

# The View From Arunah

Arunah Hill Natural Science Center

Winter 2005

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**A Recent Visit by the Smith College Astronomy Department Students  
(picture taken in front of the Gaertner Refractor)**

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# Inside This Issue

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### Spring 2005 Arunah Hill Calendar:

Jan- Feb-March

Activities at Arunah Hill and a map with directions  
to Arunah Hill are on the back of the calendar.

Stick it up on your refrigerator.

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### Front Cover:

Photo of one of the recent visits by the Smith College Astronomy Department students in front of the Gaertner refractor

## A Note from the Treasurer

I don't know if you noticed it, but there is something new on the mailing label. We added the date that your membership expires. So please check it (1/2005 means that your membership expires at the end of January 2005). If the date on your mailing label indicates that your membership has expired, this will be the last issue of "The View from Arunah" that you will receive unless we hear from you. We value you as a member but if you don't value us we can't continue to bring you the benefits of membership in the Arunah Hill Natural Science Center. So, if this applies to you, act now before you forget, and renew your membership!

Thank you,  
Peter Scherff

## Volunteer Help Needed for the Boy Scouts / Arunah Hill Klondike Derby.

**To be held at the Hill on Feb 12.**

We already have a couple of people to run science stations but are still looking for 2 or 3 more people to work at stations at trail intersections. These stations will consist of a science demonstration of your choice. The volunteers would man the station for the duration of the day while the scout sled teams move through the trails from station to station. Those volunteering can pick the science subject they would demonstrate. We are expecting 100 or more scouts to attend. ***Please contact Bruce Blanchard at 413-774-7373 for more information on the event.***

## The Editor's Desk

by Steve Pielock

### Seasons Greeting!

Winter 2005 may have just started but now is the time to sit next to a warm fire and take a look at what Arunah Hill events are coming up in 2005. You can also go on line at [www.arunah.org](http://www.arunah.org) to see the full upcoming year. Please also take a look at the Boy Scouts' Klondike Derby announcement on the page facing this one.

I would also like to take a moment to thank Barlow Bob once again for providing us with a complete look at all the Eastern area events. Check it out on page 4. If I know Bob, he will be at many of these events showing off the Sun's surface to the masses!

Thank you,

Steve

### **5A Trip to the Boston Museum of Science**

*All are welcome from the ENTIRE Astronomy Association (5A's, Arunah, Springfield Stars etc.)*

**Bring your family and friends!!!!**

**What:** One-Day bus trip to the Boston Museum of Science.

**When:** Saturday, March 5, 2005 (Depart Amherst at 6:30 AM, return for 8-8:30 PM).

**To Do:** Enjoy a show on current astronomical events in the Hayden Planetarium. See an immersive science-related show on the 7 story Dome of the Imax Theatre. Spend the rest of the time exploring the museum's exhibits.

#### **How Much:**

With the minimum of 30 people going: \$42 per adult, \$39 per senior, \$25 per child

With the maximum of 57 people going: \$31 per adult, \$28 per senior, \$14 per child

THIS INCLUDES ALL TICKETS AND BUS, you will need to bring or purchase your OWN lunch at the cafeteria in the museum. For more info on the web: <http://amastro.ecsdom.com/> or contact Tom Whitney at: 413-256-6234

### How to Submit Material to *The View from Arunah*

*The View from Arunah* welcomes material submitted by guest contributors. The strength of this publication is its writers and photographers, so we are always on the lookout for new contributors. If you have an idea that you think might make a good article, or if you are an astrophotographer who would like others to enjoy your work, then please consider contacting us. Our staff will be happy to provide any assistance that you might need to get your work published in *The View From Arunah*.

To submit articles, photographs, or drawings, please send to them to: Steve Pielock, 132 Sand Gully Rd, So. Deerfield MA 01373. Materials submitted via electronic mail should be sent to "pielock@pielock.com". Comments and criticisms are always welcome. Letters to the Editor or any of the section editors are also welcome.

