

THE OBSERVER

Newsletter of The Tri-State Astronomers

Volume 26, Number 1 • Hagerstown, MD • January 2010

Happy New Year - 2010!

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And MORE !!!

Do you see the "X" on the surface of the moon ? "Lunar Lunatic" Steve Berte', not only saw it, he was able to photograph it! If you still don't see it, look just above the center of the photograph, on the border between the lit and unlit portion of the cratered surface (called the "terminator"), and it should almost jump out at you !

The "Lunar Lunatic" program is open to all who would like to know more about our nearest neighbor in space, our own moon, "Luna"!

Find out more at our next meeting, January 20th, at the Brish Planetarium

Photo Credit S. Berte!

Did you have a great Holiday Season? Did you get everything you wanted for Christmas? I would love it if you would tell the rest of us what kind of goodies you received. My Son and I got a couple of accessories for our telescopes, and had a ball at the December Meeting, where we swapped some astronomy textbooks for some sky charts and other books! We also picked up an extremely nice tripod that is perfect for holding a heavier digital SLR type of camera, or binoculars, or even a smaller refracting telescope tube!

That meeting was a real fun event, and you will be able to read all about it in Rod's last minutes in his official position as Club Secretary. Thanks to both Rod, and "Deep Sky" Dan for their many years of service in their positions as Secretary, and Chairman of the club respectively, for these many years. Best wishes to the new officers, who's work you will be seeing in the months to come !

The results of the balloting will be covered in detail in the club minutes, found on Page 2

This month, TSA Member George Michael will be presenting a very interesting lecture about an Urban Legend that refuses to die ! You can catch a preview of some of his major points on Page 4 of this newsletter!

Rod's text and Andy Smetzer's fine illustration, detail the objects to be seen in "Our Friendly Skies", found on page three.

Our newly elected President, Steve Berte' brings us a technical review of the Denk "Power Switch" Filter and Eyepiece carrier.

All this, and more, in the following pages of "The Observer" !
Good reading to you ! Jim S. - Editor





Minutes - December 16 , 2009

The December 16, 2009 general membership meeting of the Tristate Astronomers was called to order at 7:35 p.m. by Chairman Dan Kaminsky with 29 members and guests present using the Outer Limits theme to set the tone for the auspicious business at hand.

The agenda for the night included the AstroPuzzler, outreach, education, and at long last, elections!

The AstroPuzzler for the night was, "Where do Periodic Comets originate?" The answer was that short period comets usually originate in the "scattered disk" which was formerly considered part of the Kuiper Belt, while long period comets usually originate in the "inner Oort Cloud." The prize was an autographed copy of Dr. Marschall's book about the solar system.

Recent outreach projects included:

*"Great Observatories Image Unveiling" at the Berkeley County Planetarium in Hedgesville High School on November 19.

*A program for the Blue Ridge Community College at the Berkeley County Planetarium which included a planetarium program and unfortunately, a clouded out observation session.

*"How to Buy a Telescope" was an article written by the TSA's own Jim Edwards for the December 6 Lifestyle section of the Hagerstown Herald Mail. Find this on the internet at:

http://www.herald-mail.com/?cmd=displaystory&story_id=235431&format=html

New, upcoming outreach projects include:

*Holiday Party and Dinner at the Fireside Restaurant on December 19. This was a change in date because of inclement weather. Socializing begins at 6 p.m. and dinner at 7 p.m. Contact Marsha Fuller.

*Telescope Clinics at the Discovery Station begin on January 16 from 10 a.m. to 2 p.m. More dates and locations will follow.

*Northern Middle School Family Science Night will be held February 19 and will include a telescope clinic, moon phase activity, and outdoor observing.

*Antietam Battlefield Star Parties are tentatively scheduled for April 16 and 17, as well as October 15 and 16.

The Observer keeps getting bigger and better thanks to editor Jim Stanicek. The current issue includes musings from Jim, information about the Hedgesville and Hagerstown Great Observatories Image Unveilings, the article "Our Friendly Skies," a tribute to the late Frank Kovac, and the November meeting minutes (always entertaining).

The Observer is FREE to everyone via the internet, and the first 23 years are available on DVD to members.

The educational portion of the meeting continued with Rod Martin's podcast "Skylights" from antpod.com. The stars and planets of the December sky were the main topics.

Jack Horkheimer's "Star Gazer" highlighted the winter solstice (December 21 at 12:47 p.m.) and the varying positions of the Sun along the western horizon. (Secretary's note: Think spring!)

