



The Texas Star Party - Advanced Observing Program - 2018



“Edward Emerson Barnard”

The Advanced Observing Program was initiated to educate and challenge observers to locate and observe those objects they might have considered too difficult, if not impossible, to find and/or see visually beforehand. There is no better place to push the visual limit than under the dark transparent West Texas sky. Too often observers stop at the “NGC Limit” and never try to locate objects that begin with names like *IC* or *Barnard* or unusual solar system objects like *Amalthea* or *Iapetus*, etc. Such *Name Intimidation* is nothing more than becoming overwhelmed by the seemingly exalted difficulty of the object merely due to its name. Most of the objects on this year’s list can be seen with small to average sized telescopes.

The listed objects are best located by careful and precise star-hopping. It is most imperative that the observer know *exactly* where in the field to look when the object is located, especially if some items turn out to be truly “light challenged” in their particular telescope. A few of these objects are faint and tenuous, so try various magnifications on these. By using a combination of averted and direct vision along with a degree of patience - eventually the object will be seen....Give the sky a chance and it will come to you. The standard observing rule is if you think you see the object at least three times, then you probably Really Did See It - Log it - and go on to the next object. Please refer to the handout for a star finder chart of the object, and something about the object, or something pertaining to the object.....Each has a story to tell.

This year’s advanced program is a little different in that it concentrates on an individual, Edward Emerson Barnard, the Man, the Times and the Science. Barnard was an accomplished pioneer in astrophotography and his catalog of dark nebulae, known as Barnard Object’s, were the finest photographs that had been taken of the Milky Way. Barnard perhaps was best known for his incredible eyesight and ability to discern faint detail through an eyepiece that other “gifted observers” had to photograph in order to see. As an observer he truly had no equal in his day and rarely missed a single hour of clear moonless night-sky. He was known as “the man who was never known to sleep.” His endless scouring of the heavens left an astonishing legacy of observations: of planets, satellites, comets, double stars, bright and dark nebulae and globular clusters.

Several of Barnard’s discoveries were made with a telescope as small as 5 inches, yet these objects had been passed up by other visual astronomers with much larger instruments. This years Advanced Listing of Barnard Objects puts you, the observer, in direct competition with one of the best visual observers of all time. He did it with refractors.....What can you do with your enhanced coated mirrors? There are 40 deep sky objects, plus 7 solar system objects on the observing list, and only 20 objects are required to obtain an observing pin. As always, some of these objects are easy and some will challenge even the best of you.

Barnard would have loved to understand the science of the universe that we all take for granted today. In his day anything that was not composed of stellar objects was classified as “nebulae”, which of course includes those objects we call galaxies today. As amateur astronomers, we are privileged that we get to view these objects that most people do not know even exists and very few human beings have ever visually seen. I urge you to try some of the more difficult objects, the globular clusters inside Barnard’s Galaxy, which are relatively new discoveries and have hardly been viewed by anyone. If you do not see Phobos and Deimos at the TSP, try again around August 1 when Mars will be at its maximum visual size of 24.3”. With patience and good sky conditions this list is certainly well within the range of all observers, beginner or advanced, with small or large telescopes, who desires a

TSP Advanced Observing Pin - From The One and The Only - The TEXAS STAR PARTY.

1. Any telescope may be used or any combination of telescopes.
2. Location by **Star Hopping** is Preferred - The only way to know where an object is in the heavens is to go and find it. “*Star Hop and be Educated*”. Maybe next time you can locate it without a chart, from memory - Always the Best Way.
3. An Advanced Observing Pin will be awarded to those who observe any 20 of the listed objects during TSP.
4. Observation programs from previous years may be completed for appropriate pins.
5. Observations of at least 20 objects may be turned in to Larry Mitchell anytime during the Star Party.