### The Editorial Staff of *The View From Arunah*

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**Astronomy Association:**

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**Barlow Bob's Corner:** Barlow Bob

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**Bill Naff**

**Rose Naff**

**Bruce Blanchard**

**Peter Scherff**

**Jim Downing**

**Janice Kachavos**

## Barlow Bob's Schedule of 2005 Eastern Events

**APRIL 8 - 10 DELMARVA STAR  
PARTY**  
TUCKAHOE STATE PARK,  
MARYLAND  
<http://www.delmarvastargazers.org>

**APRIL 16 - 17 NEAF**  
SUFFERN, NEW YORK  
[http://www.rocklandastronomy.com/  
neaf/](http://www.rocklandastronomy.com/neaf/)

**JUNE 3 - 5 JERSEY STARQUEST  
STAR PARTY**  
HOPE, NEW JERSEY  
<http://www.princetonastronomy.org>

**JUNE 2 - 6 CHERRY SPRINGS  
STAR PARTY**  
CHERRY SPRINGS PARK, PA  
[http://www.astrohbg.org/public\\_observing.php](http://www.astrohbg.org/public_observing.php)

**JUNE 11 STARCONN**  
WESLEYAN UNIVERSITY,  
MIDDLETOWN, CT  
<http://www.asgh.org/>

**JULY 8 - 9 ROCHESTER FEST**  
ROCHESTER, NY  
[frankbov@rochester.rr.com](mailto:frankbov@rochester.rr.com)  
<http://www.rochesterastronomy.com>

**JULY 6 - 10 MASON DIXON STAR  
PARTY**  
SHREVEPORT AIRPORT /  
FOOTLIGHT RANCH  
YORK COUNTY, PA  
<http://www.masondixonstarparty.org/>

**JULY 29 - AUG 7 ROCKLAND  
SUMMER STAR PARTY**  
SAVOY, MASSACHUSETTES  
<http://www.rocklandastronomy.com/>

**AUGUST 5 - 6 STELLAFANE**  
SPRINGFIELD, VT  
<http://www.stellafane.com>

**AUGUST 26 - 28 THE CONJUNCTION**  
NORTHFIELD, MA  
<http://www.philharrington.net/astroconjunction/>

**SEPT 9 -11 BLACK FOREST STAR  
PARTY**  
CHERRY SPRINGS STATE PARK,  
PENNSYLVANIA  
<http://www.bfsp.org/starparty/index.cfm>

**SEPT 9 -11 CONNECTICUT STAR  
PARTY**  
MARLBOROUGH, CONNECTICUT  
<http://www.asnh.org/>

**SEPT 30 - OCT 2 DELMARVA STAR  
PARTY**  
TUCKAHOE STATE PARK,  
MARYLAND  
<http://www.delmarvastargazers.org>

**SEPT 2 - 4 ARUNAH HILL DAYS**  
CUMMINGTON, MA  
<http://www.arunah.org/calendar.htm>

**OCT 7 - 8 ASTRO ASSEMBLY**  
SKYSCRAPERS, INC  
AMATEUR ASTRONOMICAL SOCIETY  
OF RHODE ISLAND  
<http://www.theskyscrapers.org/>

## DEEP SKY TREASURES

THE OBSERVER'S NOTEBOOK

### A Romp Around Orion

By John Davis

Each year as the holiday season approaches, the frigid chill of winter slowly advances every day, tightening its grip upon the Northeast. Darkness falls early in the rapidly fading twilight of the Solstice season. Looking toward the East an array of bright luminaries appears, soon to dominate our winter sky. A sure sign of approaching winter is the unmistakable figure of the great hunter Orion low in the Southeast climbing steeply “uphill” into the sky, his three “belt stars” vertically positioned above the horizon. In mythology Orion figures in a number of diverse and often contradictory stories. Some tell of his hunting exploits, slaying predatory, wild and savage beasts. In one episode he is blinded, victim of an enemy’s act of vengeance, but finally has his sight miraculously restored. Other stories have him in various amorous escapades, like chasing the fabled Seven Sisters, the Pleiades, or becoming involved in an affair with the great huntress Artemis (or Diana) who, in one story, while he swims in the ocean, accidentally shoots and kills Orion with her bow and arrow. Another version has Orion’s demise accomplished by the sting of the Scorpion. Regardless of which story of Orion you prefer, the mere sight of this magnificent constellation creates a “stirring of the blood” to quote the words of Garrett Serviss, noted author and well-known popularizer of astronomy of a century ago.

