

CONSTELLATION

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Winter 2010

President's Message
Dwight Dulsky

Over the holidays one often hears the refrain “Have a happy New Year”, over and over again – to the point where “you too” starts to become monotonous. Among all those New Year pleasantries I received an email from an acquaintance that was somewhat different; she wished us all “interesting challenges in the year ahead”. That really struck me as a great thought to begin the year 2010.

As I look back at all the various hobbies I have had over the years, none has lasted as long as this one, nor has been so challenging. Ten years ago I bought my Orion 8” Newtonian reflector. I never thought then where this hobby would take me a decade later. Every year has presented new goals and challenges with interesting rewards. The little triumphs that come along through the years are always memorable. Those first discoveries, with your own eyes always make a deep impression on your psyche. Stargazing has to be the ultimate “hide and seek” experience.

So as we slog through these winter days and cold nights, I hope you make some challenges for the year ahead. Whether you vow to learn some new constellations, find some of those outer planets or capture that ultimate astrophoto – savor the moment and realize that new challenges lie in every corner of the universe.

Astronomy 101

In January we kicked off an idea borrowed from the Rittenhouse Astronomical Society in Philadelphia. For a half hour prior to the regular meeting (7:30 – 8:00 PM) we will be conducting a series of basic astronomy sessions geared specifically for folks new to stargazing. *[BMAA also had informative Astronomy 101 sessions before meetings about ten years ago –ed]* These sessions will be a mix of astronomical topics and practical advice on using your equipment. Here is a list of the 2010 topics we’ll be presenting at 7:30 PM:

January 6th How do telescopes work?
February 3rd How did the Universe begin? & GoTo Scopes
March 3rd Where do Stars Come From?
April 7th How did the Solar System form?
May 5th Finding your way around the night sky
June 2nd How did the Moon get way up there?
July 7th How to observe the Sun safely
August 4th Interstellar Interlopers ~ Comets, Meteors & Asteriods
September 1st Faint Fuzzies & other deep space things
October 6th Dress for success ~ Cool weather observing tips
November 3rd Astronomy Indoors (Internet Resources/Museums)

All are welcome to attend these sessions, feel free to bring along friends and neighbors.

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JANUARY DIARY OF THE ANONYMOUS STARGAZER

I know it's cold outside but all hard-core stargazers reach the point when they just have to get outside and gaze, especially when there have been so few clear nights lately. So I guess I better get prepared. Heavy socks are laid out, thick-soled shoes are ready, dress in layers to keep warm, get out my warm stocking cap and don't forget to charge the MP3 player.

So what's the target list look like tonight? Checking my current Sky and Telescope, I see Jupiter is probably too low in the west; Mars should be in a good position by around 9 pm assuming the seeing is good. Some deep sky objects should also be good targets tonight since the last quarter waning moon should not interfere.

Several days later; it was supposed to be a good night (according to the clear sky website), but clouds came in; as they did the next night and the next night and 2 nights after that. I'm beginning to wonder if I will ever get out before spring. Oh well, I'll keep trying; I'm starting to get "cabin fever" from not getting out with my scope.

Finally! It's going to be a clear night. I've had to revise my target list a little because it's a little later in the month. I'm adding 3 Messier objects which I need to add to my list. I'm trying to see how many I can get from my urban back yard. The 3 new ones I'm shooting for tonight should be in good positions relative to the first $\frac{1}{2}$ quarter moon in the western sky. I'll try for M1, a nebula in Taurus, M74, a nebula in Pisces and M78 a different type of galaxy in Orion.

Take the tripod out and level it. Check. Carry the card table out so I have someplace to put all my gear. Check. Take out the power supply and the eyepiece case. Check. Take the stool out for overhead observing. Check. Finally, take the scope out of its case (I keep it in the garage so it needs less time to equilibrate temperatures) and mount it to the tripod. Plug everything in, turn it on, check the finder alignment against Polaris, wait for the GPS to link up and align it using the easy align feature of my Celestron CPC800. I used Rigel in Orion, Sirius in Canis Major and Mars, then I checked it against the Orion Nebula. The alignment is pretty good; objects are only slightly lower and right of center; make a mental note when I'm searching for my targets.

Seeing to the south is not great; Mars at 50x to 100x magnification is not very clear so I'll stay with the deep sky targets tonight. M42, the great nebula below Orion's belt is always a visual treat. At a magnification of 50x with my 40mm eyepiece, I can clearly make out the Trapezium, the 4 stars near the center of the nebula as well as the patterns of nebulosity. Before I start on my Messier targets for the night I always enjoy viewing some clusters; I have always felt they are the true jewels of the night. Just like jewels, they're all different, and beautiful. M36, M37 and M38 are relatively close to each other. Tonight, M36 nearly fills the field of my 40mm eyepiece. Beautiful. I notice 2 equal magnitude double stars nearly in the center and sketch the pattern of stars in my notebook. M37 is almost the same size as M36 but it appears to have many more stars, they are all dimmer and it does not have the characteristic arms of "M36." M38 is even more different. It is very similar in size to the other 2 but it also does not have as many bright stars as M36. I sketched all 3 in my notebook so I can check against what I have seen before.