The Constellation of the Month is Monoceros the Unicorn which lies within the Winter Triangle. Although made up of mostly 4th magnitude stars, many interesting objects reside within its boundaries. They include the Rosette Nebula, Rosette cluster, Cone Nebula, Christmas Tree Nebula and cluster, M50, and Hubble's Variable Nebula.

The Object of the Month is NGC2194, an 8.5 magnitude open cluster in Orion. Several members mentioned the difficulties encountered in observing it.

Reports about the **Messier Club and Lunar Club** encouraged members to observe and submit observations to the coordinators (Jim Stanicek and Steve Berte) for credit and inclusion in the newsletter.

The highlight of the meeting was "**DECISION 2009: TSA ELECTIONS.**" Gnashing of teeth, headache induced anxiety, countless pain killers, and ducking behind the seats preceded the nomination process for open seats. One member was rumored to be present, but unseen, by using the Harry Potter cloak of invisibility.

Two officers terms expire at the end of December, namely "Deep Sky" Dan Kaminsky as Chairman and Rod Martin's Secretary office.

By acclimation and unanimous consent Steve Berte was elected Chairman for the next decade, I mean three years. Donn Williams was also the unanimous choice for Secretary. Since Steve was Program Coordinator, a replacement needed to be elected so "Deep Sky" was elected to a new three year term.

Congratulations to all the new officers! Those not elected to an office need to support them with attendance, participation, and support as they work diligently to keep our club vibrant and active. Thanks and gratitude go to those leaving the TSA board for their years of service.

The Business portion of the meeting continued with present officers' reports.

*Mike Sager (Outreach) mentioned how outgoing chairman Dan embraced technology and thanked him for his time and participation.

*Steve Berte (Programs) outlined 2010 programs. They include:

January -- George Michael will discuss the Mars Opposition (Ed: see a preview on page 4)

February -- Dave Zwolak

March -- Library Night

April -- Jim Vail will discuss how to polar align almost anything

May -- Donn Williams will discuss his sky shed pod observatory

*Rod Martin (Secretary) thanked the club for its support while being secretary and wished good luck to Don Williams who was elected for the next term.

*Jim Stanicek (Newsletter) asked that if the same PowerPoint are used in the next administration that the asterisk be removed from his title!

*Steve Ott (Treasurer) was absent but is receiving dues. They are \$15 and may be in cash, check, or money order.

*Andy Smetzer (Website) was absent but has been updating the website daily. Visit it at www.tristateastronomers.org.

Under the topic of member observing, not much was done due to weather. Topics included the Geminids, observatories, image processing, and Iridium flares.

In a tearful farewell, Chairman Kaminsky adjourned his final meeting as Chairman at 9:16 p.m. The Swap Meet and refreshments followed.

Submitted by Rod Martin, acting like a secretary.



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is the monthly newsletter of the TriState Astronomers.

TSA is a nonprofit group that was established in 1985 to promote astronomy and encourage related activities to interested persons in the Maryland, Pennsylvania and West Virginia Area. Membership in the TSA costs \$15.00 annually. The group meets on the third Wednesday of the month in the planetarium of the Washington County Board of Education in Hagerstown, Maryland.

Outdoor observing sessions are often scheduled each month during the weekend of the new moon, weather permitting.

TSA OFFICERS

Steve Berte' Chairman
Donn Williams Secretary

Steve Ott Treasurer and
Membership Chairman

Andy Smetzer Publicity Dir
and Webmaster

Dan Kaminsky . . . Program Coord.
Jim Stanicek . . . Newsletter Editor
Mike Sager . . . Outreach & NSN

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Our Friendly Skies - January 2010 - Rod Martin - Art by Andy Smetzer

Visible Evening Planets

JUPITER is the bright evening planet low in the southwest. MARS enters the evening sky as Jupiter sets.

Visible Morning Planets

SATURN rises before midnight and is high in the morning sky. MERCURY is visible in the east before sunrise early in the month. For more information about the visible evening planets and nighttime sky, download the planetarium's podcast "Skylights" from antpod.com.

SOLAR SYSTEM

Mars is smaller than the Earth, farther from the Sun than the Earth, but seems to be the most hospitable planet to explore. There has always been something special about the Red Planet. Science fiction authors have surmised about Martians. Its surface is rocky and desert like. It also seems like a place where life could have existed.

