris opposite it), Endymion (thought I could see 1-2 ~~craters~~ craters lots on floor) Seeing poor 1-3.

Saturn ~~Jupiter~~ @ 225x, could see Titan, Rhea, Dione easily, Tethys & Iapetus with averted vision

Jupiter: Io shadow ingress predicted for 12:19 EDT – shadow clearly on disk @ 12:25 (magnification ~200x). Io ingress predicted for 01:19 – actually appeared half on planet @ 01:17. Followed until 01:27 when it faded into SEBs 01:31 Io's shadow appeared on CM (predicted 01:24) SEB not clearly split into N & S components at this longitude. No EB. NTB & NNTB visible. Seeing deteriorating & clouds moving in

Rigel: widely split @ 225x despite low altitude

M42: viewed @ 22x, ~~37x~~ 41x, 102x, 225x. No sign of vignetting even @ widest fields – with bright sky background this would be obvious. Both 40mm & 22mm seen to work very well, can see whole sword in both @ flat sharp field, @ & S glasses. Seeing too poor to see E & F in Trapezium.

622e 2000-10-19/20 20:15-21:40 EDT Oriole N 7 6cm rr

Testing ETX-60AT for WPTC Auction

Initial easy alignment worked on Vega and then ? Alkaid. Found M31, then tried M13, but couldn't see it, then Vega then Albireo – increasingly off. Tried realignment but it got worse. On third or 4th try, went into "death spiral" & I knew the batteries were gone.

→ 23:15-00:~~00~~ EDT Oriole NW 7 ~~6~~ 15cm rl Lavise

Farewell to 15cm Lin Newtonian, which I'm putting up for sale. Images of Jupiter & Saturn @ 190x were really excellent, but there's more scattered light than in other scopes.

→ 00:00-00:45 EDT Oriole NW 7 6cm rr

Tested ETX-60AT on Jupiter & Saturn – images are exquisite for its aperture – absolutely sharp up to 5mm + Barlow = 140x! The free

Galileo 185

- looks & feels like a cheap imitation of the Synta 80mm f/5
- tripod flimsy, sharp fragile leg tips, pan head useless for astro observation, azimuth lock too loose
- OTA poor finish, dew cap very short despite appearances because lens cell protrudes forward
  - focuser: drawtube holder out-of-round, a lot of play unless tension knob tightened, no T-thread on eyepiece holder (cf Synta)
  - finder dovetail crude & loosely fitted
  - dust cap too lapse - keeps falling off - no polar aperture
- 45° erecting diagonal: vignettes field on 20mm eyepiece.

Barlow Khan is supplying is pure junk: full of chromatic aberration.

623e 2000-10-20/21 19:05-1920 EDT Oriole 6 10x50b ne Louise & David
ISS & STS-92: Shuttle had separated from ISS a few hours earlier, and now was descending. Initially shuttle was brighter than ISS, but ISS gradually brightened until it was brighter. The two faded each other ~ 5° apart from ~~near~~ below bowl of Big Dipper right across Camelopardalis.
→ 21:00-22:50 EDT Oriole 6 10cm rr 8cm rr
Testing "Galileo 185" — apparently a clone of the Synta 80mm f/5. & comparing c Skywatcher 102mm f/5. Tripod & pan head supplied useless: tripod extremely flimsy & pan head wouldn't lock, also over balanced above ~ 30° altitude. Eventually I moved it to the Up-Swing/Bagen, & moved the 102 to the Lin equatorial. Deep sky observations made difficult by searchlights at Yonge & Eglinton. Observed Saturn c both scopes — neither gave as good an image as ETX-60 last night. Both were hard to focus — Saturn had a white haze around it. Mechanical construction of G 185 seemed crude compared to Synta; focuser housing out-of-round, lots of play. No T-threads on end of ~~focuser~~ drawtube.

624e 2000-10-21/22 19:00-21:45 EDT BlueMtn G+CC, Collingwood 3 15cm rr 10x50b
Louise, David, Guy Nasm, John McDowell
ε Lyra, M57, M11, NGC457 (ET cluster), M45, Saturn
GP-DX c legs @ max extension + half pier → too much vibration in wind — in future keep legs c ~~out~~ overlap ≥ 6"
Venus observed m.e. just after sunset

625e 2000-10-28/29 20:30-23:30 EDT Oriole NW 7 15cm mn 25cm rl ne
-testing LOMO binoviewer from Gary Russell. Would not reach focus on MN61 even at with Barlow's at greatest extension. The input end has 1.5" O.D. & 1.25" I.D., so it must be used with 2"-1.25" adapter in all scopes, whereas Petra's Japanese binoviewer had 2" OD, so could be inserted deeper into drawtube. What's needed is a 2" to 1.5" collar ~~to use~~ so that it can be inserted further. It does reach focus on 25cm Newt. I will contact Gary to see if he can provide a 2"-1.5" adaptor.
Seeing was poor at first on Jupiter & Saturn then improved. Transparency remarkably good; could see M110 with averted vision as "scintillation" — first time I've ever seen it in Toronto.
Toronto Dark Sky Project 20:55-23:05 EDT = 21:55-22:05 EST
A33, A38, B41
While packing up I noticed aurora for the first time; rays in N going to Zenith

626e 2000-10-30/31 20:00-22:00 EST Maimingside 3 15cm mn
Members observing night. Mostly I stayed on Jupiter & Saturn with a constant stream of viewers admiring the MN61. Seeing was quite poor, only allowing 150x-180x Red Spot visible with difficulty. Beginning of Io shadow transit observed. Afterward, went to Tim Hortan's w/ Guy Nason, Mark, & a couple of other guys & talked for 1.5 hr.

