

OBJECTS TO VIEW

[Type: S=Star SD=Double/MultipleStar Gal=Galaxy OC=OpenCluster GC=GlobularCluster N-P=PlanetaryNeb N-E=EmissionNeb N-R=ReflectionNeb N-D=DarkNeb N-S=SupernovaNeb]

Sort Ascending: Name, Type, Mag, Con || Moon: Sort Ascending: Name, Best (* in Goto Object Column = priority viewing object) || Lunar Age in brackets [1]= 4+ bil. yrs., [2]=3.8 bil., [3]=3.6 bil., [4]=3.5 bil., [5]=1-3.5 bil, [6]=under 1bil. []=? || C=colongitude

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Comets / Satellites		ISS		Satellite	International Space Station							Prime. 1/2500Sec @3200.	20180410 8:14pm Clear - Reasonable photo Prime - fast shutter burst. 20180507 4:00am Clear - fuzzy photo Prime - fast shutter burst. 20180509 4:00am Clear - Reasonable photo Prime - fast shutter burst. 20180605 11:00pm Clear - Good photo Prime - fast shutter burst.
_Comets / Satellites		C/2020 F3		Comet	Neowise								20200715 10:00pm Clear - Naked eye & 10x50 bin. Good view N of Fremont with August. 20200717 10:30pm Clear - Good photo with 300mm DSLR. 15 mi. west of Fremont. 20200721 9:30pm Clear - Naked eye & 10x50 bin. Good view N of Fremont with J&A.
_Solar Sys.				Planet	Jupiter							+++ 8mm. 30th sec@3200.	20180314_8:00p First look at Jupiter! 20180424_5:00a First photo attempt: 17mm proj. 1/8 sec@800 Not too bad. 20180603_10:30p 25mm proj. 1/125sec@3200 Very good photo. 20200915 9:00p NoBend Good Skies (24-8) 8mm - Same as normal skies.
_Solar Sys.				Planet	Mars								20180507_5:00a First photo of Mars 25mm proj. 1/30 sec@3200 Just an orange dot. 20200914 5:45a Humid hazy skies. (24-8mm) - 8mm - light orange. 20200930 4:00am Humid clear skies full moon (24-8mm) 8mm - at opposition- orange/red. 20201004 9:00 pm Clear skies 8mm - near opposition- orange/red. Slight texture visible.
_Solar Sys.				Planet	Mercury							Always so close to Sun that it is very difficult to view.	20210521 9:30pm Clear. Good elongation allowed great view with binoculars. Venus and Mars in the same area.
_Solar Sys.				Planet	Neptune								20200930 8:00pm Clear humid full moon (24-8mm) 8mm. Blue dot.
_Solar Sys.				Planet	Saturn							+++ 8mm. 30th sec@3200.	20180424_4:00a First look at Saturn! 17mm proj. photos marginal. 20190923_10:00p 17mm proj. 1/8 sec@3200 First reasonable photo. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 8mm - Same as normal skies. 20201004 - 9:00pm Clear skies - 25mm Proj. photo. Still not crisp.
_Solar Sys.				Planet	Uranus								20200930 4:00am Humid clear skies with full moon (24-8mm) light blue dot.
_Solar Sys.				Planet	Venus								20200914 5:45a Humid hazy skies. (24-8mm) - Gibbous. Still very bright. 20200930 4:00am Humid clear skies with full moon (24-8mm) 8mm. 3/4 full.
_Solar Sys. Moon	**			Crater	Abulfeda	7	20	346	166	001	150	Best C001,150. Day7,20. [6,19]. C346,166 Between Catharina and Albategnius. Catena Abulfeda runs toward Catharina. Named for Kurdish historian. 40 mi dia. [2]	20210728 5:30a Clear humid. 8mm. Day19.2 C139. Catena visible but low contrast. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Clear view of catena. 20210814 9:30p Moderately humid. Day6.8 C355. Larger catena craters visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Perfect view day. Even the smaller catena craters were visible for the whole length. 20210828 5:00a Humid. 8mm. Day20.5 C157. Another great view. 20210912 8:30p. Smoke. Hazy. 8mm. Day6.5 C348. Catena visible in bad conditions. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Even small catena craters visible. 20210926 6:00a. 8mm. Day19.8 C151. Great. Even small craters visible.
_Solar Sys. Moon				Crater	Agrippa	7	21	350	170	005	157	Best C005,157. Day7,21. [8,20] C350,170 W of M. Tranquilitatis. SE of Hyginus. Irregular rim and central peak. Named for Greek astronomer. 27 mi dia. [5]	20210814 9:30p Moderately humid. Day6.8 C355. Near terminator. Floor shadowed. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good. Triangular peak and irregular rim. 20210828 5:00a Humid. 8mm. Day20.5 C157. Best day. 1/4 floor shadow. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view day. 1/3 shadowed.
_Solar Sys. Moon	*			Crater	Albategnius	8	21	356	176	005	160	Best C005,160. Day8,21. C356,176 E of Ptolemaeus. Large crater overlapped by Klein. Several interesting floor craters. The center of the peak has a 1 mi. wide crater on top of it. In low sunlight rim casts spire shadows. Named for Muslim astronomer. 85 mi dia. [2]	20180423_8:00p First Moon photos 17mm. Floor details obvious. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Floor crater detail excellent. 20210828 5:00a Humid. 8mm. Day20.5 C157. Great view of floor and rough rim. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good - deep shadows & depth. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view. Floor craters sharp. 20210927 6:00a. 4mm. Day20.7 C163. Great floor detail. 20211013 8:00p. 8mm. Day8.3 C006. Clear, but bad seeing. Better photos 20210815.

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_Solar Sys. Moon				Crater	Aliacensis	8	21	356	176	010	160	Best C010,160. Day8,21. C356,176 SE of Purbach. Sits next to Werner. Flat floor with low central peak. Named for French geographer. 49 mi dia. [2]	20210729 5:30a Clear humid. 8mm. Day20.2 C151. Good view. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Peak and S rim crater obvious. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. Crater marred rim. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Floor 2/3 shadowed. 20210914 8:30p Humid. 4mm. Day8.6 C013. Excellent view day. Terraces and peak. 20210927 6:00a. 4mm. Day20.7 C163. Great view. 1/4 shadowed.
_Solar Sys. Moon				Crater	Alpetragius	9	21	005	185	025	165	Best C025,165. Day9,21. C005,185 [20] S of Ptolemaeus & Alphonsus. Named for Spanish astronomer. Small (25 m) with disproportionately large central peak. []	20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Large central peak. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Peak just out of the rim shadow. Good day to view. 20210828 5:00a. 8mm. Day20.5 C157. Deep enough to have good shadow already. 20210914 8:30p Humid. 4mm. Day8.6 C013. 3/4 shadowed. Peak just visible. 20210915 8:30p Humid. 4mm. Day9.7 C025. Perfect view day. 20210927 6:00a. 4mm. Day20.7 C163. Perfect view day.
_Solar Sys. Moon	*			Crater	Alphonsus	8	21	004	184	010	175	Best C010,175. Day8,21. [22] C004,184 Very old crater that overlaps Ptolemaeus. Very small rilles on floor. Dark patches of pyroclastic (volcanic) deposits on the floor as well. Named for Spanish king. 67 mi dia. [2]	20180423_8:00p First Moon photos 8mm. Floor details obvious. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. OK. Low contrast. 20210815 9:30p. 4mm. Day7.9 C007. Excellent floor features & strong rim shadow. 20210816 9:30p Humid - smoke. 4mm(8-24+3xB). Day8.9 C019. Low contrast. No Rilles, but pyroclastic dark spots obvious. 20210914 8:30p Humid. 4mm. Day8.6 C013. Excellent view day. Spots, floor detail. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Best view yet. Great floor detail including some rilles.
_Solar Sys. Moon				Crater	Anaxagoras	11	21	011	191	035	154	Best C035,154. Day11,21. [10,20] C011,191 NW limb. Overlays Goldschmidt. Young, with high albedo and a ray system. Named for Greek philosopher. 31 mi dia. [6]	20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Obviously brighter than surrounding area. Rays quite prominent. 20210821 10:00p Humid. 8mm. Day14.3 C080. !!! Luminous spot with very bright rays. 20210824 6:30a Humid. 8mm. Day16.7 C109. Rays very dominant. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good view. Rim barely raised. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. 40% shadowed. 20210916 8:00p Humid. 8mm. Day10.8 C037. Great view day for crater - not rays. 20210917 9:00p Humid. 8mm. Day11.8 C049. Crater floor well lit. 20210926 6:00a. 8mm. Day19.8 C151. Good view of floor. 20210927 6:00a. 4mm. Day20.7 C163. Great view. 1/3 shadowed.
_Solar Sys. Moon				Crater	Anaximenes	12	23	045	225	050	190	Best C050,190. Day12,23. [24] C045,225 NW rim. By Philolaus. Eroded. Floor marked with very many small craters. Named for Greek historian. 50 mi dia. []	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good day to view, but floor craters not visible in haze. 20210827 5:30a Humid. 8mm. Day19.6 C145. Visible but still low contrast. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good rim detail - very shallow. 20210917 9:00p Humid. 8mm. Day11.8 C049. Great view day. Spires. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Better C049. 20210927 6:00a. 4mm. Day20.7 C163. Still low contrast. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good day but unfavorable libration.
_Solar Sys. Moon				Landing Site	Apollo 11	6	19	336	156	345	145	Best C345,145. Day6,19. [7] Just north of Moltke in M. Tranquillitatis. 1969. Site: Tranquility Base.	20180521_6:30p(light) Very sharp image of site at 25mm proj. 20210813 9:00p Humid. Day5.7 C342. Good day to view. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good view day. 20210925 6:00a. 8mm. Day18.9 C139. Good view.
_Solar Sys. Moon				Landing Site	Apollo 12	10	22	024	204	037	195	Best C037,195. Day10,22. 1969 in M. Cognitum near Fra Mauro within walking distance of Surveyor 3 which had landed in 1967. The landing site was named "Statio Cognitum" - "Known Base."	20210718 9:30p Clear. Day9.2 C025. 8mm. Excellent view. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Good. 20210915 8:30p Humid. 4mm. Day9.7 C025. Still dark. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good view day.
_Solar Sys. Moon				Landing Site	Apollo 14	10	22	018	198	037	195	Best C037,195. Day10,22. In M. Cognitum by Fra Mauro. 1971.	20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent view. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Good. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good view day.
_Solar Sys. Moon				Landing Site	Apollo 15	8	21	004	184	013	170	Best C013,170. Day8,21. By Rima Hadley & Mons Hadley, SE of M. Imbrium. 1971. Site: Hadley Rille.	20180423_8:00p First Moon photos 8mm Blurry but useable. Good terminator lighting. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210827 5:30a Humid. 8mm. Day19.6 C145. OK. Medium contrast. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good terminator view. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day.
_Solar Sys. Moon				Landing Site	Apollo 16	7	19	345	165	001	145	Best C001,145. Day7,19. By Crater Dolland west of Theophilus. 1972.	20201106 5:00a Good skies. OK photos with 17mm&25mm proj. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good view. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view day. 20210925 6:00a. 8mm. Day18.9 C139. Good view.

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_Solar Sys. Moon				Landing Site	Apollo 17	6	19	329	149	345	139	Best C345,139. Day6,19. Near Crater Littrow south of M. Serenitatis in Montes Taurus. 1972. Site: Taurus-Littrow.	20180423 8:00p First Moon photos 8mm Blurry but useable. 20180521 6:30p(light) Clear photo at 25mm proj. 20210813 9:00p Humid. Day5.7 C342. Good day to view. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good view day. 20210925 6:00a. 8mm. Day18.9 C139. Very good.
_Solar Sys. Moon				Crater	Apollonius	3	17	299	119	318	110	Best C318,110. Day3,17. C299,119 S of M Crisium. Named for Greek mathematician. Small (33 mi), round. [2]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Sharp. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Good. Edge craters excellent. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good. Edge craters sharp. 20210909 8:00p Humid. Smoke. 8mm. Day3.2 C311. Good view day. C318 better. 20210922 9:30p Humid. 8mm. Day16.8 C111. Great view day.
_Solar Sys. Moon	**			Crater	Arago	6	20	338	158	345	150	Best C345,150 (for domes). For crater - C001,139. Day6,20. [19] C338,158 In western M. Tranquilitatis. Unusual central peak merged with rim collapse. Near 2 large domes - one to N. One to E. Four smaller farther north are very difficult to see. Named for French astronomer. 16 mi dia. [5]	20180521 6:30p(light) Clear photo at 25mm proj. Details still not visible. 20210728 5:30a Humid. 8mm. Day19.2 C139. Peak- rim collapse merger just visible. 20210813 9:00p Humid. Day5.7 C342. Excellent rim definition. Larger domes striking. Smaller domes just visible. Floor too dark (terminator) to see peak. 20210825 5:30a Humid. 8mm. Day17.7 C121. Domes barely visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. All domes visible. Peak joined to collapsed rim also clear. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Floor shadow hides peak but perfect day to view domes - all visible. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Best day for crater - peak merger visible. Domes still visible but better yesterday. 20210925 6:00a. 8mm. Day18.9 C139. Domes already visible. 20210926 6:00a. 8mm. Day19.8 C151. Perfect day to view. All domes visible. 20211011 7:00p Humid. 8mm. Day6.2 C341. Striking depth on 2 largest domes.
_Solar Sys. Moon				Crater	Archimedes	8	21	004	184	013	177	Best C013,177. Day8,21. [9,22] C004,184 In M Imbrium. Flooded 50 mi. wide crater with original peak now buried in the lava. Modest spire shadows from the rim visible at just the right sun angle. The floor is one of the smoothest places on the Moon. Rimae Archimedes to the SE. Named for Greek scientist. [4]	20180423 8:00p First Moon photos 8mm Blurry but useable. Good terminator lighting. 20201106 5:00a Good skies. OK photos with 17mm&25mm proj. 20210815 9:30p Clear. 8mm. Day7.9 C007. Good rim shadow. Floor half dark - spires. Excellent depth for Montes Archimedes to the S. 20210816 9:30p Humid - smoke. 8mm. Day8.9 C019. Good rim. No spires. 20210828 5:00a Humid. 8mm. Day20.5 C157. OK. Narrow rim shadow. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Perfect view day.
_Solar Sys. Moon				Crater	Aristarchus	12	25	048	228	060	212	Best C060,212. Day12,25. C048,228 Brightest spot on Moon. Even visible in the new moon earthshine. In Oceanus Procellarum on the Aristarchus Plateau. Named for Greek astronomer. 3 mi deep. 25 mi dia. One of youngest - 450 mil. years. [6]	20201103 3:30a Photo not sharp but stark brightness obvious at 25mm proj. 20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Crisp shadows. Very bright. 20210802 5:30a Humid smoke. 8mm. Day23.8 C200. Good even with low contrast. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Very bright. 1/4 floor shadow. Good day to view. 20210917 9:00p Humid. 8mm. Day11.8 C049. Stark. On terminator. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Great crater view. 1/8 shadowed. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Only rim lit.
_Solar Sys. Moon	*			Feature - Misc.	Aristarchus Plateau	12	25	048	228	056	221	Best C056,C221 Day12,25. Raised area in Oceanus Procellarum. Complex surface textures include Aristarchus & Heroditus craters and Vallis Schroteri.	20201103 3:30a Photo not sharp but stark brightness obvious at 25mm proj. 20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Crisp shadows. 20210802 5:30a Humid smoke. 8mm. Day23.8 C200. Good even with low contrast. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Depth not obvious - needs lower light angle. 20210819 9:00p Humid, smoke, wind. 4mm(8-24+3xBar). Day12.2 C056. Best view yet. Elevated plateau very obvious. Great contrast. 20210903 5:00a. 8mm. Day25-9 C230. Interesting edge view of W half. On terminator. 20210917 9:00p Humid. 8mm. Day11.8 C049. Stark. Partly visible. On terminator. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. OK. Better at C056. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Perfect view day for shadow depth.
_Solar Sys. Moon				Crater	Aristillus	8	21	359	179	013	160	Best C013,160. Day8,21. C359,179 Newer crater in M. Imbrium with well-defined features. Collection of central peaks. Named for Greek astronomer. 34 mi dia. [6]	20180423 8:00p First Moon photos 8mm Blurry but useable. Good terminator lighting. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Terracing and complex peak visible. Floor half dark. 20210827 5:30a Humid. 8mm. Day19.6 C145. Great. Terracing, small peaks and ejecta. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Fully shadowed - on terminator. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. 1/4 shadowed. 20210927 6:00a. 4mm. Day20.7 C163. Perfect view. 1/4/ shadowed.