Mars's orbit is larger than the Earth's orbit, so their movements seem to be similar to two cars on a racetrack. The Earth is on the inside and catches up to and passes Mars on its outer lane path. The Earth catches Mars about every 26 months. That is the best time to observe the Red Planet.

When Mars is directly opposite the Sun in our sky, opposition occurs. Mars is visible almost all night and is closest to the Earth, thereby providing our best views of the small planet. At opposition the polar ice caps, plains, and other features may be visible. It also is brightest. Mars reaches opposition on January 29. It brightens from about -1 to -1.3 magnitude. This isn't the best possible opposition, but this will provide the best observational opportunity until 2014. Watch Mars move backwards or retrograde from Leo the Lion into Cancer the Crab. The other evening planet is Jupiter. We have been following it for several months, but alas, all good things must come to an end. This month it is in the southwest, but sets earlier each night. By the end of January, Jupiter will be setting during late twilight. Check out the giant planet while you can! It is brighter than any star at -2 magnitude, but getting lower and lower.

Saturn now rises during the evening, but late enough that it is still best seen in the morning. Early in January, Saturn rises around 11:30 p.m., but by 9:30 late in the month. It is in Virgo and a little over halfway up in the sky when highest in the south. At slightly brighter than +1 magnitude, Saturn will brighten since we are now seeing its ring system open slightly to our view.

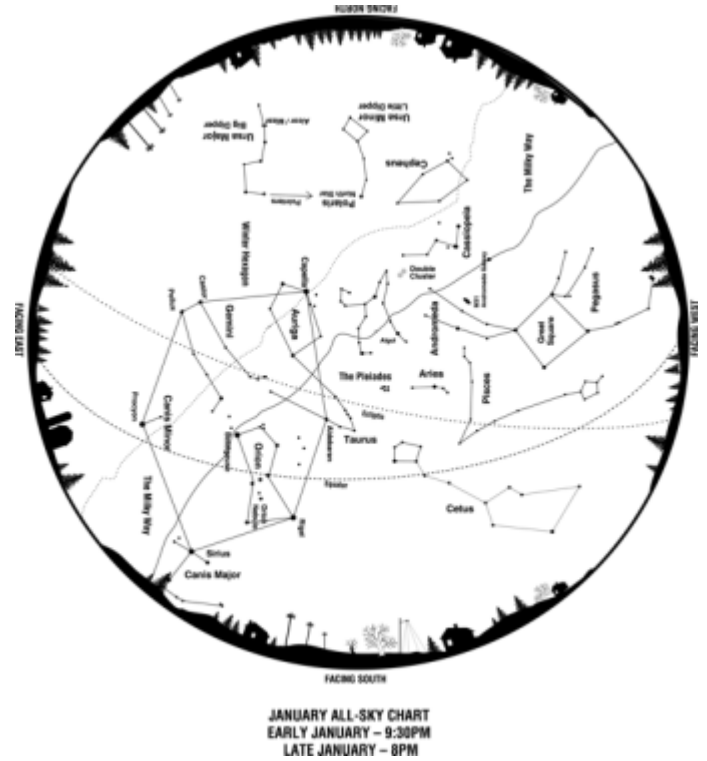
Mercury reaches inferior conjunction on January 4. That is when it passes between the Earth and Sun. It will emerge into our morning sky around mid-month and put on a fairly impressive appearance. Look for the bright "star" in the east about a half hour before sunrise the last couple weeks of January.

Venus reaches superior conjunction when it passes behind the Sun on January 11. It will not be visible this month.

SUN AND MOON

Since we have passed the winter solstice, we now have more nighttime than daylight, but the nighttime is now beginning to shorten while daylight increases.

One of the strange things about astronomy is the seasonal shift. It would make sense that the reason that it is cold in the winter is because we are farther from the Sun. That's not true. Our seasons are caused by the tilt of the Earth on its axis and the annual voyage around the Sun. A paradox is that we are actually CLOSER to the Sun in January than in July. We are colder because the Sun's angle is lower.



On January 1, the Sun rises at 7:32, sets at 4:57 for 9 hours and 25 minutes of daylight. By January 31, the Sun rises at 7:20, sets at 5:30 for 10 hours and 10 minutes of daylight.

The Sun enters the astronomic boundaries of Capricorn from Sagittarius on January 19.

The moon reaches last quarter on January 7, new on January 15, first quarter on January 23, and full on January 30.

There will be an annular solar eclipse on January 15, but will not be visible to us.