627e 2000-10-31/11-1 18:00-21:00 EST Oriole sidewalk 7 25cm rl
Hallowe'en observing: Moon, ε Lyrae, Saturn, Jupiter. ~20-25 visitors.

628e 2000-11-3/4 19:45-22:05 EST Oriole SE & NW 6 15cm mn Louise, Ron & Kim Bock, Kevin & mother — "street star party" (follow up to Halloween)

Moon: seeing poor, limited to 180x. Terminator just past Hadley area.

Saturn: 180x Titan, Rhea, Tethys, Dione, & ? Iapetus (very far from planet)

Jupiter: 180x Ganymede & Callisto very close together. Ganymede noticeably larger in diameter than Callisto, even in poor seeing. Europa in eclipse, emerged ~ 21:30.

Deep sky: M31 & 32, M45, Double Cluster, ET cluster, γ And, ε Lyrae

Ron & Kim were very keen, brought their ~ 18mo old child who played happily while they watched. Ron offered to let me view from their yard (300 Oriole Pkwy) which has good W horizon (488-5141). Later Kevin & his mom came by just as I was about to close up. They live in 3rd house along Hills Dale from Oriole.

629e 2000-11-11/12 21:15-21:50 EST Oriole driveway 7 15cm mn
First test of MN61 on low pier. Seems nice & solid, comparable ordinary chair. Seeing poor. Moon slightly past full, N pole strongly librated so that Plato appears circular (4 crater lots seen). Saturn & Jupiter best @ 180x SEB clearly split.

630e 2000-11-24/25 23:10-00:00 EST Oriole driveway 3-2 11cm rl
-testing Orbitor 4200, a 4.5" Dobsonian. This scope is tiny — I ended up with it on the kitchen stool. As with many scopes the tube is too short for the mirror's focal length, so that the focuser is almost all the way out, and there is not enough

out travel for the 2x Barlow provided to reach focus. The image of stars on either side of focus was irregular & spiky, with only hints of diffraction patterns. In focus, Jupiter & Saturn were moderately good: better than the ETX60 & 70, but nowhere near as good as the Premiere 4.5 I tested last year. The mount doesn't have enough friction in altitude: it drifts upward close to the zenith, and downward close to the horizon. The bearings have already been moved as far out as they can (you can see holes where they were originally. I imagine the Correct Tension springs on the similar Orion XT help in this regard. I observed 2 cloud belts & some hints of more detail on Jupiter @ 150x, and the Cassini division and the ~~central zone on~~ equatorial zone on Saturn, also @ 150x (Radian). Eyepieces provided (25mm & 40mm Plössls) have narrow fields, 40° & 43° respectively. Clouds prevented any deep sky observing. Finder very hard to adjust: peculiar 6 thumbscrew arrangement:  , Optically the finder is surprisingly good: the objective is an achromatic doublet, and it focuses via the eyepiece screwing in and out, rather than the objective. The drift in altitude is a real pain; I'm not sure what to do to increase the friction. The mirror cell contains a massive weight — the tube is really very close to balancing since the drift changes with altitude, so adding weight won't help.

2000-11-27 I built my mini-observatory today: a 32 cu ft large horizontal shed by Rubbermaid. It is located about 10' out from the back fence along the ~~the~~ hedge, leaving room for construction of a larger observatory in the spring. It should just be able to hold my MN61 on its GP-DX on a

short pier - I may have to shorten the present 24" pier to get it to fit. I'll worry about that tomorrow.

2000-11-28 I did in fact have to cut 6" off the 24" pier in order to close the lid on the shed. The MN61 on GP-DX on 18" pier just fits in the shed. I may have to add some weight to the mirror end of the tube to keep it from striking the back of the shed. I need to see if I can get longer bolts to fit the ends of the legs to try to anchor the scope through the shed floor into the ground. I also want to run an extension cord out to the shed to provide light & power for drive. There is room in the shed to store a chair and a small table. I'm pleased with my new observatory.

631m 2000-11-30/12-1 04:44 EST Oriole hall window 5 ne
Mars: first sighting of apparition, right above Spica in SE.

632e 2000-12-01/02 17:00-17:35 EST Oriole E 3 11cm rl
Testing Orbitar 200, mainly on Moon. Eyepieces just reach focus in Barlow with lens reversed. Tried c 25mm & 10mm Plössl c & s Barlow. Also tried 7.4mm Plössl & 4.8mm Naglor - both needed to be slid slightly out of focuser to reach focus. No problem c Ultima Barlow, since it requires in travel. Finder is good optically but very hard to align. Took a quick look at Vanus, but it was in the trees & over a chimney. Balance in altitude is very sensitive.