To those of you who only complete part of the list, but who have worked hard at it, you have successfully completed the spirit of the program. You have improved your observing skills, learned something about the night sky and hopefully enjoyed yourself....And you can always get that observing pin next year. Many people have enthusiastically stated how amazed they were at themselves - For locating and observing these objects themselves and with their own equipment.

< EXPAND YOUR OBSERVABLE LIMITS - THIS IS WHAT THE ADVANCED PROGRAM IS ALL ABOUT >

I hope you enjoy this challenge as much as I have and that it gives you a new sense of enjoyment and confidence in your abilities to successfully view – with your own eyes - Our Magnificent Universe.

***LARRY MITCHELL* : Chairman – TSP Advanced Observing Program - 2018**



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Sat. May 5 – Sun. May 13, 2018 / Observe any 20 Objects – Receive a Pin

Description	Coordinates (J2000)	Type	Const.	Mag.	Size	Class	D. LY	Urano 1
☐NGC2835	09 17 53.4 – 22 21 26	Gal	Hya	11.0(B)	6.6 x 4.3	SB(rs)c	40.8	322
☐NGC5584	14 22 23.8 – 00 23 14	Gal	Vir	12.1(P)	3.4' x 2.4'	SAB(rs)cd	74.6	242
☐NGC5824	15 03 58.5 – 33 04 04	G.C.	Lup	9.1	7.4'	--	--	373
☐IC4536	15 13 17.3 – 18 08 12	Gal	Lib	13.7(P)	2.1' x 1.7'	SB(s)dm	101.3	334
☐IC4537	15 17 32.4 + 02 05 50	Gal	Ser	15.6	0.8' x 0.3'	--	--	244
☐NGC5931, IC1122	15 29 29.6 + 07 34 23	Gal	Ser	15.0	0.9' x 0.5'	SO	--	199
☐IC4562 Group	15 35 57.0 + 43 29 39	Gal	Boo	13.6(P)	1.1'	E?	265.6	78
☐IC4603	16 25 15.0 – 24 26 00	Neb	Oph	--	28.0' x 20.0'	R	--	336
☐Rho Ophiuchus	16 25 35.2 – 23 26 50	Neb	Oph	--	80' x 72'	Triple	425	336
☐IC4617	16 42 08.1 + 36 40 59	Gal	Her	15.5	1.2' x 0.4'	--	--	114
☐NGC6240, IC4625	16 52 58.9 + 02 24 02	Gal	Oph	12.9(V)	2.5' x 1.2'	IO pec	342.3	247
☐IC4627	16 54 08.5 – 07 38 08	Gal?	Oph	14.3	48" x 22"	Unknown	--	292
☐NGC6293-N6294	17 10 10.4 – 26 34 54	G.C.	Oph	8.3	8.2'	--	--	337
☐NGC6302	17 13 44.3 – 37 06 13	P.N.	Sco	12.8(P)	85.0" x 44.0"	6	--	376
☐Barnard 68	17 22 38.0 – 23 50 12	Dk Neb	Oph	--	4.0'	--	--	338
☐NGC6354	17 24 34.7 – 38 32 30	Asterism	Sco	--	20.0"	--	--	376
☐NGC6352	17 25 29.2 – 48 25 22	G.C.	Ara	7.8	9.0'	--	--	408
☐NGC6383	17 34 39.7 – 32 34 30	O.C.	Sco	5.5	5.0'	II 3 m n	--	376
☐Barnard's Star	~17 57 47 + 04 43 05	Star	Oph	9.51(V)	Stellar	M4.0v	6.0	249
☐IC4677 (NGC6543)	17 58 15.3 + 66 38 05	PN (part)	Dra	15.7	1.0' x 0.4'	--	--	30
☐Barnard 86/N6522	18 02 58.6 – 27 52 00	Dk Neb	Sgr	--	5.0'	Ir G	--	339
☐IC4673	18 03 18.5 – 27 06 22	P.N.	Sgr	12.9(P)	15.0"	4	--	339
☐NGC6522	18 03 35.0 – 30 02 02	G.C.	Sgr	9.9	9.4'	--	--	377
☐IC4688	18 08 11.8 + 11 42 43	Gal	Oph	13.8(P)	1.4' x 1.0'	Scd	--	204
☐Barnard 90	18 10 17.4 – 28 18 00	Dk Neb	Sgr	--	3.0' x 2.0'	Ir G	--	377
☐Barnard 92	18 15 27.9 – 18 13 19	Dk Neb	Sgr	--	15.0' x 9.0'	R	--	339
☐Barnard 93	18 16 53.7 – 18 03 58	Dk Neb	Sgr	--	8.0' x 3.0'	Co G	--	339
☐NGC6590, IC4700	18 17 02.0 – 19 51 47	NEB	Sgr	--	5.6' x 3.3'	R	--	339
☐Barnard 98	18 33 18.5 – 26 01 36	Dk Neb	Sgr	--	3.0'	--	--	340
☐IC1296, Near M57	18 53 18.8 + 33 03 57	Gal	Lyr	14.8(P)	0.9' x 0.5'	SBbc	--	117
☐Barnard 133	19 06 11.1 – 06 52 30	Dk Neb	Aql	--	9.0' x 4.0'	Co G	--	296
☐NGC6818	19 43 57.8 – 14 09 10	P.N.	Sgr	9.9(P)	48.0"	4	--	297
☐NGC6822	19 44 56.5 – 14 48 11	Gal	Sgr	9.3(B)	15.6' x 13.5'	IB(s)m	1.2	297
☐Sc 6 (NGC6822)	19 45 37.0 – 14 41 10.8	G.C.		15.4v				297
☐Sc 7 (NGC6822)	19 46 00.7 – 14 32 35.0	G.C.		15.9v	7"			297
☐IC4954	20 04 54.0 + 29 11 00	Neb	Vul	--	3.0"	R	--	119
☐Beta ² Capricorni	20 20 46.5 – 14 47 06	Dbl Star	Cap	6.10	Stellar	Triple	--	298
☐IC4999	20 23 56.2 – 26 00 51	Gal	Cap	13.5	1.8' x 1.0'	SB(rs)c?	144.7	343
☐IC5005	20 25 20.1 – 25 49 42	Gal	Cap	13.6 (P)	2.5' x 1.8'	SB(s)cd	143.0	343
☐Barnard 352	20 57 11.5 + 45 50 30	Dk Neb	Cyg	--	--	--	--	85

