



(Continued from page 1)

I had a unique opportunity to travel "down under" to observe from the dark skies of south central Australia, east of Melbourne, and then from the large island of Tasmania located off the southern tip of Australia. I knew I had to take a telescope with me or I'd certainly regret it. Major airlines fly into Melbourne, but only small "regional" airlines fly into Tasmania, so the amount of baggage I could take on the three week trip was strictly limited to a total weight of 23 kg (50.7 lbs). My astronomy setup would have to fit into an already limited volume that included work attire, a bulky jacket, shoes, shaving kit, notebooks of work materials, and a laptop. While the observing portion of this trip was secondary to the business portion of this trip, it was still very important to me personally and deserved careful planning ahead of time.

Some of my initial questions to be answered were concerning the climate of the location. Would it be hot or cold this time of year? Cloudy or clear? Dark skies or urban light pollution? My excitement grew as each of these answers were favorable to potential great southern sky views of the Clouds of Magellan, Southern Cross, Alpha Centauri, Canopus, the Coal Sack, the Tarantula Nebula, and on and on. Wow.

Now what telescope should be taken? It had to be portable, deliver wide-field views when paired with one or two eyepieces, but be of sufficient quality that I could "crank up the power" if I wanted to. It needed to be rugged enough to survive the jostling of going through security (I foresaw a major hassle regarding this) and the vibration shock of the flight and maybe a rough landing. It also needed to be light enough to be supported by a photo tripod since such a tripod was the only possible support within my weight and luggage volume limitations. The Tele Vue Pronto ED doublet refractor telescope with a 480 mm focal length, f/6.8 and an objective diameter of 70 mm was chosen. I had purchased a Pronto in mint used condition from a friend for \$500 several years ago and loved it. When this short refractor is paired with both a Tele Vue 13mm Ethos and an 8mm Ethos, it can provide stunning views. The scope was also fitted with a 90 degree prism, two inch eyepiece focuser, a glass solar filter and a simple red dot sight. I made a new foam insert for the stock Tele Vue Pronto padded carry bag to fit the telescope, both Ethos eyepieces, the right angle prism and accessories. I chose a closed

cell foam with sufficient density to



provide cushioning for all of the items, but rigid enough to hold each item securely. The solar filter, small red flashlight, my small southern sky atlas, dust blower and an O-III filter had to be carried in a 1 gallon ziplock in my suitcase, but still I was pleased that I managed to get my observing essentials down to such a small package.

The tripod I chose was the Manfrotto "Bogen" Carbon Fiber Tripod (BOG190CXPRO4) with a standard ball head. The entire tripod was no longer than the Pronto's carry case and I attached to the case with Velcro straps. The tripod was very light, but surprisingly stable with the 6 lb Pronto, diagonal, and with a 2 lb Ethos eyepiece mounted on

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**How to Join the Delmarva Stargazers:** Anyone with an interest in any aspect of astronomy is welcome

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Please attach a check for \$15 made payable to Delmarva Stargazers and mail to Kathy Sheldon, 20985 Flatown Rd, Lincoln, DE 19960. Call club President Lyle Jones at 302-736-9842 for more information.

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it. Its maximum load was stated to be 11 lbs. The lack of a celestial drive was not an issue for my visual observations made with this setup. Also the time to setup and take down was less than 5 minutes. There was the expected difficulty looking at any object at zenith with this setup. To be honest, a big reason why I chose this tripod was because a friend offered to let me borrow one for the trip, and it's hard to argue with "free". It is an expensive tripod, but a perfect "Grab and Fly" match for this telescope setup.

Before the trip I had a concern regarding what this telescope/eyepiece/tripod package would look like to the airport security folks on their scanners since they probably didn't see too many telescopes come through as carry-on baggage? Primarily because of this, an extra hour was planned for security questions prior to the flight. I could have relaxed. I had no fluids (of course) in the bag, and nothing looked like a weapon on the X-ray. The TSA was very reasonable and had no problems whatsoever with the telescope. They did ask me what it was, to which I told them it was a "telescope lens", and then they sent me on my way. I arrived at my gate with an extra hour to spare. Once on the plane, this entire setup conveniently fit into an overhead aircraft bin, even on the regional-type aircraft from Melbourne south to Tasmania.

The trip allowed me ample time to observe the southern sky. The telescope setup worked like a champ. While I only used the solar filter once, I had the telescope out every night for at least two hours and all night long on the weekends. The weather in Tasmania had me chasing openings in the clouds for a couple of nights, but it cleared up and provided the darkest observing skies I have ever seen in my life. Regretfully the 70mm Tele Vue Pronto isn't made anymore, but its been replaced by its close (more expensive) cousin, the Tele Vue 76 APO Doublet Refractor.

While this article has been about the selection of a convenient "Grab and Fly" telescope that could be taken anywhere one may be headed, I haven't said much about the deep sky views I had on my trip, of the hours I spent smiling, ear-to-ear, as I leisurely cruised from the Tarantula Nebula over to the Clouds of Magellan, or mention the friendliness of the Australian amateur astronomers I met. Those experiences were the real story made possible by having a "Grab and Fly" telescope.