Now it's time for my new challenges. Hopefully my vision is sharper because of my warm-up viewing. Put in the coordinates of M1 and follow my scope as it moves to Taurus. If I can see it, it should be slightly below and right of center. Nothing there? I see a line of 3 small stars across the center, I'll check against my star atlas when I go inside. Look closely, breath deeply, use averted vision. I see it. It is very dim but clearly there. I can only make it out with averted vision. It's very difficult to make out a shape but it might be slightly irregular. Make a drawing in my notebook.

Next comes M74. Whoops. Pisces is right behind the moon so I'll try that one another night. I'll try to find M78, in Orion. It's relatively high to the south or southwest, away from the glow of Philadelphia. I put M78 into my hand-box controller and follow the scope back to Orion. Again, it should be slightly below and to the right of center using my 40mm eyepiece. I typically don't read about my targets until after I find them because I don't want to prejudice my observations. I see 2 very small objects together that could be a double star but they are very dim. Again, I need to use averted vision to see them clearly. They are where M78 should be but I see very little nebulosity. I'll draw a picture in the notebook and check it against my star atlas and the Messier list on the internet.

It is a beautiful night but my feet are starting to get cold. They always seem to be my weak link. It's time to pack everything away and take my notebook inside. I'll put the scope and everything else in the garage and put it all away in the morning. Thanks for observing with me.

Until next time, I remain your anonymous stargazer.

A postscript on the January observing session: I checked against the internet list and M78 is a double galaxy with 2 bright central cores so I believe I did find it. I will check it again next time out. So, I added 2 more Messier objects to my list.

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Tips for January

- by *Bernie Kosher*

The cold weather is upon us again. Let's all hope it's not as bad as the last few winters. A bit of cold brings the possibility of clear but turbulent skies, but snowy or frozen ground brings miserable conditions.

A quick set of winter observing tips is in order.

Keep the exposed portions of your body minimized. Wear gloves, hat, and several layers of clothes. Even a light nylon windbreaker will make a big difference, and a coverall is even better. Wear adequate foot protection with thick soled boots to prevent loss through them and use a scrap of carpet on the ground to further insulate your feet. Do not over tighten the laces of your footwear as this will cut blood circulation and your feet will numb even in relatively mild weather. Use dew heaters to prevent frost or condensation on the optics, and remember that changing temperatures will affect you mirror rather badly.

Winter skies can be superbly clear after the passage of a cold front, and after a storm has removed the moisture from the air. Even on a fairly moist night the relative humidity is low due to the temperature. This is the time of year for deep sky, and if you brave the elements, can be very rewarding. Don't count on a whole lot of precise lunar or planetary work as the air is rarely stable enough to allow really steady observing. Winter is a fine time for open clusters and galaxies, but poor for nebulae and planetaries as the Milky Way is low and we are looking away from the center.

Perhaps the best instruments for this time of year are Dobs. The light gathering power of a good sized mirror brings in many objects beyond the range of smaller scopes, plus they are easy to set up, transport and use. This can be real advantage when the conditions change quickly. If you record your observations, I recommend a small recorder. I haven't used one, and admittedly a recorder will not replace a drawing, but the convenience of not leaving the scope, not having to use lights to see the paper and the comforts of transcribing your observations the next day speak loudly in favor of the method. Ed Radomski has used a recorder for years and we all know his ability and dedication to achieve so many Herschel observations. Alan P and others draw their spottings, and this is conducive to training the eye to see faint detail, along with training the brain to perceive all that is there.

Whatever your methods, try some cold weather observing! It's really not that bad and can be very enjoyable. Recall Stella-Della this year. The temperature dropped to 20F or below during Sat-Sun night, but many of us stayed up until near dawn.

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Tips for February....

Recording your observations

- by *Bernie Kosher*

NGC NUM	HRS NUM	HR S	NOBJE ACT TYP	RA	NDE SC	CO N	MA G	LE N	WID	NGC	DESC	NOTE
205	18	V	XGAL	00 38	n	412	And	10.8	8.0	3.0	B,L,mE,vmbM	Comp to M31

So, you're out there freezing yourself and your scope. What have you seen? If you record your observations you'll be able to compare them next time, possibly with a different scope or seeing conditions; or perhaps for your own records. Many keep track for a Messier or Herschel certificate. But what is a good method? Individuality should enter the picture, but there are some basics that will help keep consistent notes from one session to the next.

What does all that drivel at the top of the page mean? In a nutshell it's a simple notation system which about covers all the bases. We'll go into it more deeply next month.