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_Solar Sys. Moon				Crater	Aristoteles	7	20	343	163	001	151	Best C001,151. Day7,20. [20.5] C343,163 On the M. Frigoris near Eudoxus. Several small peaks. Ejecta visible in low angle light. Named after Greek philosopher. 54 mi dia. [5]	20180423 8:00p First Moon photos 8mm. Blurry. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Low contrast. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Good view. Spires & terraced walls. 20210814 9:30p Moderately humid. Day6.8 C355. Good shadows but no spires. 20210815 9:30p Clear. 8mm. Day7.9 C007. Good view of terraced walls, floor features. 20210828 5:00a Humid. 8mm. Day20.5 C157. Best view day. Dramatic ejecta field, peaks, terraces and stunning spire shadows. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. 1/2 shadowed. Stark. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Perfect view day. 20210926 6:00a. 8mm. Day19.8 C151. Perfect view. 1/4 shadowed.
_Solar Sys. Moon				Crater	Arnold	6	19	325	145	336	139	Best C336,139. Day6,19. [18] C325,145 N of M Frigoris and Gartner. Old. Flooded with parts of rim missing. Named for German Astronomer. 58 mi dia. []	20210813 9:30p Clear. Day5.7 C342. Good day to view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Rim well lit. Floor dark. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good. Better at C336. 20210925 6:00a. 8mm. Day18.9 C139. Perfect view day.
_Solar Sys. Moon	*			Crater	Arzachel	8	21	003	183	010	175	Best C010,175. Day8,21. [22] C003,183 S central. S of Alphonsus. A very young, intact crater with a rille system on the floor. Named after Arab astronomer. 60 mi dia. [3]	20180423 8:00p First Moon photos 8mm. Floor details obvious. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Low contrast. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Peak casts long shadow. Floor mostly dark - covers rilles. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Good rim. No rilles. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. Largest rille just visible. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Best view yet. Rilles visible.
_Solar Sys. Moon	*			Crater	Atlas	5	18	316	136	336	125	Best C336,125. Day5,18. C316,136 SE of M. Frigoris. Shallow. Multiple-terraced inner wall. Floor has two dark, pyroclastic deposits and multiple floor fractures. Named after mythological Greek hero. 84 mi dia. [4]	20201103 3:30a OK photo at 25mm proj. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. No contrast - view next day. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Peak and shadow spires. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Good rim. Floor half dark. 20210813 9:00p Humid. Day5.7 C342. OK view. Terracing obvious. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view day. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Good view day if clear. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Best view day if clear. Dark spots just visible. 20210924 6:00a Humid. 4mm. Day18.0 C127. Great view of terraces, floor craters. 20210924 10:00p Humid. 8mm. Day18.6 C135. Top of rim lit. Great depth.
_Solar Sys. Moon				Crater	Autolycus	8	21	358	178	013	157	Best C013,157. Day8,21. C358,178 "au TALL a cuss" Newer crater in M. Imbrium. S of Aristillus. Small (24 mi) with well-defined features. Named for Greek astronomer. 24 mi dia. [6]	20180423 8:00p First Moon photos 8mm Blurry but useable. Good terminator lighting. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210815 9:30p Clear. 8mm. Day7.9 C007. Rim crater just visible. Floor 2/3 shadowed. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Fully shadowed - on terminator. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day. 1/3 shadowed. 20210927 6:00a. 4mm. Day20.7 C163. OK. 40% shadowed.
_Solar Sys. Moon				Crater	Babbage	13	26	061	241	062	226	Best C062,226. Day13,25. [12,24,25] C61,241 NW of Sinus Iridum and M Frigoris. Next to Pythagoris. Babbage A is medium-sized crater on the floor. The rim is so damaged that it almost looks like a square now. Named after English mathematician. 89 mi dia. [1]	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. On terminator - Stark rim and top of interior crater visible. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Visible but humidity obscured detail. Already low contrast. Very short window of time to view optimally. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Better view but low contrast. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Already good view. 20210903 5:00a 8mm. Day25-9 C230. Great view day. Square obvious. Babb. A stark. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Great view day. 20211002 6:00a Humid. 4mm. Day25.3 C224. Excellent view.
_Solar Sys. Moon	*			Crater	Bailly	14	27	065	245	080	225	Best C080,225. Day14,27. [26] C065,245 S of Schiller. Largest crater on the nearside of Moon. Very old and battered. Requires good libration to see at all. Named for French astronomer. 188 mi dia. []	20210903 5:00a. 8mm. Day25-9 C230. Goof view day. Libration good. Still difficult to see details. 20211002 6:00a.. 4mm. Day25.3 C224. Best view day. Perfect libration and good detail. 20211003 6:00a.. 8mm. Day26.3 C237. Almost as good as yesterday.
_Solar Sys. Moon				Crater	Bernoulli	3	17	300	120	318	109	Best C318,109. Day 3,17 C300,120 In the NE. W of Geminus Small peak and irregular rim. Named for Swiss mathematician. 29 mi dia. []	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Deep shadows. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Visible but low contrast. 20210823 11:00p Humid. 8mm. Day16.5 C104. Low contrast. Peak still visible. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good shadows. Peak clear. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. Good view day. 1/3 shadowed. C318 may be better. 20210922 9:30p Humid. 8mm. Day16.8 C111. Good day. 1/3 shadowed.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Berosus	3	16	293	113	311	104	Best C311,104. Day3,16. [15] C293,113 NE limb. E of Geminus. N of M Crisium. Close to Gauss and Hahn. S end eroded. Craterlets N. The floor is nearly featureless. Named for Babylonian astronomer. 46 mi dia. [2]	20210726 5:00a Humid. 8mm. Day17.2 C114. On terminator. Back side not visible. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Dim but visible. Good night to view if no smoke. 20210811 9:00p Humid. Light smoke. Day3.5 C318. Low contrast. Prev. day better. 20210823 6:30a Humid. 8mm. Day15.8 C096. Good day. Clear rim. 20210823 11:00p Humid. 8mm. Day16.5 C104. 1/3 shadowed. Good view. 20210824 6:30a Humid. 8mm. Day16.7 C109. Floor shadowed. Rim well lit. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210921 9:30p Humid. 8mm. Day15.8 C098. OK. Beginning of shadows. 20210922 5:00a Humid. 8mm. Day16.1 C102. Good shadows. Craterlets just visible.
_Solar Sys. Moon				Crater	Billy	12	25	050	230	060	219	Best C060,219. Day12,25. C050,230 SW O Procellarum. Very dark floor. Low, narrow rim. Named for French mathematician. 28 mi dia. [2]	20210802 5:30a Humid smoke haze. 8mm. Day23.8 C200. Dark floor very obvious. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Very crisp rim with 1/4 floor shadow. Low albedo floor very noticeable. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Great view day. 1/8 shadowed. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Good. 1/4 shadowed.
_Solar Sys. Moon				Crater	Bullialdus	10	23	002	182	037	192	Best C037,192. Day10,23. [11] C002,182 An isolated, well-formed crater in M. Nubium. Terraced walls and complex central peak. Named for French astronomer. 37 mi dia. [5]	20180507_4:30a. Photo at 25mm proj. OK image. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Peak, terraces. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Good. 20210915 8:30p Humid. 4mm. Day9.7 C025. Only rim lit. 20210916 8:00p Humid. 8mm. Day10.8 C037. Great view day. 1/4 shadowed. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Great view of terraces, peak.
_Solar Sys. Moon				Crater	Burckhardt	3	17	304	124	310	112	Best C310,112. Day3,17. C304,124 NE. Between Geminus and Cleomedes. Craters on each side make it look like it has Mickey Mouse ears. Named for German astronomer. 35 mi dia. [3]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Mouse ears very obvious. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Good view. 20210823 6:30a Humid. 8mm. Day15.8 C096. Low contrast. 20210824 6:30a Humid. 8mm. Day16.7 C109. Excellent view. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. Good view day. 1/3 shadowed. C318 may be better. 20210923 5:00a Humid. 8mm. Day17.1 C114. Great view day.
_Solar Sys. Moon				Crater	Bürg	6	19	332	152	350	136	Best C350,136. Day6,19 [5,18,20] C332,152 Interesting crater in Lacus Mortis. N of M Serenitatis. Young. Wavy rim. Split central peak. Named for Austrian astronomer. 24 mi dia. [6]	20201103 3:30a OK photo at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. High peak, textured rim. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. On Terminator. Good view. 20210813 9:00p Humid. Day5.7 C342. Good contrast. 20210827 5:30a. 8mm. Day19.6 C145. Good. Peak just lit. Rim terraces striking. Rima. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Floor 3/4 shadowed. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good. 1/3 shadowed. 20210925 6:00a. 8mm. Day18.9 C139. Great view of crater. Rima just visible. 20211011 7:00p Humid. 8mm. Day6.2 C341. Good view of crater. Rima perfect.
_Solar Sys. Moon				Crater	Byrgius	13	26	070	245	080	226	Best C080,226. Day13,26. [25] C065,245 W of M Humorum. Eroded walls. Byrgius A (to the E) has extensive rays. View rays at high angle light away from terminator. Named for Swiss clock maker. 54 mi dia. [2]	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Low contrast. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Still low contrast. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Visible but humidity obscured detail. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Bright rays visible. 20210903 5:00a 8mm. Day25-9 C230. Good view of crater - not rays. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Still dark. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Good view day. 20211002 6:00a Humid. 4mm. Day25.3 C224. Good day for crater - not bright rays.
_Solar Sys. Moon				Crater	Campanus	11	23	029	209	043	190	Best C043,190. Day11,23. [10] C029,209 SW of M Nubium. Next to Mercator. Small peak. Floor craters. Named for Italian astronomer. 30 mi dia. [3]	20210801 5:30a Humid smoke. 8mm. Day22.9 C187. Darker floor slightly apparent. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Darker floor still subtle. Peak and floor craters visible. 20210817 9:30p Humid Smoke. 4mm(8-24+3xBar). Day10 C031. Floor shadowed-term. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. No floor craters - Atmosphere unstable. Low albedo floor obvious. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Dark floor still noticeable, but low contrast so no floor craters. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Top of rim lit. On terminator. 20210916 8:00p Humid. 8mm. Day10.8 C037. 1/2 shadowed. Peak. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good view day.
_Solar Sys. Moon	*			Crater	Capuanus	11	23	028	208	037	184	Best C037,184. Day11,23. [10,2] C028,208 S of P Epidemiarum. Small volcanic domes on the floor seen in low angle light. Floor appears dark (flooded with lava). Gap in N rim connects to the "marsh." Named for Italian astronomer 37 mi dia. [2]	20210801 5:30a Humid smoke haze. 8mm. Day22.9 C187. Domes not visible at 8mm. 20210802 5:30a Clear humid. 8mm. Day23.8 C200. Clear view but no domes at 8mm. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Domes visible. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Too low contrast. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Top of rim lit. On terminator. 20210916 8:00p Humid. 8mm. Day10.8 C037. Perfect view day. Domes visible. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good view. Bad seeing for domes.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon	*			Crater	Cassini	8	21	356	176	010	160	Best C010,160. Day8,21. C356,176 Lava-filled crater on east edge of M. Imbrium. Original peak visible as small bumps in the center covered by the lava. Oblong crater on floor. Named for Italian astronomer. 35 mi dia. [3]	20180423 8:00p First Moon photos 8mm Blurry but useable. Good terminator lighting. 20201106 5:00a Good skies. OK photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Very high peak. 20210814 9:30p Moderately humid. Day6.8 C355. Dark - on terminator. 20210815 9:30p Clear. 8mm. Day7.9 C007. Good viewing day. Floor craters & texture. 20210828 5:00a. 8mm. Day20.5 C157. Great view day including texture & ejecta. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good stark view. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great overall view day. 20210928 5:00a. 4mm. Day21.6 C175. Dramatic rim lighting on terminator.
_Solar Sys. Moon				Feature - Misc.	Cassini's Bright Spot	14	14	005	185	074	120	Best C074,120. Day14. C005,185 Technically originating from crater Hell Q (only 3 mi wide & very young) on the floor of Deslandres (N of Tycho), the Bright Spot is one of the brighter spots on the moon in overhead light. First noted by Cassini in the 17th century. Best viewed on days 12-15.	20210821 4:30a Very humid. 8mm. Day13.6 C072. Hell Q very bright. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Very bright. 20210923 10:00p Humid. 4mm. Day17.7 C123. Brighter than Tycho.
_Solar Sys. Moon				Crater	Catharina	6	20	337	157	350	146	Best C350,146. Day6,20. [19] C337,157 W of M Nectaris. Oldest of 3 with Cyrillus & Theophilus to the north. Named for Greek philosopher. 65 mi dia. [2]	20180423 8:00p First Moon photos 8mm Blurry but useable. Some floor features discernible. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Good contrast. 20210813 9:00p. Day5.7 C342. Perfect view day. Good rim shadow & floor craters. 20210827 5:30a Humid. 8mm. Day19.6 C145. Best view day. Great texture. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day. 20210926 6:00a. 8mm. Day19.8 C151. 1/3 shadowed. Stark. 20211011 7:00p Humid. 8mm. Day6.2 C341. Good night for spires.
_Solar Sys. Moon	*			Crater	Cauchy	6	19	321	141	342	140	Best C342,140. Day6,19. [5,18] C321,141 In eastern M. Tranquilitatis. Cauchy domes (lava bubbles) are just s. of Rupes Cauchy. Named for French mathematician. 7 mi dia. []	20201103 3:30a OK photo at 25mm proj. Need higher magnification for details. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. Too soon - no contrast. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Didn't see domes. 20210813 9:00p Humid. Day5.7 C342. Rupes & Rima Cauchy and domes visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Rupes & Rima visible. Domes dark. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Rupes and domes clear. Rima very faint. 20210925 6:00a. 8mm. Day18.9 C139. Great view. Domes, rima, rupes all visible.
_Solar Sys. Moon				Crater	Censorinus	7	18	328	148	340	140	Best C340,140. Day7,18. [8,16-18] C328,148 S edge of M Tranquilitatis. E of Moltke. Very young, tiny (2.4 mi.) crater with high albedo making it shine in overhead light - halo of lighter material surrounds the crater. One of brightest spots on Moon. Best when away from terminator. Named for Roman writer. [6]	20210814 9:30p Moderately humid. Day6.8 C355. Very bright. Brightness obscures view of the tiny crater. Also good on other days away from terminator. 20210827 5:30a Humid. 8mm. Day19.6 C145. Already just past terminator. 20210825 5:00a Humid. 8mm. Day17.7 C121. Very bright. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Very bright. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Even brighter tonight. 20210925 6:00a. 8mm. Day18.9 C139. Bright.
_Solar Sys. Moon				Crater	Cepheus	5	18	315	135	336	121	Best C336,121. Day5,18. C315,135 E of L Somniorum. Small (24 mi), round. Named for mythological king. [5]	20210727 5:30a Clear humid. 8mm. Day18.2 C126. Small edge crater visible. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Deep shadows hide floor. 20210813 9:00p Humid. Day5.7 C342. Good rim shadow. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view day. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. 3/4 floor shadow. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good view.
_Solar Sys. Moon				Crater	Clairaut	8	20	348	168	013	145	Best C013,145. Day8,20. C348,168 S of Maurolycus. Floor craters and overlapping rim crater to S make it look a little like a cartoon face. Named for French astronomer. 47 mi dia. []	20210815 9:30p Clear. 8mm. Day7.9 C007. Good day to view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Cartoon face visible with imagination. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view day. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day.
_Solar Sys. Moon	*			Crater	Clavius	9	23	015	195	030	173	Best C030,173. Day10,23. [9,22] C015,195 Unique curved crater chain on the floor of Clavius. Of different ages, so random in spite of obvious pattern. Crater Rutherford is entirely within the SE rim of Clavius. Little floor ridges extend N from Rutherford. Named for a Jesuit scientist. 164 mi dia. [2]	20180427 8:30p. Photo at 8mm proj. Interior sequence of craters visible. 20180507 4:30a. 25mm proj. shows interior craters clearly. 20191007 8:00p Too far into terminator to see well. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210801 5:30a Humid smoke. 8mm. Day22.9 C187. Great shadows - on terminator. 20210816 9:30p Humid - smoke. 8mm. Day8.9 C019. Eerie. Deep shadows. On term. 20210817 9:30p Humid Smoke. 4mm(8-24+3xBar). Day10 C031. Excellent day to view. 20210828 5:00a Humid. 8mm. Day20.5 C157. OK view already. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good. Deep shadows. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view day. C031 better. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Best view yet. Even tiny floor craters and details visible. - Great photo.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon	*			Crater	Cleomedes	4	17	304	124	320	115	Best C320,115. Day4,17. [3,18] C304,124 NE. S of Geminus. Terraced walls, rilles and a small central mountain. Rille cuts through small dome N of peak. Named for Greek astronomer. 78 mi dia. [2]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Central peak visible. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Striking edge crater. Rest dark. 20210810 9:00p Very humid. Thick smoke. Day2.5 C306. Good. Terminator W edge. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Ideal view day. Floor craters, terraced wall and complex peak. Floor rille not visible. 20210824 6:30a Humid. 8mm. Day16.7 C109. Great view. Rille barely visible. 20210825 5:30a Humid. 8mm. Day17.7 C121. 1/4 floor shadow. Great contrast. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Good view day if clear. 20210923 5:00a Humid. 8mm. Day17.1 C114. Great floor detail. 20210923 10:00p Humid. 4mm. Day17.7 C123. E rim and peak lit. Dramatic.
_Solar Sys. Moon				Crater	Colombo	5	18	315	135	336	126	Best C336,126. Day5,18. C315,135 Between M Fecunditatis and M Nectaris. Darker floor. Semi-circle of small peaks on floor. 76 mi dia. [2]	20210727 5:30a Clear humid. 8mm. Day18.2 C126. Peak visible. Textured rim. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Rim good. Floor dark - term. 20210813 9:00p Humid. Day5.7 C342. Eroded rim. Better contrast 1 day sooner. 20210825 5:30a. 8mm. Day17.7 C121. Good view. Collapsed S rim. Small peaks. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. OK view day if clear. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Best view day if clear. 20210924 6:00a Humid. 4mm. Day18.0 C127. Great. Terraces and peak.
_Solar Sys. Moon				Crater	Condorcet	3	16	292	112	311	104	Best C311,104. Day3,16. [17] C292,112 SE of M Crisium. Terraced walls. Small overlapping crater to N. Named for French mathematician.46 mi dia. [2]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Already dark - past terminator. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Dim but visible. No details thru the smoke, but best day to view. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Low contrast - terraces vis. 20210823 6:30a Humid. 8mm. Day15.8 C096. OK. Just showing rim shadow. 20210823 11:00p Humid. 8mm. Day16.5 C104. 1/4 shadowed. Terraces clear. 20210824 6:30a Humid. 8mm. Day16.7 C109. Floor shadowed but rim lit - excellent. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210922 5:00a Humid. 8mm. Day16.1 C102. Good view. Small shadow. Terraces.
_Solar Sys. Moon				Crater	Cook	5	18	312	132	324	121	Best C324,121. Day5,18. [4] C312,132 SW edge of M Fecunditatis. NW of Petavius. Old, worn, flooded. Named for British explorer. 29 mi dia. [2]	20210811 9:00p Humid. Smoke. Day3.5 C318. Rim good. Floor lit. Close to terminator. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view day. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Best view day if clear. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good view.
_Solar Sys. Moon	*			Crater	Copernicus	10	23	020	200	035	190	Best C035,190. Day10,23. [11] C20,200 In Oceanus Procellarum. Prominent ray system visible with binoculars. Discernible hexagonal rim form. Keyhole-shaped Fauth lies just S. Tiny crater, Copernicus A (2.2 mi), on E rim. Named for the astronomer. When Riccioli was naming the craters, he threw Copernicus into the Ocean of Storms because he didn't agree that the Earth went around the Sun. 58 mi dia. Very young - 100-800 mil yrs [6]	20180427_8:30p. Photo at 8mm proj. Bright with obvious rays. 20180507_4:30a. Photo at 25mm proj. Sharp image. Rays visible. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Peak, terraces. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Right on terminator - floor dark but impressive high rim shadows. 20210816 9:30p Humid - smoke. 8mm. Day8.9 C019. Only E rim lit - dramatic. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Great view. 20210915 8:30p Humid. 4mm. Day9.7 C025. Stark. 1/2 shadowed. 20210916 8:00p Humid. 8mm. Day10.8 C037. Great view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Perfect. Peaks, terraces, ejecta.
_Solar Sys. Moon				Crater	Curtius	9	21	356	176	013	157	Best C013,157. Day9,21. C356,176 SE of Clavius. Just NE of Moretus. Irregular floor surface. Wavy rim. Named for German astronomer, Curtz. 59 mi dia. [2]	20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Edge crater visible. Floor not sharp. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Still no floor detail. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. Floor 1/4 shadowed. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day. 20210915 8:30p Humid. 4mm. Day9.7 C025. OK. Better at C013.
_Solar Sys. Moon				Crater	Cyrillus	6	19	335	155	345	145	Best C345,145. Day6,19. C335,155 Cyrillus is between Theophilus and Catherina both physically and in age. Very irregular floor. Named for Egyptian theologian. 61 mi dia. [2]	20180423_8:00p First Moon photos 8mm Blurry but useable. Some floor features discernible. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Good contrast. 20210813 9:00p Humid. Day5.7 C342. Excellent viewing day. Good detail, 20210827 5:30a Humid. 8mm. Day19.6 C145. Perfect view day. Great floor texture. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Great view day. 20210926 6:00a. 8mm. Day19.8 C151. 1/3 shadowed. Stark.
_Solar Sys. Moon				Crater	Damoiseau	14	27	068	248	070	232	Best C070,232. Day14,27. [26] C061,241 W edge of O Procellarum. East of Grimaldi. Interesting concentric crater. Named for French astronomer. 23 mi dia. []	20210821 4:30a Very humid. 8mm. Day13.6 C072. Humidity obscured detail. Better waning (C230). 20210903 5:00a. 8mm. Day25-9 C230. Great view of concentric shape. 20211003 6:00a. 8mm. Day26.3 C237. Good day to view but poor seeing.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon	*			Crater	Davy	9	23	008	188	015	176	Best C015,176. Day9,22.[10,21] C008,188 NE of M. Nubium and SW of Ptolemaeus, the small crater has a long crater chain (catena) that extends almost to Ptolemaeus. Need for British physicist. 21 mi dia. [4]	20180423_8:00p First Moon photos 8mm. Blurry but visible. Davy catena not visible. Try for sharper image. 20210719 9:00p Humid. 8mm. Day10.3 C037. Great shadows. Catena clearly visible. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Catena crisp. 20210817 9:30p Smoke. 4mm(8-24+3xBar). Day10 C031. Catena barely visible. 20210828 5:00a Humid. 8mm. Day20.5 C157. Catena just visible. 20210914 8:30p Humid. 4mm. Day8.6 C013. Catena visible. 20210915 8:30p Humid. 4mm. Day9.7 C025. Catena visible even with humidity. 20210927 6:00a. 4mm. Day20.7 C163. Catena visible even with low contrast. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Even small craters visible.
_Solar Sys. Moon				Crater	De La Rue	4	17	310	130	320	122	Best C320,122. Day4,17. [18] C310,130 NE. Near Atlas. N of Endymion. Complex shallow, textured crater. Named for British astronomer. Named for British astronomer. 82 mi dia. [1]	20210727 5:30a Clear humid. 8mm. Day18.2 C126. Tall spires. Stark floor craters. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Eroded rim obvious. Floor texture just visible. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good floor detail. Broken rim. 20210825 5:30a Humid. 8mm. Day17.7 C121. Great shadows and floor detail. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK view day if clear. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. OK view day if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. Great floor detail. Deep shadows. 20210924 6:00a Humid. 4mm. Day18.0 C127. Striking depth in very low angle light.
_Solar Sys. Moon				Crater	Delisle	12	24	035	215	050	201	Best C050,201. Day12,24. [23] C035,215 In west M Imbrium. Polygonal rim. Central rise - not peak. Next to Mons Delisle. Named for French astronomer. 16 mi dia. [5]	20210802 5:30a Humid smoke. 8mm. Day23.8 C200. Good view of crater & mountain. 20210818 9:30p Humid - smoke. 8mm. Day11.1 C043. Floor shadowed. Top of rim lit. 20210819 9:00p Humid, smoke, wind. 4mm(8-24+3xBar). Day12.2 C056. Better tonight. Polygon rim noticeable. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good. 2/3 shadowed. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day. 1/3 shadowed.
_Solar Sys. Moon				Crater	Democritus	6	18	325	145	340	125	Best C340,125. Day6,18. C325,145 N of M Frigoris and Gartner. Named for Greek Astronomer. 24 mi dia. []	20210813 9:30p Clear. Day5.7 C342. Good day to view. Peak visible. 20210825 5:30a. 8mm. Day17.7 C121. Good shadows Rim irregularities obvious. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Floor 3/4 shadowed. 20210912 8:30p. Smoke. 8mm. Day6.5 C348. Good view day. 1/3 shadowed. 20210924 6:00a Humid. 4mm. Day18.0 C127. Great view. 1/4 shadowed.
_Solar Sys. Moon				Crater	Descartes	7	20	344	164	001	157	Best C001,157. Day7,20. [8,21] C344,164 W of Cyrillus. Old - almost no rim left - just wide terraces. Apollo 16 landed just N of Descartes. Named for French philosopher. 30 mi dia. [2]	20210814 9:30p Moderately humid. Day6.8 C355. Floor crater obvious. So shallow there are few shadows. 20210827 5:30a Humid. 8mm. Day19.6 C145. Floor terrace rings just visible. 20210828 5:00a Humid. 8mm. Day20.5 C157. Best view. N rim blowout & terrace rings. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view. Waning better - C157.
_Solar Sys. Moon	*			Crater	Deslandres	9	21	005	185	013	176	Best C013,176. Day9,21. [8,22] C005,185 Very old, eroded crater north of Tycho. SW of Purbach. Small catena other texture on floor. Also on the floor is crater Hell Q (only 3 mi wide) AKA Cassini's Bright Spot - very bright in overhead light. Best day for Bright Spot - 11-14. 3rd largest visible crater. Named for French astronomer. Hell named for Hungarian astronomer. 159 mi dia. [1]	20180423_8:00p First Moon photos 8mm proj. Good floor detail 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210816 9:30p Smoke. 4mm(8-24+3x). Day8.9 C019. Good. Small floor craters vis. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Hell Q very bright. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good floor detail. Hell Q less bright. 20210914 8:30p Humid. 4mm. Day8.6 C013. Perfect view day. Great floor detail. 20210915 8:30p. 4mm. Day9.7 C025. Good overall view day. Better texture C013. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Amazing floor texture.
_Solar Sys. Moon				Crater	Dionysius	7	19	343	163	350	159	Best C350,159.Day7,19. [20] C343,163 S of Julius Caesar. W edge of M Tranquilitatis. Very young crater with high albedo making it shine in overhead light - halo of lighter material surrounds the crater. Named for 1st cent. saint. 11 mi dia. [6]	20210721 10:00p Clear. Smoke haze. 24 and 8mm. Day12.5 C061 Bright spot very prominent at 24mm. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Bright. 20210814 9:30p Humid. Day6.8 C355. Crisp, bright. Halo obvious. Floor 1/2 dark. 20210827 5:30a Humid. 8mm. Day19.6 C145. Bright even near terminator. 20210828 5:00a Humid. 8mm. Day20.5 C157. Brightness diminished. Good crater view. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Slightly bright. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Brighter than yesterday.
_Solar Sys. Moon				Crater	Doppelmayr	12	25	041	221	055	209	Best C055,209. Day12,25. [11,24] C041,221 S edge of M Humor. High central peak. The rim descends into the mare. Named for German astronomer. 39 mi dia. [2]	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Good view. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Peak prominent. 20210819 9:00p Humid, smoke, wind. 4mm(8-24+3xBar). Day12.2 C056. Good day to view. Peak really stands out. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. OK view. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day.
_Solar Sys. Moon	**			Dorsum	Dorsa Smirnov (Serpentine Ridge)	6	20	335	155	345	149	Best C345,149. Day6,20. C0335,155 Long winding ridge in eastern M. Serenitatis. Named for Russian geologist.	20201103 3:30a Just visible in photo at 25mm proj. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Just visible. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Striking. Great shadow depth. 20210813 9:00p Humid. Day5.7 C342. Perfect view today. 20210827 5:30a Humid. 8mm. Day19.6 C145. Excellent view day. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Great view day. 20210926 6:00a. 8mm. Day19.8 C151. Perfect view day.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon	*			Dorsum	Dorsum Oppel	4	18	308	128	318	121	Best C318,121. Day4,18. [17] C308,128 Wrinkle ridges on western M. Crisium passing flooded craters Yerkes and Lick. Named for German paleontologist.	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Clearly visible. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Dark by today. 20210811 9:00p Humid. Light smoke. Day3.5 C318. Good contrast. Full length vis. 20210824 6:30a Humid. 8mm. Day16.7 C109. Just visible. 20210825 5:30a Humid. 8mm. Day17.7 C121. Great view. Good contrast. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. Great contrast and depth but C318 better overall. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. C318 still better. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good view, but waxing (C318) better.
_Solar Sys. Moon	*			Dorsum	Dorsum Heim	9	24	025	205	037	203	Best C037,203. Day9,24. [10,23] C025,205 In west central M. Imbrium to the NW of Lambert. Named for Swiss geologist.	20210718 9:30p. 8mm. Day9.2 C025. Excellent shadows. Striking. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Very good view today, Fully visible. 20210817 9:30p Humid - smoke. 8mm. Day10 C031. Fully visible Great contrast. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Great view. 20210916 8:00p Humid. 8mm. Day10.8 C037. Perfect view day.
_Solar Sys. Moon	*			Dorsum	Dorsum Zirkel	9	24	025	205	037	203	Best C037,203. Day9,24. [10,23] C025,205 In west central M. Imbrium to the NW of Lambert. Named for German geologist. Dorsum Heim is farther to the NW.	20201106 5:00a Good skies. Barely distinguishable with 25mm proj. 20210718 9:30p. 8mm. Day9.2 C025. Excellent shadows. Striking. Also Dorsum Heim. 20210801 5:30a Clear humid smoke. 8mm. Day22.9 C187. Barely visible. Try day 24. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Very good view today, but terminator cuts off SE section. Heim fully visible. 20210817 9:30p Humid - smoke. 8mm. Day10 C031. Fully visible, but lower contrast than yesterday. Heim great contrast. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Great view. Slightly obscured by terminator. Heim perfect. 20210915 8:30p Humid. 4mm. Day9.7 C025. E half visible. 20210916 8:00p Humid. 8mm. Day10.8 C037. Perfect view day.
_Solar Sys. Moon				Crater	Endymion	3	16	306	126	315	112	Best C315,112. Day3,16. [4-17 18] C306,126 NE. Near Atlas. Flooded crater with nearly smooth, dark floor. Rim casts modest spire shadows in low sun. Fairly young. Named for Greek mythological character. 76 mi dia. [2]	20201103 3:30a OK photo at 25mm proj. Western rim starkly lit. This was day 19 terminator. Would be better at day 16 or 17. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. Spire shadows on rim visible. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. On term. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Good rim shadow. 20210824 6:30a Humid. 8mm. Day16.7 C109. Very good viewing day. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good rim spires. Great depth. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210923 5:00a Humid. 8mm. Day17.1 C114. Great view day. 20210923 10:00p Humid. 4mm. Day17.7 C123. Rim lit. Great depth.
_Solar Sys. Moon				Crater	Eratosthenes	9	22	012	192	025	175	Best C025,175. Day9,22. [10] C012,192 Between M. Imbrium & Sinus Aestuum to the S. The crater is over 2 mi. deep. Hard to see with overhead light. Named for Greek astronomer. 36 mi dia. [5]	20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210801 5:30a Humid smoke haze. 8mm. Day22.9 C187. Floor dark - on terminator. 20210816 9:30p Humid Smoke. 4mm(8-24+3xBar). Day8.9 C019. Perfect night to view. 20210914 8:30p Humid. 4mm. Day8.6 C013. Rim lit. Floor shadowed. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good view day. 1/4 shadowed. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Perfect view day. Peak and terraces. Long catena to the S very clear including small craters. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Dramatic rim lighting.
_Solar Sys. Moon				Crater	Eudoxus	7	20	344	164	001	150	Best C001,150. Day7,20. [19] C344,164 Young crater on the M. Frigoris near Aristoteles. Low cluster instead of peak. Named for Greek astronomer. 42 mi dia. [6]	20180423 8:00p First Moon photos 8mm. Blurry. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Good view. 20210813 9:00p Humid. Day5.7 C342. On terminator. E rim lit. 20210814 9:30p Moderately humid. Day6.8 C355. Floor half dark - obscures peak. 20210815 9:30p Clear. Day7.9 C007. Terraced walls and floor cluster visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Great. Terracing and floor cluster. 20210828 5:00a Humid. 8mm. Day20.5 C157. Better ejecta view. 40% floor shadow. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Floor dark. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Perfect view day. 20210926 6:00a. 8mm. Day19.8 C151. Perfect view. 1/4 shadowed.
_Solar Sys. Moon				Crater	Firmicus	3	17	297	117	312	109	Best C312,109. Day3,17. C297,117 S of M Crisium. Dark, featureless floor. Named for Roman astrologer. 35 mi dia. [2]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Sharp. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Dim in the smoke. 20210811 9:00p Humid. Light smoke. Day3.5 C318. Good. Rim shadow, dark floor. 20210823 6:30a Humid. 8mm. Day15.8 C096. OK. Dark floor obvious. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good. Flat, smooth, dark floor. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. Good view day. 20210922 5:00a Humid. 8mm. Day16.1 C102. OK. Small shadows. 20210922 9:30p Humid. 8mm. Day16.8 C111. Good view day.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Flamsteed	12	25	044	224	055	215	Best C055,215. Day12,25. C044,224 E of Grimaldi. Flamsteed sits inside the buried Flamsteed P in southern Oceanus Procellarum - site of 1st US soft landing - Surveyor 1 - 1966. Named for British astronomer. 12 mi dia. [5] Flamsteed P - 70 mi dia. [1]	20201103 3:30a Photo not sharp but Flamsteed P obvious at 25mm proj. 20210721 10:00p. Smoke haze. 8mm. Day12.5 C061 Clear view of Flamsteed P as well. 20210802 5:30a Humid smoke. 8mm. Day23.8 C200. Already visible in low contrast. 20210818 9:30p Humid - smoke. 8mm. Day11.1 C043. OK. On term. Rim lit. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good view of P as well. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day.
_Solar Sys. Moon				Crater	Fra Mauro	9	23	017	197	025	188	Best C025,188. Day9,23. [10,22] C017,197 N of M Cognitum. Very old, flooded ghost crater. Apollo 14 site is just to the N. S are craters Bonpland (another ghost crater) and Parry (interesting "tentacles" at low mag.) Named for Italian geographer. 63 mi dia. [1]	20180507 4:30a. Photo at 25mm proj. OK image. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent view of the shallow rim. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Good. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Good rim definition. 20210817 9:30p Humid - smoke. 8mm. Day10 C031. OK but not great contrast. 20210915 8:30p Humid. 4mm. Day9.7 C025. Perfect view day. 20210928 5:00a. Great seeing. 4mm. Day21.6 C175. Good. Small floor craters visible. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Best view day.
_Solar Sys. Moon	*			Crater	Fracastorius	6	19	327	147	335	140	Best C335,140. Day6,19. [5,18,20] C327,147 Flooded by lava from M. Nectaris. Interesting floor features and unnamed rille running across the S third (that would require high magnification). Fracastorius M is 2.5 mi wide and in the middle of the rille. Named for Italian astronomer. 69 mi dia. [2]	20180423 8:00p First Moon photos 8mm Blurry but useable. Dark floor of crater (lava from Nectaris) is obvious. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Good but floor rilles not visible. 20210728 5:30a Humid. 8mm. Day19.2 C139. SW rim interesting - multiple small craters. 20210813 9:00p Humid. Day5.7 C342.OK view. Rille not visible. 20210825 5:30a Humid. 8mm. Day17.7 C121. OK view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Mostly shadowed but stark rim. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Great view day if clear. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. OK view day. 20210925 6:00a. 8mm. Day18.9 C139. Great view.
_Solar Sys. Moon				Crater	Franklin	5	18	313	133	336	121	Best C336,121. Day5,18. [4] C313,133 E of L Somniorum. Terraced wall. Central peak. Named for Benjamin Franklin. 35 mi dia. [3]	20210727 5:30a Clear humid. 8mm. Day18.2 C126. Central peak. Rough area to south. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Deep shadows hide floor. 20210813 9:00p Humid. Day5.7 C342. Good rim shadow. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view day. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. OK view day if clear. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good view.
_Solar Sys. Moon				Crater	Furnerius	3	17	300	120	310	111	Best C310,111. Day3,17. C300,120 Very old crater in SE. Farthest S of the Great Eastern Chain (with Langrenus, Vendelinus and Petavius). Low, eroded rim and many small floor craters. Furnerius A is only 7 mi. wide but has a 1200 mi. ray. Named for French geographer. 84 mi dia. [1]	20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Smoke. Day3.5 C318. Good view. Floor craters barely visible. 20210824 6:30a. 8mm. Day16.7 C109. Eroded walls & floor craters. Furnerius A bright. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210922 9:30p Humid. 8mm. Day16.8 C111.Good view of floor. 20210923 5:00a Humid. 8mm. Day17.1 C114. Good shadows.
_Solar Sys. Moon				Crater	Gartner	6	19	326	146	335	142	Best C335,142. Day6,19. [5,20] C326,146 N edge of M Frigoris. NE of Aristoteles. Old. Flooded. S rim gone. Named for German geologist. 71 mi dia. [1]	20210813 9:30p Clear. Day5.7 C342. Good day to view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Floor partly shadowed. Good detail. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good. Better at C336. 20210925 6:00a. 8mm. Day18.9 C139. Great view day.
_Solar Sys. Moon	*			Crater	Gassendi	11	24	040	220	045	207	Best C045,207. Day11,24. [10,25] C040,220 N edge of M. Humorum. Multiple central peaks and rilles on floor. Named for French astronomer. 63 mi dia. [2]	20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Excellent shadows. 20210721 10:00p. Smoke. 8mm. Day12.5 C061 Largest rilles visible - too far from term. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Central peaks obvious. Rilles still not lit to see well. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Best day for contrast. At 8mm only largest rilles. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Great day to view. Rilles just visible even with unstable atmosphere. 20210819 9:00p Humid, smoke, wind. 4mm(8-24+3xBar). Day12.2 C056. Another good view day. Rilles just visible. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Great view. Larger rilles vis. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day. Bad seeing.
_Solar Sys. Moon				Crater	Gauss	3	16	284	104	295	098	Best C295,098. Day3,16. [2,15] C284,104 NE limb. E of Geminus. NE of M Crisium. Craters on floor. Only viewable during favorable libration. Named for German mathematician. 110 mi dia. [1]	20210823 6:30a Humid. 8mm. Day15.8 C096. Best view day. Rim shadow and larger floor features visible. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. Unfavorable libration. 20210921 9:30p Humid. 8mm. Day15.8 C098. Perfect view day. Rim and floor features. 20210922 5:00a Humid. 8mm. Day16.1 C102. Top of rim and peak barely lit.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Geminus	3	17	304	124	305	112	Best C305,112. Day3,17. C304,124 NE. N of M Crisium and Cleomedes. Terraced walls and small central peaks. Named for Greek astronomer. 53 mi dia. [5]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Rim shadows. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Good. Dark shadow on E rim. Wide terraces and peak visible. 20210823 6:30a Humid. 8mm. Day15.8 C096. Bright floor but low contrast. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good view day. Terraces, peak. 20210825 5:30a Humid. 8mm. Day17.7 C121. Floor dark. Bright rim. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK. 1/3 shadowed. 20210923 5:00a Humid. 8mm. Day17.1 C114. Perfect view day.
_Solar Sys. Moon				Crater	Gemma Frisius	8	20	347	167	001	150	Best C001,150. Day7,20. [21] C347,167 N of Maurolycus. Old. Rim battered by countless small craters. Small central peak still there. Named for Dutch physician. 54 mi dia. [2]	20210814 9:30p Humid. Day6.8 C355. Good day to view. Floor half shadowed. 20210827 5:30a Humid. 8mm. Day19.6 C145. Peak. Good floor detail. Battered. 20210828 5:00a. 8mm. Day20.5 C157. Another good view day. Deeper shadows. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view day. 20210914 8:30p Humid. 4mm. Day8.6 C013. Excellent view day. Good floor detail. 20210926 6:00a. 8mm. Day19.8 C151. Great view. Good floor detail.
_Solar Sys. Moon				Crater	Goldschmidt	10	21	003	183	030	169	Best C030,169. Day10,21. [9,11] C003,183 NW limb. Overlain by Anaxagoras. Many small craters on floor. Named for German astronomer. 70 mi dia. [1]	20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Good view, but floor craters not visible. 20210828 5:00a Humid. 8mm. Day20.5 C157. Larger floor craters visible. 20210914 8:30p Humid. 4mm. Day8.6 C013. Excellent view with shadows. 20210916 8:00p Humid. 8mm. Day10.8 C037. OK. Better C025-C031. 20210927 6:00a. 4mm. Day20.7 C163. Good view day. 20210928 5:00a. 4mm. Day21.6 C175. Good shadow texture today.
_Solar Sys. Moon	*			Crater	Grimaldi	14	27	067	247	075	238	Best C075,238. Day14,27. [26] C067,247 On western limb of moon. Very old, lava-filled crater with dark floor that contrasts with surroundings (darkest spot on Moon). To the E is Damoiseau - a concentric crater inside a much older crater. It is particularly striking when waning near the terminator (C236). Rimae Grimaldi lies between Grimaldi and Damoiseau. Requires perfect conditions. Named for Italian physicist. 107 mi dia. [1]	20201103 3:30a OK photo at 25mm proj. Dark floor obvious. Not sharp for details. 20210722 9:30p. Smoke. 8mm. Day13.7 C074. Good contrast. Dark floor obvious. 20210802 5:30a Humid smoke. 8mm. Day23.8 C200. Dark floor even in low contrast. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Visible but humidity obscured detail. Could still see impressive rim height. Right on terminator. 20210821 10:00p Very humid. 8mm. Day14.3 C080. By now, rim less obvious but dark floor striking even in poor viewing conditions. 20210903 5:00a 8mm. Day25-9 C230. OK day. Floor slightly darker to the N. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Great view day. 20211003 6:00a 8mm. Day26.3 C237. Good view day. Damoiseau perfect.
_Solar Sys. Moon				Crater	Gutenberg	5	18	318	138	336	127	Best C336,127. Day5,18. C318,138 W edge of M. Fecunditatis. Larger crater impinges on Gutenberg's rim. Named for German inventor of printing press. 46 mi dia. [2]	20210727 5:30a Humid. 8mm. Day18.2 C126. Rough, irregular - from imposing craters. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Completely dark. Past term. 20210813 9:00p. Day5.7 C342. Good view- better 5. Rim crater, S ejecta obvious. 20210825 5:30a Humid. 8mm. Day17.7 C121. OK view. Medium contrast. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Best view day if clear. 20210924 6:00a Humid. 4mm. Day18.0 C127. Good view of floor texture. 20210924 10:00p Humid. 8mm. Day18.6 C135. Top of rim lit.
_Solar Sys. Moon				Crater	Hahn	3	16	288	108	311	100	Best C311,100. Day3,16. [2,15] C288,108 NE limb. E of Geminus. NE of M Crisium. Small peak. Rim crater. Only viewable during favorable libration. Named for German chemist. 52 mi dia. []	20210823 6:30a. 8mm. Day15.8 C096. Best view day. Rim shadow & irregular rim vis. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210921 9:30p Humid. 8mm. Day15.8 C098. Great view day. Good shadows. Peak. 20210922 5:00a Humid. 8mm. Day16.1 C102. Perfect view day. Good libration. Peak, rim crater, terraces all good.
_Solar Sys. Moon				Crater	Hainzel	11	23	034	214	050	195	Best C050,195. Day11,23. [24] C034,214 SW of L Timoris and M Nubium. One of 3 interlocking craters that results in unusual shape. Crater Mee just to S - very complex. Named for German astronomer. 43 mi dia. [2]	20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Low contrast. 20210802 5:30a Humid smoke haze. 8mm. Day23.8 C200. Good shadows show shape. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. On terminator - stark. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Good. Elongated central rise. Good view of Mee to the S. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Floor shadowed by today. 20210916 8:00p Humid. 8mm. Day10.8 C037. Rim lit. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day.
_Solar Sys. Moon				Crater	Hansteen	12	25	052	232	060	218	Best C060,218. Day12,25. C052,232 SW O Procellarum. NW of Billy. Polygonal rim. Rima just to the SW. Named for Norwegian astronomer. 27 mi dia. [4]	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Good view. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Polygon rim obvious. Terraces. Area of rima in shadow. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day but no rima. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Good. No rima.
_Solar Sys. Moon				Crater	Harpalus	12	24	044	224	060	206	Best C060,206. Day12,24. C044,224 NW. In Sinus Roris. Terraced with sharp rim. Named for Greek astronomer. 24 mi dia. [6]	20210802 5:30a Humid smoke. 8mm. Day23.8 C200. Terraces and sharp rim visible. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Good viewing day. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Top of rim lit. - term. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Crisp rim. Terraces. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good view day. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Great view day 1/3 shadowed.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Heraclitus	8	21	355	175	015	155	Best C015,155. Day8,21. [20] C355,175 S central. S of Stofler. A complex crater in the south with a unique shape from multiple overlapping impacts. Named for Greek philosopher. 56 mi dia. []	20180423 8:00p First Moon photos 8mm. Unusual shape set off by low light. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear. 8mm. Day20.2 C151. Good view. Interesting shape obvious. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Very good view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Unusual shape noticeable. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Dark - on terminator. 20210914 8:30p Humid. 4mm. Day8.6 C013. Perfect view day. 20210927 6:00a. 4mm. Day20.7 C163. Good. Deep shadows.
_Solar Sys. Moon				Crater	Hercules	5	18	322	142	340	125	Best C340,125. Day5,18. [6,19] C322,142 SE of M. Frigoris. Multiple-terraced inner wall. Lava has covered all but the very tip of the original large peak. Near Atlas. Named for Greek mythological hero. 43 mi dia. [5]	20201103 3:30a OK photo at 25mm proj. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. No contrast - view next day. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Floor craters visible. 20210728 5:30a. 8mm. Day19.2 C139. Floor dark by today but high walls are striking. 20210813 9:00p Humid. Day5.7 C342. Good contrast. Terraced walls. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view day. 20210827 5:30a Humid. 8mm. Day19.6 C145. W rim lit on terminator. Dramatic height. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Floor 1/3 shadowed. 20210924 6:00a Humid. 4mm. Day18.0 C127. Great view of terraces and floor texture. 20210924 10:00p Humid. 8mm. Day18.6 C135. 3/4 shadowed. Great depth.
_Solar Sys. Moon				Crater	Herschel	9	21	003	183	025	162	Best C025,162. Day9,21. [8] C003,183 Just N of Ptolemaeus. Small crater with crisp rim and noticeable peak. Named for German astronomer. 25 mi dia. [5]	20210729 5:30a Clear humid. 8mm. Day20.2 C151. Crisp rim. 20210815 9:30p Clear. 8mm. Day7.9 C007. Sharp rim but 3/4 shadowed floor. 20210816 9:30p Smoke. 4mm(8-24+3xBar). Day8.9 C019. Sharp. 1/4 shadowed. 20210828 5:00a Humid. 8mm. Day20.5 C157. Already good view. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good. 1/3 shadowed. 20210915 8:30p Humid. 4mm. Day9.7 C025. Great. 1/4 shadowed. 20210927 6:00a. 4mm. Day20.7 C163. Great view day.
_Solar Sys. Moon				Crater	Hesiodus	10	23	016	196	025	185	Best C025,185. Day10,23. C016,196 South edge of M Nubium. Shallow crater associated with Rima Hesiodus. Named for Greek poet. 26 mi dia. [2]	20180507 4:30a. Photo at 25mm proj. OK image. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Good. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Best view day.
_Solar Sys. Moon	*			Crater	Hesiodus A	10	23	016	196	035	175	Best C035,175. Day10,23. [11] C016,196 Very small concentric-ring crater on south edge of Mare Nubium. 9 mi dia. []	20180507 4:30a. OK Photo at 25mm proj. Need more magnification to see rings. 20210718 9:30p. 8mm. Day9.2 C025. Excellent shadows. Rings not visible at 8mm. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Rings too small. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Rings barely visible. 20210915 8:30p Humid. 4mm. Day9.7 C025. Too soon for rings. 20210916 8:00p Humid. 8mm. Day10.8 C037. Perfect view day but bad conditions. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great view - concentric rings clear and obvious.
_Solar Sys. Moon				Crater	Hevelius	14	27	068	248	075	232	Best C075,232. Day14,27. [26] C068,248 W edge of O Procellarum. Joined to Cavalerius. Old, degraded walls and rilles on floor. Named for Polish astronomer. 71 mi dia. [2]	20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Low contrast. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Visible but humidity obscured detail. Good view of rim. Cavalerius also visible. 20210903 5:00a. 8mm. Day25-9 C230. OK day. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Good view day. 20211003 6:00a. 8mm. Day26.3 C237. Good day to view but poor seeing - no rilles.
_Solar Sys. Moon				Crater	Hipparchus	8	21	354	174	001	170	Best C001,170. Day8,21. [20] C354,174 Degraded remnant of a crater. SE of Sinus Medii. NE of Ptolemaeus. Named for Greek astronomer. 86 mi dia. [1]	20180423 8:00p First Moon photos 8mm. Floor details obvious. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210814 9:30p Moderately humid. Day6.8 C355. Dark. On terminator. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Complex floor features sharp. 20210827 5:30a Humid. 8mm. Day19.6 C145. Still low contrast. 20210828 5:00a Humid. 8mm. Day20.5 C157. Low rim needs more contrast. 20210913 8:30p. Smoke. 8mm. Day7.6 C001. Excellent view day. Great floor features. 20210914 8:30p Humid. 4mm. Day8.6 C013. Acceptable view. Better C001. 20210927 6:00a. 4mm. Day20.7 C163. OK view day. Will be better at C170.
_Solar Sys. Moon				Crater	Hommel	6	18	326	146	350	125	Best C350,125. Day6,18. C326,146 SE. (SW of Janssen). Touches Vlacq. Many large rim craters. Named for German astronomer. 75 mi dia. []	20210813 9:00p Humid. Day5.7 C342. Good shadows. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good view day. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good view day.