1905-1925 EST ~~4 11~~ Oriole NW 4 11cm rl
Jupiter & Saturn best c 7.4mm 123x - detail visible within Jupiter's

belts, Cassini division just visible. Did a quick star test on Aldebaran - no clear ring pattern. Bitterly cold (-4, with windchill -16). High milky haze prevented DSOs other than Pleiades.

20:05-29:25 EST Oriole NW 6 11cm rl

Testing Orbitor 4200: ε Lyra split @ 180x (10mm Barlow), but not very cleanly. Albireo split. Polaris not split. Saturn 180x Cassini suspected. Shadow of crepering seen on globe, Sequatorial belt Titan, Rhea. Jupiter @ 180x w/ Io just off limb after transit. Did not see Io's shadow, but may have been partly obscured by Io, because close to opposition. Double cluster well shown in 25mm & visible in finder.

21:05 - 21:30 EST Oriole NE 6 15cm mm, 11cm rl

Testing GRO LOMO binaviewer on Jupiter & Saturn, first w/ 16mm Super Plössls & GRO Barlow at max extension. Seeing excellent ~6-7, much detail visible on Jupiter, Saturn shows Cassini & 4 moons, shadow of globe on rings - just beautiful. Magnification seems similar to 6mm Radian ~150x.

Orbitor: viewed M42 @ 30x (NW)

21:45 - 22:10 EST Oriole NE 6 15cm mm

Testing GRO LOMO binaviewer w/ Vixen Barlow at max extension. Plenty of focus travel in both directions. With 16mm eyepiece, magnification seems slightly higher than w/ 4mm, ~250x. With 24.5 SWAs, magnification is about 150x. Detail on Jupiter is just staggering w/ 16mm eyepiece: barge in STB, wealth of detail in both SEB & NEB. Seeing ~8!

Observatory seems a bit cramped, 6'x3' would be better size. Tried running GPDX drives off AC adapter, but didn't work;

probably the polarity is wrong. Having the scope in an observatory is a huge convenience!
I need to experiment further c Barlow placement in binoviewer. I suspect GRO Barlow at minimum extension will give widest field for DSOs. Ultima Barlow a bit further in will give more reasonable high power — usually the seeing isn't good enough for this high a magnification.

633e 2000-12-02/03 17:50-18:10 EST Oriole SE 7 13cm rl
Testing SkyWatcher 130mm f/5 Newtonian on EQ-2 mount
Moon: 26x, 65x, 130x, 162x — features appear doubled - probably scope hasn't cooled down fully. Vega — star test @ 162x has plume due to tube currents. M57 seems dim Barlow → false colour.

→ 19:15-20:00 EST Oriole E 7 13cm rl
Saturn just outstanding @ 162x: Cassini visible all the way around SEB clear, shadow on rings clear, Titan + Rhea easy.
Jupiter: also great @ 162x: much detail visible in belts.
M31+32 easy despite moonlight. ε Lyr nicely split @ 162x, Dumb @ 162x has bright border on either side of focus. Optically the scope is fine in every way. The mount is a bit light but slow motions work well. This makes a great grab-and-go scope. At $399 this is a major bargain!

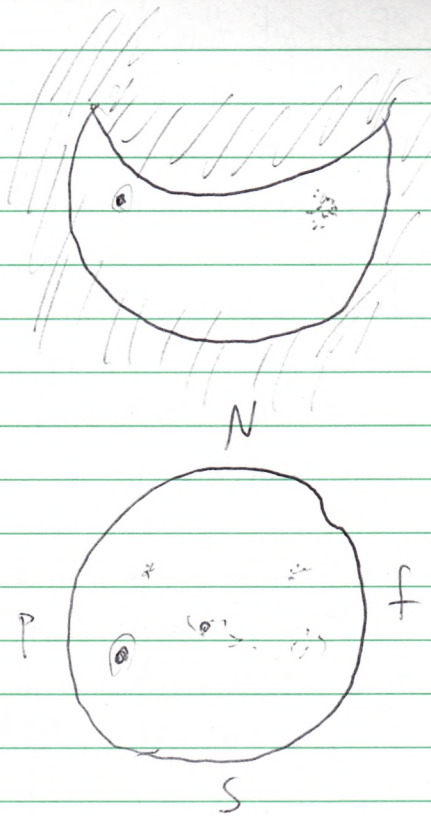
→ 22:00-22:45 EST Oriole NE 3 15cm mn
Jupiter: further experiments c binoviewer, 1st with GRO Barlow in original position → lower magnification. Then I tried Ultima Barlow all the way in. 16mm seems equivalent to 4mm without binoviewer @ 24.5mm equiv. to 6mm. View with 16mm was probably the

best view of Jupiter I've ever had in my life. Red Spot perfectly centred. Detail within RS. SEB & NEB both clearly double. STB & SSTB clearly visible, as well as NTB. No EB at this longitude. EZN pale & featureless. Seeing close to 9 at times & then it would completely fuzz out — some passing clouds. At its best, Jupiter looks just like the recent fly-by images from the Cassini probe. Colour in RS more pink than salmon. Both the bino viewer & the MN61 are unqualified successes, & the combination is superb. Can't wait to try it on the Moon & Mars! −7C but quite still, not as chilly as last night.