BRISH PLANETARIUM

The current public program is "Bad Astronomy." The program will be presented on Tuesdays from January 12 through February 23 at 7 p.m. "Bad Astronomy" tries to debunk myths and misconceptions about flying saucers, moon landings, and more!

Programs are held Tuesday evenings at 7 p.m. when schools are in session, unless noted otherwise. If schools are closed all day or dismissed early due to inclement weather, that night's program is cancelled.

Admission fees are \$3 for adults, \$2 for children and students, and senior citizens with a WCPS gold card are free.

The Tristate Astronomers meet monthly in the planetarium. For more information and schedules for the club, go to <http://www.tristateastronomers.org>.

The planetarium is located at the Central Offices of the Washington County Public Schools on Commonwealth Avenue off Frederick Street in Hagerstown. The planetarium's website is:

http://www.wcboe.k12.md.us/content/d_i_planet.cfm

The phone number is 301-766-2898.

An Urban Legend That Refuses to Die, Mars, As Big As The Moon! By TSA Member, George Michael

Have you seen the power point slide show sent out on the internet each summer in recent years about the very large Mars that will be arriving in August? The presentation has pictures which suggest that Mars will even be bigger than the Moon! This bogus assertion, like a lot of information on the internet, has a life of its own.

I always reply to the folks that send me these types of articles that it is not true and is based on something that happened back in August 2003. We obviously need a lot of Astronomy education. This urban legend will be making the rounds again this coming August so be prepared.

Actually, if you have been observing Mars in recent weeks, you can see that it is in fact getting bigger and brighter as we catch up to it. Right now (January 2010), Mars appears to be heading "backwards" (retrograde) compared to its background stars, an illusion which is caused by the fact that we are passing it. In February, Mars will pass M44 (The Beehive Cluster) heading west and then in April, will pass M44 again heading east. This will be a nice binocular view on both occasions.

Mars will be at opposition on January 29. That is the point, of course, when Earth passes between Mars and the Sun meaning that these two celestial bodies (Sun/Mars) are directly opposite to us in our view from Earth. Like a Full Moon, Mars will be rising in the east just as the Sun is setting in the west.

Opposition is the best time for viewing another planet because that is when the planet is closest to the Earth and appears larger and brighter than normal. However, this opposition of Mars will not be as good as the last opposition and decidedly worse than the all time great opposition in 2003. In fact, the next two oppositions are about as "bad" as it gets. The chart below shows the distances of Mars from Earth at opposition from 2003 until 2018.

The distance variations are based on the variations of the orbits of Mars and Earth. In its orbit right now, Mars is approaching its aphelion or furthest distance from the Sun. Meanwhile, Earth is just past our perihelion or closet approach to the Sun. In other words, even though we are closing in on Mars as we catch up to it, Mars is drifting away from the Sun in its orbit at the same time we are moving closer to the Sun. These two factors account for the gulf of 61.7 million miles for this opposition, an incredible 78% increase in our distance from Mars compared to August 2003.

Mars' orbit is more eccentric than Earth's. That is, its elliptical shape is more pronounced. Earth's orbit varies 3.4% between perihelion and aphelion. Mars' orbit varies by 18.6% between its two extremes making it over five times more eccentric than Earth's.

Even though we are approaching Mars, our closest approach is limited by the fact that Mars is getting further from the Sun. The next time we pass Mars, which will be in 2 years plus five weeks, we will have made two orbits around the Sun to just one orbit for Mars. Mars will be further along in its orbit by then, just past its aphelion, leaving it a nasty 62.6 million miles from Earth, about as "bad" as it ever gets. However, things improve each successive revolution so that 2018's opposition will be a really good one.

One final thing in looking at the chart below, is to notice the time span between each opposition. From 2003 to 2005, the oppositions were 2 years, 71 days apart. From then to the December 24, 2007 opposition was 2 years, 47 days. From 2007 to the current opposition is 2 years, 36 days. From the one this month to the one on March 3, 2012 will take 2 years, 33 days. By comparison, the opposition period from 2018 to 2020 will take 2 years, 78 days.