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_Solar Sys. Moon	*			Crater	Hortensius	10	23	028	208	035	202	Best C035,202. Day10,23. [11,24] C028,208 ESE of Copernicus in M. Insularum. 6 volcanic domes lie just to the north. (A little S of the Milichius Domes.) Named for Dutch astronomer. 7 mi dia. []	20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Domes not visible - terminator too far away for contrast. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Some domes visible. 20210817 10:15p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Domes just becoming visible. Good view. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Domes barely visible. Better yesterday. 20210916 8:00p Humid. 8mm. Day10.8 C037. Great. Domes visible in bad conditions. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Domes faintly visible.
_Solar Sys. Moon				Crater	Ina	8	21	355	175	001	165	Best C001,165. Day8,21. Rare D-shaped volcanic depression N of M. Vaporum in Lacus Felicitatis (about half the size of Moltke). Only a dot with the 8se. Discovered by Apollo 15 crew from orbit in 1971. Not named for a particular person. 2 mi dia.	20201106 5:00a Good skies. Not distinguishable even with 17mm proj. Will need perfect skies and 13mm proj. 2021 - Very small. Haven't been able to distinguish even on good nights.
_Solar Sys. Moon	*			Crater	Inghirami	14	27	070	250	075	232	Best C075,232. Day14,27. [26] C070,250 SW. Below Schickard. The wide Vallis Inghirami lies NW of the crater. Very close to edge of moon. Needs good libration. Named for Italian astronomer. 57 mi dia. [2]	20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Low contrast. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Rim just visible on terminator. 20210903 5:00a 8mm. Day25-9 C230. Vallis is wide and shallow - not striking. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Unfavorable libration. 20211003 6:00a 8mm. Day26.3 C237. Great view and good libration.
_Solar Sys. Moon				Crater	J. Herschel	12	24	046	226	050	206	Best C050,206. Day12,24. C046,226 N of Sinus Iridum and M Frigoris. Heavily eroded rim. Named for British astronomer. 102 mi dia. [1]	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Large, shallow and eroded even in low contrast. 20210803 5:30a Clear humid smoke. 8mm. Day24.7 C212. Very eroded. Interior crater. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good view of erosion. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good view day. 20210917 9:00p Humid. 8mm. Day11.8 C049. Great view day. Amazing floor texture.
_Solar Sys. Moon	*			Crater	Janssen	5	18	320	140	336	126	Best C336,126. Day5,18. C320,140 Very old crater in SE highlands. Numerous newer small craters overlap. Small rimae (Rimae Janssen) which cuts through the higher ground (unusual) should be visible. An interesting row of small craters starts in the middle of Janssen and heads E to Vallis Rheita. Named for French astronomer. 124 mi dia. [1]	20201103 3:30a Good photo at 25mm proj. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. No contrast - view next day. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Complex of layered craters. Quite interesting. Rima on floor also visible. 20210813 9:00p Humid. Day5.7 C342. Quite good view. Craters and rima distinct. 20210825 5:30a Humid. 8mm. Day17.7 C121. Excellent view of floor and rima. 20210827 5:30a Humid. 8mm. Day19.6 C145. Just tops of rims lit - on terminator. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Best view day if clear. Good view of floor crater row. Rima just visible. 20210924 6:00a Humid. 4mm. Day18.0 C127. Perfect view of rima and crater chain. 20210924 10:00p Humid. 8mm. Day18.6 C135. Deep shadows. Very dramatic.
_Solar Sys. Moon				Crater	Julius Caesar	7	20	345	165	001	154	Best C001,154. Day7,20. [21] C345,165 On eastern M. Tranquilitatis. Flooded crater with broken SE wall. One of oldest. Floor darkens to N (One of darkest spots on moon) Named for Roman emperor. 56 mi dia. [1]	20180423 8:00p First Moon photos 8mm. Blurry. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. OK view. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Good. Low walls. 20210814 9:30p Moderately humid. Day6.8 C355. Good view. Dark floor north obvious. 20210827 5:30a Humid. 8mm. Day19.6 C145. OK shadows. Dark floor visible. 20210828 5:00a Humid. 8mm. Day20.5 C157. Great shadows. Good detail. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good, stark view. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view day. 20210926 6:00a. 8mm. Day19.8 C151. Great view day.
_Solar Sys. Moon				Crater	Kane	6	20	335	155	348	146	Best C348,146. Day6,20. [19] C335,155 N edge of M Frigoris. N of Aristoteles. Old. Flooded with irregular low rim. Named for American explorer. 34 mi dia. []	20210813 9:30p Clear. Day5.7 C342. Good day to view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good view day. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Floor half shadowed. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Best view day. 20210926 6:00a. 8mm. Day19.8 C151. Getting dark, but still very good.
_Solar Sys. Moon				Crater	Kant	7	20	340	160	001	142	Best C001,142. Day7,20. [19] C340,160 W of Theophilus. Irregular rim and central peak. Named for German philosopher. 21 mi dia. [4]	20210814 9:30p Moderately humid. Day6.8 C355. Good. Floor 1/3 shadowed. 20210827 5:30a Humid. 8mm. Day19.6 C145. Great view of rim and peak. 20210828 5:00a Humid. 8mm. Day20.5 C157. Rim lit - on terminator. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. 1/2 shadowed. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Excellent view day. 1/4shadowed. 20210925 6:00a. 8mm. Day18.9 C139. Peak and rim clear.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Kepler	11	24	038	218	050	205	Best C050,205. Day11,24. C038,218 Has slightly polygonal form and a prominent ray system that is visible in the correct light. In E central Oceanus Procellarum. 100 mil yrs old. Named for German astronomer. 19 mi dia. [6]	20180427 8:30p. Photo at 17 mm proj. Rays clearly visible. 20180507 4:30a. Photo at 25mm proj. Sharp image. Rays visible. 20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Excellent shadows. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Rays very bright. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Rays still visible and polygon shape noticeable. 20210803 5:30a Clear humid smoke. 8mm. Day24.7 C212. Floor dark by today - term. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Floor 3/4 shadowed. Polygon noticeable. Surrounding ejecta texture very interesting. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good. 1/3 shadowed. 20210917 9:00p Humid. 8mm. Day11.8 C049. Great view day. 1/4 shadowed.
_Solar Sys. Moon	*			Crater	Kies	10	23	327	147	030	195	Best C030,195. Day10,23. [11,24] C327,147 Flooded ghost crater in SW M Nubium with unusual shape (appendage to south) Named for German astronomer. 28 mi dia. [4]	20180507 4:30a. Just visible at 25mm proj. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. Shape clearly visible. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Good. 20210802 5:30a Clear humid smoke. 8mm. Day23.8 C200. Perfect light today to view. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Good view. 20210915 8:30p Humid. 4mm. Day9.7 C025. Just visible past terminator. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good view day.
_Solar Sys. Moon				Crater	Krusenstern	8	21	355	175	015	163	Best C015,163. Day8,21. C355,175 E of Purbach. N of Aliacensis. Flat floor with battered rim. Named for 19th century German explorer. 29 mi dia. [2]	20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. Crater marred rim. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. 1/2 shadowed. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day. 20210927 6:00a. 4mm. Day20.7 C163. Good view day.
_Solar Sys. Moon				Lacus	Lacus Mortis	6	19	332	152	348	145	Best C348,145. Day6,19. [20] C332,152 NE of M Serenitatis. Flooded crater with Rimae Bürg on the floor and Bürg crater in the middle.	20180423 8:00p First Moon photos 8mm. Blurry. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Visible. 20210728 5:30a. 8mm. Day19.2 C139. Obviously a filled crater. Didn't notice rilles. 20210813 9:00p Humid. Day5.7 C342. Good floor texture, but rille not visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Great view with rilles. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Deep shadows. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Great view day. 20210926 6:00a. 8mm. Day19.8 C151. Great texture, but slightly too dark.
_Solar Sys. Moon				Lacus	Lacus Spei	3	16	295	115	311	109	Best C311,109. Day3,16. C295,115 NE limb. Very small "lake" NE of Messala. Means "Lake of Hope".	20210821 10:00p Very humid. 8mm. Day14.3 C080. Dark against full moon. 20210823 6:30a Humid. 8mm. Day15.8 C096. Another good view. 20210824 6:30a Humid. 8mm. Day16.7 C109. Excellent view. Dark floor, good depth. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK if clear. 20210922 5:00a Humid. 8mm. Day16.1 C102. Good contrast with surrounding plain. 20210922 9:30p Humid. 8mm. Day16.8 C111. Just getting dark. Still good.
_Solar Sys. Moon				Lacus	Lacus Timoris	10	23	031	211	037	180	Best C037,180. Day10,23. [11] C031,211 Small "lake" south of Palus Epidemiarum & Mare Nubium. North of Hainzel.	20180427 8:30p. Photo at 8mm proj. Small but visible. 20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Just visible. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Good. Best at 24mm. 20210817 9:30p Humid - smoke. 8mm. Day10 C031. Good. 20210916 8:00p Humid. 8mm. Day10.8 C037. Excellent view day. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great contrast. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Still good.
_Solar Sys. Moon				Crater	Lade	7	21	350	170	001	160	Best C001,160. Day7,21. [8,20] C350,170 W of M. Tranquilitatis. NNE of Hipparchus. Flooded. S rim missing. Named after German astronomer. 34 mi dia. [1]	20210814 9:30p Moderately humid. Day6.8 C355. Good day to view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Still too low contrast. 20210828 5:00a Humid. 8mm. Day20.5 C157. Best day. Floor crater and jagged rim. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Great view day. 20210927 6:00a. 4mm. Day20.7 C163. Very good floor texture.
_Solar Sys. Moon				Crater	Lalande	9	22	009	189	025	175	Best C025,175. Day9,22. C009,189 (Best bright albedo - C110-130) E edge M Insularum. N of Davy. Surrounded by high albedo area and rays. Simple crater with smaller Lalande A to the SW. Named for French astronomer. 15 mi dia. []	20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Bright. 20210914 8:30p Humid. 4mm. Day8.6 C013. 3/4 shadowed. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good view of crater. Too low for rays. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. White ejecta obvious.
_Solar Sys. Moon				Crater	Lambert	10	23	021	201	035	185	Best C035,185. Day10,23. C021,201 In central M. Imbrium. Flooded ghost crater Lambert R is just to the south and barely visible. Dorsum Zirkel to the NW. Named for French astronomer. 19 mi dia. [5]	20201106 5:00a Good skies. OK photo with 25mm proj. 20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Excellent shadows. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Lambert R just visible. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Rim striking - floor dark. Right on terminator. 20210817 9:30p Smoke. 4mm(8-24+3xBar). Day10 C031. Lambert R just visible. 20210915 8:30p Humid. 4mm. Day9.7 C025. Floor dark. Lambert R just visible. 20210916 8:00p Humid. 8mm. Day10.8 C037. Lambert R barely visible. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great - Lambert. Not R. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Lambert R faintly visible.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Lamé	3	16	296	116	310	109	Best C310,109. Day3,16. [17] C296,116 SE of M Fecunditatis. Overlaps Vendelinus. Multiple small craters within. The row on the E extends S of the crater as well. Named for French mathematician. 52 mi dia. [2]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Already dark - Peak just visible. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day to view but too dim in smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Interior craters visible. 20210823 6:30a Humid. 8mm. Day15.8 C096. Low contrast. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good view day. Floor texture visible. 20210909 8:00p. Heavy smoke haze. 8mm. Day3.2 C311. Good view day if clear. 20210922 9:30p Humid. 8mm. Day16.8 C111. Good. 1/3 shadowed.
_Solar Sys. Moon	*			Crater	Lamont	6	20	337	157	345	150	Best C345,150. Day6,20. C337,157 Completely buried crater in M. Tranquilitatis with rilles to the west. Just visible in low sunlight. (Arago just northwest.) Named for German astronomer. 66 mi dia. []	20180521_6:30p(light) Clear photo at 25mm proj. Buried crater outline just visible. 20210728 5:30a Humid. 8mm. Day19.2 C139. Low contrast. Just visible. Try day 20. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Subtle but visible. 20210813 9:30p Moderately humid. Day5.7 C342. Best view. Obvious. 20210827 5:30a Humid. 8mm. Day19.6 C145. Clearly visible. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day. 20210926 6:00a. 8mm. Day19.8 C151. Perfect view day.
_Solar Sys. Moon				Crater	Langrenus	3	16	300	120	305	112	Best C305,112. Day3,16. [4,17] C300,120 SE M. Fecunditatis. Large. Terraced walls. High albedo floor. Farthest N of the Great Eastern Chain (with Vendelinus. Petavius and Furnerius). Named for Belgian engineer. 79 mi dia. [6]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Rim texture, central peak and spire shadows all visible. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Good view of wide, terraced walls and complex central peak. Floor texture just visible. 20210823 6:30a Humid. 8mm. Day15.8 C096. Low contrast. 20210824 6:30a Humid. 8mm. Day16.7 C109. Great view day. Terraces, western rim shadow and compound peak. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK view day if clear. 20210923 5:00a Humid. 8mm. Day17.1 C114. Excellent shadows for detail.
_Solar Sys. Moon				Crater	Lansberg	11	23	026	206	035	180	Best C035,180. Day11,23. [10] C026,206 A sharply defined, young crater with little new cratering on the floor. In M. Insularum. Named for Dutch astronomer. 24 mi dia. [4]	20180427_8:30p. Photo at 8mm proj. Small but visible. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Sharp peak, crisp rim. 20210802 5:30a Humid smoke haze. 8mm. Day23.8 C200. Good view again today. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Floor 2/3 shadowed. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Rim lit. On terminator. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good. 1/2 shadowed. Peak visible. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Good view of floor.
_Solar Sys. Moon				_Survey	Large Area Overview							Prime & Prime+Reducer - full moon fits in FOV. Prime-320thSec@400ISO.	20150928_11:15p DSLR 300mm. Lunar eclipse. Adequate photo. 20180425_7:30p prime. Waxing Gibbous. OK photo. 20180426_8:00p_Prime&Reducer. Waxing Gibbous. Good photo. 20180428_8:00p_Prime&Reducer. Full Moon. Surprise photo - 3 geese flew in front as the photo was taken. 20190910_8:30p_Prime. Almost full. OK photos. 20190913_7:00p_DSLR 300mm photo framed by trees. 20200721_9:00p_DSLR 300mm photo. Sliver moon at sunset. 20200914 6a Humid hazy skies. (24-8mm) - 24mm Sliver with Earthshine ! 20210526 5a Clear DSLR 300mm good photos of partial eclipse.
_Solar Sys. Moon				Crater	Le Monnier	6	19	330	150	350	144	Best C350,144. Day6,19. [20] C330,150 Completely flooded floor connected to M. Serenitatis. Named for French astronomer. Named for French astronomer. 37 mi dia. [2]	20180423_8:00p First Moon photos 8mm. Very blurry. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Visible but better a day later. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Good contrast. 20210813 9:00p Humid. Day5.7 C342. Good shadows. 20210825 5:30a Humid. 8mm. Day17.7 C121. OK view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Great view and contrast. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day. 20210925 6:00a. 8mm. Day18.9 C139. Already quite good.
_Solar Sys. Moon				Crater	Letronne	11	25	042	222	050	208	Best C050,208. Day11,25. [24] C042,222 Old, flooded crater on south edge of Oceanus Procellarum. Just N of Gassendi. North rim completely gone. Named for French archaeologist. 72 mi dia. [3]	20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Excellent shadows. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Good view. 20210818 9:30p Humid Smoke. 4mm(8-24+3xBar). Day11.1 C043. On term. Stark view. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. OK view. 20210917 9:00p Humid. 8mm. Day11.8 C049. Great view day.
_Solar Sys. Moon				Crater	Lick	4	17	308	128	320	116	Best C320,116. Day4,17. [5-18] C308,128 SW edge of M Crisium SW of Picard. Flooded. Very shallow rim. Named for California philanthropist. 19 mi dia. [3]	20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Great view. 20210824 6:30a Humid. 8mm. Day16.7 C109. OK view but floor texture not obvious. 20210825 5:30a Humid. 8mm. Day17.7 C121. Floor partly shadowed. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK view if clear. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Better C318. 20210923 5:00a Humid. 8mm. Day17.1 C114. Good view.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Linné	7	20	348	168	355	163	Best C355,163. Day7,20. [8,21] C348,168 Very small crater in NW M. Serenitatis. Surrounded by white ejecta visible depending on the sun angle. Large volcanic (Valentine) dome lies to the north. Very young. Named for Swedish botanist. 1 mi dia. [6]	20201106 5:00a Good skies. OK photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Just visible. 20210814 9:30p Moderately humid. Day6.8 C355. Light spot noticeable. Should be brighter in coming days. Valentine Dome just visible. 20210815 9:30p Clear. 8mm. Day7.9 C007. Slightly brighter than yesterday. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Same as yesterday. 20210827 5:30a Humid. 8mm. Day19.6 C145. Bright spot visible. 20210828 5:00a Humid. 8mm. Day20.5 C157. Spot visible - not crater. Dome visible. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Spot - no crater. No dome. 20210927 6:00a. 4mm. Day20.7 C163. Bright. Perfect view of dome.
_Solar Sys. Moon				Crater	Longomontanus	10	23	022	202	035	178	Best C035,178. Day10,23. C022,202 Very old crater NW of Clavius that is almost completely flattened by time. Named for Danish astronomer. 97 mi dia. [2]	20180427_8:30p. Photo at 8mm proj. Floor features barely visible. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Floor craters visible. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Floor craters visible. 20210915 8:30p Humid. 4mm. Day9.7 C025. Only top of rim lit. 20210916 8:00p Humid. 8mm. Day10.8 C037. Excellent view day. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great floor detail. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Another great view.
_Solar Sys. Moon				Crater	Macrobius	5	18	314	134	335	124	Best C335,124. Day5,18. C314,134 W of M Crisium. Multiple terraces. Small Macrobius C lies across west rim. Named for Roman writer. 40 mi dia. [3]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Look one day later - no detail. 20210727 5:30a. 8mm. Day18.2 C126. Good spire shadows, small peak, terraces. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. W rim lit. Floor all dark - term. 20210813 9:00p Humid. Day5.7 C342. Adequate rim shadows still visible. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good shadows, terraces, rim crater. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. 1/3 shadowed. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Best view day if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good. 1/4 shadowed
_Solar Sys. Moon	*			Crater	Madler	6	19	330	150	335	130	Best C335,130. Day6,19. C330,150 Between M. Tranquilitatis (Sinus Asperitatis) & M Nectaris. E of Theophilus. Named for German astronomer. 17 mi dia. [6]	20210827 5:30a Humid. 8mm. Day19.6 C145. OK. 3/4 shadowed. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. OK. Almost 1/2 shadowed.
_Solar Sys. Moon	*			Crater	Maginus	9	21	007	187	020	172	Best C020,172. Day9,21. [8,22] C007,187 SE of Tycho. Highly eroded. Many overlapping craters and many craters on floor. Named for Italian astronomer. 121 mi dia. [1]	20180423_8:00p First Moon photos 8mm Blurry but useable. 20210816 9:30p Smoke. 8mm. Day8.9 C019. Small floor craters very distinct. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good floor detail. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view. 1/4 shadowed. 20210915 8:30p Humid. 4mm. Day9.7 C025. OK. Maybe better around C020. 20210927 6:00a. 4mm. Day20.7 C163. Great view. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Perfect day. Very small floor craters visible.
_Solar Sys. Moon				Crater	Mairan	12	24	044	224	060	207	Best C060,207. Day12,24. C044,224 SW of Sinus Iridum. Sharp outer edge. Surrounded by very rough surface area. Named for French astronomer. 25 mi dia. [4]	20210802 5:30a Humid smoke haze. 8mm. Day23.8 C200. Noticeable sharp edge. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Good viewing day. 20210818 9:30p Humid Smoke. 4mm(8-24+3xBar). Day11.1 C043. Top of rim lit - term. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Great view day. Irregular rim. Surrounding texture. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good view day. 20210917 9:00p Humid. 8mm. Day11.8 C049. 3/4 shadowed. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day. 1/3 shadowed.
_Solar Sys. Moon				Crater	Manilius	7	20	351	171	005	157	Best C005,157. Day7,20. [8,21] C351,171 In M. Vaporum. NW of Julius Caesar. Has visible ray system. High albedo interior and wavy rim. Named for Roman poet. 24 mi dia. [5]	20180423_8:00p First Moon photos 8mm. Blurry. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Good rays at 24mm. 20210814 9:30p Humid. Day6.8 C355. Good rim shadow. Floor dark -at term. 20210815 9:30p Clear. 8mm. Day7.9 C007. Very bright. Peak visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Bright. Some rays noticeable. 20210828 5:00a Humid. 8mm. Day20.5 C157. Perfect day to view crater. Still bright. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Peak. Slightly bright. 20210927 6:00a. 4mm. Day20.7 C163. Good. Peak still visible.
_Solar Sys. Moon				Crater	Maraldi	6	19	325	145	335	135	Best C335,135. Day6,19. [18] C325,145 N edge of M Tranquilitatis. Worn, with low albedo floor. E edges of the overlapping, flooded craters to the S look like a tail. Named for Italian astronomer. 24 mi dia. [2]	20210813 9:30p Clear. Day5.7 C342. Good day to view. Very dark floor obvious. 20210825 5:30a Humid. 8mm. Day17.7 C121. Rugged shape and dark floor apparent in spite of low contrast. 20210827 5:30a Humid. 8mm. Day19.6 C145. Floor dark - on terminator. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Great view day if clear. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Still good view. 20210925 6:00a. 8mm. Day18.9 C139. Perfect view day.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Mare	Mare Anguis	3	16	293	113	306	108	Best C306,108. Day3,16. NE of M Crisium. Small "lake." Means "Serpent Sea."	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Dark - need to view day earlier. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good view if no smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Visible. Better previous day. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good libration. Best view yet - very noticeable even in fully lit half of moon. Photo on this day also good. 20210824 6:30a Humid. 8mm. Day16.7 C109. Excellent view. Interesting deep, wide valley cuts off to the NE and S of Hahn. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK view day if clear. 20210922 5:00a Humid. 8mm. Day16.1 C102. Already good.
_Solar Sys. Moon				Mare	Mare Australe	3	15	270	090	295	088	Best C295,088. Day3,15. SE of Vallis Rheita. Only viewable during favorable libration. That may be on any day or % of illumination. Use Stellarium to predict best viewing days. "Southern Sea."	20210813 9:00p Humid. Day5.7 C342. Photo shows at near best libration. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good libration. Best view yet - very noticeable even in fully lit half of moon. Photo on this day also good. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Libration even slightly better today. 20210822 9:30p Humid. 20xBin. Day15.4 C092. Visible even with low magnification. 20210823 6:30a Humid. 8mm. Day15.8 C096. Already obscured by terminator. 20210920 9:30p Humid. 8mm. Day14.8 C086. Good libration.
_Solar Sys. Moon				Mare	Mare Cognitum	10	23	022	202	037	184	Best C037,184. Day10,23. [11] Named "The Sea that has Become Known" in 1964 by the IAU because Ranger 7 sent back the first pictures of the lunar surface before impacting here earlier that year. In 1967 Surveyor 3 landed nearby. In 1969 Apollo 12 returned to within walking distance of Surveyor 3 & brought back parts to examine.	20201103 3:30a OK photo at 25mm proj. 1/250 1600. 20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Surface texture obvious. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Good. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good view day.
_Solar Sys. Moon				Mare	Mare Crisium	4	17	300	120	318	114	Best C318,114. Day4,17. Just visible to the naked eye on the eastern edge of the Moon. Named in 1651. Riccioli named the maria on folklore which associated the 1st quarter with good weather and the last quarter with bad. AccordiSongly, maria visible 1st quarter include the Seas of Serenity, Tranquility, Fertility, and Nectar. Last quarter, we see the Sea of Rains, Clouds, Moisture, and the Ocean of Storms. One mare that seems not to fit that pattern is the Sea of Crises. However, the Greek word <i>krisis</i> , borrowed into Latin and then English as 'crisis', originally meant an act of separating or distinguishing. This may explain the name <i>Mare Crisium</i> , as this is the first mare revealed as each New Moon becomes a crescent.	20201030 7:00p OK photo at 25mm proj. 1/1000 6400. 20210726 5:00a. 8mm. Day17.2 C114. Noticed a lot of texture on the eastern floor. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Large height of western rim striking. Rest dark by today. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. 3/4 visible. 20210811 9:00p Humid. Smoke haze. Day3.5 C318. Great day to view. Much detail. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK view day if clear. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. C318 better. 20210922 5:00a Humid. 8mm. Day16.1 C102. Good. Waxing (C318) better. 20210923 5:00a Humid. 8mm. Day17.1 C114. Good floor texture.
_Solar Sys. Moon				Mare	Mare Fecunditatis	5	18	310	130	325	118	Best C325,118. Day5,18. Very old basin south of Mare Tranquillitatis. "Sea of Fertility." Named in 1651.	20180521_6:30p(light) OK photo at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Very textured floor on E edge. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Half lit. 20210813 9:00p Humid. Day5.7 C342. OK. Better 1 day sooner. 20210825 5:30a Humid. 8mm. Day17.7 C121. Great floor texture today. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Good view day if clear. 20210911 8:30p. Very heavy smoke. 8mm. Day5.4 C336. Good, but better at C324.
_Solar Sys. Moon				Mare	Mare Frigoris	7	19	001	180	045	147	Best C045,147. Day7,19. [8] Far north, the "sea" is made up of multiple basins. Lighter rays across the floor were laid down by Goldschmidt to the NW. "Sea of Cold." Named in 1651.	20180423 8:00p First Moon photos 8mm. Blurry. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Easily visible. 20210813 9:00p Humid. Day5.7 C342. Half dark - terminator. 20210814 9:30p Moderately humid. Day6.8 C355. W edge past terminator. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good view day. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Only E half in light. 20210926 6:00a. 8mm. Day19.8 C151. Good overview.
_Solar Sys. Moon				Mare	Mare Humboldtianum	3	15	270	090	295	091	Best C295,091. Day3,15. [2] Far NE edge of Moon. E of Endymion. Only viewable during favorable libration. That may be on any day or % of illumination. Use Stellarium to predict best viewing days. "Sea of Humboldt." Named for German explorer.	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Excellent libration. Best view yet - very noticeable even in fully lit half of moon. Even Lacus Spei to the south is visible. Photo on this day also good. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Libration even slightly better today. 20210822 9:30p Humid. 20xBin. Day15.4 C092. Visible even with low magnification. 20210823 6:30a Humid. 8mm. Day15.8 C096. Already partially obscured by terminator, but W edge shadows now show good depth. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good libration. Best view yet in spite of hazy viewing conditions. 20210920 9:30p Humid. 8mm. Day14.8 C086. Maximum libration. Entire mare visible. 20210921 9:30p Humid. 8mm. Day15.8 C098. Still mostly visible with good libration. 20211011 7:00p Humid. 8mm. Day6.2 C341. Excellent libration. Entirely visible.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Mare	Mare Humorum	11	24	038	218	050	205	Best C050,205. Day11,24. [12] An intermediate-aged basin south of Oceanus Procellarum. "Sea of Moisture." Named in 1651.	20201103 3:30a OK photo at 25mm proj. 1/250 1600. 20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Excellent shadows. 20210818 9:30p Humid - smoke. 8mm. Day11.1 C043. E edge still shadowed. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good view day. 20210917 9:00p Humid. 8mm. Day11.8 C049. Great view day.
_Solar Sys. Moon				Mare	Mare Imbrium	10	23	015	195	035	170	Best C035,170. Day10,23. In the north central region, the Imbrium basin, which became Mare Imbrium when it filled with lava, is one of the largest in the Solar System. "Sea of Rains." Named in 1651.	20180425_7:30p. Photo at 17mm proj. Blurry. 20180427_8:30p. Good photo at 17mm proj. 20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Excellent shadows. Good texture on lava floor. 20210817 9:30p Humid - smoke. 8mm. Day10 C031. Great floor detail. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view day.
_Solar Sys. Moon				Mare	Mare Insularum	10	22	030	210	040	200	Best C040,200. Day10,22. [11] A recently named (1976) "sea" north of M. Cognitum. "Sea of Islands."	20201103 3:30a OK photo at 25mm proj. 1/250 1600. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Very rough floor unlike most of the other "seas". 20210818 9:30p Humid - smoke. 8mm. Day11.1 C043. Well named. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good. Deep shadows. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good view.
_Solar Sys. Moon				Mare	Mare Marginis	3	15	270	090	295	088	Best C295,088. Day3,15. [2] East of M Crisium. Only viewable during favorable libration. That may be on any day or % of illumination. Use Stellarium to predict best viewing days. "Sea of the Edge."	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Excellent libration. Very noticeable even in fully lit half of moon. Even Goddard Crater is visible. Photo on this day also good. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Libration even slightly better today. 20210822 9:30p Humid. 20xBin. Day15.4 C092. Visible even with low magnification. 20210823 6:30a Humid. 8mm. Day15.8 C096. Already obscured by terminator. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good libration. 20210920 9:30p Humid. 8mm. Day14.8 C086. Maximum libration. Entire mare visible. 20211011 7:00p Humid. 8mm. Day6.2 C341. Excellent libration. Entirely visible.
_Solar Sys. Moon				Mare	Mare Nectaris	6	18	325	145	335	130	Best C335,130. Day6,18. Multi-rimmed basin. Rupes Altai is part of the outer rim. "Sea of Nectar."	20180423_8:00p First Moon photos 8mm Blurry but useable. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Very flat. 20210813 9:00p Humid. Day5.7 C342. Good view. Low wrinkles on E and W edges. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Great view day if clear. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Still good view. 20210924 6:00a Humid. 4mm. Day18.0 C127. Good view day.
_Solar Sys. Moon				Mare	Mare Nubium	10	22	016	196	045	178	Best C045,178. Day10,22. [11] A very old basin south of M. Cognitum. A bright, obvious ray from Tycho crosses the dark floor of Nubium. "Sea of Clouds." Named in 1651.	20201103 3:30a OK photo at 25mm proj. 1/250 1600. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Half dark by today. 20210818 9:30p Humid - smoke. 8mm. Day11.1 C043. Good view. 20210915 8:30p Humid. 4mm. Day9.7 C025. OK view day. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great texture. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Very good floor detail.
_Solar Sys. Moon				Mare	Mare Orientale	14	27	090	270	089	250	Best C089,250. Day14,27. Western edge of moon. ESE of Grimaldi. Only viewable during favorable libration. That may be on any day or % of illumination. Use Stellarium to predict best viewing days. "Eastern Sea." Named after the old convention of reversing E and W on Moon.	20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Favorable libration. (Best possible libration [every 6 years] will occur the next few days - if clouds stay away to see it.) Rim just peaking around the edge of the Moon. 20210903 5:00a 8mm. Day25-9 C230. Slightly better than yesterday. 20211003 6:00a 8mm. Day26.3 C237. Just visible on the edge. 20211004 6:00a 8mm. Day27.4 C249. Excellent libration and good view, but very poor seeing obscured details.
_Solar Sys. Moon				Mare	Mare Serenitatis	7	18	343	163	358	140	Best C358,140. Day7,18. [6] The Serenitatis Basin is located north of M. Tranquilitatis. It is both lighter in color and younger than Tranquilitatis. A Tycho ejecta ray passes S to N through the middle of the mare. "Sea of Serenity." Named in 1651.	20180423_8:00p First Moon photos 8mm Blurry but useable. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Good view. 20210813 9:00p Humid. Day5.7 C342. E half lit. Great view of Serpentine Ridge. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good floor texture including Serp. Ridge. Tycho ejecta ray clearly visible. 20210913 8:30p. Smoke. 8mm. Day7.6 C001. Fully visible-less contrast than yesterday. 20210925 6:00a. 8mm. Day18.9 C139. Good.
_Solar Sys. Moon				Mare	Mare Smythii	3	15	270	090	295	088	Best C295,088. Day3,15. [2] SE of M Crisium. Only viewable during favorable libration. That may be on any day or % of illumination. Use Stellarium to predict best viewing days. "Smith-ee-eye" Named for British astronomer.	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good libration. Best view yet - very noticeable even in fully lit half of moon. Photo on this day also good. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Libration even slightly better today. 20210822 9:30p Humid. 20xBin. Day15.4 C092. Visible even with low magnification. 20210823 6:30a Humid. 8mm. Day15.8 C096. Already obscured by terminator. 20210920 9:30p Humid. 8mm. Day14.8 C086. Maximum libration. Entire mare visible. 20211011 7:00p Humid. 8mm. Day6.2 C341. Excellent libration. Entirely visible.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Mare	Mare Spumans	3	17	295	115	310	110	Best C310,110. Day3,17. An elevated "lake" within the Crisium basin. NE of M Fecunditatis. Means "Foaming Sea." Named in the 1906.	20201030 7:00p Fuzzy photo at 25mm proj. 1/1000 6400. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. Good view. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Just visible in smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. OK. Better day before. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good libration. Best view yet - very noticeable even in fully lit half of moon. 20210823 6:30a Humid. 8mm. Day15.8 C096. Good. 20210824 6:30a Humid. 8mm. Day16.7 C109. Great view. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK view day if clear. 20210922 9:30p Humid. 8mm. Day16.8 C111. Good.
_Solar Sys. Moon				Mare	Mare Tranquillitatis	6	18	330	150	355	138	Best C355,138. Day6,18. [5] An old basin that was the landing site for Apollo 11. "Sea of Tranquility." Named in 1651.	20180423 8:00p First Moon photos 8mm Blurry but useable. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Very textured on eastern half. 20210813 9:00p Humid. Day5.7 C342. Great day to view. Floor texture striking. 20210827 5:30a Humid. 8mm. Day19.6 C145. Excellent view of floor texture. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good view day.
_Solar Sys. Moon				Mare	Mare Undarum	3	16	295	115	310	106	Best C310,106. Day3,16. An elevated "lake" within the Crisium basin. Means "Sea of Waves." Named in the 1906.	20201030 7:00p Fuzzy photo at 25mm proj. 1/1000 6400. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. On the terminator - dark. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Just visible in smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. OK. Better day before. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good libration. Best view yet - very noticeable even in fully lit half of moon. Photo on this day also good. 20210823 6:30a Humid. 8mm. Day15.8 C096. Good. 20210824 6:30a Humid. 8mm. Day16.7 C109. Great view. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210922 5:00a Humid. 8mm. Day16.1 C102. Already good contrast.
_Solar Sys. Moon				Mare	Mare Vaporum	8	21	356	176	001	160	Best C001,160. Day8,21. One of the younger "sea" basins. "Sea of Vapors." Named in 1651.	20180427 8:30p. OK photo at 17mm proj. 20210815 9:30p Clear. 8mm. Day7.9 C007. Good. Interesting floor texture in S. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view especially of pyroclastic area. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Great view day. 20210914 8:30p Humid. 4mm. Day8.6 C013. OK. Better C001.
_Solar Sys. Moon	**			Crater	Marius	12	25	050	230	060	218	Best C060,218. Day12,25. [13,26] C050,230 In N central Oceanus Procellarum. WNW of Kepler. Rima Marius is close by to the NE. Many volcanic domes (Marius Hills) lie to the N and W. Named for German astronomer. 25 mi dia. [3]	20210721 10:00p. Smoke. 8mm. Day12.5 C061 Domes were very distinct and obvious. 20210802 5:30a Clear humid smoke. 8mm. Day23.8 C200. Light too high for domes. 20210803 5:30a Clear humid smoke. 8mm. Day24.7 C212. Domes just visible. No rima. 20210819 9:00p Humid, smoke. 8mm. Day12.2 C056. Domes very good. Faint rima. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. One day to soon. 20210917 9:00p Humid. 8mm. Day11.8 C049. Dark. On terminator. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day. Domes. No rima. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Crater, domes great.
_Solar Sys. Moon				Crater	Marth	11	23	029	209	035	185	Best C035,185. Day11,23. C029,209 Very small concentric-ring crater in Palus Epidemiarum S of M Nubium. Need very high magnification. May be beyond the 8se to see inner ring. Named for German astronomer. 4 mi dia. []	20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Too small to see rings. May not be possible with 8se. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. On terminator - visible, but too shadowed to see floor. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Rings too small. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view. Rings too small. 20210928 5:00a. Great seeing. 4mm. Day21.6 C175. Perfect day but rings too small.
_Solar Sys. Moon				Crater	Maurolycus	7	20	345	165	001	155	Best C001,155. Day7,20. [19,21] C345,165 Large crater in south central highlands E of Stofler. Interesting floor features. Overlapped smaller crater. Named for Italian astronomer. 71 mi dia. [2]	20201103 3:30a Good photo at 25mm proj. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Many overlapping small craters make it very interesting. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Good view today also. 20210813 9:00p Humid. Day5.7 C342. Dark - on terminator. 20210814 9:30p Moderately humid. Day6.8 C355. Good. E floor dark. Floor craters W. 20210827 5:30a. 8mm. Day19.6 C145. Good Complex terraces and floor craters. 20210828 5:00a Humid. 8mm. Day20.5 C157. Excellent view + dramatic rim shadow. 20210913 8:30p. Smoke. 8mm. Day7.6 C001. Great view day. Good floor features.
_Solar Sys. Moon				Crater	Menelaus	6	19	344	164	355	151	Best C355,151. Day6,19. [18] C344,164 N of Julius Caesar. S edge of M Serenitatis. Very young crater with high albedo making it shine in overhead light. Named for Greek astronomer.16 mi dia. []	20210721 10:00p Clear. Smoke. 24mm. Day12.5 C061 Bright spot very prominent. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Bright. 20210814 9:30p Moderately humid. Day6.8 C355. Very bright. Floor half dark. 20210825 5:30a Humid. 8mm. Day17.7 C121. Very bright. 20210827 5:30a Humid. 8mm. Day19.6 C145. Bright. Some rays visible. 20210828 5:00a Humid. 8mm. Day20.5 C157. Bright even on terminator. Few rays. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Bright - on term. No rays. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. 1/2 shadowed. Slightly bright.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Mercurius	3	16	295	115	310	104	Best C310,104. Day3,16. C295,115 NE edge of moon. NNE of Messala. Irregular rim. Zeno is to the SE. Named for mythical Mercury. 42 mi dia. [2]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. On terminator. Good shadows. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Barely visible in smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Low contrast. No detail. 20210823 6:30a Humid. 8mm. Day15.8 C096. Good view today. Zeno also visible E. 20210823 11:00p Humid. 8mm. Day16.5 C104. Best view day. 1/4 shadowed. 20210824 6:30a Humid. 8mm. Day16.7 C109. Deeply shadowed, but lit high rim is striking. Zeno past terminator by today. 20210909 8:00p Humid. Smoke. 8mm. Day3.2 C311. Good day if clear & OK libration. 20210922 5:00a Humid. 8mm. Day16.1 C102. Good shadows. Zeno getting dark. 20210922 9:30p Humid. 8mm. Day16.8 C111. Stark shadows. Floor dark. Zeno gone.
_Solar Sys. Moon	*			Crater	Mersenius	12	25	048	228	060	214	Best C060,214. Day12,25. C048,228 W of M Humororum. Heavily worn with flooded floor. To the east is Rima Mersenius. Named for French mathematician. 52 mi dia. [2]	20210802 5:30a Humid smoke haze. 8mm. Day23.8 C200. Low contrast - no rima. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Still no rima. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good view but no rima. 20210917 9:00p Humid. 8mm. Day11.8 C049. Rim only lit, but rima visible. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Good. 1/3 shadowed.
_Solar Sys. Moon				Crater	Messala	3	17	300	120	310	114	Best C310,114. Day3,17. [4,16] C300,120 E of L Somniorum. N of Geminus. Significantly eroded. Irregular floor. Named for Persian astronomer. 78 mi dia. [1]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Small central peak visible. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. OK. Floor texture not visible. 20210823 6:30a Humid. 8mm. Day15.8 C096. Barely visible in low contrast. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good view of low rim. 20210825 5:30a Humid. 8mm. Day17.7 C121. Floor shadowed but rim well lit showing more depth than other angles. Top of small peak just lit. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210923 5:00a Humid. 8mm. Day17.1 C114. Great view day.
_Solar Sys. Moon				Crater	Messier	5	17	313	133	335	120	Best C335,120. Day4,17. C313,133 Interesting oblong crater in M. Fecunditatis presumably from low angle impact. Messier A (directly W and oblong from a double impact) may be a rebound crater. Named for French astronomer. 7 mi dia. [6]	20210727 5:30a Clear humid. 8mm. Day18.2 C126. Just visible on terminator. Crisp. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. OK view. 20210813 9:00p Humid. Day5.7 C342. Small, but shape still obvious. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view day. Half shadowed. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. OK view day if clear. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good view of oblong shape.
_Solar Sys. Moon				Crater	Metius	5	18	317	137	335	126	Best C335,126. Day5,18. C317,137 W of Rheita. Very irregular rim. Named for Dutch astronomer. 54 mi dia. [2]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. No contrast - view next day. 20210727 5:30a Humid. 8mm. Day18.2 C126. Floor craters and wide rim shadows. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Dark - on terminator. 20210813 9:00p Humid. Day5.7 C342. Good view. Irregular rim. Floor crater. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view day. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. 20210924 6:00a Humid. 4mm. Day18.0 C127. Floor crater and scar visible.
_Solar Sys. Moon				Crater	Meton	7	20	338	158	348	157	Best C348,157. Day7,20. [21] C338,158 N of M Frigoris and Aristoteles. Old. Compound formation of several merged craters. Named for Greek astronomer. 81 mi dia. [1]	20210814 9:30p Clear. Day6.8 C355. Good day to view. 20210827 5:30a Humid. 8mm. Day19.6 C145. OK. Medium contrast. 20210828 5:00a Humid. 8mm. Day20.5 C157. Great view day. Rim brightly lit. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Great view day. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view. Better at C348.
_Solar Sys. Moon	*			Crater	Milichius	10	23	030	210	030	202	Best C030,202. Day10,23. C030,210 In M. Insularum. W of Copernicus. 6 volcanic domes lie just to the NW. The largest (Milichius Pi) is directly west. Named for German astronomer. 7 mi dia. [6]	20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Already past term. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. At 8:45, domes in dark. By 10:15 domes great for viewing at C031. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Domes barely visible. Better yesterday. 20210916 8:00p Humid. 8mm. Day10.8 C037. Great. Domes visible in bad conditions. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Domes faintly visible.
_Solar Sys. Moon				Crater	Miller	8	21	000	180	013	160	Best C013,160. Day8,21 [9] . C000,180 S central - W of Stofler. Grouped with Huggins and Nasireden that forms arc. Named for British scientist. 38 mi dia. [3]	20210728 5:30a Clear humid. 8mm. Day19.2 C139. No contrast. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Good. 20210814 9:30p Moderately humid. Day6.8 C355. Dark - terminator. 20210815 9:30p. 8mm. Day7.9 C007. Peak just visible. Near term floor mostly dark. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day. 1/4 shadowed. 20210927 6:00a. 4mm. Day20.7 C163. Peak and floor debris clear.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Mons	Mons Gruithuisen Gamma (and Mons Gruithuisen Delta)	11	24	041	221	049	207	Best C049,207. Day11,24. S of Sinus Iridum. N of Gruithuisen crater. Two of the largest domes on the moon.	20210721 10:00p Clear Smoke haze. 8mm. Day12.5 C061 Excellent shadows. Quite prominent features. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Low contrast. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Good view. Smooth, round tops show them as domes instead of typical mountains. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Very good. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Perfect view day. 20210917 9:00p Humid. 8mm. Day11.8 C049. Great view day.
_Solar Sys. Moon				Mons	Mons Hadley	8	21	356	176	010	155	Best C010,155. Day8,21. C356,176 In Montes Apenninus. Overlooks the Apollo 15 landing site. Almost 3 mi. high.	20180423 8:00p First Moon photos 8mm Blurry but useable. Good terminator lighting. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Excellent shadows. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Great view. 20210828 5:00a Humid. 8mm. Day20.5 C157. Excellent depth shadows today. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view day. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. Perfect shadows.
_Solar Sys. Moon				Mons	Mons Huygens	8	21	003	183	010	155	Best C010,155. Day8,21. C003,183 In Montes Apenninus. Highest mountain on Moon at 18000 ft.	20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Excellent shadows. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Very obvious. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Great height perception. 20210828 5:00a Humid. 8mm. Day20.5 C157. Excellent depth shadows today. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Bright peak right on terminator. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. Perfect shadows.
_Solar Sys. Moon				Mons	Mons Pico	9	21	009	189	013	157	Best C013,157. Day9,21. C009,189 Isolated peak in M. Imbrium. 1.5 mi. high. Remainder of flooded crater rim.	20180423 8:00p First Moon photos 8mm. Very blurry. 20201106 5:00a Good skies. OK photos with 17mm&25mm proj. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Right on terminator. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Good depth. 20210828 5:00a Humid. 8mm. Day20.5 C157. Great shadows. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. 20210915 8:30p Humid. 4mm. Day9.7 C025. Another good view day. 20210927 6:00a. 4mm. Day20.7 C163. Great shadows.
_Solar Sys. Moon				Mons	Mons Piton	9	21	001	181	013	157	Best C013,157. Day8,21. [9] C001,181 Isolated peak in M. Imbrium. Over 1 mile high. Small crater on its peak. Remainder of flooded crater rim.	20180423 8:00p First Moon photos 8mm Blurry but useable. 20201106 5:00a Good skies. OK photos with 17mm&25mm proj. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Great day to view. Depth. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Great shadows. 20210828 5:00a Humid. 8mm. Day20.5 C157. Excellent depth. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. 20210915 8:30p Humid. 4mm. Day9.7 C025. Another good view day. 20210927 6:00a. 4mm. Day20.7 C163. Great shadows.
_Solar Sys. Moon	*			Mons	Mons Rumker	13	26	058	238	065	230	Best C065,230. Day13,26. [25] C058,238 Volcanic plateau W of Sinus Iridum with 22 domes. Small and difficult to see details.	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Barely visible. 20210903 5:00a 8mm. Day25-9 C230. Best view day. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day. 20211002 6:00a Humid. 4mm. Day25.3 C224. Already OK. 20211003 6:00a 8mm. Day26.3 C237. On terminator, but still good.
_Solar Sys. Moon				Montes	Montes Alpes	8	21	001	181	013	163	Best C013,163. Day8,21. Part of the middle ring of the Imbrium basin. Over 2 mi. high.	20180423 8:00p First Moon photos 8mm. Blurry. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210815 9:30p Clear. 8mm. Day7.9 C007. Great sense of height. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good depth shadows. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Tops of peaks lit. On terminator. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. 20210927 6:00a. 4mm. Day20.7 C163. Great depth.
_Solar Sys. Moon				Montes	Montes Apenninus	8	21	004	184	013	161	Best C013,161. Day8,21. 3 mile high outer SE rim of the M. Imbrium basin.	20180423 8:00p First Moon photos 8mm Blurry but useable. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Low contrast. 20210815 9:30p Clear. 8mm. Day7.9 C007. Great sense of height. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good depth shadows. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good shadows - on terminator. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. Perfect shadows. 20210927 6:00a. 4mm. Day20.7 C163. Great view day.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Montes	Montes Carpatus	10	23	024	204	037	192	Best C037,192. Day10,23. South rim of M. Imbrium basin. Includes a variety of volcanic land forms.	20180507_4:30a. Photo at 25mm proj. OK image. 20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Excellent shadows. 20210817 9:30p Humid - smoke. 8mm. Day10 C031. Great depth perception. 20210915 8:30p Humid. 4mm. Day9.7 C025. OK view day. Tops lit. 20210916 8:00p Humid. 8mm. Day10.8 C037. Excellent view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good day.
_Solar Sys. Moon				Montes	Montes Caucasus	7	21	010	190	001	159	Best C001,159. Day7,21. [8,20] Part of the outer E rim of the M. Imbrium basin. Reach to a height of almost 4 mi.	20180423_8:00p First Moon photos 8mm. Blurry. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Fairly low. 20210814 9:30p Moderately humid. Day6.8 C355. Good shadows - on terminator. 20210815 9:30p Clear. 8mm. Day7.9 C007. Good depth. 20210827 5:30a Humid. 8mm. Day19.6 C145. OK view. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good shadow depth. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Great view day.
_Solar Sys. Moon				Montes	Montes Haemus	7	20	009	189	355	150	Best C355,150. Day7,20. SW edge of M. Serenitatis basin. Named after an old name for the Balkan Mountains.	20180423_8:00p First Moon photos 8mm. Blurry. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Not dramatic. 20210814 9:30p Moderately humid. Day6.8 C355. Good shadows. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good view day. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Sill dark but good shadows. 20210926 6:00a. 8mm. Day19.8 C151. Good definition.
_Solar Sys. Moon				Montes	Montes Pyrenaeus	5	18	320	140	336	128	Best C336,128. Day5,18. Small chain west of M. Fecunditatis.	20210727 5:30a Clear humid. 8mm. Day18.2 C126. Rounded and flat. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Dark - on terminator. 20210813 9:00p Humid. Day5.7 C342. OK shadows. 20210825 5:30a Humid. 8mm. Day17.7 C121. OK view - medium contrast. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Great view day if clear. 20210924 6:00a Humid. 4mm. Day18.0 C127. Great depth.
_Solar Sys. Moon				Montes	Montes Recti	10	23	020	200	025	193	Best C025,193. Day10,23. Small, straight mountain chain on north edge of M. Imbrium.	20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Excellent shadows. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Good. 20210802 5:30a Humid smoke. 8mm. Day23.8 C200. Excellent. Right at terminator. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Just visible. Good. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Great view. 20210915 8:30p Humid. 4mm. Day9.7 C025. Great view. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Very good view.
_Solar Sys. Moon				Montes	Montes Rhipaeus	10	23	028	208	037	202	Best C037,202. Day10,23. [11,24] Small mountain chain on west edge of M. Cognitum.	20180507_4:30a. Photo at 25mm proj. Image not sharp. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Low contrast. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Good view today. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Still good today. 20210916 8:00p Humid. 8mm. Day10.8 C037. Great view day.
_Solar Sys. Moon				Montes	Montes Spitzbergen	9	21	005	185	013	169	Best C013,169. Day9,21. [8] In M Imbrium N of Archimedes. Probably surviving rim of buried crater.	20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Good shadows. 20210914 8:30p Humid. 4mm. Day8.6 C013. Great view day. 20210915 8:30p Humid. 4mm. Day9.7 C025. OK. Better on C013. 20210927 6:00a. 4mm. Day20.7 C163. Good view.
_Solar Sys. Moon				Montes	Montes Taurus	6	20	320	140	348	145	Best C348,145. Day6,20. [19] Broad hilly region SE of M. Serenitatis. Named after the Taurus Mountains in Turkey.	20180423_8:00p First Moon photos 8mm. Blurry. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. OK but should be better a day later. 20210728 5:30a Humid. 8mm. Day19.2 C139. Good contrast but still not dramatic. 20210813 9:00p Humid. Day5.7 C342. Good shadows. 20210825 5:30a Humid. 8mm. Day17.7 C121. OK view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Perfect view. Deep shadows. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good view day. 20210926 6:00a. 8mm. Day19.8 C151. Only top of peaks visible.
_Solar Sys. Moon				Montes	Montes Teneriffe	10	23	013	193	025	178	Best C025,178. Day10,23. Small mountain chain on north edge of M. Imbrium.	20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Excellent shadows. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Good. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Good depth. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Still good. 20210915 8:30p Humid. 4mm. Day9.7 C025. Great view. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great depth.
_Solar Sys. Moon				Crater	Moretus	9	21	007	187	025	159	Best C025,159. Day9,21. [22] C007,187 SSE of Clavius. Central mountain. Terraced wall. Named for Flemish Jesuit philosopher. 111 mi dia. [5]	20210817 9:30p Smoke. 4mm(8-24+3xBar). Day10 C031. Terraces & peak visible. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good view day. 1/8 shadowed. 20210915 8:30p Humid. 4mm. Day9.7 C025. Great view day.