634n 2000-12-03/04 22:15-23:30EST Oriole NE 6 15cmmn
Jupiter: Observing w binoviewers w UHtns Barlow ≈ 2cm protruding, 16mm eyepieces ~230x Seeing 5-6. Both NEB & SEB clearly split. Much detail within NEB, eg. w oval in NEBn on p half of disk. STB & SSTB hardly visible at this longitude. Europa approaching transit, brilliant white against limb, followed a few minutes later by its tiny but intensely black shadow.
Saturn: Brief look ≈ binoviewer as above.

635d 2000-12-20 11:35-11:40 EST Oriole garage 7 10cm rr
Sun: observed with home-made Baader Astro-Solar film. Many groups seen @ 20x, plus bright areas near limb. Detail not clear @ 50x, but a lot of turbulence over neighbour's roof. Using cheap Lin Plössl eyepieces (25 mm & 10 mm)

636d 2000-12-25 11:05-11:15 EST Oriole Garage 7 10cm rr David
Partial solar eclipse; lots of sunspots 20x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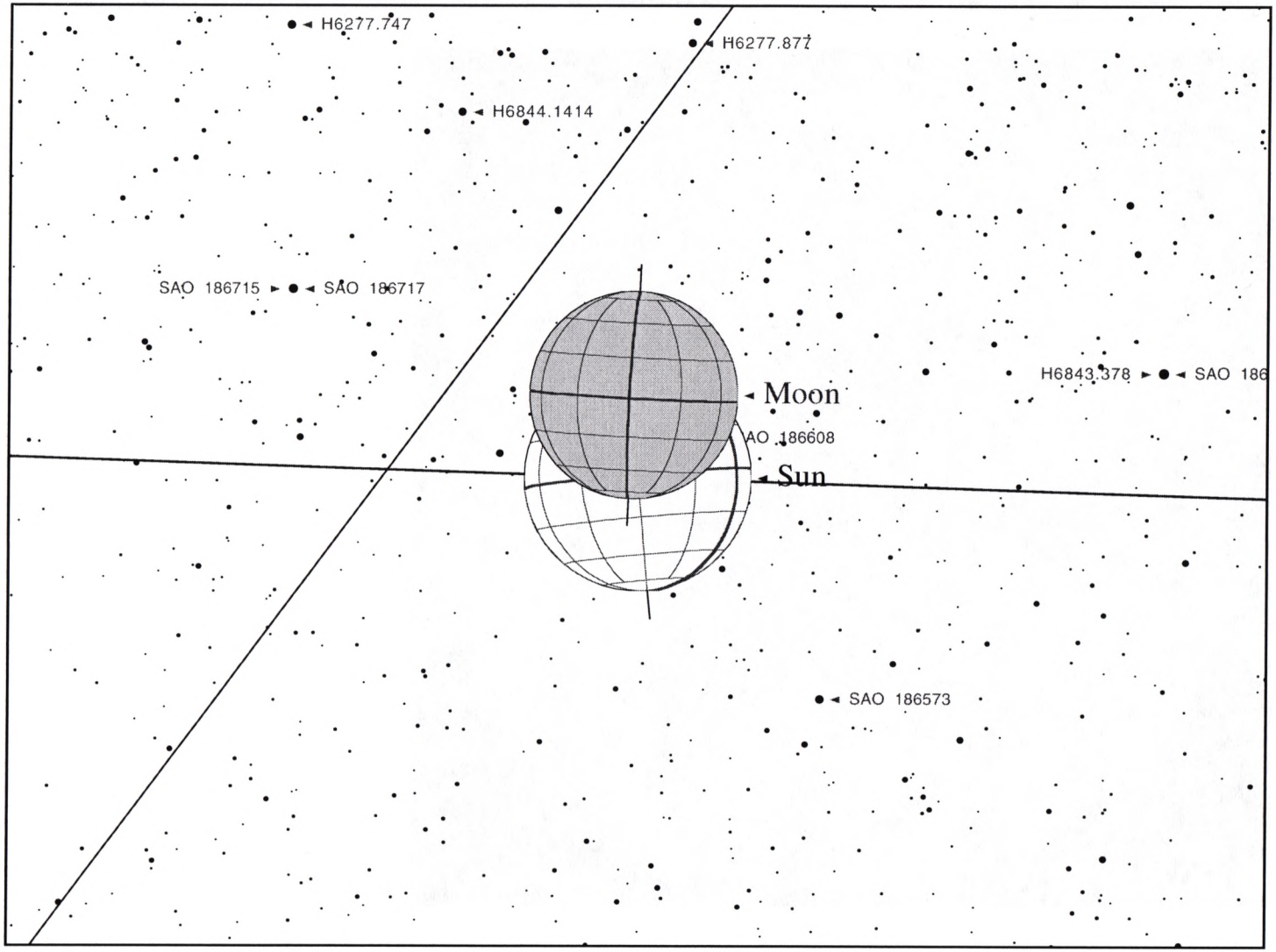

Viewing from Toronto
12/25/2000 12:34:00 PM (Local)
12/25/2000 17:34:00UT
FOV: 3°

—11:50 EST
Eclipse: large sunspot in centre of disk about to be eclipsed

—— 12:30-12:45 EST Oriale front drive 7 10 cm rr Louise
Eclipse: at ~~#~~ maximum needed to move to front driveway to see Sun. Large sunspot eclipsed. Medium spot + large group of small spots f Moon's S limb.