Each winter quite naturally most observers will be focusing in on Orion’s great celestial treasure, considered by many the most glorious object in the heavens, M-42 the Great Orion Nebula, and we will be going there very shortly. Since this great showpiece nebula commands so much attention during our winter observing as we soak in its splendor, we then often move on to other beautiful clusters and nebulae in neighboring constellations. Now however, rather than do this, we’ll look into what else we can find in Orion, and briefly highlight some of the constellation’s other deep sky treasures with a quick tour around the area to locate objects you may discover are well worth the effort to seek out!

Our first stop will be near the northwest corner of the constellation, in Orion’s “Lion Skin” chain of stars where we’ll find a neat little cluster of well over a dozen members, designated **NGC-1662**, glowing at mag. 6.4 NW and NNW of the 4<sup>th</sup> mag. stars pi-1 and pi-2 in the chain. Years ago, while scanning the area one evening with binoculars, a friend and I suspected this unresolved 20’ glowing patch might just possibly be a comet.

Another little open cluster in the vicinity is **Dolidze 17**, one degree NW of 2<sup>nd</sup> mag.  $\gamma$  Ori., Bellatrix, marking the left shoulder. Visible with binoculars, it’s a coarse scattering of up to 20 stars, with a half dozen of the brighter ones framing the group in a “boxy” figure. While in this area be sure to check out 3<sup>rd</sup> mag.  $\lambda$  Orionis, Meissa, marking Orion’s head and its neighbors phi-1 and phi-2 forming a pretty triangle with a little vertical chain of three 6<sup>th</sup>-7<sup>th</sup> mag. stars inside! These, along with a number of fainter ones make up the cluster **Collinder 69**.

Undoubtedly the most striking and identifiable feature of Orion is the trio of his three “belt stars”: At the W end, mag. 2.2 **Mintaka ( $\delta$ )**, mag. 1.7 **Alnilam ( $\epsilon$ )** and mag. 1.7 **Alnitak ( $\zeta$ )** on the E end, all three of nearly the same brightness and equally spaced in a straight row. These brilliant blue-white O and B stars called “**The Three Kings**” in many Latin countries lie in a beautiful star spangled area where a glorious array of stars and faint reflection nebulae decorate the scene. For example, starting at Mintaka on the W end, you can trace with binoculars a curving chain of stars winding first N, then curving S between Mintaka and the middle star Alnilam, back W, then S and swinging back up E and N to form a large and graceful letter “S” superimposed over a beautiful rich star field. This “Belt” area is designated **Collinder 70**. Look again closely with good binoculars at Mintaka. It’s a binocular double, its 6<sup>th</sup> mag. companion just 53 arc seconds away.

From Mintaka we’ll swing now 7° WSW to a spot just 2° N of 3<sup>rd</sup> mag.  $\beta$  Eridani, Cursa, a star situated 3 ½ ° NW of 0 mag. Rigel. With scopes of 10" or more you should find the reflection nebula **NGC-1788**. This subtle little gem is wreathed around a pair of 10<sup>th</sup> mag. stars. Now we’ll hop over the boundary into Eridanus near Rigel in Orion to look for an intriguing, but difficult target. We’ll be attempting to discern **IC-2118**, the elusive “**Witch Head**” reflection nebula. This “challenge object”, illuminated by Rigel’s intense radiation is elongated NNE-SSW stretching across 2 ½ ° of sky just over 2° WNW of Rigel, its N edge just 1° S of Cursa ( $\beta$  Eri). Its brightest part is just E of 5<sup>th</sup> mag.  $\psi$  (psi) Eridani. Under ideal transparent conditions you might just catch it using a low power, wide field eyepiece in a 12" or larger scope. Strange as it may seem, the “Witch Head” has actually been observed with good binoculars!