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_Solar Sys. Moon				Crater	Mouchez	11	21	032	212	035	165	Best C035,165. Day11,21. [10,22] C032,212 NW limb. Very old, eroded remnant of a crater. Named for French astronomer. 50 mi dia. []	20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Good view. 20210828 5:00a Humid. 8mm. Day20.5 C157. OK view day. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view day. 20210927 6:00a. 4mm. Day20.7 C163. Good view day.
_Solar Sys. Moon				Mons	Mount Marilyn	6	19	320	140	336	130	Best C336,130. Day6,19. C140,320 Between M Tranquilitatis and M Fecunditatis. Named by Apollo 8 Astronaut Jim Lovell in honor of his wife. Its distinctive shape was used as a guide for a landing path.	20210813 9:00p Humid. Day5.7 C342. Good view. 20210825 5:30a Humid. 8mm. Day17.7 C121. Visible but low contrast. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Better yesterday. 20210924 6:00a Humid. 4mm. Day18.0 C127. Good view.
_Solar Sys. Moon				Oceanus	Oceanus Procellarum	12		060	240	049	200	Best C049,200. West central. Fairly smooth floor.	20201103 3:30a OK photo at 25mm proj. 1/250 1600. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Good view. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good view day. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day.
_Solar Sys. Moon				Palus	Palus Epidemiarum	10	23	028	208	037	195	Best C037,195. Day10,23.[11,24] SW of M. Nubium, it is covered with a variety of rilles.	20180427 8:30p. Photo at 8mm proj. Small but visible. 20210802 5:30a Humid smoke haze. 8mm. Day23.8 C200. Complex area surrounds it. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Good view. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good view day. 20210916 8:00p Humid. 8mm. Day10.8 C037. Excellent view day.
_Solar Sys. Moon				Palus	Palus Somni	5	18	315	135	336	126	Best C336,126. Day5,18. The Marsh of Sleep, on the eastern edge of M. Tranquilitatis, has a light brown color not found elsewhere on the Moon.	20180423 8:00p First Moon photos 17mm. Blurry. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Easily visible. 20210813 9:00p Humid. Day5.7 C342. Brownish tint barely noticeable. Darkened area compared to surroundings, but not smooth (or as dark) as M Tranquilitatis. 20210825 5:30a Humid. 8mm. Day17.7 C121. OK view. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Best view day if clear. 20210924 6:00a Humid. 4mm. Day18.0 C127. Great texture.
_Solar Sys. Moon				Crater	Peirce	4	17	307	127	325	114	Best C325,114. Day4,17. [5,18] C307,127 In M Crisium. Wavy rim. Floor craters. Named for American mathematician. 11 mi dia. [5]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Small but clear. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Crisp view. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Sharp. Floor dark. 20210813 9:00p Humid. Day5.7 C342. Crisp. Good shadows. 20210823 11:00p Humid. 8mm. Day16.5 C104. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good view. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. Fully shadowed. Wait. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Good view day if clear. 20210923 5:00a Humid. 8mm. Day17.1 C114. Great view day.
_Solar Sys. Moon	*			Crater	Petavius	3	17	300	120	310	113	Best C310,113. Day3,17. C300,120 SE of M. Fecunditatis. S of Vendelinus. Interesting double wall and floor rille. Convex floor is 1000 ft higher in center. Dark floor patches are later lava intrusions into these few areas. Vallis Palitzsch lies directly E. To the N is Petavius B which comes to a point on the S rim and has high albedo. Named for French theologian. 117 mi dia. [3]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Double rim, peaks and rille on floor all visible. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Double rim, terraced floor, complex peak. Petavius B also visible. 20210823 11:00p Humid. 8mm. Day16.5 C104. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good view day - rim, floor, peak. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. Great view day if clear. Vallis Palitzsch clearly visible. 20210922 9:30p Humid. 8mm. Day16.8 C111. Great view of Palitzsch. 20210923 5:00a Humid. 8mm. Day17.1 C114. Perfect day for floor details, terraces.
_Solar Sys. Moon				Crater	Philolaus	12	23	030	210	050	177	Best C050,177. Day12,23. [21,22] C030,210 NW rim. By Anaximenes. Wide terraces. Two peaks. Named for Greek philosopher. 43 mi dia. [6]	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good day to view. Terracing and both peaks visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Already a reasonable view on day 20. 20210828 5:00a Humid. 8mm. Day20.5 C157. Good floor and rim detail. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Rim still well lit. 20210917 9:00p Humid. 8mm. Day11.8 C049. Great view day. Terraces. Peaks. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Better C049. 20210927 6:00a. 4mm. Day20.7 C163. Good. Terraces and peaks. 20210928 5:00a.Great seeing. 4mm. Day21.6 C175. Perfect. Double peak, terraces. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Still excellent.
_Solar Sys. Moon				Crater	Phocylides	13	25	056	236	070	220	Best C070,220. Day13,25. [26] C056,236 SW. S of Schickard. Overlaid with many small craters. Named for Dutch astronomer. 75 mi dia. [2]	20180427 8:30p. Photo at 8mm proj. Right on edge of terminator. 20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Good contrast. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Small craters visible. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Visible but humidity obscured detail. 20210903 5:00a Humid. 8mm. Day25-9 C230. Already 1/2 shadowed. Rim stark. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Only rim lit. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Good view day. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Great. Some floor craters visible.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Picard	4	17	306	126	325	114	Best C325,114. Day4,17. [5,18] C306,126 In M Crisium. Irregular shape. Named for French astronomer. 14 mi dia. [5]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Clean edges. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. W edge tall. Rest dark. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Good. Floor 3/4 dark. 20210813 9:00p Humid. Day5.7 C342. Crisp. Good shadows. 20210823 11:00p Humid. 8mm. Day16.5 C104. 20210824 6:30a Humid. 8mm. Day16.7 C109. Good view. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. Fully shadowed. Wait. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Good view day if clear. 20210923 5:00a Humid. 8mm. Day17.1 C114. Great view day.
_Solar Sys. Moon				Crater	Piccolomini	6	19	328	148	350	140	Best C350,140. Day6,19. [5,18] C328,148 Fairly young intact crater in the SE. Just SW of M Nectaris at the end of the Rupes Altai. Large peak, terraced wall, convex floor. Named for Italian astronomer. 54 mi dia. [4]	20180423_8:00p First Moon photos 8mm Blurry but useable. 20201103 3:30a. Good photo at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Peak and terraced wall visible. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. More contrast than yesterday. 20210813 9:00p Humid. Day5.7 C342. Good peak and rim shadows. 20210827 5:30a Humid. 8mm. Day19.6 C145. Peak & rim lit. Floor shadowed. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. 1/2 shadowed. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day. 20210925 6:00a. 8mm. Day18.9 C139. Great view. 1/3/ shadowed.
_Solar Sys. Moon	*			Crater	Pitatus	9	22	013	193	025	176	Best C025,176. Day9,22. [10,23] C013,193 S edge of M Nubium next to Hesiodus. Shallow, very low albedo, floor-fractured crater with floor rima on both edges. Light patches of Tycho ejecta cross the floor N to S. "Horseshoe" Pitatus S lies to the N. Named for Italian astronomer. 66 mi dia. [2]	20210801 5:30a Humid - smoke. 8mm. Day22.9 C187. Floor features partially visible. 20210816 9:30p Humid Smoke. 4mm(8-24+3xBar). Day8.9 C019. Good view. No rimae. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. No rimae. Tycho ejecta clearly visible. Pitatus S faintly visible. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good view day but too humid for rimae. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Perfect - even floor rilles vis. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Still good. Rilles faint.
_Solar Sys. Moon	*			Crater	Plato	9	22	009	189	020	187	Best C020,187. Day9,22. [23 for spires]. C009,189 Large flooded crater with rugged rim that casts long shadows when at terminator. Rimae Plato to the E. (Best at C163.) Unnamed (3.5 mi wide) rima to the west. Named for Greek philosopher. 68 mi dia. [4]	20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Excellent shadows. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Perfect day for long spires - stretching over half way across floor. 20210816 9:30p Humid - smoke. 8mm. Day8.9 C019. Very good view. Modest spires. 20210914 8:30p Humid. 4mm. Day8.6 C013. Wonderful spires. Rima just visible. 20210915 8:30p Humid. 4mm. Day9.7 C025. Great overall view day - no spires. 20210927 6:00a. 4mm. Day20.7 C163. Rimae Plato very obvious. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Rimae still vis. Better C163. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Spires great, but better C187.
_Solar Sys. Moon	*			Crater	Plinius	6	20	336	156	348	142	Best C348,142. Day6,20. [19] C336,156 Between M. Serenitatis & M. Tranquilitatis. Rimae Plinius lie to the north. Terraced, large peak. Named for the Roman author (Pliny) who wrote the first encyclopedia. 27 mi dia. [5]	20180423_8:00p First Moon photos 8mm. Blurry. 20180521_6:30p(light) Clear photo at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Should be better a day later. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Sharp rim. Central peak. 20210813 9:00p Humid. Day5.7 C342. Irregular shaped rim. Good peak shadow. Rima just visible. (Better shadow on day 6 than 19.) 20210827 5:30a. 8mm. Day19.6 C145. Perfect view. Terraces, both rimae visible. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good. 1/3 shadowed. 20210925 6:00a. 8mm. Day18.9 C139. Good view of interior details.
_Solar Sys. Moon	*			Crater	Posidonius	6	19	343	163	348	140	Best C348,140. Day6,19. [7,20] C343,163 E edge M Serenitatis. Complex rilles on floor and double wall. Named for Greek geographer & astronomer.. 59 mi dia. [4]	20180423_8:00p First Moon photos 8mm. Blurry. 20170521_6:30p(light) 25mm proj. photo shows good interior image. 20210727 5:30a Humid. 8mm. Day18.2 C126. Good but should be better a day later. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Double wall and floor rilles visible. 20210729 5:30a Humid. 8mm. Day20.2 C151. Great shadow depth. Beautiful view. 20210813 9:00p Humid. Day5.7 C342. Good. Floor features. Rilles barely. 20210827 5:30a Humid. 8mm. Day19.6 C145. Great view of peaks and rilles. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good, stark shadows. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day. 20210925 6:00a. 8mm. Day18.9 C139. Great floor texture.
_Solar Sys. Moon	*			Crater	Prinz	12	24	044	224	050	210	Best C050,210. Day12,24. C044,224 Near Aristarchus in O Procellarum. Flooded crater with long Rimae Prinz to the north. Named for German astronomer. 29 mi dia. [3]	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Rima to N visible. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good. Didn't see rima. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. OK but no rima. 20210917 9:00p Humid. 8mm. Day11.8 C049. Great view day. Rima just visible.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Proclus	5	17	314	134	340	120	Best C340,120. Day5,17. C314,134 West of M. Crisium. Visible ray system with distinct "zone of exclusion" from very low angle impact. Rays best viewed on days 7-14 in overhead sunlight. Polygonal shape. Very young. Named for Greek philosopher. 17 mi dia. [6]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Bright. Rays at 24mm. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Peak visible but not rays. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Too soon - dark. 20210813 9:00p Humid. Day5.7 C342. Great view. Very bright. Rays visible. 20210817 9:30p Smoke. 8mm. Day10 C031. Very bright with zone of exclusion. 20210825 5:30a Humid. 8mm. Day17.7 C121. Bright but rays faint. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Great view day if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good crater view. Rays minimal.
_Solar Sys. Moon				Promontorium	Promontorium Agarum	3	17	295	115	311	109	Best C311,109. Day3,17. [4,16] C115,295 SE edge of M Crisium. Several thousand feet high peaks.	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Stark. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good even thru smoke. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Still good contrast. 20210823 6:30a Humid. 8mm. Day15.8 C096. Medium contrast. 20210823 11:00p Humid. 8mm. Day16.5 C104. Shadows show height. 20210824 6:30a Humid. 8mm. Day16.7 C109. Even better today. Great contrast. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Good view day if clear. 20210922 9:30p Humid. 8mm. Day16.8 C111. Great contrast.
_Solar Sys. Moon				Promontorium	Promontorium Heraclides	11	24	033	213	037	206	Best C037,206. Day11,24. [10] C033,213 SW edge of S Iridum. In 1679, Cassini depicted Heraclides as a Moon Mermaid. Best viewed at C050 and vertically inverted.	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Lower than Laplace. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Good. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good view day. 20210916 8:00p Humid. 8mm. Day10.8 C037. Excellent view day. 20210917 9:00p Humid. 8mm. Day11.8 C049. OK. Better C037.
_Solar Sys. Moon				Promontorium	Promontorium Kelvin	11	24	035	215	037	206	Best C037,206. Day11,24. C035,215 SE edge of M Humorum. N starting point of Rupes Kelvin.	20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Clearly visible.
_Solar Sys. Moon				Promontorium	Promontorium Laplace	10	24	025	205	037	204	Best C037,204. Day10,24. C025,205 NE edge of S Iridum.	20210802 5:30a Clear humid smoke. 8mm. Day23.8 C200. Good view. Quite high. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Good. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good view day. 20210915 8:30p Humid. 4mm. Day9.7 C025. Just coming into the light. 20210916 8:00p Humid. 8mm. Day10.8 C037. Excellent view day.
_Solar Sys. Moon	*			Crater	Ptolemaeus	8	21	003	183	013	177	Best C013,177. Day8,21. C003,183 Large, old, lava filled crater S of Sinus Medii. Worn, irregular outer rim. Unnamed catena to the NE. Named for Greek astronomer. 102 mi dia. [1]	20180427_8:30p. Blurry photo at 17mm proj. 20180507_4:30a. Clear photo at 25mm proj. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Low contrast. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Shallow floor craters visible. Catena also barely apparent. 20210914 8:30p Humid. 4mm. Day8.6 C013. Best overall view day. Catena clear. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Perfect view day. Catena to the N is sharp and several ghost craters on the floor are obvious.
_Solar Sys. Moon				Crater	Purbach	8	21	003	183	010	175	Best C010,175. Day8,21. [22] C003,183 Very old. SE of M. Nubium. Heavily worn wall. Named for Austrian astronomer. 71 mi dia. [1]	20180423_8:00p First Moon photos 8mm. Floor details obvious. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. OK. Low contrast. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Spires. Excellent floor detail. 20210914 8:30p. 4mm. Day8.6 C013. Good overall view day. C007 more dramatic. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great view day.
_Solar Sys. Moon				Crater	Pythagoras	13	25	060	240	072	225	Best C072,225. Day13,25. [24] C060,240 NW of Sinus Iridum and M Frigoris. Hexagonal rim and wide terraces. Named for Greek philosopher. 88 mi dia. [5]	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Large central peak and terraced wall visible but contrast low. Hexagon just visible at low viewing angle. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Good. Center peak prominent. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Already good view. 20210903 5:00a. 8mm. Day25-9 C230. Unfavorable libration but still good view. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Rime barely lit. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Perfect view day. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Good but unfavorable libration. 20211003 6:00a.. 8mm. Day26.3 C237. Still visible in spite of unfavorable libration.
_Solar Sys. Moon	*			Crater	Pytheas	10	23	021	201	025	178	Best C025,178. Day10,23. C021,201 N of Copernicus in M Imbrium. Sharp rim. East of Pytheas is a long row of splash craters from Copernicus contained in one of the rays. ♦♦♦♦> Should be best viewing of craters on day 9.5 (C031). Named for Greek astronomer. 12 mi dia. [6]	20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Only the largest of the splash craters were visible. 20210801 5:30a Clear humid smoke. 8mm. Day22.9 C187. Splash craters not visible. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Splash craters just visible at the terminator. 20210817 9:30p Humid Smoke. 4mm(8-24+3xBar). Day10 C031. Craters barely visible. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Largest craters barely visible. Low contrast. 20210915 8:30p Humid. 4mm. Day9.7 C025. Splash craters barely visible. 20210928 5:00a. Great seeing. 4mm. Day21.6 C175. Great. Pytheas & splash craters. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Splash craters visible. Better C175.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Rabbi Levi	6	19	336	156	348	142	Best C348,142. Day6,19. [7,20] C336,156 SW of Piccolomini. Interesting floor crater pattern. Named for French scholar. 50 mi dia. []	20210813 9:00p Humid. Day5.7 C342. Good. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day. Great view of floor craters. 20210925 6:00a. 8mm. Day18.9 C139. Great view day.
_Solar Sys. Moon				Crater	Regiomontanus	8	21	002	182	010	175	Best C010,175. Day8,21. [22] C002,182 S central. Below Purbach. Worn, irregular wall. Named for German astronomer. 67 mi dia. [1]	20210728 5:30a Clear humid. 8mm. Day19.2 C139. No contrast. 20210815 9:30p 4mm(8-24+3xBar). Day7.9 C007. Good. Crater on peak just visible. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great view day.
_Solar Sys. Moon	*			Feature - Misc.	Reiner Gamma	13	25	055	235	070	230	Best C070,230. Day13,25. [26] C055,235 A bright lunar swirl (no crater or hill) with a localized magnetic field and high albedo. In central Oceanus Procellarum. Named for Italian astronomer.	20210721 10:00p. Smoke haze. 8mm. Day12.5 C061 Obvious bright spot. At terminator. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Very noticeable. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Bright. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Very obvious. 20210903 5:00a. 8mm. Day25-9 C230. Excellent view day. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Just becoming visible. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Very apparent.
_Solar Sys. Moon				Crater	Reinhold	11	23	023	203	030	189	Best C030,189. Day11,23. [10,24] C023,203 Irregular terraced walls. In M. Insularum SSW of Copernicus. Named for German astronomer. 26 mi dia. [5]	20180427 8:30p. Photo at 8mm proj. Visible but not clear. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210801 5:30a Humid smoke. 8mm. Day22.9 C187. Terraced walls not visible at 8mm. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Terraces visible today. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Good. 20210915 8:30p Humid. 4mm. Day9.7 C025. Floor dark. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Good. Terraces. 1/4 shadowed.
_Solar Sys. Moon				Crater	Riccioli	14	27	075	255	080	242	Best C080,242. Day14,27. C075,255 Just W of Grimaldi. Very dark spot on floor. A crater on the western edge named by the 17th century Italian astronomer (for himself) who assigned most of the prominent names on the moon that we still use today - Giovanni Riccioli. Suggested it was like an artist signing his painting in the corner. There is a rough chronology to his choices as you go around clockwise. 86 mi dia. [1]	20210722 9:30p. Smoke. 8mm. Day13.7 C074. Right at term. - only near edge visible. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Low contrast. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Still past terminator. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Good day to view. Shallow rim and dark spot on floor visible. 20210903 5:00a 8mm. Day25-9 C230. Low contrast, but dark spot visible. 20211003 6:00a 8mm. Day26.3 C237. OK view including dark spot. 20211004 6:00a. 8mm. Day27.4 C249. Slightly better than yesterday.
_Solar Sys. Moon	*			Rima	Rima Ariadaeus	8	20	346	166	001	157	Best C001,157. Day8,20, [21]. C346,166 Large rille west of M. Tranquilitatis. A long depression where the ground has fallen away.	20180423 8:00p First Moon photos 17mm Blurry. Barely visible. 20201106 5:00a Good skies. OK photo with 17mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. View next day - no contrast. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Visible but still low contrast. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Whole length clearly visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good view of entire rimae. 20210828 5:00a Humid. 8mm. Day20.5 C157. Even clearer than yesterday. 20210913 8:30p Humid.. 8mm. Day7.6 C001. Great view. Waning even better - C157. 20210914 8:30p Humid. 4mm. Day8.6 C013. Low contrast but still visible.
_Solar Sys. Moon				Rima	Rima Bradley	8	21	002	182	009	175	Best C009,175. Day8,21. C002,182 SE edge M Imbrium. S of Archimedes. Below Mons Bradley. Intersects Rimae Archimedes. Named for English astronomer.	20210815 9:30p 4mm(8-24+3xBar). Day7.9 C007. Good. Clearly visible. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great view day. Rimae Archimedes also visible.
_Solar Sys. Moon	*			Rima	Rima Bürg	6	20	332	152	341	145	Best C345,145. Day6,20. [19] C332,152 Rilles in Lacus Mortis. N of M Serenitatis.	20210728 5:30a Clear humid. 8mm. Day19.2 C139. Rilles just visible. 20210813 9:00p Humid. Day5.7 C342. Large floor wrinkle visible & largest rilles. 20210827 5:30a Humid. 8mm. Day19.6 C145. Perfect view day. All but smallest rilles visible. Floor texture great. 20210912 8:30p. Smoke. Hazy. 8mm. Day6.5 C348. Fair view even in bad conditions. 20210925 6:00a. 8mm. Day18.9 C139. Just visible. 20210926 6:00a. 8mm. Day19.8 C151. Still Visible. 20211011 7:00p Humid. 8mm. Day6.2 C341. Best view yet of small rilles.
_Solar Sys. Moon	*			Rima	Rima Cauchy	6	19	321	141	336	139	Best C336,139. Day6,19. C321,141 Rille in eastern M. Tranquilitatis N of Cauchy. Near Rupes Cauchy.	20201103 3:30a Not distinguishable at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Wasn't able to see. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Clearly visible. 20210813 9:00p Humid. Day5.7 C342. Just visible with domes and Rupes Cauchy. 20210825 5:30a Humid. 8mm. Day17.7 C121. Faintly visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. N half visible. On terminator. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Rupes and domes clear. Rima very faint. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Light already too high. 20210925 6:00a. 8mm. Day18.9 C139. Visible along with rupes.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon	*<—			Rima	Rima Hadley	8	21	356	176	010	163	Best C010,163. Day8,21. [7] C356,176. 1 mile wide and 1300 ft deep. By Apollo 15 site. SE edge of M. Imbrium.	20201106 5:00a Good skies. Not distinguishable even with 17mm proj. 20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Too small to see. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Barely visible. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Completely shadowed. 20210914 8:30p Humid. 4mm. Day8.6 C013. Just barely visible. 20210927 6:00a. 4mm. Day20.7 C163. Entire length just visible. Better in photo.
_Solar Sys. Moon	*<—			Rima	Rima Hesiodus	10	23	016	196	037	178	Best C037,178. Day10,23. C016,196 Long rille s. edge of M. Nubium.	20210719 10:30p. Smoke. 6mm. Day10.3 C037. Rille not visible - try smokeless night. 20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Rille not visible. 20210817 9:30p Humid Smoke. 4mm(8-24+3xBar). Day10 C031. Rille just visible. Faint. 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Contrast too low. 20210915 8:30p Humid. 4mm. Day9.7 C025. Faint. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view day but bad conditions. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Best view yet. Obvious. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Visible, but better C175.
_Solar Sys. Moon	*			Rima	Rima Hyginis	8	21	349	169	001	157	Best C001,157. Day8,21. [20] C349,169 Long rille s. of M. Vaporum made up of string of small craters along a graben all formed from volcanic collapse. Rare craters not caused by impact.	20201106 5:00a Good skies. Good photo with 17mm proj. 20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Clearly visible but Hyginis was only individual crater distinguishable. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Clearly visible. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Small craters in row visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Visible but low contrast. 20210828 5:00a Humid. 8mm. Day20.5 C157. Perfect view day - small craters visible. 20210913 8:30p Humid.. 8mm. Day7.6 C001. Great view. Waning even better - C157. 20210914 8:30p Humid. 4mm. Day8.6 C013. Low contrast but still visible. 20210927 6:00a. 4mm. Day20.7 C163. Excellent detail of small craters.
_Solar Sys. Moon	*<—			Rima	Rima Marius	12	25	050	230	060	218	Best C060,218. Day12,25. [24] C050,230 In Oceanus Procellarum. 150 mi. rille to the NE of Marius (NW of Marius C).	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Barely visible at 8mm. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Faint. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Barely visible. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Very faint.
_Solar Sys. Moon	*<—			Rima	Rimae de Gasparis	12	25	050	230	060	222	Best C060,222. Day12,25. C050,230 Elaborate rille system W of M. Humorum both in and around the de Gasparis crater. Very narrow. May not work with 8se.	20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Rilles not visible. May need smoke-free night at 6mm. 20210802 5:30a Clear humid smoke. 8mm. Day23.8 C200. Light too high for rilles. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Light good but not visible. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Not yet visible. Try day 25. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Great. Even rimae on floor visible.
_Solar Sys. Moon	*<—			Rima	Rimae Goclenius	5	17	315	135	330	125	Best C330,125. Day5,17. C315,135 W edge of M. Fecunditatis. Next to Gutenberg. Named for German physicist.	20210813 9:00p Humid. Day5.7 C342. Barely visible. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view but humidity too high to see. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Good view day if clear. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. Rima barely visible. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good day, but bad seeing.
_Solar Sys. Moon	*			Rima	Rimae Hippalus	11	24	030	210	037	204	Best C037,204. Day11,24. C030,210 Interesting rilles near Hippalus crater form concentric arcs at its former outer edge. SE of Mare Humorum.	20210719 10:30p Clear. Smoke haze. 6mm. Day10.3 C037. Rilles not visible. Might work with haze-free sky and night when right on terminator. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Just visible at 8mm. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Most not yet lit, but N section very good. 20210818 9:30p Smoke. 4mm(8-24+3xBar). Day11.1 C043. Rima thru crater vis. 20210819 9:00p Humid, smoke, wind. 4mm(8-24+3xBar). Day12.2 C056. Low contrast. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Best view yet. S portion of all the rimae fully visible. Just out of the terminator. 20210916 8:00p Humid. 8mm. Day10.8 C037. Rimae clearly visible.
_Solar Sys. Moon				Rima	Rimae Hypatia	6	19	336	156	341	151	Best C345,151. Day6,19. 112 mi. rille just W of Moltke in M. Tranquilitatis. Close to1969 Landing Site: Tranquility Base. The Apollo 11 crew called it "US Highway 1."	20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Clearly visible. 20210926 6:00a. 8mm. Day19.8 C151. Great view day. Both sections visible. 20211011 7:00p Humid. 8mm. Day6.2 C341. Perfect view of both parts. Good contrast.
_Solar Sys. Moon	*			Rima	Rimae Mersenius	12	25	048	228	060	210	Best C060,210. Day12,25. [24] C048,228 W of M Humorum. E of crater Mersenius. 52 mi dia. [2]	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good view but no rima. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Best view yet. Clearly visible. Tomorrow may be better. 20210917 9:00p Humid. 8mm. Day11.8 C049. Rima just visible. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon	*			Rima	Rimae Plinius	6	20	336	156	001	146	Best C001,146. Day6,20. [19] C336,156 Between M. Serenitatis & M. Tranquilitatis. Rimae Plinius lie to the north of crater Plinius. Named for the Roman author (Pliny) who wrote the first encyclopedia.	20210827 5:30a Humid. 8mm. Day19.6 C145. Perfect view. Both rimae visible. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good view day. Faintly visible even in bad conditions. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Clearly visible. 20210926 6:00a. 8mm. Day19.8 C151. Excellent. Both rimae visible.
_Solar Sys. Moon	*<—			Rima	Rimae Sirsallis	13	26	061	241	065	235	Best C065,235. Day13,26. C061,241 Prominent, long rille in the SW. WNW of Gassendi. Winds S from Sirsallis toward Darwin and Byrgius & intersects with Rimae Darwin.	20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Just barely visible. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Light too high. 20210803 5:30a Clear humid smoke. 8mm. Day24.7 C212. Low contrast. Not visible. 20210821 10:00p Humid. 8mm. Day14.3 C080. Crater vis. Humidity obscured rimae. 20210903 5:00a Humid. 8mm. Day25-9 C230. Visible with effort. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Rima just visible. 20211002 6:00a Humid. 4mm. Day25.3 C224. Great view of entire rimae. 20211003 6:00a 8mm. Day26.3 C237. Perfect view. Very obvious.
_Solar Sys. Moon	*			Rima	Rimae Sulpicius Gallus	7	19	349	169	001	160	Best C001,160. Day7,19. C349,169 SW edge of M Serenitatis. NW of Menelaus. Rimae to NW of crater.	20210828 5:00a Humid. 8mm. Day20.5 C157. Western portion visible. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Perfect view day. Clearly visible. 20210927 6:00a. 4mm. Day20.7 C163. Good visibility of entire rimae.
_Solar Sys. Moon	**			Rima	Rimae Triesnecker	8	21	356	176	001	164	Best C001,164. Day8,21. C356,176 Elaborate rille system in Sinus Medii. Near Rimae Hyginis. Mechanism of formation is not known.	20201106 5:00a Good skies. Not distinguishable even with 17mm proj. Will need perfect skies and 13mm proj. 20210719 9:00p Clear Very humid. 8mm. Day10.3 C037. Clearly visible. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Just visible. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Best view yet. Fully visible. 20210914 8:30p Humid. 4mm. Day8.6 C013. Low contrast - barely visible. 20210927 6:00a. 4mm. Day20.7 C163. Good. Just becoming visible at C164.
_Solar Sys. Moon				Crater	Ritter	6	19	341	161	348	151	Best C348,151. Day6,19. [7,20] C341,161 In SW M. Tranquilitatis near Apollo 11. Next to Sabine. Irregular outer rim. Named for German geographer. 18 mi dia. [3]	20210728 5:30a Clear humid. 8mm. Day19.2 C139. Small - hard to see details. 20210813 9:00p Humid. Day5.7 C342. Dark (& Sabine). Better 1 day later. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good view. Irregular rim obvious. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. 1/2 shadowed. Sabine 1/3. 20210926 6:00a. 8mm. Day19.8 C151. Great view day.
_Solar Sys. Moon				Rupes	Rupes Altai	6	19	340	160	348	145	Best C348,145. Day6,19. [20] C340,160 Outer rim of the M. Nectaris. Named for mountain chain in Asia.	20180423_8:00p First Moon photos 8mm Blurry but useable. Long escarpment around Mare Nectaris is very visible. 20201103 3:30a. Good photo at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Good, but better a day later. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Great view. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. On terminal. Striking depth. 20210813 9:00p Humid. Day5.7 C342. By terminal. Very good. 20210825 5:30a Humid. 8mm. Day17.7 C121. Visible but low contrast. 20210827 5:30a Humid. 8mm. Day19.6 C145. Best view day. Long shadows (waning). [On day 6, the cliff is brightly lit, but there aren't any shadows.] 20210828 5:00a Humid. 8mm. Day20.5 C157. Top edge lit. Dark to the E. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day. 20210925 6:00a. 8mm. Day18.9 C139. Already good.
_Solar Sys. Moon	*			Rupes	Rupes Cauchy	6	19	321	141	336	139	Best C336,139. Day6,19. [5,18] C321,141 Escarpment in eastern M. Tranquilitatis S of Cauchy. 2 domes just S of the rupes. Near Rima Cauchy.	20201103 3:30a Not distinguishable at 25mm proj. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Easily visible. 20210813 9:00p Humid. Day5.7 C342. Visible along with the 2 domes (faint). 20210825 5:30a Humid. 8mm. Day17.7 C121. Faintly visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. N half visible. On terminator. 20210911 8:30p. Very heavy smoke. 8mm. Day5.4 C336. Rupes and domes clear. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Light already too high. 20210925 6:00a. 8mm. Day18.9 C139. Visible along with rima.
_Solar Sys. Moon				Rupes	Rupes Kelvin	11	24	035	215	050	206	Best C050,206. Day11,24. C035,215 Escarpment on SE edge of M Humorum. Begins at Promontorium Kelvin.	20210818 9:30p Smoke. 4mm(8-24+3xBar). Day11.1 C043. Just visible. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Clearly visible.
_Solar Sys. Moon	*			Rupes	Rupes Liebig	12	25	048	228	060	206	Best C060,206. Day12,25. C048,228 W edge of M Humorum. 112 mi long curved ridge with area in the middle missing. To the W is Rima Mersenius.	20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061. Just visible. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Clearly visible.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon	**			Rupes	Rupes Recta (Straight Wall)	9	22	008	188	025	178	Best C025,178. Day9,22. [21] C008,188 A 70 mi. long cliff in M. Nubium W of Purbach. A little farther W (beyond Birt) is small Rima Birt.	20180423 8:00p First Moon photos 8mm. Unusually straight escarpment is very visible. 20180507 4:30a. 25mm proj. shows small image. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadow. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Another good view. 20210828 5:00a Humid. 8mm. Day20.5 C157. Already faintly visible. 20210914 8:30p Humid. 4mm. Day8.6 C013. Stark view. Rima Birt not yet lit. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good view. Rima Birt barely visible. 20210927 6:00a. 4mm. Day20.7 C163. Already visible even with low contrast. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Recta and Birt very clear.
_Solar Sys. Moon				Crater	Sacrobosco	7	19	344	164	001	145	Best C001,145. Day7,19. C344,164 W of Rupes Altai. Very worn with deeply textured floor and 3 crisp floor craters. Named for French astronomer. 61 mi dia. [1]	20210814 9:30p. Day6.8 C355. Good day to view. Craters and texture obvious. 20210827 5:30a. 8mm. Day19.6 C145. Dramatically irregular rim. Good floor craters. 20210828 5:00a Humid. 8mm. Day20.5 C157. Great day. Teddy bear face visible if you use your imagination. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view day. 20210926 6:00a. 8mm. Day19.8 C151. Perfect view day.
_Solar Sys. Moon				Crater	Scheiner	11	22	027	207	049	191	Best C049,191. Day11,22. [23] C027,207 Just west of Clavius. Several craters on the floor. Named for German astronomer. 68 mi dia. [1]	20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Rim lit, but floor completely shadowed. 20210818 9:30p Smoke. 4mm(8-24+3xBar). Day11.1 C043. Good. Floor craters. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Top of rim lit. 20210916 8:00p Humid. 8mm. Day10.8 C037. Rim lit. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Great view. 1/4 shadowed.
_Solar Sys. Moon	*			Crater	Schickard	13	25	055	235	065	220	Best C065,220. Day13,25. [26] C055,235 Large, partially flooded crater s. of M. Humorum. Floor has light and dark patches. The light area may be dust ejecta from a distant impact (Orientale?). Named for German astronomer. 128 mi dia. [1]	20180427 8:30p. Photo at 8mm proj. Right on edge of terminator. 20210721 10:00p Smoke 8mm. Day12.5 C061 Good view-dark patches not noticeable. 20210802 5:30a Clear humid smoke. 8mm. Day23.8 C200. Dark patches just visible. 20210803 5:30a Clear humid smoke. 8mm. Day24.7 C212. Dark patches just visible. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Visible but humidity obscured detail. Dark patches visible in spite of that. 20210901 4:30a. 4mm(8-24+3xBar). Day24-0 C206. Good detail but needs 1 more day. 20210903 5:00a. 8mm. Day25-9 C230. Striking but floor already heavily shadowed. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Great view day. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Excellent. Great floor detail.
_Solar Sys. Moon				Crater	Schiller	12	24	039	219	050	205	Best C050,205. Day12,24. [25] C039,219 Unusually long oblong shape. Second ridge on floor. Named for German celestial map publisher. 112 mi dia. [2]	20180427 8:30p. Photo at 8mm proj. Elongated shape clearly visible. 20210719 10:30p Clear. Smoke haze. 8mm. Day10.3 C037. Excellent shadows. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Good view of shape. 20210803 5:30a Clear humid smoke. 8mm. Day24.7 C212. On terminator. High rim! 20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Top of rim visible. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good view day. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Great view. 20210917 9:00p Humid. 8mm. Day11.8 C049. Good view day.
_Solar Sys. Moon	*			Crater	Sharp	12	24	040	220	060	206	Best C060,206. Day12,24. C040,220 W of Sinus Iridum. Surrounded by rough, low mountains. Rima Sharp is W of Sharp B. An unnamed rille is to the immediate NW. Named for German astronomer. 24 mi dia. [4]	20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Good day to view. Sharp but rima not visible in haze. The interesting, unnamed rille to W was easy to see. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Good view day. Rille visible.
_Solar Sys. Moon				Sinus	Sinus Asperitatis	6	19	333	153	348	145	Best C348,145. Day6,19. Southern extension of M Tranquilitatis. Means Sea of Roughness.	20210813 9:00p Humid. Day5.7 C342. Perfect viewing day. Great texture. 20210827 5:30a Humid. 8mm. Day19.6 C145. Best view day. Surface details crisp. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Great view day. 20210925 6:00a. 8mm. Day18.9 C139. Already good.
_Solar Sys. Moon				Sinus	Sinus Concordiae	5	18	317	137	336	126	Best C336,126. Day5,18. E edge of M Tranquilitatis.	20210727 5:30a Clear humid. 8mm. Day18.2 C126. Easily visible. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Dark - on terminator. 20210813 9:00p Humid. Day5.7 C342. Good view. Dark floor color. 20210825 5:30a Humid. 8mm. Day17.7 C121. OK view. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good view day if clear. 20210924 6:00a Humid. 4mm. Day18.0 C127. Great contrast with surrounding plain.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Sinus	Sinus Iridum	11	24	032	212	037	205	Best C037,205. Day11,24. A large, flooded crater, the Bay of Rainbows is on the north edge of M. Imbrium. The floor is 200 ft. lower on the N edge than at its juncture with Imbrium (a unique feature). The "Jeweled Handle" is a clair-obscur effect in which the rim mountains catch the light at the terminator (at just the right moment - C030) and seem detached from the surface. About this time, floor "waves" might be visible (C035-040). The rim mountains are the Montes Jura.	20180425_7:30p. 17mm. Blurry. Good terminator lighting. 20180427_8:30p. Good photo at 17mm proj. 20210719 9:30p Clear Very humid. 8mm. Day10.3 C037. Excellent shadows. 20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Good view. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Great rim shadows. Terminator runs through middle. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. "Jeweled Handle" striking - perfect view day. 20210818 9:30p Smoke. 8mm. Day11.1 C043. Good view day. Floor very smooth. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. Excellent view day. 20210916 8:00p Humid. 8mm. Day10.8 C037. Great view day. 20210917 9:00p Humid. 8mm. Day11.8 C049. OK. Better C037.
_Solar Sys. Moon				Sinus	Sinus Medii	8	21	359	179	013	164	Best C013,164. Day8,21. In the center of the near side of the Moon. (There is no named crater at the exact center. Just a little pit.)	20180427_8:30p. OK photo at 17mm proj. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Very smooth with few craters. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day. 20210927 6:00a. 4mm. Day20.7 C163. Good view day.
_Solar Sys. Moon	*			Crater	Stadius	9	22	013	193	019	176	Best C019,176. Day9,22. [21] C013,193 Flooded ghost crater directly E of Copernicus. Long crater chain stretches to the NW. Medium age. 43 mi dia. [3]	20201106 5:00a Good skies. Blurry but distinguishable at 17mm proj. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Perfect day to view. Crater chain very sharp. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good view of crater chain. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Perfect view of crater chain. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Crater chain still good.
_Solar Sys. Moon				Crater	Steinheil	5	17	315	135	336	118	Best C336,118. Day5,17. C315,135 SE. By Janssen. Small simple crater right next to Watt. Named for German astronomer. 42 mi dia. [2]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Crisp. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Deep shadows. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Upper rim lighted Floor dark. 20210813 9:00p Humid. Day5.7 C342. Nice rim detail. Floor almost featureless. 20210825 5:30a Humid. 8mm. Day17.7 C121. 1/3 shadowed. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. 3/4 shadowed. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Best view day if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. OK. 2/3 shadowed.
_Solar Sys. Moon	*			Crater	Stevinus A	8	17	315	135	318	109	Best C318,109. Day8,17. [4 for Stevinus, 8-14 S.A] C315,135 Small satellite crater to Stevinus (in the SE - WNW of Stevinus. NW of Furnerius.) that has a ray system and high albedo unexpected for its size. View when away from terminator. Stevinus has an elongated central peak. W of Stevinus is an interesting arc of craters below Reichenbach. Named for Dutch physicist. 5 mi dia. []	20180423_8:00p First Moon photos 8mm Blurry but useable. Rays of Stevinus A (just west of Stevinus) obvious. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. Didn't see rays. Stevinus peak vis. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Terraces, elongated peak. Good day to view. Stevinus A not bright. 20210813 9:00p Humid. Day5.7 C342. Stevinus A bright. 20210824 6:30a. 8mm. Day16.7 C109. Good day - terraces, peak. Stevinus A glowing. 20210825 5:30a Humid. 8mm. Day17.7 C121. Floor shadowed. Stevinus A subdued. 20210922 9:30p Humid. 8mm. Day16.8 C111. Great for crater - not albedo.
_Solar Sys. Moon				Crater	Stöfler	8	20	354	174	010	151	Best C010,151. Day8,20. C354,174 Large crater in south central highlands. Next to Maurolycus. Many overlapped smaller craters. Named for German astronomer. 78 mi dia. [1]	20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210729 5:30a. 8mm. Day20.2 C151. Very interesting complex multiple craterlets. 20210814 9:30p Moderately humid. Day6.8 C355. Dark - on terminator. 20210815 9:30p Clear. 8mm. Day7.9 C007. Complex overlapping craters very clear. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good. Crater layering very interesting. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good view. Excellent shadows. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day. C007 more detail. 20210926 6:00a. 8mm. Day19.8 C151. Great view day.
_Solar Sys. Moon				Crater	Sulpicius Gallus	7	19	349	169	001	140	Best C001,140. Day7,19. C349,169 SW edge of M Serenitatis. NW of Menelaus. Very young crater with high albedo making it shine in overhead light. Named for Roman orator. 7 mi dia. [6]	20210728 5:30a Clear humid. 8mm. Day19.2 C139. Very bright. 20210814 9:30p Moderately humid. Day6.8 C355. Good view, but light not high enough to show brightness. 20210827 5:30a Humid. 8mm. Day19.6 C145. Bright. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Good but not bright. 20210925 6:00a. 8mm. Day18.9 C139. Good but not bright.
_Solar Sys. Moon				Crater	Taruntius	5	18	314	134	324	127	Best C324,127. Day5,18. C314,134 Double-walled crater N edge of M. Fecunditatis. Pyroclastic dark patches on the floor. Young. Named for Roman philosopher. 35 mi dia. [6]	20210727 5:30a. 8mm. Day18.2 C126. Peak, shallow rim and edge crater all striking. 20210813 9:00p Humid. Day5.7 C342. Small rim shadow. Better 1 day sooner. 20210825 5:30a Humid. 8mm. Day17.7 C121. OK view - medium contrast. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Good view day if clear. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. OK. Better at C324. 20210924 6:00a Humid. 4mm. Day18.0 C127. Double wall, dark spots visible.
_Solar Sys. Moon				Crater	Taylor	7	19	344	164	001	149	Best C001,149. Day7,19. C344,164 SW of M. Tranquilitatis. NW of Cyrillus. Old with wide terraces. Elongated slightly north to south. (Walnut shape?) 26 mi dia. [2]	20210814 9:30p Moderately humid. Day6.8 C355. Floor half shadowed by high E rim. 20210827 5:30a Humid. 8mm. Day19.6 C145. Good view day. Peak, elongation visible. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Perfect view day. 20210926 6:00a. 8mm. Day19.8 C151. Great view day.