—— 14:00-14:15 EST Oriale front drive 7 10 cm rr Louise
Eclipse: watched last sliver of Moon move off the Sun's disk. 5 sunspot groups visible including large complex group close to centre of disk. 20x.

637d 2000-12-27 08:10-08:15 EST Corbeil 3 ne Louise
Sun pillar: spectacular pillar about 10-15° high above rising Sun

638e 2000-12-28/~~29~~ 18:~~15~~-19:30 EST Corbeil 9 25 cm rl 10x50b —— -17°C
* NGC 246 ~~7:55~~ 18:25 faint nebulosity involved ē 4 stars 71x
(NGC 247) not visible
NGC 253 18:35 big beautiful @ 28x
* NGC 288 18:42 big + bright @ 28x not resolved
* " ~~7:49~~ 936 18:50 bright condensed core @ 71x
* " 772 18:54 small, no condensation 71x
* " ~~1:55~~ 1232 19:05 dim glow, brighter towards centre 71x
* " 1788 19:23 very faint glow, triangular 71x
" 1980 19:19 dim glow around bright stars
" 1977 " ~~bright~~ dim glow around bright stars

* Mel 25 19:20 Hyades beautiful ē 10x50b

PN 246*

Gal 253 936* 772* 1232*

Glob 288* M13

ReflN 1788*

OC Mel 25 M45 1981* M44 ~~[illegible]~~ Mel 111

EmN M42 M43 1514* 1980* 1973* 1975* 1977* 2024*

2000 Sun + sunspots

Moon (hundreds of craters etc)

Total Lunar eclipse

Partial solar eclipse

9 planets + 4 moons Jup + 6 moons Sat

10 asteroids

aurora

zodiacal light

2 comets

double stars

DSOs

98 observing sessions

21 DSO

13 new

8 reobserv

Tit

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Iap

→ 20:30 - 21:00 EST 9

NGC 1514: ~~7~~ 20:40 79x Needed Ultrablock to see glow around star.
" *1980: 20:45 nebular glow around stars 71x Ultrablock
*1973-5-7: 20:48 appeared all as one broad glow, not differentiated into 3 objects 71x Ultrablock
*1981: 20:50 bright Y-shaped asterism in centre of cluster 71x
*2024: 20:55 faint band at right angle to line between ζ & SAO 132480 = V1197 needed Ultrablock @ 71x, and putting ζ just outside f.o.v.

63/9m 2000-12-28/29 05:00-05:25 EST Carbeil 9 25cm rl 10x50b
Comet McNaught-Hartley: barely visible in 10x50s, 2/3 of the way from α Lib to μ Lib. Viewed with 25cm rl @ 28x, 71x, 129x — at 129x coma and nucleus partly differentiated, coma appears triangular, no clearly defined tail.
M13 in 25cm rl @ 129x: beautiful, swarming with stars.
M44 in 10x50's, also *Coma Berenices cluster (05:10 EST) Mel 111

Reflections: After nearly 6 months without any "ancient photons" my main aim was to try to get the southernmost remaining objects in Dyers Best NGC list before they disappeared behind the Sun. Since I'd be starting with NGC 246 down in southwestern Cetus, I tried to get a few objects from my "next" list, a combination of the brighter Herschel 400 and some carbon stars, and the last of the AL Urban list. I also hoped to see the new comet McNaught-Hartley. Because of the cold (+17C) I decided to skip the circumpolar Finest NGCs, and concentrate on the southern ones. I got 8 of the remaining 22. It was a fine night — very clear. Luckily I was awakened by a

migraine & went out to observe the comet at 5 am since the sky was fully clouded over by 6 am. In the face of a dark sky, I didn't look at any of the "shallow sky" objects visible (Moon, Venus, Saturn, Jupiter, and Mars) except for the comet, 21 DSOs, of which 13 were first observations & 8 reobservations (including NGC 253, last seen in 1959!) I wore my "old geezer" sweat pants in lieu of long underwear, cords, cotton sweater, down parka, 2 pairs of socks, hiking boots, gloves & watch cap. Quite cozy once I added the second pair of socks. The Made Dob performed well, as usual, though with Teflon replacing polyethylene bearings friction is too low; when I remove an eyepiece, the tube starts to rise. Need to increase friction with a spring somehow. Also on Swad of Orion I felt a lot of scattered light; need to improve baffling. I'm on the verge of ordering a 1D AR mirror cell and ProtoStar diagonal & spider. I have Varathane & Krylon Ultra Matte Black to repaint tube, & flocked paper to put opposite diagonal.

6.40 m 2000-12-31/2001-1-1 05:45-06:20 EST Cam boil 9 25cm rl ne
Comet McNaught-Hartley nucleus & small coma, no tail 28x & 130x
Mars: image boiling, most likely due to tube currents, since I was observing from unheated garage & no time for cooldown
130x

2001-01-18 Sold Lin 15 cm rl to Paul Romanow for $595.