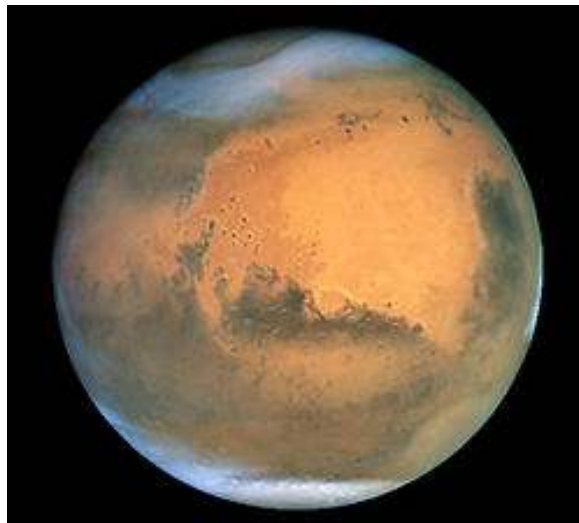
This variation is explained by Kepler's 2nd law of planetary motion. When Mars is near perihelion (2003, 2005, 2016, 2018), it is travelling faster. At this phase of its orbit, Earth struggles to catch up and therefore takes longer to "lap" its rival. The time between successive oppositions can be 40 to 50 days longer when compared to Mars' aphelion phases (2010, 2012, 2014) at its reduced velocity.

So get out there and see Mars this month. It's a better view than it has been for the last two years. Great views are coming in 2018 and 2020. But don't ever let someone tell you that Mars will appear to be larger than the Moon!

Date of Opposition	Distance from Earth in miles
Aug. 28, 2003	34.6 million
Nov. 7, 2005	43.1 million
Dec. 24, 2007	54.8 million
Jan. 29, 2010	61.7 million
Mar. 3, 2012	62.6 million
Apr. 8, 2014	57.4 million
May 22, 2016	46.8 million
July 27, 2018	35.8 million

Mars, as seen by the Hubble Space Telescope during a recent opposition. Note the blurring of surface features, due to a dust storm on the planet! In a typical Amateur Astronomer's telescope, the planet will appear to be somewhat smaller than the disk of Jupiter, and some surface details will be visible, although not as clearly as seen in this view.

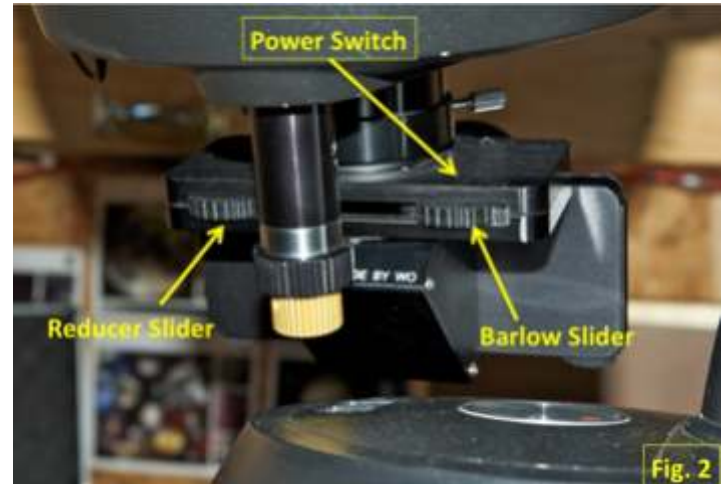
Photo Credit: Nasa-Hubble Imaging Team



This month I'd like to tell you about a great device that really makes observing easy and efficient. It's the Denkmeier S-1 Power Switch/Filter Slide from Denkmeier Optical, Inc. (<http://deepskybinoviewer.com/index.cfm>). This device, with optics by Williams Optics, rolls 4 devices into one: 1) star diagonal; 2) 2x Barlow; 3) 0.63 focal reducer; 4) filter slide (Figure 1). You may be familiar with Denkmeier's other products that involve binocular viewers. You can get a binoviewer with all the capability of the S-1, but part of my purpose in getting the Denk was to spend less money on eyepieces so I chose not to have to invest in duplicate eyepieces when I do buy them. After all, good eyepieces are expensive enough as it is! I got the so-called "Shorty" version of the Power Switch that is designed to work with SCT telescopes and offers the shortest extension possible from the back of the OTA. Power switches that work with refractors are also available.



So what's so great about the Denk Power Switch? Basically, it turns any eyepiece you own into three. For example, I put my Meade Series 5000 SWA 24mm eyepiece in my NexStar 8SE and get a magnification of 85x and a FOV of 48 minutes. But I really need a larger FOV for some deep sky searching and getting larger objects in view. On an SCT, that would normally involve unscrewing the diagonal and visual back, threading on a focal reducer, reattaching the visual back and diagonal and then observing. Reverse the process to go back to normal magnification. Needless to say, I found I seldom used my Celestron focal reducer. With the Denk, all I need do is slide a focal reducer lens built into the device into place, refocus, and I've got 53x mag in a 76 min FOV, which makes observing the Double Cluster a piece of cake (Figure 2)! And I haven't changed my eyepiece once.