CON	Goto Obj. List #	DESIGNATION	MAG NITUDE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	Tebbutt	4	17	307	127	324	120	Best C324,120. Day4,17. [5-18] C307,127 Past SW edge of M Crisium S of Lick and Picard. Flooded. High eastern rim. Named for Australian astronomer. 19 mi dia. []	20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Great view. 20210823 11:00p Humid. 8mm. Day16.5 C104. 20210824 6:30a Humid. 8mm. Day16.7 C109. OK but high rim not obvious. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good depth today. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Good view day if clear. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good.
_Solar Sys. Moon				Crater	Thebit	9	21	005	185	019	174	Best C019,174. Day9,21. [22] C005,185 E edge of M Nubium. NW of Purbach. Smaller crater (Thebit A) lies across rim. Named for Syrian astronomer. 35 mi dia. [4]	20210729 5:30a Clear humid. 8mm. Day20.2 C151. Low contrast. 20210816 9:30p Humid Smoke. 4mm(8-24+3xBar). Day8.9 C019. Great. 1/4 shadowed. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good. 1/2 shadowed. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good view day. 20210928 5:00a.Great seeing. 4mm. Day21.6 C175. Good view. Small craters sharp.
_Solar Sys. Moon	*			Crater	Theophilus	6	19	333	153	348	141	Best C348,141. Day6,19. [5,18,20] C333,153 Youngest of 3 with Cyrillus & Catharina to the south. Impact melt overflows crater mostly to the north. Fairly rare. Named for Greek astronomer. 68 mi dia. [5]	20180521_6:30p(light) Clear photo at 25mm proj. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. On terminal. Great view. Peak just visible above the shadowed floor. 20210813 9:00p Humid. Day5.7 C342. Perfect viewing day. Great rim shadows. 20210827 5:30a Humid. 8mm. Day19.6 C145. Great view day. N impact melt obvious. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Stark shadows. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day. 20210925 6:00a. 8mm. Day18.9 C139. Great view day. 20211011 7:00p Humid. 8mm. Day6.2 C341. Good night for spires.
_Solar Sys. Moon				Crater	Timocharis	10	22	013	193	025	178	Best C025,178. Day10,22. C013,193 In south central M Imbrium. Center floor crater almost removed peak. Named for Greek astronomer. 21 mi dia. [5]	20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Floor dark by day 23. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Good view but floor shadow obscured peak. 20210817 9:30p Humid. 4mm(8-24+3xBar). Day10 C031. Tiny peak crater just visible. 20210915 8:30p Humid. 4mm. Day9.7 C025. Good view day. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Great view - floor, terraces.
_Solar Sys. Moon				Crater	Torricelli	6	19	331	151	348	144	Best C348,144. Day6,19. [20] C331,151 South of M. Tranquilitatis. N of Theophilus. Unique "keyhole" shape. Sits inside ghost crater, Torricelli R. Named for Italian Physicist. 14 mi dia. []	20180521_6:30p(light) OK photo at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. No contrast. 20210728 5:30a Humid. 8mm. Day19.2 C139. Interesting shape from double impact. 20210813 9:00p Humid. Day5.7 C342. Very clear. Shape obvious. Torricelli R visible. 20210827 5:30a Humid. 8mm. Day19.6 C145. Floor 1/3 shadowed. Perfect view day for both Torricelli and Torricelli R. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Perfect view day of both. 20210925 6:00a. 8mm. Day18.9 C139. Great view day.
_Solar Sys. Moon				Crater	Triesnecker	8	21	356	176	013	164	Best C013,164. Day8,21. C356,176 In Sinus Medii. Rim bulges to the west. Rays visible in overhead light. Young. 16 mi dia. [6]	20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210815 9:30p. 4mm(8-24+3xBar). Day7.9 C007. Irregular shape. Rays beginning. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Fully shadowed. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day. 1/4 shadowed. 20210927 6:00a. 4mm. Day20.7 C163. Good view day.
_Solar Sys. Moon				Crater	Tycho	9	22	012	192	025	177	Best C025,177. Day9,22. C012,192 A very young crater in the south still well defined and very bright with significant rays most visible in overhead light. Only crater with dark nimbus around the rim that doesn't shine in overhead sunlight - probably dark pieces of impact melt. 3 mi deep. 100 mil. yrs. old. Named for Austrian astronomer. 63 mi dia. [6]	20180427_8:30p. Photo at 9mm proj. Rays clearly visible. 20180507_4:30a. Photo at 25mm proj. Rays less visible in this light. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210801 5:30a Humid smoke. 8mm. Day22.9 C187. Rim bright, floor dark - on term. 20210816 9:30p Humid - smoke. 4mm(8-24+3xBar). Day8.9 C019. Great view. 1/2 shadowed but peak rises above it. 20210915 8:30p Humid. 4mm. Day9.7 C025. Great view day. 1/3 shadowed. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Perfect view day.
_Solar Sys. Moon	*			Feature - Misc.	Valentine Dome	7	21	348	168	359	163	Best C359,163. Day7,21. [8,20] C348,168 In NW M. Serenitatis. Large volcanic dome lies N of Linne. Requires just the right low angle of light to see.	20210814 9:30p Clear. 8mm. Day6.8 C355. Barely visible. 20210828 5:00a Humid. 8mm. Day20.5 C157. Best view day. Still faint. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Too late by a few hours. 20210927 6:00a. 4mm. Day20.7 C163. Perfect view day. Heart shape apparent.
_Solar Sys. Moon				Vallis	Vallis Alpes	8	21	356	176	007	168	Best C007,168. Day8,21. C356,176 Easily seen valley in the Montes Alpes. 120 mi. long and 6 mi wide. Tiny rille runs down the center of it.	20180423_8:00p First Moon photos 8mm. Valley clearly visible. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210718 9:30p Clear. 8mm. Day9.2 C025. Excellent shadows. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. Good. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Perfect viewing day. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Stark shadows. 20210914 8:30p Humid. 4mm. Day8.6 C013. Good view day. 20210927 6:00a. 4mm. Day20.7 C163. OK view day.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Vallis	Vallis Capella	6	19	325	145	336	130	Best C336,130. Day6,19. [18] C325,145 Prominent, long valley N of M. Nectaris. Cuts through the crater Capella. Named for Roman astronomer. Crater Isidorus is directly west. Named for Roman writer.	20180521_6:30p(light) OK photo at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Very good view including craters Capella and Isadora. 20210813 9:00p Humid. Day5.7 C342. Great view of valley & craters Capella & Isidorus. 20210825 5:30a Humid. 8mm. Day17.7 C121. Shadow already apparent. 20210827 5:30a Humid. 8mm. Day19.6 C145. Only N portion visible. On terminator. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Good. Deep shadows. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Another good view day. 20210924 6:00a Humid. 4mm. Day18.0 C127. Good view of entire length.
_Solar Sys. Moon				Vallis	Vallis Rheita	5	18	314	134	336	122	Best C336,122. Day5,18. C314,134 Prominent, 20 mi. wide valley in the SE west of crater Rheita. Not a graben but a series of craters probably from the Nectaris impact. Rheita E is just E of Rheita - an unusual elongated crater no doubt also resulting from multiple impacts. Named for Czech astronomer.	20180423_8:00p First Moon photos 8mm Blurry but useable. Vallis Rheita just visible between Rheita and Metius. 20201103 3:30a. Good photo at 25mm proj. 20210726 5:00a Clear humid. 8mm. Day17.2 C114. View next day - no contrast. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. Great depth and good shadows. 20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Great view. 20210813 9:00p Humid. Day5.7 C342. Excellent view even on day 6. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good shadows. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. Great view day if clear. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Best view day if clear.
_Solar Sys. Moon	*			Vallis	Vallis Schröteri	12	25	048	228	060	218	Best C060,218. Day12,25. C048,228 In Oceanus Procellarum on the Aristarchus Plateau. Proposed NASA unmanned landing site in 2021. Named for German astronomer.	20210719 10:30p Clear. Smoke. 8mm. Day10.3 C037. Partly visible - right on termin. 20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Good view. Very obvious. 20210802 5:30a Humid smoke. 8mm. Day23.8 C200. Good even with low contrast. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Acceptable contrast. 20210819 9:00p Humid, smoke, wind. 8mm. Day12.2 C056. Great view. 20210917 9:00p Humid. 8mm. Day11.8 C049. Dark. On terminator. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. Good view day. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Very good. Deep shadows.
_Solar Sys. Moon	*			Crater	Vendelinus	3	17	300	120	310	113	Best C310,113. Day3,17. C300,120 SE of M Fecunditatis. Touches Lamé. Very complex rim and floor. Named for Belgian astronomer. 81 mi dia. [1]	20210726 5:00a Clear humid. 8mm. Day17.2 C114. Floor craters visible. 20210810 9:00p Very humid. Thick smoke haze. Day2.5 C306. Good day if no smoke. 20210811 9:00p Humid. Light smoke. Day3.5 C318. Still good. Some floor texture. 20210824 6:30a. 8mm. Day16.7 C109. Broken rim, floor craters, low albedo prominent. 20210909 8:00p Humid. Heavy smoke. 8mm. Day3.2 C311. Great view day if clear. 20210923 5:00a Humid. 8mm. Day17.1 C114. Good shadows.
_Solar Sys. Moon	*			Crater	Vieta	13	25	057	237	065	222	Best C065,222. Day13,25. C057,237 W of M Humororum. Eroded walls. Crater chain on floor. Named for French mathematician. 54 mi dia. [2]	20210802 5:30a Clear humid smoke haze. 8mm. Day23.8 C200. Low contrast. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Low contrast. Only largest floor craters visible. 20210821 4:30a Very humid. 8mm. Day13.6 C072. Visible but humidity obscured detail. 20210903 5:00a Humid. 8mm. Day25-9 C230. Floor 2/3 shadowed by now. 20210918 8:30p Poor Seeing. 8mm. Day12.8 C061. 2/3 shadowed. 20211002 6:00a. Humid. 4mm. Day25.3 C224. Great. Floor craters clear.
_Solar Sys. Moon	*<—			Crater	Vitello	12	25	037	217	045	205	Best C045,205. Day12,25. [11,24]. C037,217 SW edge of M Humororum - by Doppelmayer. Complex floor rilles. Named for Polish physicist. 26 mi dia. []	20210818 9:30p Humid - smoke. 4mm(8-24+3xBar). Day11.1 C043. Good view. 20210901 4:30a Humid. 4mm(8-24+3xBar). Day24-0 C206. OK view.
_Solar Sys. Moon				Crater	Vitruvius	6	19	329	149	348	140	Best C348,140. Day6,19. [20] C329,149 N edge of M Tranquillitatis. Rim compromised on N edge. Named for a Roman architect. 18 mi dia. [4]	20180521_6:30p(light) Clear photo at 25mm proj. 20210727 5:30a Clear humid. 8mm. Day18.2 C126. No contrast. 20210728 5:30a Clear humid. 8mm. Day19.2 C139. Crisp. 20210729 5:30a Clear humid. 8mm. Day20.2 C151. On terminal. Good depth. 20210813 9:00p Humid. Day5.7 C342. Crisp view. 20210827 5:30a Humid. 8mm. Day19.6 C145. Best view day. Both S rim crater and N rim break visible. Good peak shadow. Floor 1/3 shadowed. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. 3/4 shadowed. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Great view day. 20210925 6:00a. 8mm. Day18.9 C139. Great view. 1/4 shadowed.
_Solar Sys. Moon				Crater	Vlacq	6	18	323	143	348	122	Best C348,122. Day6,18. [5] C323,143 SE. (SW of Janssen). Many small craters on floor. Low central peak mostly buried in lava. To the NW is Pitiscus (Best C135,345). Named for Dutch mathematician. 55 mi dia. [1]	20210727 5:30a Clear humid. 8mm. Day18.2 C126. Central peak visible. Next to Pitiscus (shallow with floor craters). 20210813 9:00p Humid. Day5.7 C342. Good shadows. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view. 20210911 8:30p Humid. Very heavy smoke. 8mm. Day5.4 C336. Floor 1/2 shadowed. 20210912 8:30p Humid. Smoke. Hazy. 8mm. Day6.5 C348. Good view day. Not good enough conditions for floor craters. 20210923 10:00p Humid. 4mm. Day17.7 C123. Great view day. Still no floor craters.