641e 2001-01-18/19 20:00-21:15 EST Oriole driveway NE 5-3 15cmrr 7cmrr
Tried to do a star test on ~~Alf~~ Rigel to see whether 15cmrr is overcorrected, undercorrected, or neither. Using #56 filter & 300x in poor seeing, it seemed as if objective is slightly over corrected — bright outer ring outside focus. Quick looks at Saturn & Jupiter, but seeing poor.

Testing SkyWatcher (Synta) 70mm f/10 alt-az refractor. Optics seem very good, but mount is poor — large amount of play in altitude lock. Eyepieces are good optically at this F ratio, but fields are tiny. "4mm" is more like 7 ~~mm~~ mm compared to Radians. Looked at M42, Saturn & Jupiter. Titan & Cassini division visible, string slash 2 belts on Jupiter — images crisp, even in "4mm", though 12.5mm seems to give the best views. Trapezium very nice @ 12.5mm (56x) — checked f.l.s of eyepieces by measuring exit pupils: 20mm, 12mm, 6mm. Meade 24.5mm SWA works very nicely on this scope, as does 6mm Radian!
→ 29x 2°21' f.o.v.

642e 2001-01-19/20 19:00-20:00 EST Oriole driveway NE 6 15cmrr -8°C
Rigel: star test — seeing a bit better, very slight overcorrection — companion clearly seen, widely separated @ 300x
M42-43 22mm Nagler 45x 1.5° field @ & 5 Ultrablock: spectacular to have whole Sword in f.o.v. at once, sharp stars to very edge. Also @ 75x & 136x (@ Ultrablock) — much mottling of inner nebula.
Jupiter & Saturn in binoviewer @ 24.5mm (16mm too high a mag given poor seeing) — many belts visible on Jupiter, wonderful 3D effect on Saturn. Bitterly cold — 20 wind chill

→ 22:10-22:30 EST Oriole Driveway 3-6 7cmrr
Saturn & Jupiter: further testing of Sky-Watcher 70mm rr.
- tried using 7.4mm TV Plössl = 95x which gave very pleasing images — SR4 gave more magnification but a lot more colour. Tried to see RS which was close to CM, but all I could make out was a narrowing of the SEB at that point.

43e 2001-01-28/29 17:45-18:10 EST Oriole driveway 3-1 9cmmc
Testing Gaymede Galileo 90 Mak-Cass
Moon Image sharp ≤ 26mm (46x) & 8.8mm (136x), but not good ≤ 6mm* (200x). The most striking impression is how dim the image is. I don't remember the ETX 90 looking this dim, nor any of the scopes of similar aperture.
Venus Image good up to 136x.
Jupiter only got a quick glimpse before the clouds moved in — again. seemed really dim.
*by mistake I was actually using 4mm = 300x - no wonder it was dim!
→ 18:55-19:05 EST 2-1
Jupiter: observed through clouds @ 136x: dim but very sharp. Still sharp ≤ 6mm (200x) but very dim.

→ 20:30-21:20 EST 5
Saturn: Cassini division easy @ 162x (7.4mm). Titan easy, Rhea needed averted vision.
Jupiter: NEB & SEB easy, NTB & STB visible, some detail within belts, best @ 162x
Rigel: star test @ 162x. Nice diffraction rings in focus. Out of focus images asymmetrical ⇒ astigmatism & bright outer ring ⇒ spherical aberration.

M42: nebulosity very faint, only three stars visible in Trapezium @ 136x.
Mechanical: there is enormous play in focusing knob — mirror moves under gravity after being brought to focus. Finder is almost totally inaccesible: too close to tube & too far from end of tube — can't get eye anywhere close to behind it. I was reduced to sighting along the tube to find Jupiter & Saturn.
Optics: despite the problems revealed in the star test, the in-focus images are quite sharp but dim. Magnification limit seems ~160x — 200x is too much. Image is much more detailed than in the 70mm refractors I've tested recently, but nowhere near as good as in 130mm Newtonian, mainly because it's so dim. 102mm f/10 refractor was much more satisfying to use: images seemed much brighter despite small aperture difference.

6442 2001-02-11/12 19:00-20:00 EST Corbeil Q 25cm rl 10x50b
NGC 7129 19:20 haze around group of 6-7 stars 71x
NGC 7635 19:40 huge & very very faint with averted vision 71x
NGC 40 19:55 tiny blue fuzzball, quite bright 71x
M52 71x
→ 20:30-21:30 EST Corbeil Q 25cm rl 10x50b
NGC 281 20:45 very faint, needed averted vision 71x
Stock 23 20:55 Nice cluster of faint, bright stars 71x
IC. 289 21:05 faint but definite, very fuzzy, dim! vision 129x Ultrablock I got it!
NGC 2022 21:20 Large & easily seen with direct vision 129x Ultrablock
Sword of Orion fantastic @ 28x, NGC 2024 really obvious!

2 sections c dark band between them.
6 more "Finest NGC" tonight → 8 more to go. I tried for NGC 1501 etc, but they are still too high for Dob. Bitterly cold: −19°C.

645e 2001-02-17/18 19:30-19:45 EST Oriole 7 ne
- clear but very cold: −10 C with wind chill of −24C. I checked the proposed observatory location in the NE corner of the yard. The horizon to the S is about 15-20°, and the tallest evergreen doesn't come close to Jupiter & Saturn, probably about 55°. In their present positions it should be possible to follow them down to within 20-25° of the western horizon, now that the old oak is gone.