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Solar System Objects:

- ☐ **Amalthea:** Opposition May 9 – Rises at 8:37pm, visible all night – Transit 2:06 am, Vmag. 14.28
Sidereal Period: 11h 57m 22.673s /Maximum Elongation: 59”

<u>Date</u>	<u>Max East Elongation</u>		<u>Max West Elongation</u>	
	<u>Local Time</u>	<u>Sep.</u>	<u>Local Time</u>	<u>Sep.</u>
May 5:	E - 4:50 am	56.7”	W - 10:46 pm	56.9”
May 6:	E - 4:45 am	56.7”	W - 10:40 pm	56.9”
May 7:	E - 4:39 am	56.7”	W - 10:35 pm	56.9”
May 8:	E - 4:34 am	56.7”	W - 10:29 pm	56.9”
May 9:	E - 4:28 am	56.8”	W - 10:24 pm	56.9”
May 10:	E - 4:23 am	56.8”	W - 10:18 pm	56.9”
May 11:	E - 4:17 am	56.8”	W - 10:13 pm	56.9”
May 12:	E - 4:12 am	56.8”	W - 10:07 pm	56.9”
May 13:	E - 4:06 am	56.8”	W - 10:02 pm	56.9”

- ☐ **Gegenschein** Anti-Solar Point (Hint: The Sun moves approximately 15 degrees in 1 hour)

- ☐ **Iapetus (VIII):** In Sagittarius - Maximum Eastern Elongation - May 2, Vmag. 11.4, Rises: 12:24 am