CON	Goto Obj. List #	DESIGNATION	MAG NITU DE	TYPE	NAME	D A Y	D A Y	CO Lng X	CO Lng N	BE ST X	BE ST N	COMMENTS (+++ = best easy viewing) (T = Tour Object) (♦ Need to view ♦♦ Revisit ♥ Try Photo)	VIEWING NOTES
_Solar Sys. Moon				Crater	W. Bond	8	21	002	182	013	163	Best C013,163. Day8,21. [20] C002,182 N of Montes Alpes and M Frigoris. Very old. Heavily worn wall now looks square. Named for American astronomer. 97 mi dia. [1]	20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Square shape obvious. 20210827 5:30a Humid. 8mm. Day19.6 C145. Quite good even in low contrast. 20210913 8:30p Humid. Smoke. 8mm. Day7.6 C001. Great view - stark shadows. 20210914 8:30p Humid. 4mm. Day8.6 C013. Very good view day. 20210927 6:00a. 4mm. Day20.7 C163. Perfect view day. Good floor texture. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Still good - deeper shadows
_Solar Sys. Moon				Crater	Walther	8	21	359	179	013	162	Best C013,162. Day8,21. [22] C359,179 S central. S of Regiomontanus. Irregular rim and complex floor. Named for German astronomer. 79 mi dia. []	20180423 8:00p First Moon photos 8mm. Floor details obvious. 20201106 5:00a Good skies. Good photos with 17mm&25mm proj. 20210815 9:30p Clear. 4mm(8-24+3xBar). Day7.9 C007. Even small floor craters clear. 20210828 5:00a Humid. 8mm. Day20.5 C157. Floor features just becoming visible. 20210914 8:30p Humid. 4mm. Day8.6 C013. Excellent view day. Great floor detail. 20210927 6:00a. 4mm. Day20.7 C163. Perfect view day. Great detail. 20210928 5:00a. Excellent seeing. 4mm. Day21.6 C175. Deep shadow spires and great floor craters.
_Solar Sys. Moon				Crater	Wargentín	13	26	060	240	070	235	Best C070,235. Day13,26. [25] C060,240 SW near Schickard. View: 8-24mm. Unusual crater filled to the brim with lava that didn't overflow. Named for Swedish astronomer. 52 mi dia. [2]	20210721 10:00p Clear. Smoke haze. 8mm. Day12.5 C061 Good contrast. 20210802 5:30a Humid smoke haze. 8mm. Day23.8 C200. Low contrast but visible. 20210803 5:30a Clear humid smoke haze. 8mm. Day24.7 C212. Barely visible. 20210821 10:00p Very humid. 8mm. Day14.3 C080. Humidity obscured details. 20210903 5:00a Humid. 8mm. Day25-9 C230. Best view day. Much more interesting than in the photo. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Good view day. 20211002 6:00a Humid. 4mm. Day25.3 C224. Great view. 20211003 6:00a 8mm. Day26.3 C237. Perfect view of subtle floor ripples.
_Solar Sys. Moon				Crater	Wilhelm	10	23	022	202	035	189	Best C035,189. Day10,23. C022,202 W of Tycho and overlaid by debris from Tycho. Named for German astronomer. 66 mi dia. []	20210801 5:30a Clear humid smoke haze. 8mm. Day22.9 C187. Floor craters. 20210817 9:30p Humid - smoke. 4mm(8-24+3xBar). Day10 C031. Good floor texture. 20210915 8:30p Humid. 4mm. Day9.7 C025. Only rim lit. 20210916 8:00p Humid. 8mm. Day10.8 C037. Good view day. 20210929 5:00a. Humid. 8mm. Day22.5 C188. Great view day for floor detail.
_Solar Sys. Moon				Crater	Xenophanes	14	26	086	266	086	250	Best C086,250. Day14,26. [27] C086,266 SW of Pythagoras. Requires fairly rare favorable libration. Peak may be lit above rim. Named for Greek philosopher. 78 mi dia. []	20210821 10:00p Very humid. 8mm. Day14.3 C080. Excellent liberation. Far rim well lit. Peak just visible. 20210903 5:00a. 8mm. Day25-9 C230. Unfavorable libration - out of view. 20210919 8:30p Poor Seeing. 8mm. Day13.8 C074. Only rim lit.
_Solar Sys. Moon				Crater	Yerkes	4	17	310	130	318	120	Best C318,120. Day4,17. [5-18] C310,130 SW edge of M Crisium W of Picard. Flooded. Very shallow rim. Named for American financier. 22 mi dia. [3]	20210811 9:00p Humid. Light smoke haze. Day3.5 C318. Great view. 20210824 6:30a Humid. 8mm. Day16.7 C109. OK view. Very smooth floor. 20210825 5:30a Humid. 8mm. Day17.7 C121. Good view, shadows. 20210909 8:00p Humid. Heavy smoke haze. 8mm. Day3.2 C311. OK view day if clear. 20210910 8:00p Humid. Very heavy smoke. 8mm. Day4.3 C324. C318 better. 20210923 10:00p Humid. 4mm. Day17.7 C123. Good view.
AND				Asterism	(not named) propose: Littlest Dipper							In And between Cas and Lac. Stars: 3,5,7,8,11 And & EW Lac & V424 Lac. Half way between Errai and Scheat. View with 10x Binoculars.	20200923 5:30am Hazy clear 10x50 bin. - Easy to see. Good.
AND		γ Andromedae	2.1	SD	Almach							{T} Double - Orange/Blue - 10" sep.	20191007 5:30am (24-8mm) Mod. Good Skies - 8mm. Obvious separation and color. Small is blue. Large is orange.
AND		α And	2.1	SD	Alpheratz							♦ Double not visible in 8" scope.	
AND	61	M 031	3.4	Gal	Andromeda Galaxy							+++ {T} View with 32mm. 2.4 million LY away. Photo with prime and reducer includes M32 and M110. Most distant naked eye object. 1st to be recognized as a galaxy instead of nebula.	20180724 5:00a First look through the scope! 20191007 5:30am (24-8mm) Mod. Good Skies - Good at 24mm. 20191008 5:30am Prime with Reduc. Good photo 8sec 3200. 20200903 9pm Clear 24mm (24-8mm) - Good. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - best view yet.
AND		NGC 7662	8.3	N-P	Blue Snowball Nebula							♥ {T} Faint - Photo prime wedge 60s 6400. May require 25mm proj.	20191007 5:30am (24-8mm) Mod. Good Skies - Too faint to see. 24mm. Try photo.
AND	71	ι κ λ ψ And	-	Asterism	Frederick's Glory OR Honores Friderici							Former constellation 1787- Frederici Honores. View with 10x50 Binoculars. Half way between Sheet and Shedar.	20200903 9pm Clear Binocuars. Not impressive.
AND	80			Asterism	Gold Putter							56 And at end of club. Between Almach and Mothallah.	20200923 5:30am Hazy clear 10x50 bin. - Easy to see. Good.

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AND	29			Asterism	Home Plate							♦ 5 stars in pentagon shape. SAO 36057 on side. RD: 00·07·00 40·35 10x or 20x binoculars.	
AND	26	β And	2.1	SD	Mirach							♥ Red Giant - visibly orange. Double not visible in 8" scope. NGC404 Mirach's Ghost Gal. is 7' in direction of M31. Requires photo 25mm Proj.	20191007 5:30am (24-8mm) Mod. Good Skies - Orange. 8mm.
AND		SAO 37375 (51 And)	3.55	S	Nimbus							Visibly Orange (formerly in Perseus, u)	20191007 5:30am - Needed SAO to find. 20200914 4:45a Humid hazy skies. (24-8mm) - light orange.
AND		SAO 55107		Asterism	Triangle Cluster							{T} String of stars leading to triangle. In Nexstar asterism list.	20200904 9:30 pm Good Skies 24mm (24-8mm) -- Unimpressive
AND		M 032	8.1	Gal								{T} Included in M31 view. Try photo with 25mm proj. Compact elliptical galaxy.	20191007 5:30am (24-8mm) Mod. Good Skies - Small but visible at 8mm. 20191008 5:30am Prime with Reduc. Good photo with M31 8sec 3200. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 8mm - small.
AND		M 110	8.1	Gal								{T} Next to M31. Photo with 25mm proj. Use prime with reducer to include M31, M32. Elliptical galaxy.	20191007 5:30am (24-8mm) Mod. Good Skies - Faint but visible at 24mm. 20191008 5:30am Prime with Reduc. Good photo 8sec 3200. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - barely visible.
AND		NGC 0891	9.9	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 60s 6400. OR 25mm proj.	20191007 5:30am (24-8mm) Mod. Good Skies - Barely visible at 8mm.
AND		NGC 752	5.7	OC								View with 24-32 mm eyepiece or Prime	20191007 5:30am (24-8mm) Mod. Good Skies - Small - 8mm.
ANT		NGC 2997	9.4	Gal								♥ Try photo just to have seen Antlia. Prime wedge 60s 6400. OR 25mm proj.	
AQL		α Aql	0.77	SD	Altair							Double not accessible to 8" scope. One of closest naked eye stars - 17 LY.	20201007 8:00pm Clear. Bright bluish white.
AQL		NGC 6781	11.8	N-P	Snowball Nebula							♥ {T} Faint. Photo prime wedge 60s 6400. OR 25mm proj.	20200912 9:15pm Good Skies for PawMea. 8mm (24-8mm) - Not visible. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - Barely visible.
AQR		NGC 7293	7.6	N-P	Helix Nebula							♥ {T} Faint. Photo prime wedge 60s 6400.	20200912 9:15pm Good Skies for PawMea. Not visible. Omaha light pollution in east. 20201006 8:30pm Clear Hazy Prime - Failed photo. Need longer exposure & very dark sky.
AQR		β Aqr	2.9	SD	Sadalsuud							Yellow supergiant (rare class of star). Triple system not accessible to 8" scope.	20201103 7:30p Good skies. 8mm (24-8mm) - Visibly orange.
AQR		NGC 7009	8.0	N-P	Saturn Nebula							♥ {T} Faint. Photo prime wedge 60s 6400. OR 25mm proj.	20200912 9:15pm Good Skies for PawMea. 24mm (24-8mm) - Not visible.
AQR	72	γ ζ η π Aqr		Asterism	Water Jar OR Urn OR Y in Aquarius							{T} γ is Sadachbia. ζ is double star challenge in Tour. View with 10x50 binoculars.	20200912 9pm Good Skies for PawMea. Easily viewed but not dramatic.
AQR	47	M 002	6.5	GC								{T} View with 9 mm eyepiece. 40,000 LY away. Photo with prime 15s 6400 OR +wedge 30s 3200 Very large G.C.	20200912 9:15pm Good Skies for PawMea. 8mm (24-8mm) - Bright but fuzzy.
AQR		M 072	9.2	GC								{T} View with 9 mm eyepiece Not actually a cluster but individual stars at varying distances. Later catalogues included it because Messier had.	20200912 9pm Good Skies for PawMea. 8mm (24-8mm) - Very faint.
AQR		M 073	8.9	OC								{T} View with 9 mm eyepiece - 4 stars in triangle shape asterism. Messier thought he saw nebulosity.	20200912 9pm Good Skies for PawMea. 8mm (24-8mm) - Faint. 4 stars visible.
ARI		NGC 772	10.3	Gal	Fiddlehead Galaxy							♥ {T} Faint. Photo prime wedge 60s 6400. OR 25mm proj.	20191007 5:30am (24-8mm) Mod. Good Skies - Not visible. Try photo.
ARI		γ Ari	4.5	SD	Mesarthim							7" separation.	20200914 5am Humid hazy skies. (24-8mm) - 8mm - close but obvious double.