646e 2001-02-23/24 19:30-19:35 EST Oriole 3 15x70b
- quick look with new Orion Little Giant II binoculars, purchased at Efston today. Looked at Sword of Orion, Jupiter, Saturn (rings suspected), Pleiades (gorgeous). They are quite light in weight & almost hand holdable. Field is wide enough (4°) that finding things is quite easy. Can't wait to try these under dark skies!

647e 2001-03-8/9 19:50-20:30 EST Oriole driveway 4 13cm rl.
- quick look with Sky-Watcher (Synta) 13cm F/5 Newtonian on EQ2 mount which I bought yesterday for my birthday. -
Jupiter: belts showing c high contrast despite very hazy sky
Best @ 162x (4mm Radian)
Saturn: Cassini division clear, NEB & polar region clear, shadow of planet on rings. Image very dim @ 162x because of haze,

better @ 130x. So hazy I couldn't even see Titan!
Moon: ca long 79° – terminator is mostly along S limb!
- just fits in 10mm eyepiece (65x) – haze ~~made~~ near full
Moon made viewing very poor.
First test of 130mm f/5 indicates it's even better optically than sample I tested previously. Given the hazy sky the contrast on Jupiter was remarkable. Image really snaps into focus. Tripod is the pits, but I tried the Celestron Anti-Vibration Pads for the first time & they really seemed to help. I think this will really serve its function well as a quick look/star party scope.

Synta has added a second counterweight since the previous version, which is good because scope was tube-heavy even with counterweight at very end of Dec shaft, which I had forgotten. The primary really is "factory collimated" as the locking screws use an Allen key smaller than anything I own. The eyepieces are rather better than those that Lin supplies (clear edge to field stop).

It was nice to be out observing again without freezing to death! It was just below freezing, so that the snow melt was freezing underfoot, but I was comfortable in my lined winter coat.

648e 2001-03-10/11 19:00-19:30 EST Oriole driveway 7 13cm r1
Transparency much better, but seeing poor.
Saturn: Titan visible at all powers, Cassini, shadow of globe on rings, equatorial belt visible @ 162x
Jupiter: 162x
Antares: diffraction patterns very clear, but distorted by tube

currents & seeing. No sign of astigmatism, & spherical aberration not a problem. Rings clear both in & out of focal plane.

Pleiades: lovely @ 26x

M42: viewed @ 26x, 65x c̄ Ultrablock, & 88x — 4 stars in Trapezium

→ 20:20 - 20:45 EST Oriole driveway, 6, 13cm rl

Jupiter: Seeing a bit steadier. Some detail visible within NEB & SEB @ 135x (4.8mm Nagler) & 162x (4mm Radian). Jupiter moved into trees down driveway.

cousins

6490 2001-03-11/12 19:00 - 19:45 EST Oriole driveway 7 15cm mn Louise, Ilar

Jupiter: RS just barely visible in RSH — many fine belts visible. Io & Europa both in eclipse. Europa emerged at 19:33 EST 180x

Saturn: Cassini easy, Titan, Rhea & Iapetus. Dione & Tethys suspected

M45: fills field @ 41x

→ 20:30 - 20:45 EST Oriole driveway 7 15cm mn

Jupiter: Io has just emerged from eclipse. RS just about out of sight. 180x I went in to get binoviewer but when I got back out, Jupiter was into the maple in the front yard, & the image was mush.

I'd forgotten just how good the images in the MN61 are! It's been three months since I last used it.

→ 22:20 - 22:40 EST Oriole driveway 6 13cm rl

Moon — mostly @ 135x c̄ 4.8mm Nagler — this eyepiece has a lot of ghosting — I prefer the Radians, but this will be good for star parties.

Seeing poor due to low altitude of Moon. Terminator through Mare Crisium. Colong = 117° Messier & Messier A well placed.

650e 2001-03-15/16 20:00-21:00 EST Cabeil 9 25cm r1

20:15 NGC 891 Largest ill-defined @ 71x, needs averted vision

20:25 NGC 1023 Small bright elliptical @ 71x

20:35 NGC 2359 Large and bright, visible @ 28x without Ultrablock filter, really nice @ 71x with Ultrablock, irregular Z shape.

21:00 NGC 2440 Had to go to 129x to see it as anything but a star. Brighter than any stars in field with Ultrablock.

→ 21:40-22:10 EST Cabeil 9 25cm r1,

21:47 NGC 1491 Triangular patch just visible @ 28x, easy ~~with~~ @ 71x with Ultrablock — close to star

21:43 NGC 1528 Nice bright little star cluster, visible in finder 28x

21:55 Kemble's Cascade, NGC 1502 nice little cluster @ 71x

21:57 NGC 1501 medium size, faint but definitely round @ 71x with Ultrablock

(NGC 3003) right overhead in Dobson's Hole — clouds moving in rapidly from west. Ended up looking at M42-43 ~~with~~ @ 71x & Ultrablock — just gorgeous, filled the field.

Earlier looked at M34, M46, M47 while star hopping.