As we hop back into Orion be sure to check out brilliant **Rigel**. This blazing mag. 0.1 B8 supergiant is a beautiful double, its mag 6.8 B5 companion, also blue-white, glowing in the glare with just 9.5 arc seconds of separation. Now we’ll swing ENE to a spot just under 1°

SSE of 3<sup>rd</sup> mag. ι (iota) Ori, the bright “bottom” star of Orion’s sword. Here we’ll find another reflection nebula, **NGC-1999** shining in a circular glow around a 9<sup>th</sup> mag. star, somewhat reminiscent of a wispy planetary nebula. Just to the north, the star Iota itself is the center of a very interesting gathering of nebulosity and multiple stars carrying the designation **NGC-1980**. Iota is a nice triple accentuating a populated field of up to 30 stars wreathed in nebulosity that appears upon close inspection to be a southern extension of **M-42**, the **Great Orion Nebula**, with which it indeed shares the scenery in a glorious low power rich field telescopic view! And what can we say about Orion’s grand prize deep sky treasure **M-42-M-43**? This great nebula spanning over 30 light years of space at a distance of about 1600 light years has so much going for it that we’ll take an “in depth” look at it in a future column. For now we’ll just remind ourselves that we are looking at one of the largest and closest star production factories – or “Stellar Nurseries” if you will, in the entire galaxy. Within this great molecular cloud at this very moment new stars (or “proto stars”) are in the process of forming, as evidenced by views acquired by the Hubble Telescope. While considering this, take the time to gaze and appreciate the many loops and swirls of nebulosity. You might, with 12" and larger scopes even detect a hint of color: aqua-greens and possibly pinks in part of the swirls. Notice the dark gap-called the “fish mouth”-intruding into the brightest central portions of the nebula. In the bright area adjacent to the “fish mouth” be sure to study the four stars of Theta-1 or the “Trapezium” group. You might even be able to pick out additional 5<sup>th</sup> and 6<sup>th</sup> components in the trapezium faintly gleaming at 11<sup>th</sup> magnitude. Nearby, to the N of the ‘fish mouth’ notice the reverse “comma” shape of the **M-43** nebula component. Now we’ll shift less than half a degree to the N of M-43 to find a pair of 4<sup>th</sup> and 5<sup>th</sup> mag. stars: 42 and 45 Orionis. Though you’ll not see the dazzling luminance of M-42, a careful telescopic examination of 42 and 45 and two slightly fainter stars a little to the N will reveal they are wreathed in beautiful reflection nebulosity with a concave dark edge on the south side of the wider, brighter southern portion. This nebulosity is labeled **NGC-1973**, **NGC-1975** (northern patches) and **NGC-1977** (southern portion). Now, jumping less than half a degree N again, the bright open cluster **NGC-1981** slides into view, a rather coarse arrangement of some 30 or more (many faint) stars across a 25' field.

Sliding now away from NGC-1981 and Orion’s sword just 2° NNE will land us less than 1° SW of bright, 2<sup>nd</sup> mag. Alnitak, ζ (zeta) Ori and right on top of one of the finest multiple stars in the winter sky, the beautiful quadruple star **Sigma Orionis**, its mag. 3.8 primary flanked by mags. 6.5, 7.5 and 10.3 components, all blue

white, separated from the primary by 11", 13" and 42" and all in a crooked line running ENE-WSW. Some observers see varying colors in Sigma’s components. In the same field to the NW is **Struve 761**, another multiple system.

The next object, lying immediately to the E of Alnitak (ζ Ori), the eastern “belt” star, is a beauty! It’s the fascinating emission nebula **NGC-2024**, more commonly referred to as “**The Flame Nebula**” owing to its fiery appearance in photographs. It actually has a shape 30' across, closely resembling a maple leaf. A prominent broad dark lane runs N-S through its feathery pattern, all of which can be seen along with other detail much more clearly when you place the dazzling adjacent zeta Ori.(Alnitak) out of your field of view! Just about 15' due S of the Flame Nebula you’ll find the reflection nebula **NGC-2023**, its dim glow enveloping an 8<sup>th</sup> mag.star.



Photo of the Orion area, including Barnard’s Loop (Sh 2-276).

One of the most formidable challenges you'll find in visual observing is being able to glimpse the famous but very elusive "**Horsehead Nebula**" (**Barnard 33**) a dark notch shaped like the chess piece located half a degree S of Zeta and 15' SW of NGC-2023. It forms a dark 6' x 4' silhouette intruding into the eastern part of the very faint glow of **IC-434**, a thin diaphanous wisp of nebulosity stretching N-S across a degree of sky immediately to the S of Zeta. You should be successful seeing it if you use a Hydrogen Beta filter in larger (12"-20") apertures, provided you have a very dark, transparent sky and observe it at or near culmination. I have glimpsed the "Horsehead Nebula" with a 12 ½ " scope using an H-Beta filter at Arunah Hill. An even more difficult challenge could very well be glimpsing the elusive glow of **Barnard's Loop (Sh 2-276)**, an extremely faint streak of emission nebulosity tracing a N-S oriented arc 8 degrees long situated roughly 4 degrees east of Orion's belt. Possibly the remnants of a long forgotten supernova, this great arc often shows up on photographs, but is extremely difficult to see visually. The late Walter Scott Houston and several others have observed it visually under excellent conditions by viewing through a Lumicon UHC or O-III filter held over the naked eye.