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ARI	73	33, 35, 39, 41 Ari		Asterism	Northern Fly (Musca Borealis)							Former constellation - 41 is Bharani. View with 10x50 binoculars.	20200914 5am Humid hazy skies. (24-8mm) - Needed binoculars. 20200923 5:30am Hazy clear 10x50 bin. - 4 star asterism easily visible.
AUR	8	α Aur	0.05	S	Capella							Biggest & brightest yellow star visible. Very close double.	20200914 5am Humid hazy skies. (24-8mm) - yellow hard to see - white. Double not vis.
AUR		φ Aur at center		Asterism	Cheshire Cat							By M38. Eyes and mouth of cat with 10x or 20x binoculars.	20200923 5:30am Hazy clear 10x50 bin. - Easy to see. Good.
AUR		IC 0405	10.0	N-E	Flaming Star Nebula							♥ Photo Prime & reducer wedge 30s 6400.	20200914 5am Humid hazy skies. (24-8mm) - Not visible.
AUR		M 037	5.6	OC	January Salt and Pepper Cluster							{T} View with 17 - 24 mm eyepiece	20200914 5am Humid hazy skies. (24-8mm) - 17mm good.
AUR	56	M 036	6.0	OC	Pinwheel Cluster							♥ +++ {T} Photo prime (wedge) 15s 6400. Red emerging star in field of view of cluster but actually farther away.	20200914 5am Humid hazy skies. (24-8mm) - 24mm Very good.
AUR		M 038	6.4	OC	Starfish Cluster							{T} Faint - experiment with magnification Discovered 100 yrs before Messier.	20200914 5am Humid hazy skies. (24-8mm) - 24mm OK.
AUR	74	ε ζ η Aur		Asterism	The Kids							The kids of Capella, the Goat star	20200923 5:30am Hazy clear 10x50 bin. - Easy to see. Not visually compelling.
AUR	76	14, 16, 17, 18, 19 Aur SAO 57853		Asterism	The Leaping Minnow OR Little Fish in Nexstar database							{T} 12+ stars. By IC405 (Flaming Star Neb.)	20200914 5am Humid hazy skies. (24-8mm) - 24mm Not impressive. Try photo with Neb. 20200923 5:30am Hazy clear 10x50 bin. - Good with binoculars. Needed wide field.
AUR	75	ν τ υ Aur		Asterism	The Little Kids							by Mahasim, θ	20200923 5:30am Hazy clear 10x50 bin. - Easy to see. Not visually compelling.
AUR		IC 0410	7.5	N-E	The Tadpoles							♥ Photo Prime & reducer wedge 30s 6400.	20200914 5am Humid hazy skies. (24-8mm) - 24mm OK.
BOO		μ1 Bootis	4.3	SD	Alkallurops AB							Double - White - 109" sep. SAO64686. Possibly bound to μ2.	20191006 8pm Wide separation at 8mm 20200817 9:15pm 8mm (24-8mm). White/White. One larger.
BOO		μ2 Bootis	6.8	SD	Alkallurops BaBb							Double - White - 2.2" sep. Possibly bound to μ1.	20191006 8pm Wide separation from A at 8mm. Ba Bb separation not visible.
BOO		ε Bootis	2.5	SD	Izar							{T} Double - Orange/Blue - 2.9" sep.	20191006 8pm Very close. Barely see both at 8mm. (24-8mm) 20200817 9:15pm 8mm (24-8mm). One star larger. Very close but visible.
BOO	30			Asterism	Kangaroo							♦ 19 stars - 8 curve to make the back. Above SAO 64408. 10x binoculars.	
BOO	78			Asterism	Napoleon's Hat							+++ .5 ° below Arcturus. View with 24mm eyepiece.	20200822 9pm Easily visible with 24mm. 20200824 p:30pm. Hazy but still visible. Better to use 32mm.
BOO		ι Boo SAO 29071	4.8	SD	ι Boo							Double. View with 9 mm eyepiece	20200818 9:30pm 8mm (24-8mm). Easy. Blue/White. One brighter.
BOO		κ Boo SAO 29045	4.5	SD	κ Boo							{T} Double. View with 9 mm eyepiece	20200817 9:15pm 8mm (24-8mm). Easy. White/White. Matched size.
BOO		ξ Bootis	5.7	SD	ξ Bootis							{T} Double - White/Orange - 7" sep. SAO101250	20191006 8pm Obvious separation at 8mm. Smaller is orange.
CAE		β Cae	5.0	S									20201012_5:00am Clear - 10x50 Binoculars. Very low in south. Just wanted to have seen Caelum. Too faint without bin. Saw alpha and gamma as well.
CAM		SAO 25001	5.2	SD	11 & 12 Cam							180" Separation. Orange/Blue.	20200930 4:30am Humid clear skies full moon (24-8mm) 8. Blue/Lt. Orange. Good Sep.

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CAM		NGC 1502	6.9	OC	Jolly Roger Cluster							Bottom of Kemble's Cascade. View 17mm.	20200903 9pm Clear 24mm (24-8mm) - Unimpressive cluster.
CAM	77	SAO 12998		Asterism	Kemble's Cascade (String of Pearls)							{T} Center is HIP18505. View with 20x80 Binoculars	20200903 9pm Clear Binoculars - Very striking.
CAM		NGC 2403	8.5	Gal								♥ Try photo. Prime 15-30s 12800. Too close to NCP for prime wedge. (OR 25mm proj. + reducer & wedge 60s 6400.)	20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - not visible.
CAM		IC 0342	9.1	Gal								♥ Try photo. Prime 15-30s 12800. Too close to NCP for prime wedge. (OR 25mm proj. + reducer & wedge 60s 6400.)	
CAP		M 030	6.9	GC	Jellyfish Cluster							{T} View with 9 mm eyepiece	20200912 9pm Good Skies for PawMea. 8mm (24-8mm) - Faint but visible.
CAS		η Casseopeiae	3.5	SD	Achird							{T} Double - Orange/Blue - 13" sep. SAO 21732	20200904 9:30 pm Good Skies 8mm (24-8mm) - Orange much dimmer.
CAS		NGC 7635	10.0	N-E	Bubble Nebula							♥ Photo only - use prime. 30s 6400 OR 15s 12800. Too close to NCP for prime wedge. OR 25mm proj. + reducer & wedge 60s 6400.	20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
CAS		NGC 457	6.4	OC	Dragonfly or Owl Cluster E.T. Asterism							♦♦ View with 24 mm eyepiece. Photo with 25mm proj. Too close to NCP for wedge.	20200904 9:30 pm Good Skies 24mm (24-8mm) - OK.
CAS	32			Asterism	Eddie's Roller Coaster							SAO 11424 near one end of wave shape. Binoculars.	20201103 7:30p Good skies. 10x50 binoculars - Difficult to make out.
CAS		IC 1795		N-E	Fish Head Nebula							♥ Right next to IC1805. Photo only - use prime. 30s 6400 OR 15s 12800. Too close to NCP for prime wedge. OR 25mm proj. + reducer & wedge 60s 6400.	20200904 9:30 pm Good Skies 24mm (24-8mm) - Not visible. 20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
CAS		IC 0059	2.6	N-R	Gamma Cas Nebula							♥ Try photo. Prime 15-30s 12800. Too close to NCP for prime wedge. OR 25mm proj.	20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
CAS		IC 1805	6.5	N-E	Heart Nebula							♥ Photo only - use prime with reducer. 30s 6400. Too close to NCP for wedge.	20200912 9:15 pm Good Skies for PawMea. 8mm (24-8mm) - Not visible. 20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Barely visible.
CAS	31			Asterism	Kemble's Kite Measuring Scoop							Diamond shaped kite with tail. Binoculars RD: 3•27 71•50	20201103 7:30p Good skies. 10x50 binoculars - Just visible. Needs dark skies.
CAS		NGC 663	7.1	OC	Lawnmower Cluster							Sparse star group.	20200904 9:30 pm Good Skies 24mm (24-8mm) - OK.
CAS	33			Asterism	Lucky Number 7							SAO 35186 at the corner of a shape like a number "7". Binoculars.	20201103 7:30p Good skies. 10x50 binoculars - Visible but not impressive.
CAS		NGC 0281	7.4	N-E	Pacman Nebula							♥ Photo only - use prime. 30s 6400 OR 15s 12800. Too close to NCP for wedge.	20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Barely visible.
CAS		M 052	6.9	OC	Salt and Pepper Cluster							{T} View with 17-24mm. Photo with Prime - not polar. Includes many variable stars - mostly pulsars.	20200912 9pm Good Skies for PawMea. 17mm (24-8mm) - Good
CAS		IC 1848	6.5	N-E	Soul Nebula							♥ Photo only - use prime with reducer. 30s 6400. Too close to NCP for wedge.	20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Barely visible.
CAS		ι Casseopeiae	6.7	SD	δ Cephei							SAO 12298	20200904 9:30 pm Good Skies 8mm (24-8mm) - Blue/White. Very close.
CAS	16	ρ Casseopeiae	4.5	S	ρ Casseopeiae							SAO 35879. 4000 LY away - most distant naked eye star.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Easy to view.

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CAS		M 103	7.4	OC								{T} View with 17 - 24 mm eyepiece. Photo with 25mm - polar OR prime - not polar. One of the most distant open clusters. Interesting bright red giant near center. The brightest star in the group (blue) is not a part of the cluster (SAO11822 - a triple).	20200904 9:30 pm Good Skies 17mm (24-8mm) - OK.
CEP		IC 1396	3.5	N-E	Elephant Trunk Nebula							♥ Photo only - use prime. 30s 6400 OR 15s 12800. Too close to NCP for prime wedge. OR 25mm proj. + reducer & wedge 60s 6400.	20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Barely visible.
CEP		NGC 6946	8.8	Gal	Fireworks Galaxy (crosses into Cygnus)							♥ Photo only - use prime. 30s 6400 OR 15s 12800. Too close to NCP for prime wedge. (OR 25mm proj. + reducer & wedge 60s 6400.)	20200912 9:15 pm Good Skies for PawMea. 8mm (24-8mm) - Not visible. 20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
CEP	1	SAO 33693	4.2	S	Garnet Star							+++ Very Red, Largest Star in Galaxy	20200824 9:30pm Hazy. Good. 20200904 9:30 pm Good Skies 8mm (24-8mm) - Good.
CEP	84	NGC 7023	7.1	N-E	Iris Nebula							♥ Photo only - use prime. 30s 6400 OR 15s 12800. Too close to NCP for prime wedge. OR 25mm proj. + reducer & wedge 60s 6400.	20200824 9:30pm Hazy 1st quarter moon. Not visible. 20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
CEP		NGC 7160	6.1	OC	Swimming Alligator Cluster							Loose group of stars.	20200904 9:30 pm Good Skies 24mm (24-8mm) - OK.
CEP	34			Asterism	Tobacco Pipe							13 stars from stem and bowl of pipe. SAO 20150 at tip of bowl. Binoculars.	20201103 7:30p Good skies. 10x50 binoculars - Takes imagination to see a pipe.
CEP		NGC 7380	7.2	N-E	Wizard Nebula							♥ Photo only - use prime. 30s 6400 OR 15s 12800. Too close to NCP for wedge.	20200915 9:15p NoBend Good Skies horizon haze (24-8) 24mm - Barely visible.
CEP		δ Cephei	4.0	SD	δ Cephei							{T} Double - Orange/Blue - 41" sep. SAO 34508	20200904 9:30 pm Good Skies 8mm (24-8mm) - Good. Blue much smaller.
CET		M 077	8.9	Gal	Cetus A							♦ {T} View with 9 mm eyepiece. Photo with 25mm proj. or prime. Very small. Barred spiral Seyfert galaxy.	20201103 7:30p Good skies. 8mm (24-8mm) - Not visible - Omaha lights too bright.
CET	35			Asterism	Pouring Cup							SAO 110408 is at the tip of the spout. 1.5° across. Binoculars.	20201103 7:30p Good skies. 10x50 binoculars - Shape not obvious.
CMA		M 041	4.5	OC	Little Beehive Cluster							{T} View with 17 - 24 mm eyepiece Faintest object observed in antiquity - Aristotle mentions it and described using averted vision to be able to see it.	20200914 5am Humid hazy skies. (24-8mm) - 24mm Not impressive. 20200930 5:00am Humid clear skies full moon (24-8mm) 24mm. OK. 20200412 9:00pm Clear. 10x & 20x bin. Easily seen with either.
CMA		α CMA	-1.5	S	Sirius							Brightest star in the sky.	20200914 5am Humid hazy skies. (24-8mm) - 8mm - very bright blue/white. 20200930 4:00am Humid clear skies with full moon (24-8mm) 8mm. Brilliant.
CMA		NGC 2207	10.7	Gal								♥ Colliding with NGC 2163. Photo only - prime wedge 60s 6400-12800.	
CMA		VY CMA	8.0	S								Red hypergiant. 1500 times bigger than Sun. 4000 LY away. Use coordinates.	20200930 5:00am Humid clear skies full moon (24-8mm) 8mm. Small. Dim. Obviously red.
CMA		145 CMA	4.8	SD								SAO 173349	20200930 5:00am Humid clear skies full moon (24-8mm) 8mm. Orange/Blue Good.
CMI		α CMI	0.4	S	Procyon							Double too close to see.	20200914 5am Humid hazy skies. (24-8mm) - 8mm - white.
CNC		SAO 80416	4.0	SD	ι Cnc							Yellow / Blue.	20200930 5:00am Humid clear skies full moon (24-8mm) 8mm. Yellow/Blue Good.
CNC	53	M 044	3.1	OC	Beehive Cluster							{T} View with 24mm eyepiece & reducer or bin. 1st exoplanet in a cluster found here. Stars are diverse. Fairly young. One of the nearest clusters.	20200930 5:00am Humid clear skies full moon (24-8mm) 24mm. Scanned area to view. Needed 24mm with reducer to see all. Obvious arrow shape is interesting.

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CNC		M 067	6.9	OC	Golden-Eye Cluster (Pac-Man)							{T} View with 9 mm eyepiece Once thought that the Sun started out in this cluster. It didn't.	20200930 5:00am Humid clear skies full moon (24-8mm) 8mm. Dense but dim.
COL		β Cae	2.7	S	Phact								20201012_5:00am Clear - 10x50 Binoculars. Very low in south. Just wanted to have seen Columba. Visible without bin. Saw Wazn and delta Col as well.
COM		M 064	8.5	Gal	Black Eye Galaxy							♥ {T} View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400. Spiral galaxy. The gas of the galaxy is rotating opposite the stars.	20200912 9:15 pm Good Skies for PawMea. 8mm (24-8mm) - Not visible.
COM		M 100	9.4	Gal	Blowdryer Galaxy							♥ !! {T} View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400. Grand design spiral galaxy.	
COM		Abell 1656. ACO 1656	10.7	Gal Cluster	Coma Galaxy Cluster							View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400.	20200912 9:15 pm Good Skies for PawMea. 8mm (24-8mm) - Very faint - photo only.
COM		Melotte 111		OC	Coma Star Cluster							View with 10x bin.	20210604 10:30 pm Clear 10x bin. Good open cluster of stars just visible naked eye but quite dramatic in the binoculars. 20210605 10:30pm Clear 20x bin. - only shows part of the cluster but gives more detail.
COM		NGC 4559	10.0	Gal	Koi Fish Galaxy							♥ Photo with prime wedge 60s 6400. (May need 25mm proj.)	
COM		NGC 4565	10.4	Gal	Needle Galaxy							♥ View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400.	
COM	36			Asterism	Sand Shovel							♦ Shovel shape just above M53. Binoculars.	20210604 10:30 pm Clear 20x bin. Easily visible, but not impressive.
COM		M 85,88,91,98,99,100		Gal	Virgo Cluster (Northern Part)							Too wide for single photo. Too faint for binoculars.	
COM		M 099	9.9	Gal	Virgo Cluster Pinwheel Galaxy							♥ {T} View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400. Grand design spiral galaxy.	
COM		M 085	9.1	Gal								♥ {T} View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400. Lenticular galaxy (lens shaped) with very little structure.	
COM		M 088	9.6	Gal								♥ View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400. Spiral galaxy in the Virgo Cluster. Very regular spiral lines that can be followed to the core.	
COM		M 091	10.1	Gal								♥ {T} View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400. Barred spiral. Dimmest Messier galaxy. Part of the Virgo Cluster. Not finally identified until 1969 - Messier had recorded the wrong coordinates.	
COM		M 098	10.1	Gal								♥ {T} View with 9 mm eyepiece. Photo with 25mm proj. or prime wedge 60s 6400. Inclined spiral. Moving toward us very quickly.	
COM		M 053	7.7	GC								{T} Faint One of the most distant GCs.	20200912 9:15 pm Good Skies for PawMea. 8mm (24-8mm) - Barely visible.
CRA		NGC 6726	7.0	N-R								Photo only - 25mm proj. or prime wedge 60s 6400.	20200912 8:45 pm Good Skies for PawMea. 24mm (24-8mm) - Not visible.
CRB		NGC 6085	13.4	Gal								Photo only - 25mm proj. or prime wedge 60s 6400. May be too dim to photograph with 8".	

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CRT		α Crt	4.0	S	Alkes							Included to note observation of the constellation.	20210429 9:30pm Clear. Constellation barely visible but could perceive the outline.
CRV		NGC 4038	10.9	Gal	Antennae Galaxy							♥ Photo with 25mm proj. or prime wedge 60s 6400.	
CRV		β Crv	2.6	S	Kraz							Included to note observation of the constellation.	20200429 9:30pm Clear with low humidity. The 5 main stars of Crv were clearly visible naked eye. Binoculars showed richer star field. 10x50 see only 2 main stars at a time.
CVN	63	NGC 4490	9.8	Gal	Cocoon Galaxy							Photo with prime wedge 60s 6400 OR 25mm Proj. wedge 30s 6400.	20200818 9:30pm Good skies. 24mm to be bright enough to view. Extremely faint. 20200822 10pm Hazy clear - not visible.
CVN		α Canes Vanatici	2.8	SD	Cor Caroli							{T} Double - Blue/Orange - 20" sep. Use 9mm.	20200817 9:15pm 8mm (24-8mm). Easy. White/White. One larger.
CVN	62	M 094	8.2	Gal	Croc's Eye Galaxy							♥ +++ {T} Photo with 25mm proj. or prime wedge 60s 6400. Spiral galaxy. Large and diffuse. Outer area not visible to normal exposures.	20200818 9:30pm Good skies. 12mm (24-8mm). Quite bright. 20200822 10pm Visible. 20201007 8:30pm Clear Hazy PrimeWedge - Failed photo. Needs longer exposure dark sky.
CVN	2	γ Cvn SAO 44317	5.4	S	La Superba							+++ Very Red. Use coordinates: 12-46-4.34 / 45-19-49.5 12.767872 / 45.330417	20200904 9:30 pm Good Skies 8mm (24-8mm) - Good.
CVN		M 063	8.6	Gal	Sunflower Galaxy							♥ {T} Photo with prime wedge 60s 6400 OR 25mm Proj. wedge 30s 6400. Beautiful spiral.	20191019_8:00P DarkSkies - 24mm Too faint to see. 20201007 8:30pm Clear Hazy PrimeWedge - Small fuzzy photo. Needs 25mm Proj.
CVN		NGC 4631	9.2	Gal	Whale Galaxy							Photo with prime wedge 60s 6400 OR 25mm Proj. wedge 30s 6400.	20200818 9:30pm Good skies. 12mm (24-8mm). Extremely faint.
CVN		M 051	8.4	Gal	Whirlpool Galaxy							{T} !! View with 9 mm eyepiece. Faint. Needs very dark skies. Photo prime wedge 60s 6400. Grand design spiral.	! 20191019_8:00P DarkSkies - 24mm Very faint. 20200822 10pm Very faint. 20201007 8:30pm Clear Hazy PrimeWedge - Good photo.
CVN		M 106	8.4	Gal								♥ {T} Photo Prime wedge 60s 6400. Spiral. One of the largest and brightest nearby galaxies. 24 million ly. Has a mega maser quasar star.	20200818 9:30pm Good skies. 12mm (24-8mm). Extremely faint.
CVN	41	M 003	6.3	GC								+++ {T} First object discovered by Charles Messier. Contains 500,000 stars. Photo with prime wedge 30s 6400 OR 25mm Proj. wedge 30s 6400.	20200818 9:30pm Good skies. 12mm (24-8mm). Quite bright. 20200822 9:30pm 12mm.
CYG		61 Cyg SAO 70919	5.2	SD	(Bessel's Star)								20200817 9:15pm 8mm (24-8mm). Easy. Matched size.
CYG	22	β Cygni	3.3	SD	Albireo							+++ {T} Double - Orange/Blue - 34.3" sep. SAO 87301	20190827_10:02P Good photo at 17mm 1/4 sec 3200.
CYG		IC 5146	10.0	N-E	Cocoon Nebula							♥ Photo - use prime & wedge. 30-60s 6400	20200915 9:00p NoBend Good Skies horizon haze (24-8) 17mm - Not visible.
CYG		M 029	6.6	OC	Cooling Tower							{T} View with 9 mm eyepiece Intervening dust blocks most of its light.	20191019_8:00P DarkSkies - Loose grouping. Not impressive.
CYG		NGC 6888	10.0	N-E	Crescent Nebula							♥ Photo - use prime & wedge. 30-60s 6400	20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - not visible but stunning Milky Way star field.
CYG		NGC 6866		Asterism	Kite Cluster							Diamond plus 5 star tail. In Nexstar asterism list.	20200912 9:15 pm Good Skies for PawMea. 24mm (24-8mm) - OK - Try 32mm.
CYG	39			Asterism	Little Orion							SAO 50298 at center of shape that looks like Orion. (In No. Am. Nebula) Binoculars.	20201103 7:30p Good skies. 10x50 binoculars - Easy to see.
CYG	39	NGC 7000	4.0	N-E	N. American Nebula							♥ Photo - use prime wedge. 60s 6400	20191019_8:00P DarkSkies - Very faint.

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CYG		IC 5070		N-E	Pelican Nebula							♥ Photo - use prime & wedge. 30-60s 6400	20200915 9:00p NoBend Good Skies horizon haze (24-8) 17mm - Not visible.
CYG	37			Asterism	Smiley Face							SAO 48917 is one of the eyes of a smiley face. Binoculars.	20201103 7:30p Good skies. 10x50 binoculars - Easy to see and recognize.
CYG	38			Asterism	String of Stars							SAO 69413 in center of string of stars near the Crescent Nebula.	20201103 7:30p Good skies. 10x50 binoculars - Just OK.
CYG	10	SAO 49940 Try 49712	9.1	S	V Cyg							Very Red	SAO not in database. Use coordinates. 20200824 9:30pm Hazy 1st quarter moon. Dim.
CYG		NGC 6960	7	N-S	Veil Nebula							♥ Photo - use prime + reducer & wedge. 30-60s 6400	20191006 8pm Too faint. 20191019_8:00P DarkSkies - 24mm Faint but visible.
CYG		NGC 6992	7	N-S	Veil Nebula							♥ Photo - use prime + reducer & wedge. 30-60s 6400	20191019_8:00P DarkSkies - 24mm Faint but visible. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - Just visible. 20201004 9:00pm Clear skies - Marginal photo with Prime & Wedge. Try reducer.
CYG		NGC 6995	7	N-S	Veil Nebula							♥ Photo - use prime + reducer & wedge. 30-60s 6400	20191019_8:00P DarkSkies - 24mm Faint but visible.
CYG		μ Cygni	4.6	SD	μ Cygni							White/White - 1.7" sep. SAO 89940. 72 LY away.	20200922 9:00pm Hazy clear. 8mm (24-8mm) - Separation barely visible.
CYG	27	SAO 49741 Not in Cat. Use GoTo #	5.4	SD	ω Cyg							Orange? Use coordinates: 20-31-56.26 / 49-17-22 20.532294 / 49.289444	20200927 8:45pm 8mm. Visible. OK.
CYG		M 039	4.6	OC								{T} View with 32 mm eyepiece or Prime. Large cluster with few stars. Most have already escaped.	20191019_8:00P DarkSkies - Too narrow FOV? 20200930 8:30pm Clear humid full moon (24-8mm) 24mm.-narrow. Bin.-too wide. OK.
CYG		SAO 48193	6.5	SD									20200817 9:45pm 8mm (24-8mm). Faint but visible. Matched size.
DEL		α Del SAO 106357	6.4	SD	Sualocin							7 star system	20201103 7:30p Good skies. 10x50 binoculars - Easy separation for largest two. White/White.
DEL		γ Del SAO 106475	5.1	SD	γ Del								20200818 9:30pm Good skies. 8mm (24-8mm). Easy. Orange/White. Matched size.
DEL		NGC 6934	8.8	GC									20200818 9:30pm Good skies. 8mm (24-8mm). Faint but visible.
DRA		v Draconis	5.5	SD	(Kuma)							{T} Double - White - 62" sep.	20191006 8pm Wide separation at 8mm
DRA		SAO 30013	5.5	SD	17 Dra 16 Dra							♦♦ 17 & 16 are an Optical Double. Each is also a double. Only 17 is resolvable.	20200930 8:30pm Clear humid full moon (24-8mm) 8mm. Blue/Blue easy separation.
DRA		SAO 30949	8.0	SD	39 Draconis							♦ 7 star system - 3 should be resolvable. View 8mm.	
DRA		HIP 83608	5.6	SD	Alrakis (μ Dra) In named star catalog as Arrakis							Double.	20200922 9:00pm Hazy clear. 8mm (24-8mm) - Separation very close. White/White.
DRA		NGC 6543	8.1	N-P	Cat's Eye Nebula							♥ (T) Photo - use 25mm projection & wedge. 30-60s 6400. Too close to NCP for prime wedge.	20191019_8:00P DarkSkies - 24mm & 8mm Too faint to see. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
DRA		ψ Draconis	4.6	SD	Dziban							White - 30" sep. 72 LY away.	20200922 9:00pm Hazy clear. 8mm (24-8mm) - Easy double. White/White.
DRA	79	SAO 9181 at center		Asterism	Kemble 2 (Mini Cassiopeia) ("W" Cluster)							+++ Alahakan in direction of Tyl. Works with 24mm or binoculars.	20200824 9:30pm Hazy 1st quarter moon. All contained within 24mm. 20200903 9pm Clear 24mm (24-8mm) - Good.

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DRA		M 102	9.9	Gal	Spindle Galaxy							♥ (T) Photo - use 25mm projection & wedge. 30-60s 6400. Too close to NCP for prime wedge. Edge on galaxy. Messier recorded wrong coordinates.	20191006 8pm Very faint. Try photo. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 17mm - faint but visible.
DRA		ε Draconis	6.6	SD	Tyl							3" sep.	20200817 9:15pm 8mm (24-8mm). Very close at 8mm. Matched size.
DRA	11	SAO 9404 Not in Cat.	6.2	S	UX Dra							Very Red. Use coordinates: 19-20-51.77 / 76-35-56.3 19.347714 / 76.598972	20200824 9:30pm Hazy 1st quarter moon. Visible.
DRA		SAO 16078	6.6	SD									20200817 9:45pm 8mm (24-8mm). White/White. Matched size.
EQL		α Eql	3.9	S	Kitalpha							Need to view something in Equuleus.	20201103 7:30p Good skies. 10x50 binoculars - White.
ERI		NGC 1535	10.6	N-P	Cleopatra's Eye Nebula							♥ Photo - use prime & wedge. 30-60s 6400. May need 25mm proj.	
FOR		α For	3.9	S	Dalim								20201012_5:00am Clear - 10x50 Binoculars. Very low in south. Just wanted to have seen Fornax. Too faint without bin.
FOR		NGC 1097	9.5	Gal								♦ Faint - photo with prime.	
GEM		NGC 2392	9.7	N-P	Eskimo Nebula							♥ (T) Photo - use prime & wedge. 30-60s 6400. Probably needs 25mm proj.	20200914 5am Humid hazy skies. (24-8mm) - 8mm - Not visible.
GEM		β Gemini	1.2	SD	Pollux							Double - White - sep. 11'	20200914 5am Humid hazy skies. (24-8mm) - 8mm - double not visible.
GEM	54	M 035	5.1	OC	Shoe-Buckle Cluster							{T} View with 17 - 24 mm eyepiece	20200914 5am Humid hazy skies. (24-8mm) - 24mm - good.
HER	43	M 013	5.8	GC	+++ Great Star Cluster in Hercules							♥ {T} View with 9 mm eyepiece. 21,000 LY away. Photo prime 15s 6400. Wedge OK. May need 25mm proj.	20191006 8pm Good view at 8mm. Almost fills FOV. Good candidate for photo at 13mm. 20200807 Good at 8mm. 20200819 10pm Good skies. 8mm. Excellent. 20201006 8:45pm Clear Hazy Prime - Fuzzy photo.
HER		NGC 6229	9.4	GC	Prize Comet G. C.							View with 9 mm eyepiece	20191006 8pm Visible but faint at 8mm
HER	25	α Herculis	3.5	SD	Rasalgethi							{T} Double - Orange/White - 4.6" sep.	20191006 8pm Obvious separation at 8mm. Hard to see color. 20200812 10 pm Orange/White.
HER	44	M 092	6.5	GC								{T} View with 9 mm eyepiece One of the oldest GCs - 11 billion yrs.	20191006 8pm Good visibility at 8mm. 20200822 10pm Hazy clear - very faint.
HYA		α Hya	2.0	S	Alphard							Included to note observation of the constellation.	20210429 9:30pm Clear. Alphard is the only obvious star in the constellation, but the long line of other stars were faintly visible.
HYA		M 048	5.8	OC	Beehive Cluster							♦ {T} View with 9 mm eyepiece Not where Messier said it should be.	
HYA		NGC 3242	8.6	N-P	Ghost of Jupiter Nebula							♦ {T} Faint - experiment with magnification. Should be visible at 8mm.	
HYA		M 083	7.5	Gal	Southern Pinwheel Galaxy							♦ {T} View with 9 mm eyepiece. Photo with 25mm proj. or prime. Spiral galaxy.	
HYA		M 068	7.3	GC								♦ {T} View with 9 mm eyepiece. Used to first determine distance to GCs.	