Also Mel 20 = α Per association 28x ~ 21:50 EST

Only 2 more "Finest NGC"s to go: #3003 in Leo Minor & 5907 in Draco. Need to catch 3003 early while rising or later when past zenith — 5907 should be visible around midnight. Only -5° tonight.

651e 2001-03-16/17 18:55 EST Corbeil 8 10×50b
Venus: phase plainly visible ≅ 10×50s: ⌣

→ 20:00-20:55 EST Corbeil 8 25cm rl 10×50b
NGC 3003: 20:20 71× Very faint, almost masked by a scattering of bright foreground stars so that it looks more like a faint open cluster than a galaxy.
M102/NGC5866 20:30 71× Re-observed in passing on way to NGC 5907
NGC 5907 20:35 71× Very thin sliver but easily visible. This is the last of the "Finest NGCs". Unfortunately the National Council is meeting this weekend so I won't get my certificate approved till the next council meeting, presumably at the GA in London in July.

I just realized that M102, which I observed tonight just before my last NGC, was the last object I observed to get my Messier certificate in 1999!

After bagging my last NGC, I celebrated by having a good look at Jupiter & Saturn, best @ 228×. SEB & upper cloudy double, & 2 belts visible both north & south of NEB & SEB. Image seemed a little soft @ 284× & tube was bouncing a bit in the wind.

652e 2001-03-17/18 19:05-19:10 EST Corbeil 3 10×50b
Venus: phase plainly visible ⌣ 19:10 EST

Limiting magnitude / Dawes's limit	14.7m 0.5"	14.2m 0.6"	13.6m 0.8"	13.6m 0.8"	12.7m 1.2"
	Meade 254mm 1138mm fl f/4.5	Cave 203m 1391mm f.l. f/7	Celestron 150 m 1200mm fl. f/8	Premiere 150 mm 750mm f.l. f/5	SkyWatcher 12 500mm fl. f
40mm König	28x 89m 2°28'	35x 5.8m 2°01'	30x 5.0m 2°20'		12x 8.2mm
24.5 mm SWA	46x 5.5mm 1°27'	57x 3.6mm 1°11'	49x 3.1mm 1°22'	31x 4.9mm 2°11'	20x 5.0mm 3
22mm Nagler	52x 4.9m 1°35'	63x 3.2m 1°18'	55x 2.8m 1°30'		23x 4.5m 3
16mm Nagler	71x 3.6mm 1°09'	87x 2.3m 57'	75x 2.0m 1°06'	47x 3.2mm 1°45'	31x 3.3mm 2
8.8mm UWA	129x 2.0mm 39'	158x 1.3mm 32'	136x 1.1mm 37'	85x 1.8mm 59'	57x 1.8mm 1
6mm Radian	190x 1.3mm 19'	232x 0.9mm 16'	200x 0.8mm 18'	125x 1.2m 29'	83x 1.2mm
5mm Radian	228x 1.1mm 16'	278x 0.7m 13'	240x 0.6mm 15'	150x 1.0m 24'	100x 1.0mm
4mm Radian	284x 0.9mm 13'	348x 0.6m 10'	300x 0.5mm 12'	188x 0.8m 19'	125x 0.8mm
3mm	379x	464x	400x	250x 0.6m 15'	167x 0.6mm
2.5mm	455x	556x	480x	300x	200x 0.5mm
2mm	569x	696x	600x	375x	250x 0.4mm
Paracorr:					
22mm Nagler	59x 4.3mm 1°23'				
16mm Nagler	82x 3.1mm 1°00'				
8.8mm UWA	149x 1.7m 34'				
32mm Erfle	36x 7.1mm 1°55'		38x 4.0mm 1°49'		6x 6.5mm 4
28mm Plössl	41x 6.2mm 1°20'		43x 3.5m 1°16'	27x 5.6m 2°01'	18x 5.7mm 3
16mm Erfle	71x 3.6mm 57'		75x 2.0m 54'	47x 3.2m 1°27'	31x 3.3mm 2
7.4mm Plössl	154x 1.7m 20'		162x 0.9m 18'	101x 1.5mm 30'	68x 1.5m
3.8mm	308x 0.8m 10'		324x 0.5m 9'	203x 0.7m 15'	135x 0.8m

1) Number of observing session

2) Time of day or night: e n m d

3) Date YYYYMMDD -DD

4) Time (start to end) tz zone

5) Location

6) Sky conditions 0 = almost totally overcast
1 = very cloudy
2 = mainly cloudy
3 = partly cloudy
4 = city: very hazy/murky
5 = city: hazy/murky
6 = city: slightly hazy or murky
7 = city: acceptably clear
8 = dark: quite clear
9 = very clear
10 = absolutely fantastic

7) Instrument used: ne b rl rr sct, eg. 10x50 b, 20cm rl

8) Others present

Synta 13cm f/5

25mm	26x	5mm	1°55'
10mm	65x	2mm	46'
7.4mm	88x	1.5mm	34'
4.8mm	135x	1.0mm	36'
24.5mm	27x	4.9mm	2°32'
16mm	41x	3.2mm	2°01'
8.8mm	74x	1.8mm	1°08'
6mm	108x	1.2mm	33'
5mm	130x	1.0mm	28'
4mm	162x	0.8mm	22'

130
190
285