OK, so now I'm tooling along and find I want get some more magnification on say, M13- The Great Hercules Star Cluster. In the past, I would have had to reverse the whole focal reducer process to remove it, remove the eyepiece, insert a Barlow lens in the diagonal eyepiece holder and refocus. With the Denk, I just slide out the reducer lens and slide in the 2x Barlow lens from the opposite side of the device, refocus, and BAM! I'm looking at M13 at 169x in a 24 min FOV. It really doesn't get much simpler and I've just effectively used 3 different eyepieces without ever having to change one. The upshot is that I find I change eyepieces less frequently and use my available FOV/mag options a lot more with a final result that I get a lot more enjoyment out of viewing. Because I don't hesitate to change the optics to exactly suit my needs (it's so easy to do) I find I make better, more detailed observations.

MARK YOUR CALENDARS! MESSIER MARATHON

COMING UP IN MARCH! MORE AT THE NEXT MEETING,

JANUARY 20TH AT THE BRISH PLANETARIUM

Now let's consider filters. Suppose I'm hunting planetary nebulae and land on the Dumbbell Nebula. It looks pretty bright, but I can't quite see the narrowing in the center which gives M27 its name and to some makes the nebula look like an hour glass. I know either a light pollution (e.g., LP-2) or Oxygen III (O-III) filter will enhance the view, but which one will work best on this target? The answer used to involve observing the object in visible light, removing the eyepiece, screwing in an LP-2 filter, reinserting the eyepiece, observing, going through all the steps to remove the filter and repeating the process ending with an O-III filter in place. Then I'd spend some time deciding which filter really worked best because a significant amount of time had elapsed between viewing with the one then the other. With the Denk, I preload the LP-2 and O-III filters in the Filter Slide cartridges before I begin observing (Figure 3). Then I make my observation in visible light, slide in the LP-2, observe, slide in the O-III as I slide out the LP-2 and check the view in the second filter in about 1 second after seeing it in the first. Want to compare views? I just slide the filters back and forth and settle on the one I like (Figure 4). And all this without touching the eyepiece or threading anything! Doing lunar or planetary work and want to try some color filters to enhance features? Just replace the nebula filters with the colored filters you want and you can again make multiple comparisons



Fig. 3

The bottom line is the Denk Power Switch/Filter Slide was worth every penny I paid for it. I initially purchased just the Power Switch (\$389) as I had a Lumicon filter slide (see the May09 issue of The Observer for a review of that device) and used it on the switch. That worked fine, but it was just a bit more complex and bulky a setup. So I saved my money and sent my Power Switch back to Denkmeier where they upgraded it by adding the filter slide (\$189). That may sound like a lot of money, and of course it is, but think of what you're getting. My observing sessions are more effective and efficient because I always have optimal viewing setups. That's due to the fact I never hesitate to try magnifying or reducing the view because it is so easy to do. But the big advantage is that if I didn't pay for the Denk, I probably would have sunk the same amount or more money in some additional eyepieces over time. As it stands now I own 3 quality eyepieces from the Meade Series 5000 line: SWA 24mm and 16mm and UWA 6.7mm eyepieces. Couple those three with the Denk (regular, Barlow, Reduced) and I effectively have 9 high quality eyepieces: 24, 12, and 38mm; 16, 8, and 25mm; 6.7, 3.8, and 11mm. The only combination in either my CPC 1100 or NexStar 8SE that exceeds my scopes' theoretical magnification limits is the Barlowed 6.7mm lens. However, that's still a great deal and if I ever did decide to buy another eyepiece, I'd be getting a 3 for 1 deal! However, I've had my Denk for about a year now and find I feel no need to buy another eyepiece.



Fig. 4

Here's a few more technical specs for you. The Denk comes with a 2" star diagonal and a built in 1.25" eyepiece adapter, so no matter what size your eyepieces are, they'll fit in the Denk. It comes with two 2" filter cartridges and 1.25" inserts so any filter you have will fit them. If you're primarily a deep sky observer, those two cartridges for a couple of nebula filters may be all you'll ever need. But if you do planetary/lunar work, you may want to invest in 2-4 additional cartridges so you can load up a variety of colored filters to speed up filter changes while observing

Clear Skies!