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LAC		NGC 7243	6.4	OC								View with 17 - 24 mm eyepiece - sparse	20200930 5:00am Humid clear skies full moon (24-8mm) 8mm. 24mm. OK.
LEO		ζ Leo	3.3	SD	Adhafera							♦ Optical triple with 35 & 39 Leo. 24mm or Binoculars.	20210605 10:00pm Clear humid 20x bin - all three visible.
LEO		γ Leo	2.1	SD	Algieba							♦ Double at 8mm. View with 40 Leo for a color contrast (32mm or bin.)	20210605 10:00pm Clear humid 8mm (24-8mm) - Double white / white. 20x bin - color contrast with 40 Leo obvious.
LEO	64	M 066	8.9	Gal	Leo Triplet							♥ {T} View with 9 mm eyepiece. Photo. Wedge 25mm proj. Prime for all three triplets. 30-60s 6400. Deformed spiral galaxy.	20180605_11:30P Prime@3200 for 20 sec. Adequate photo.
LEO	64	M 065	9.3	Gal	Leo Triplet							♥ {T} View with 9 mm eyepiece. Photo. Wedge 25mm proj. Prime for all three triplets. 30-60s 6400. Old spiral galaxy.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
LEO	64	M65, M66, NGC3628		Gal	Leo Triplet - all three							♦ View with 32mm eyepiece. Photo - Prime wedge 60s 6400.	
LEO	64	NGC 3628	9.5	Gal	Leo Triplet - dimmest of the 3. Hamburger Gal.							♥ View with 9 mm eyepiece. Photo. Wedge 25mm proj. Prime for all three triplets. 30-60s 6400.	
LEO	64	NGC 2903	9.0	Gal								♥ Photo only. Wedge 25mm proj. Or Prime. 30s 6400.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
LEO		M 105	9.3	Gal								♥ {T} Cluster with NGC3384 &3389 9mm for all 3. Photo 25mm proj. for all 3. Use wedge. 60s 6400. Elliptical galaxy with no features. Rare in that it seems to have no dark matter.	
LEO		M 096	9.3	Gal								♥ {T} View with 9 mm eyepiece. Photo. Wedge 25mm proj. or prime. 30s 6400. Young spiral galaxy.	
LEO		M 095	9.7	Gal								♥ {T} View with 9 mm eyepiece. Photo. Wedge 25mm proj. or prime. 30s 6400. Barred spiral galaxy. One of faintest M. objects. Contains unusual dust lanes.	
LEO		NGC 3384	9.9	Gal								♥ {T} View with 9 mm eyepiece. Photo. Wedge 25mm proj. or prime. 30s 6400.	
LEP		α Lep	2.3	S	Arneb								20201012_5:00am Clear - Naked eye. Low in south. Just wanted to have seen Lepus. Seven bright stars in Lepus visible without binoculars.
LEP	12	SAO 150058	8.0	S	Hind's Crimson Star							View with 9 mm eyepiece 05•00•31 / -14•46•39.8	20200930 5:00am Humid clear skies full moon (24-8mm) 8mm. Small - very orange. Good.
LEP		M 079	7.7	GC								{T} View with 9 mm eyepiece Contains the brightest star in any GC.	20200930 5:00am Humid clear skies full moon (24-8mm) 8mm. Faint with moonlight.
LIB		α Lib	2.8	SD	Zubenelgenubi							Double should be visible with binoculars.	
LMI		28 Lmi		OC								♦ 5 stars around 27, 28 & 30 LMI with interesting color variance. View with 32mm.	
LYN	40			Asterism	Inch Worm							♦ SAO 61254 is in the middle of the curving inch worm. Binoculars.	
LYR	23	ε Lyra	5.5	SD	Double Double							♥ +++ {T} Double - White - 208" sep. SAO67315. Try photo at 25mm proj. 8s 6400.	20190904_10:00P ModerateSkies 8mm Saw all 4. 20191006 8pm Saw all 4 at 8mm Obvious sep of 2 main stars. Very small sep. on components of each. Try 6mm. 20191019_8:00P DarkSkies - same. 20200817 9:15pm 8mm (24-8mm). Wide separation between pairs.

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Lyr	83	M 057	9.4	N-P	Ring Nebula							♥ +++ {T} Photo Wedge prime 60s 6400. May need 25mm proj. Ring is seen since we're looking into the end of a cylinder.	20191019 8:00P DarkSkies - 8mm Faint but visible. 20200824 9:30pm Hazy 1st quarter moon. Very visible at 8mm.
Lyr		β Lyra	3.5	SD	Sheliak							Eclipsing binary. Separation 45".	20200927 8:45pm 8mm. Orange/Blue. Blue dimmer.
Lyr	5	α Lyr	0.0	S	Vega							White. Very close double	20200905 9:30pm Hazy clear 8mm (24-8mm) - double too close to see.
Lyr		SAO 67537	4.2	SD	δ Lyr							♦ Optical double δ1 and δ2.	
Lyr		M 056	8.3	GC								♦♦ {T} View with 9 mm eyepiece Perhaps the oldest GC - 13 billion yrs.	20191006 8pm Visible but faint at 8mm. 20191019 8:00P DarkSkies - same. Try time exposure. 20201004 9:00pm Clear skies. Attempted Prime photo. Small. Use projection. 20201012 9:00pm Clear. 8mm. Faint, fuzzy ball.
Lyr	14	T Lyr	7.6	S								Technically - reddest star by spectrum.	20200824 9:30pm Hazy 1st quarter moon. Faint.
Mic	5	α Mic	4.9	S									20200922 9:00pm 35mm f/2 800_8s photo. Microscopium too dim for naked eye. Visible in wide field.
Mon		NGC 2346	11.6	N-P	Butterfly Nebula							♥ Photo only. Wedge Prime. 60s 6400.	
Mon		NGC 2264	3.9	N-E	Christmas Tree Cluster (includes Cone Nebula)							♥ View 20xBin. Photo - Wedge Prime. 60s 6400.	20210411 9:00pm Clear 20xBin. Good view, bright.
Mon		M 050	5.9	OC	Heart-Shaped Cluster							{T} View with 17 - 24 mm eyepiece Young cluster. 130 m.y. old.	20200930 4:00am Humid clear skies full moon (24-8mm) 24mm. Heart shape hard to see.
Mon		NGC 2244	4.8	N-E	Rosette Nebula NGC 2244 is the Open Cluster inside the nebula.							♥ View with 32mm. Photo with Prime + reducer & wedge. 60s 6400.	20200930 5:00am Humid clear skies full moon (24-8mm) 24mm. Very faint.
Mon		β Monocerotis	5.3	SD	β Monocerotis							♦ Triple - Blue HIP30867 6•29•50.5 -7•1•37	
OPH	3	HIP 87937	9.5	S	Barnard's Star							Red	17 57 47.49 / 4 45 4.5. 6 LY away - closest in N. Hem. Only Alpha Can closer. 20200822 10pm Faint but visible.
OPH		M 107	7.8	GC	Crucifix Cluster							{T} View with 9 mm eyepiece. Very loose GC near the galactic plane.	20200817 9:45pm 8mm (24-8mm). Very faint.
OPH		NGC 6572	10.8	N-P	Emerald Nebula							♥ Photo only. Wedge Prime. 60s 6400.	
OPH		M 062	6.4	GC	Flickering Globular Cluster							{T} Faint - View with 9 mm eyepiece	20200904 9:30 pm Good Skies 8mm (24-8mm) - fairly dim.
OPH	46	M 012	6.1	GC								{T} View with 9 mm eyepiece Unusual distribution of star masses for G.C.	20200817 9:45pm 8mm (24-8mm). Faint but visible. Good skies. 20200824 9:30pm Hazy 1st quarter moon. Not visible. 20200904 9:30 pm Good Skies 8mm (24-8mm) - Very faint but visible. 20201006 8:30pm Clear Hazy Prime - OK photo.
OPH	45	M 010	6.6	GC								{T} View with 9 mm eyepiece	20200812 Not visible. 20200824 9:30pm Hazy 1st quarter moon. Dim.
OPH		M 019	6.8	GC								{T} Faint - View with 9 mm eyepiece Least round GC. Atypical - formed from dwarf galaxy. Younger than most. Multiple ages of stars.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but visible.
OPH		M 014	7.6	GC								{T} View with 9 mm eyepiece	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but visible.

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OPH		M 009	7.9	GC								{T} View with 9 mm eyepiece Near the center of the galaxy.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but visible.
OPH		NGC 6633		OC								Binoculars OR 32mm with reducer	20200929 9pm Binoculars - OK.
OPH	15	TW OPH	7.5	S								One of reddest stars by spectrum.	20200822 10pm Hazy - difficult to see.
ORI	7	α Ori	0.45	S	Betelgeuse							Red/Orange. Very close double.	20200914 5am Humid hazy skies. (24-8mm) - 8mm - Very orange.
ORI		M 078	8.0	N-R	Casper the Friendly Ghost Nebula							♥ {T} View with 32mm eyepiece. Photo with Prime & reducer. 15-30s 3200. (wedge OK)	20191007 5:30am (24-8mm) Mod. Good Skies - Faint but visible at 24mm.
ORI	87	M 043	7.0	N-E	de Mairan's Nebula							♥ +++ {T} View with 32mm. Photo with Prime & reducer. 15-30s 3200. (wedge OK). Colliding with M42.	20191007 5:30am (24-8mm) Mod. Good Skies - Very good at both 24 and 8mm. Good photos with M42.
ORI	81	M 042	4.0	N-E	Great Nebula in Orion							+++ {T} View with 32mm. Better with Prime & reducer. 1,500 LY away. Photo prime + reducer 4s 3200. Naked-eye visible, it is one of the brightest nebula.	20180314_8:00p First look at Nebula - Impressive. 20180411_8:15p Prime 10sec@3200 Good photo. 20191007 5:30am (24-8mm) Mod. Good Skies - Bright and beautiful at both 24 & 8mm. 20191008 5:30am Prime with Reduc. Good photo 4sec 3200. 20200930 5:00am Humid clear skies full moon (24-8mm) 24mm. Clear even with moon.
ORI		IC 0434	11.0	N-D	Horsehead Nebula							♥ {T} View with 32mm eyepiece. Photo with Prime & reducer. 15-30s 3200. (wedge OK) Horse head just left of IC434.	20191007 5:30am (24-8mm) Mod. Good Skies - Very faint at 24mm.
ORI		NGC 1980	2.5	OC	Lost Jewel (Lower Sword)							Cluster includes Hatysa. View with Orion Nebula	20191007 5:30am (24-8mm) Mod. Good Skies - Very faint at 24mm. 20200914 5am Humid hazy skies. (24-8mm) - 24mm - sparse but good next to M42.
ORI		NGC 1973	7.0	N-E	Mermaid's Purse Nebula							♥ View with 32mm eyepiece. Photo with Prime & reducer. 15-30s 3200. (wedge OK)	20191007 5:30am (24-8mm) Mod. Good Skies - Very faint at 24mm.
ORI	9	β Ori	0.15	S	Rigel							Blue	20200914 5am Humid hazy skies. (24-8mm) - 8mm - Blue.
ORI	28	σ Orionis SAO 132406	4.0	SD	σ Orionis							+++ Double - White - sep. 13" & 43" SAO 132406	20200914 5am Humid hazy skies. (24-8mm) 8mm- 3 stars vis. in σ Ori. + 3 in Struve 761.
PEG		NGC 7331	9.5	Gal	Deer Lick Group							♥ Photo - prime wedge 60s 6400.	20200915 9:00p NoBend Good Skies horizon haze (24-8) 17mm - Visible but small and fuzzy. Smaller galaxies not visible.
PEG		M 015	6.4	GC	Pegasus Cluster							{T} View with 9 mm to 32mm eyepiece	20200914 5:45a Humid hazy skies. (24-8mm) - 8mm Faint. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 8mm - Bright fuzzy ball.
PEG		NGC 7479	10.9	Gal	Propeller Galaxy (Superman Galaxy)							♥ Photo only. Wedge Prime. 60s 6400.	
PEG		NGC 7320	12.6	Gal	Stephen's Quintet							♥ Photo only - use 25mm proj. with wedge. 60s 6400.	20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
PER		NGC 1499		N-E	California Nebula							♥ Photo only. Wedge Prime. 60s 6400.	
PER	52	NGC 869 NGC 884	3.8	OC	Double Cluster							+++ {T} Prime & Reducer OR Binoculars. 869-7,000 LY away; 884-7,500 LY.	20200914 5:45a Humid hazy skies. (24-8mm) - 24mm Rich star field!
PER		NGC 1333	9.5	N-R	Embryo Nebula							♥ Photo only. Wedge Prime. 60s 6400.	

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PER	82	M 076	10.1	N-P	Little Dumbbell Nebula							♥ {T} View with 9 mm eyepiece. Photo Wedge Prime. 60s 6400. May need 25mm proj. Faintest Messier object. Unusual planetary nebula - high carbon content making unique coloration.	20191007 5:30am (24-8mm) Mod. Good Skies - Very faint but visible at 8mm.
PER		α Per	1.8	S OC	Mirfak, Alpha Persei Cluster							Binoculars	20201102 6:30p 35mm DSLR 4sec 800. Good photo.
PER		M 034	5.2	OC	Spiral Cluster							{T} View with 17 - 24 mm eyepiece	20191007 5:30am (24-8mm) Mod. Good Skies - Unimpressive cluster at 24mm.
PSA		α PSA	1.2	S	Fomalhaut							View with 9 mm eyepiece.	20201004 9:00pm Clear skies. 8mm (24-8mm) - Very bright even low in the east.
PSC		M 074	9.4	Gal	Phantom Galaxy							♥ {T} View with 9 mm eyepiece. Photo Wedge Prime. 60s 6400. May need 25mm proj. Spiral galaxy. 30 million light years away. One of most distant Messier objects. Similar to the Milky Way.	
PUP		M 093	6.2	OC	Butterfly Cluster							♦ {T} View with 17 - 24 mm eyepiece	
PUP		ρ Pup	2.8	S	Tureis							No alpha or beta stars in Puppis - When constellation was split off, they were in Carina.	20201012_5:00am Clear - 10x50 Binoculars. Very low in south. Just wanted to have seen Puppis. Visible without bin. Saw Azmidi and pi Pup as well.
PUP		M 047	4.4	OC								♦ {T} View with 32mm eyepiece. Location was mis-labeled by Messier and its location wasn't identified until 1959.	
PUP		M 046	6.1	OC								♦ {T} View with 17 - 24 mm eyepiece NGC2438 (Planetary Neb) is visually within the cluster but at a different distance. The Calabash Nebula IS a part of the cluster.	
PYX		γ Pyx	4.0	S									20201012_5:00am Clear - 10x50 Binoculars. Very low in south. Just wanted to have seen Pyxis. Too faint without bin.
SCL	65	NGC 0253	7.2	Gal	Sculptor Galaxy							♦ {T} View with 24 mm eyepiece. Photo with prime.	20201103 7:30p Good skies. 8mm (24-8mm) - Not visible - Omaha lights too bright.
SCL		NGC 0055	7.9	Gal	String of Pearls Galaxy							♦ View with 9 mm eyepiece. Photo with prime.	
SCO		β Scorpii	2.6	SD	Acrab							Double - Blue - sep. 13"	20200817 9:45pm 8mm (24-8mm). Easy. Blue/Blue. One slightly larger.
SCO		α Sco	0.96	S	Antares								20200930 8:00pm Clear humid full moon (24-8mm) 8mm. Brilliant orange. 20201004 8:45pm Clear skies. Attempted 200mm DSLR photo of surrounding nebula 8s @3200 but nothing visible. Try prime and reducer with longer exposure.
SCO		NGC 6302	7.1	N-P	Bug Nebula							♥ Photo only. Wedge Prime. 60s 6400. May need 25mm proj.	
SCO	55	M 006	4.2	OC	Butterfly Cluster							♥ {T} View with 17 - 24 mm eyepiece. Photo prime wedge 30s 3200. Young. Mostly blue stars with one red giant.	20200903 9pm Clear 24mm (24-8mm) - Very striking.
SCO		M 004	5.4	GC	Crab Globular Cluster							{T} View with 9 mm eyepiece - sparse Closest GC to the Sun.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but visible.
SCO	21	ν Scorpii	4.1	SD	Jabbah							Double - 7 star system - largest known. Surrounded by Blue Horsehead Neb IC4592	20200822 10pm Hazy - 2 stars easily separated - 3rd barely visible. 20200903 9pm Clear - 3rd still barely visible.
SCO		M 007	3.3	OC	Ptolemy's Cluster							♥ {T} View with 9 mm eyepiece. Photo prime wedge 30s 3200. 1st object photographed by New Horizon craft (Pluto mission).	20200903 9pm Clear 24mm (24-8mm) - Beautiful cluster.

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SCO		λ Scorpii	1.6	SD	Shaula							Double - sep. 42"	20200912 8:45 pm Good Skies for PawMea. 8mm - Double not visible. Twinkling colors.
SCO		M 080	7.3	GC								{T} View with 9 mm eyepiece The most dense open cluster.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but visible.
SCT		M 011	5.8	OC	Wild Duck Cluster							{T} Needed very dark skies & then was worth viewing. Photo prime 8s 6400. Wedge OK. One of more massive and dense OCs.	20200912 8:30 pm Good Skies for PawMea. 8mm (24-8mm) - Faint. Needed darker. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 17mm - striking. 20201006 8:45pm Clear Hazy Prime - Good photo.
SCT		M 026	8.0	OC								{T} Needed dark skies to see, but still less than impressive cluster. Mysterious ring void near edge.	20200912 8:30 pm Good Skies for PawMea. 8mm (24-8mm) - Faint. Needed darker. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 17mm - clear view but sparse.
SER		θ ser SAO 124068	4.6	SD	Alya							White/White. View with 9 mm eyepiece	20200904 9:30 pm Good Skies 8mm (24-8mm) - Good. Equal size.
SER	42	M 005	5.7	GC	Rose Cluster							♥ +++ {T} View with 8mm. Photo prime wedge 60s 6400. Naked-eye visible under perfect conditions.	20200818 9:30pm Good skies. 8mm (24-8mm). Very striking. 20201006 8:30pm Clear Hazy Prime - Fuzzy photo. Try again.
SER	88	M 016	6.0	N-E	Star Queen Nebula (Eagle Nebula)							♥ +++ {T} View with 17 - 24 mm eyepiece. Photo prime wedge 60s 6400. Subject of the icon Hubble photo - Pillars of Creation.	! 20200904 9:30 pm Good Skies 24mm (24-8mm) - Open cluster with faint nebula. Good. 20201006 8:30pm Clear Hazy Prime - Failed photo. Need longer exposure & dark skies.
SER		NGC 6118		Gal								♥ Several faint galaxies to try to photograph (all in SERCP) including also: NGC 5964, 5970, 5962, 5921. Use prime wedge 60s 6400.	
SEX		NGC 3115		Gal	Spindle Galaxy (also one in Draco)							♥ Photo only. Wedge Prime. 60s 6400. May need 25mm proj.	
SGE		M 071	6.1	GC	Angelfish Cluster							{T} View with 9 mm eyepiece Most sparse GC.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint.
SGR		NGC 6822	8.8	Gal	Barnard's Galaxy							View with 9 mm eyepiece Photo prime wedge 60s 6400-12800.	20200903 9pm Clear 8mm (24-8mm) - Fuzzy oval but visible. 20201006 8:15pm Clear Hazy Prime - exposure too short. 20201007 8:30pm Clear Hazy Prime - fuzzy photo. Needs dark skies.
SGR		M 018	6.9	OC	Black Swan Cluster							{T} View with 9 mm eyepiece. Photo prime wedge 30s 3200. Sparse cluster.	20200904 9:30 pm Good Skies 17mm (24-8mm) - OK.
SGR		NGC 6723	7.9	GC	Chandelier Cluster							View with 9 mm eyepiece. Photo prime wedge 30s 3200.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Very faint.
SGR		M 022	5.2	GC	Great Sagittarius Cluster							{T} View with 9 mm eyepiece. Photo prime wedge 30s 6400. Has several black holes near center.	20200904 9:30 pm Good Skies 8mm (24-8mm) - OK. 20201006 8:00pm Clear Hazy Prime - OK photo.
SGR		M 008	5.0	N-E	Lagoon Nebula							{T} View with 32mm. Photo prime wedge 30s 3200. One of only 2 nebula visible to the naked eye (M42 is the other).	20200904 9:30 pm Good Skies 24mm (24-8mm) - Faint but visible with good star cluster by it. Try photo with prime. 20201006 8:00pm Clear Hazy Prime - good photo. 20201007 8:00pm Clear Hazy PrimeWedge - good photo.
SGR		M 017	6.0	N-E	Omega Nebula							{T} View with 24-32 mm eyepiece. Photo prime wedge 30s 3200. Distant but intrinsically bright. Many bright stars ionize the hydrogen.	20200904 9:30 pm Good Skies 17mm (24-8mm) - Faint but OK. 20201006 8:00pm Clear Hazy Prime - OK photo. 20201007 8:00pm Clear Hazy PrimeWedge - OK photo.
SGR		M 024	4.6	Star Cloud	Small Sagittarius Star Cloud							{T} View with 17 - 24 mm eyepiece. Photo prime wedge 30s 6400. Not an actual object but a group of stars seen through an obscuring dust cloud at the center of the Milky Way.	20200904 9:30 pm Good Skies 24mm (24-8mm) - OK field of stars. 20201007 8:30pm Clear Hazy PrimeWedge - Good photo.
SGR		M 055	6.3	GC	Specter Cluster							{T} View with 9 mm eyepiece. Photo prime wedge 30s 6400.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Very faint. 20201007 8:30pm Clear Hazy PrimeWedge - OK photo.

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SGR		M 020	6.3	N-E	Trifid Nebula							{T} View with 24-32 mm eyepiece. Photo prime wedge 30s 3200. Includes all 3 types of nebula: Emission (the red portion), Reflection (green), Absorption (dark bands).	20200903 9pm Clear 24mm (24-8mm) - Barely visible. 20201006 8:15pm Clear Hazy Prime - good photo. 20201007 8:15pm Clear Hazy Prime Wedge- good photo.
SGR		M 021	5.9	OC	Webb's Cross							{T} View with 9 mm eyepiece. Photo prime wedge 30s 3200. Young cluster. 8 mil ly.	20200904 9:30 pm Good Skies 24mm (24-8mm) - OK. 20201007 8:30pm Clear Hazy PrimeWedge - Good photo.
SGR		NGC 0891	10.1	Gal								View with 9 mm eyepiece. Photo prime wedge 60s 6400.	20201006 8:15pm Clear Hazy Prime - exposure too short. Needs dark skies.
SGR		M 028	6.9	GC								{T} View with 9 mm eyepiece. Photo prime wedge 30s 3200.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but visible.
SGR		M 069	7.7	GC								{T} View with 9 mm eyepiece. Photo prime wedge 30s 3200.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but visible.
SGR		M 054	7.7	GC								{T} View with 9 mm eyepiece. Photo prime wedge 30s 3200. Part of a dwarf galaxy being eaten by the Milky Way.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but visible.
SGR		M 070	7.8	GC								{T} View with 9 mm eyepiece. Photo prime wedge 30s 3200. Has a collapsed core with a compact center.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Very faint but visible.
SGR		M 075	9.2	GC								{T} View with 9 mm eyepiece. Photo prime wedge 30s 3200. Captured by the Milky Way from a smaller galaxy which is called the Gaia Sausage. Many other GCs were captured at the same time. One of the most densely compacted clusters and one of most distant from the Sun.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Barely visible.
SGR	57	M 025	4.6	OC								{T} View with 17 - 24 mm eyepiece. Photo prime wedge 30s 3200. Pulsar in M25 used for earliest measurement of distance to the cluster.	20200904 9:30 pm Good Skies 24mm (24-8mm) - Very good. 20201007 8:30pm Clear Hazy PrimeWedge - Good photo.
SGR		M 023	5.5	OC								{T} View with 9 mm eyepiece. Photo prime wedge 30s 3200. Very large open cluster.	20200904 9:30 pm Good Skies 24mm (24-8mm) - Good. 20201007 8:30pm Clear Hazy PrimeWedge - Good photo.
TAU	6	α Tau	0.85	SD	Aldebaran							Orange	20200914 5:45a Humid hazy skies. (24-8mm) - 8mm slightly orange.
TAU		M 001	8.4	N-S	Crab Nebula							♥ {T} View with 9 mm eyepiece. Photo Wedge Prime. 60s 6400. 1st object identified that corresponds to an observed historical supernova (recorded by Chinese astronomers in 1054).	20191007 5:30am (24-8mm) Mod. Good Skies - Very faint at 8mm.
TAU		NGC 1514	10.8	N-P	Crystal Ball Nebula							♥ Photo only - prime wedge 60s 6400.	20200914 5:45a Humid hazy skies. (24-8mm) - 8mm Not visible.
TAU		C 41	0.5	OC	Hyades							♥ {T} Binoculars 10x. Photo with prime reducer will capture only small section. Try dslr photo to see nebulosity.	20200923 5:30am Hazy clear 10x50 bin. - Very good. 20210410 9:00pm Clear 10x50 & 20x80 bin. - good.
TAU	51	M 045	1.2	OC N-R	Pleiades							♥ +++ {T} View with 32mm + reducer OR Prime & reducer. Try photo with more nebulosity: Prime + reducer 15s 6400.	20191007 5:30am (24-8mm) Mod. Good Skies - Too wide for 24mm. 20191008 5:30am Prime with Reduc. Good photo 2sec 3200.
TAU	13	119 Tau	4.3	S	Ruby Star							Reddest naked eye star.	20200914 5:45a Humid hazy skies. (24-8mm) - 8mm - ?? fix coordinates in object list. 20200930 5:00am Humid clear skies full moon (24-8mm) 8mm. More orange than red.

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TRI		M 033	5.7	Gal	Triangulum Galaxy							♥ {T} View with 24-32 mm eyepiece. Photo prime wedge 60s 6400. Spiral galaxy. Rare in that it has no bulge and no black hole at the center.	20191007 5:30am (24-8mm) Mod. Good Skies - Not vis. Try photo. Needs very dark skies. 20201006 8:30pm Clear Hazy Prime - Failed photo. Need longer exposure & very dark sky.
UMA		M 081	6.9	Gal	Bode's Galaxy							♥ {T} View with 24-32 mm eyepiece Photo - use 25mm projection + reducer & wedge. 60s 6400-12800. Too close to NCP for prime wedge. Grand design spiral. Close (12 mil ly).	20200807 8mm Very faint. 20200930 5:00am Humid clear skies full moon (24-8mm) 8. Small- visible even with moon.
UMA		M 082	8.4	Gal	Cigar Galaxy							♥ {T} View with 17 mm eyepiece Photo - use 25mm projection + reducer & wedge. 60s 6400-12800. Too close to NCP for prime wedge. Starburst galaxy with many super novas.	20200905 9:30pm Hazy clear 8mm (24-8mm) - Barely visible. Need dark skies. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 17mm - Visible. Fuzzy.
UMA	17	SAO 62377	7.5	S	Lalande 21185							Brightest red dwarf in N Hem. Very dim. 8 LY. 3rd closest N Hem. star.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Very faint.
UMA	24	ζ Ursae Majoris	2.2	SD	Mizar							+++ {T} Double - White - sep. 11' from Alcor. 14" MizarB	20191007 5:30am (24-8mm) Mod. Good Skies - Obvious separation from Alcor. Mizar A B separation just visible at 8mm.
UMA	85	M 097	9.9	N-P	Owl Nebula							♥ Photo only - use 25mm projection + reducer & wedge. 60s 6400-12800. Close to NCP - marginal for prime wedge. One of only 4 planetary nebulas in the Messier catalogue.	20200824 9:30pm Hazy 1st quarter moon. Not visible. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
UMA		M 101	7.9	Gal	Pinwheel Galaxy							♥ {T} Photo only - use 25mm projection + reducer & wedge. 60s 6400-12800. Close to NCP - marginal for prime wedge. 21 mil. l.y. away. Grand design spiral. 1st galaxy where the spiral structure was seen (late 1800s by William Parsons through the largest telescope at the time).	20191019_7:45P - 24mm Too faint to see. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - Not visible. 20201007 9:00pm Clear Hazy PrimeWedge - OK photo. Need darker skies.
UMA		M 108	10.0	Gal	Surfboard Galaxy							♥ {T} View with 9 mm eyepiece. Photo - use 25mm projection + reducer & wedge. 60s 6400. Close to NCP - marginal for prime wedge. Edge-on barred spiral galaxy.	20200905 9:30pm Hazy clear 8mm (24-8mm) - Barely visible. Need dark skies.
UMA		NGC 2841	9.2	Gal	Tiger's Eye Galaxy							♥ Photo only - use 25mm projection + reducer & wedge. 60s 6400-12800. Close to NCP - marginal for prime wedge.	20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - too low - haze.
UMA		M 109	9.8	Gal	Vacuum Cleaner Galaxy or Theta Galaxy							♥ {T} Photo only - use 25mm projection + reducer & wedge. 60s 6400-12800. Too close to NCP for prime wedge. Barred galaxy. Ansa Bar type (meaning it has bright concentrations on each end).	20200905 9:30pm Hazy clear 8mm (24-8mm) - Barely visible. Need dark skies. 20200915 9:00p NoBend Good Skies horizon haze (24-8) 24mm - Not visible.
UMA		M 040	9.6	SD	Winnecke 4							{T} Experiment with magnification. Double star that Messier included because previous observer thought they saw nebulosity. Messier also missed on the location so it was lost until 1966 when it was figured out which one he meant.	20200904 9:30 pm Good Skies 8mm (24-8mm) - Faint but both visible.
UMI		α Ursae Minoris	2.0	SD	Polaris							{T} Double - White - sep. 18"	20200817 9:45pm 8mm (24-8mm). Second star very faint.
VIR		NGC 4425	11.8	Gal Cluster	Center of Virgo Cluster (So. Part)							♥ {T} View with 32 mm eyepiece. Photo with prime + reducer & wedge 60s 6400. May need 25mm proj.	
VIR		M 086	8.9	Gal	in Markarian's Chain							♥ {T} View with 32 mm eyepiece. Photo with prime + reducer & wedge 30-60s 6400. May need 25mm proj. Old, elliptical, nondescript galaxy.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.

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VIR		M 084	9.1	Gal	in Markarian's Chain							♥ {T} View with 32 mm eyepiece. Photo with prime + reducer & wedge 30-60s 6400. May need 25mm proj. Giant elliptical galaxy. In M84, Hubble telescope found first strong evidence of a super massive black hole.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
VIR		M 104	8.0	Gal	Sombrero Galaxy							♥ {T} View with 9 mm eyepiece. Photo with prime wedge 30s 6400. May need 25mm proj. Edge-on spiral galaxy. Noted by Messier but not included in his catalogue. Added to list in 1921. 104-110 are all later additions of items Messier had observed.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
VIR	4	α Vir	0.95	S	Spica							♦ Blue	20210605 10:15pm Clear humid 8mm (24-8mm) - Bright blue.
VIR	66	M 049	8.4	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 30s 6400. May need 25mm proj. 72 million LY away. Elliptical galaxy.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
VIR		M 087	8.6	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 30s 6400. May need 25mm proj. Elliptical. Largest known galaxy with largest black hole. Center of both the Virgo Cluster and of neighboring clusters which includes Milky Way (which is rotating around this point - 54 mil. light years away).	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
VIR		M 060	8.8	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 30s 6400. May need 25mm proj. Elliptical gal. By NGC4647 - a spiral galaxy.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
VIR		M 090	9.5	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 30s 6400. May need 25mm proj. Spiral galaxy recently entering the Virgo Cluster.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
VIR		M 061	9.6	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 30s 6400. May need 25mm proj. Barred spiral galaxy.	20180605_11:30P Prime@3200 for 30 sec. Adequate photo.
VIR		M 059	9.6	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 30s 6400. May need 25mm proj. Elliptical galaxy. Fuzzy ellipse.	20210605 10:15pm Clear humid 8mm (24-8mm) - Just visible. Fuzzy oval.
VIR		M 058	9.7	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 60s 6400. May need 25mm proj. Spiral bar galaxy with ring in center.	
VIR		M 089	9.8	Gal								♥ {T} View with 9 mm eyepiece. Photo with prime wedge 60s 6400. May need 25mm proj. A round galaxy with no visible detail.	
VUL	70	Col 399	3.6	Asterism	Coat Hanger or Brocchi's Cluster							{T} 20x Binoculars (or 10x). On a line from Albireo to Anser then Coat Hanger. SAO 104818	20200924 8:30pm Clear skies 10x50 bin. - Easy to see. Good.
VUL	86	M 027	7.3	N-P	Dumbbell Nebula							+++ {T} View with 9 mm eyepiece. Photo - prime wedge 15s 6400. Explosion of a white dwarf (very old star) similar to the Sun.	20190904_9:00P ModerateSkies Barely dark 8mm Just visible. Try photo. 20200824 9:30pm Hazy 1st quarter moon. Good even in bad conditions. 20200903 9pm Clear 8mm (24-8mm) - Very visible but no structure. 20201004 8:30 pm Clear - Good photo with Prime and Wedge.