Starting at the beginning, one should note the time, seeing and transparency, type and size of scope and any outside influence (moonlight, horizon glow, clouds, drunk etc). Use Universal time or specify the local time clearly. A common system for the seeing is how stable a star image stays. On a scale of 1 to 10, 1 would be very poor, indicating the star is a swirling mass of light streaks with no diffraction rings visible in the turbulent mess; 10 would indicate perfect seeing with the rings perfectly still (some books go to 12 for absolute steadiness and no light scattered between the rings-nights like this are a fantasy-so fantasize). Seeing has little to do with transparency, which is almost always determined by haze and moisture content. A beautifully steady night is rarely also transparent, likewise a beautiful winter night with a black sky is rarely stable. Use a scale or record the faintest star readily visible in the area you are observing.

What do we need to record about the target object? Start with its designation. How bright? (magnitude is best). How big? What is the basic shape?(round, elongated, square). Is it evenly bright? Is there a sudden brightening or darkening at the center? Any resolution into stars or knots of higher brightness? Any evidence of extensions or filaments? Spiral arms etc?

Why not use the code as in the NGC shown above? This 'shorthand' is very effective. A quick explanation of the entry is in order. The New General Catalog uses Dreyers designation for a deep sky objects, whether it's a galaxy or planetary or whatever. It's designations for deep sky objects are used in most catalogs, and many of the objects can be found with an 8" scope in good skies. Quite a number can be found with much smaller, so try some and see.

Anyhow, the listing starts with the NGC number, then the Herschel number if any and then the Herschel type. It really doesn't matter whose designation you use, as long as it's from some standard source. The X in the next block means it is shown on Nortons Star atlas (my own use from an old copy). Then comes the object type, it's RA in hours and minutes, it's Declination in degrees and minutes, magnitude, length and width in minutes and then the NGC description. To decode the description is simple after a bit of use and memorization. This one means B-right, L-arge, m-uch E-xtended, v-ery m-uch b-righter M-iddle. The notes are subjective to the viewer. Perhaps an entry here would be "6 mag star about 12' north preceding". The one here means "companion galaxy to M31".

You may also want to record how you found it, whether by star hop, setting circles, accident or whatever.

By all means make a drawing of some sort. It trains the eye to see detail and is very satisfying. Avoid making drawings later. You will remember detail not there and forget other things.

This column is too long already so we'll complete the NGC description explanation next time.

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Tips for March

- by *Bernie Kosher*

Last month we started on an explanation of the NGC descriptions. Let's continue with the letters used and their meanings.

J. L. E. Dreyer composed the NGC from collections of lists from Herschel and others, using many of their descriptions and assigning numbers by right ascension. After completion two more lists were added with the designation IC for Index Catalog. These start and end twice at RA=0 so the numbering sequence is in order but continues around the sky twice.

These catalogs use the same letter descriptions as shown below....capital letters are used as main descriptors and lower case as adjectives. The separated letter(s) is the one used by the NGC.

B right	C ompressed	E longated	F aint	L arge	M iddle
N ucleus	P oor	R ound	Ri ch	S mall	
b righter	c onsiderably	diam eter	e xtremely	g radually	irr egular
l ittle	mag nitude	m uch	nebulosity	p retty	rrr=resloved
st ar	s uddenly	v ery			

np=north preceding nf=north following sp=south preceding sf=south following

Open or galactic clusters are described by letters C---F, with C being loose and irregular, and F being very rich and compact.

Globulars use Roman Numerals I---XII, with I being extremely rich and compressed to XII which is loose and sparse.

I have found these guidelines cover the range of observations very nicely. Your observation could read (B L E smbM BN) for M31. This would mean...Bright, Large, Elongated, suddenly much brighter Middle, Bright Nucleus.

You may also add lines such as the size in minutes, how you located the object etc. An entry such as (10mag st sp) would mean a 10th magnitude star south preceding; preceding meaning it came into the field before the object of interest. Add entries which help in location, such as "triangle of fairly bright stars 10' to southeast". Try reading some of the descriptions in the literature and you'll quickly become accustomed to the method.

Of course, drawings are desirable; as are voice recordings of your impressions. Do not modify your descriptions after the observation! These changes are probably subjective or imaginary.

Don't forget some of the tips for deep sky observing.....try gently nudging the scope, the object may be easier to see if the scope is moving; for extremely faint objects cover the head with a cloth or whatever to exclude all light; use a different power, going to higher powers may increase the apparent contrast; look for central stars in planetaries; look for red or deeply colored stars, also double stars as these notes may guide you to the object next time; take the time to allow your eye to become accustomed to the faintness of deep sky objects; use peripheral vision; be nice. Oops, I got carried away.

Look for other nearby objects or star groups of interest or particular beauty. A lot of the fun of observing is simple appreciation. If you record your observations and findings you can more easily show other amateurs, without having to say " I know that nice cluster of stars is right around here somewhere or the other". Not that I've ever done anything like that.

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