<u>Date</u>	<u>Local Time</u>	<u>Coord. J2000</u>	<u>Size</u>	<u>Mag.</u>
May 6:	3:00	18 39 00.5 – 22 16 52	0.2”	11.4
May 7:	3:00	18 38 52.1 – 22 17 05	0.2”	11.4
May 8:	3:00	18 38 42.0 – 22 17 18	0.2”	11.4
May 9:	3:00	18 38 33.4 – 22 17 30	0.2”	11.4
May 10:	3:00	18 38 23.1 – 22 17 42	0.2”	11.4
May 11:	3:00	18 38 12.2 – 22 17 54	0.2”	11.4
May 12:	3:00	18 38 00.7 – 22 18 05	0.2”	11.4

- ☐ **Jupiter: TSP - Transit and Shadow Phenomena:** Jupiter rises 8:37 pm

<u>Date</u>	<u>Local Time</u>	<u>Event</u>
May 6:	3:28 am	Io Shadow, Ingress
	3:32 am	Io Transit, Ingress
	4:33 am	Io Shadow, Mid Shadow Transit
	4:36 am	Io Transit, Mid Transit
	5:38 am	Io Shadow, Egress
	5:41 am	Io Transit, Egress
May 7:	9:56 pm	Io Shadow Ingress
	9:58 pm	Io Transit, Ingress
	11:01 pm	Io Shadow, Mid Shadow Transit
	11:02 pm	Io Transit, Mid Transit
May 8:	12:06 am	Io Shadow, Egress
	12:07 am	Io Transit, Egress

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☐ **Phobos**

Rises: 1:39 am, Transit 6:52 am, Times below between 6:00pm - 6:00 am, Vmag. 12.2

Orbital period: 7h 39m 12s - Available Viewing Times Only:

Maximum Eastern Elongation

<u>Date</u>	<u>Local time</u>	<u>Separation</u>
May 5:	E - 2:48 am	16.0"
May 10:	E - 5:16 am	16.8"
May 12:	E - 3:13 am	17.1"
May 13:	E - 2:11 am	17.3"

Maximum Western Elongation

<u>Date</u>	<u>Local Time</u>	<u>Separation</u>
May 6: -	W - 5:36 am	16.1"
May 7: -	W - 4:33 am	16.3"
May 8: -	W - 3:31 am	16.4"
May 9: -	W - 2:29 am	16.6"
May 13: -	W - 5:59 am	17.3"

☐ **Deimos**

Rises: 1:39 am, Transit 6:52 am, Times below between 6:00pm - 6:00 am, Vmag. 13.3

Orbital Period: 30h 18m - Available Viewing Times Only:

Maximum Eastern Elongation

<u>Date</u>	<u>Local Time</u>	<u>Separation</u>
May 5: -	E 2:58 am	39.7"
May 10: -	E 4:10 am	41.9"

Max West Elongation

<u>Date</u>	<u>Local Time</u>	<u>Separation</u>
May 8: -	W - 6:43 am	41.0"
May 12: -	W - 1:37 am	42.7"

☐ **Vesta**

Rises: 11:53 pm, Orbit Stationary: May 8, Orbital period 3.6 years, Motion: 3.11" / hour

Perihelion (Sun Dist.) Distance: 2.2 AU, Aphelion Dist: 2.6 AU, Earth Dist.: 1.4 AU,

May 7	18 19 26.2 – 17 40 39	6.3
May 8	18 19 28.1 – 17 41 51	6.3
May 9	18 19 27.9 – 17 43 07	6.3
May 10	18 19 25.6 – 17 44 28	6.3
May 11	18 19 21.2 – 17 45 54	6.3
May 12	18 19 14.8 – 17 47 25	6.3

Clear Skies and Good Hunting !

Larry Mitchell

**TSP Advanced Visual Observing Program
Houston Astronomical Society (HAS)**