We'll find a much easier object now by moving back W to a spot just 2 ½° NNE of δ Ori, Alnitak where we'll see the bright reflection nebula, **M-78**, easily spotted with good binoculars in a dark sky. Its wispy glow, wrapping around two 10<sup>th</sup> mag. stars gives it an eerie, ghost-like appearance. Glowing much more faintly around a 10<sup>th</sup> mag. star just 15' NNE is the reflection nebula **NGC-2071**. Two other very faint patches of reflection nebulosity quite close by (SW and WNW) are **NGC-2064** and **NGC-2067**. Now we'll jump N to bright ruddy Betelgeuse, and from there slide our finder scope just over 3 ½° NW on a line from Betelgeuse directly toward 3<sup>rd</sup> mag. Meissa (λ Ori) at which point we should spot the small round 12<sup>th</sup> mag. glow of **NGC-2022**, a fine little planetary nebula 18" x 20" across. Two 8<sup>th</sup> mag. stars, both less than half a degree to the WNW point back to it. From Betelgeuse again, we'll now slide NE through 4<sup>th</sup> mag. mu (μ) Orionis some 7° to a point 1½° SSE of mag. 4.5 ξ (xi) Ori (in the area of Orion's right arm and raised club). Here we'll find **NGC-2194**, a rich, densely packed little 8<sup>th</sup> mag. open cluster of well over 50 stars 10' across. This fine aggregation is especially attractive in apertures of 10" and up. In sharp contrast just under 2° NW from NGC-2194 lies the coarse and bright open cluster **NGC-2169**, 7' across and shining at mag. 5.9. It forms a neat symmetrical triangle with xi and nu Ori, both 4<sup>th</sup> mag. stars just over a degree apart in the upraised club-wielding right arm. This unusual cluster has a very unique feature. Among the coarse arrangement of over 30

member stars, is a remarkable grouping spelling out the numerals "37", upside-down in most eyepieces, but very obvious almost immediately upon viewing the cluster!

Finally we move N again to the stars Chi-1 and Chi-2 (χ-1+2) at the tip of Orion's upraised club. Mag. 4.5 χ-2 and its neighbor just under ½ a degree to the S, the 5<sup>th</sup> mag. star 64 serve as guideposts to our last attraction, the fine cluster **NGC-2175**, Situated just 1½° ENE of χ-2, and embedded in a beautiful emission nebula **NGC-2174**, 20' across, wreathed around the cluster and a bright 7.5 magnitude star in particular. This nebulosity is nicely brought out in a 10" scope using a UHC or other narrowband nebula filter. Noteworthy also is the small, tightly packed clump of about 20 stars 18' to the ENE of the bright star, known as **NGC-2175-S**. Altogether this whole assemblage is indeed a very attractive telescopic object, well worth seeking out!

These objects we've visited are by no means a complete roster of Orion's many attractions, but may perhaps give you motivation to linger a little longer in the environs of Orion, when you venture out to explore the winter sky!

## "A Grand Celestial Arc"

By John Davis

This year, at the close of 2004 during December an impressive arc of bright luminaries has appeared stretching across the evening Eastern sky into the Southeast. These bright points of light form a perfect arc and are arranged in a uniformly increasing progression of spacing, reminiscent of a chart illustrating "Bode's Law" in the spacing of planets in our solar system. This "Great Arc" starts high in the east with Castor and Pollux, heads gradually Southeast, marked by the bright planet, Saturn, then on to Procyon and finally ending at the Brilliant Sirius, sparkling away low in the Southeast. A continuation of this same arc also extends North and NW from Castor and Pollux thru Beta Aurigae and culminating with the brilliant Capella.