Telescope Reviews:

Pronto: <http://www.company7.com/televue/telescopes/pronto.html>

Ranger: <http://www.company7.com/televue/telescopes/ranger.html>

### Delmarva Stargazers Pop Quiz

It's quiz time agin. We have had a few people who were pretty proficient at the last few quizzes. So lets test your gray matter one more time. You can use your "Call-a-Friend" option, but no internet. Books (ebooks and hardcopy books) are OK! Come to the next meeting and you can use your "Ask-the-Audience" option. Six correct outta the 8 is passing.

1. \_\_\_\_\_ is the largest mountain know to man.
2. This star, \_\_\_\_\_, is the biggest known to man and is 2000x bigger than Sol.
3. \_\_\_\_\_, their early Greek name, meant 'wandering star'.
4. \_\_\_\_\_ is the coldest spot in the Milky Way.
5. \_\_\_\_\_ is the only known asteroid with a moon.
6. The \_\_\_\_\_ scale indicates the hazard effects of asteroids colliding with Earth.
7. \_\_\_\_\_ has the highest winds.
8. \_\_\_\_\_ is one of the largest non-round moons in the solar system.

After you answer these, turn to the next page for the answers. DO NOT PEEK !

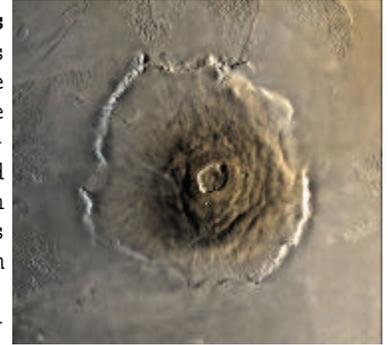
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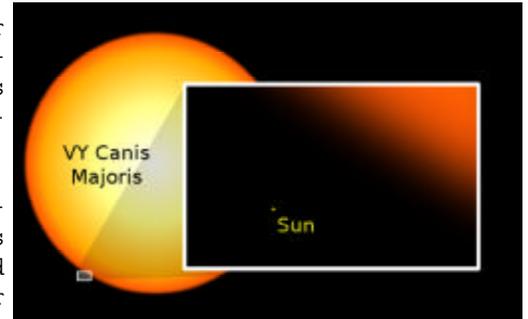
## Delmarva Stargazers Pop Quiz – Answers

Here are the answers to the quiz on page 5. If you cheated and went right to the answers, then you'll received 2 demerits. Go and answer the quiz first.

1. If you guessed Everest, you off by a factor of 3. **Olympus Mons** on **Mars** is the tallest mountain known to Man. Olympus Mons is a shield volcano, similar in morphology to the large volcanoes making up the Hawaiian Islands. The edifice is about 600 km wide and stands nearly 22 km above the surrounding plains. The summit of the mountain has six nested calderas (collapse craters) forming an irregular depression 60 x 80 km across and up to 3.2 km deep. The volcano's outer edge consists of an escarpment, or cliff, up to 8 km tall, a feature unique among the shield volcanoes of Mars. Olympus Mons covers an area approximately the size of Arizona.



2. **VY Canis Majoris** (VY CMa) is the largest known star and also one of the most luminous. It is a red hypergiant in the constellation Canis Major. It is 2000 solar radii, about 3.0 billion km in diameter, and about 1.5 kiloparsecs (4,900 light-years) distant from Earth. Unlike most hypergiant stars, which occur in either binary or multiple star systems, VY CMa is a single star. It is categorized as a semiregular variable and has an estimated period of 2,000 days. Placed at the center of our solar system, VY Canis Majoris's surface would extend beyond the orbit of Saturn.



3. The Greek words 'astron' and 'astêr' were both used for any point of light in the sky. The phrase '**plānetes astéres**' "wandering stars" was applied to the seven visible planets (including the Sun and Moon) because of their observable movement against the fixed stars. Thus, all were 'stars' in the Classical sense, explaining the prefix astro- in both astrology and astronomy.

4. The **Boomerang Nebula** (also called the **Bow Tie Nebula**) is a protoplanetary nebula located 5,000 light-years away from Earth in the constellation **Centaurus**. The nebula is measured at 1 K (-272.15 °C; -457.87 °F), the naturally coldest place currently known in the Universe. The Boomerang Nebula was formed from the outflow of gas from a star at its core. The gas is moving outwards at a speed of about 164 km/s and expanding rapidly as it moves out into space. This expansion is the cause of the nebula's very low temperature. With a temperature of -272 °C, it is only 1 °C warmer than absolute zero (the lowest limit for all temperatures). Even the -270 °C background glow from the Big Bang is warmer than the nebula. It is the only object found so far that has a temperature lower than the background radiation.



5. **243 Ida** is an asteroid in the Koronis family of the asteroid belt. It was named after a nymph from Greek mythology. On 28-Aug-1993, Ida was visited by the spacecraft Galileo, bound for Jupiter. It was the second asteroid to be visited by a spacecraft and the first found to possess a satellite. Ida's moon, **Dactyl**, was discovered by mission member Ann Harch in images returned from Galileo. It was named after

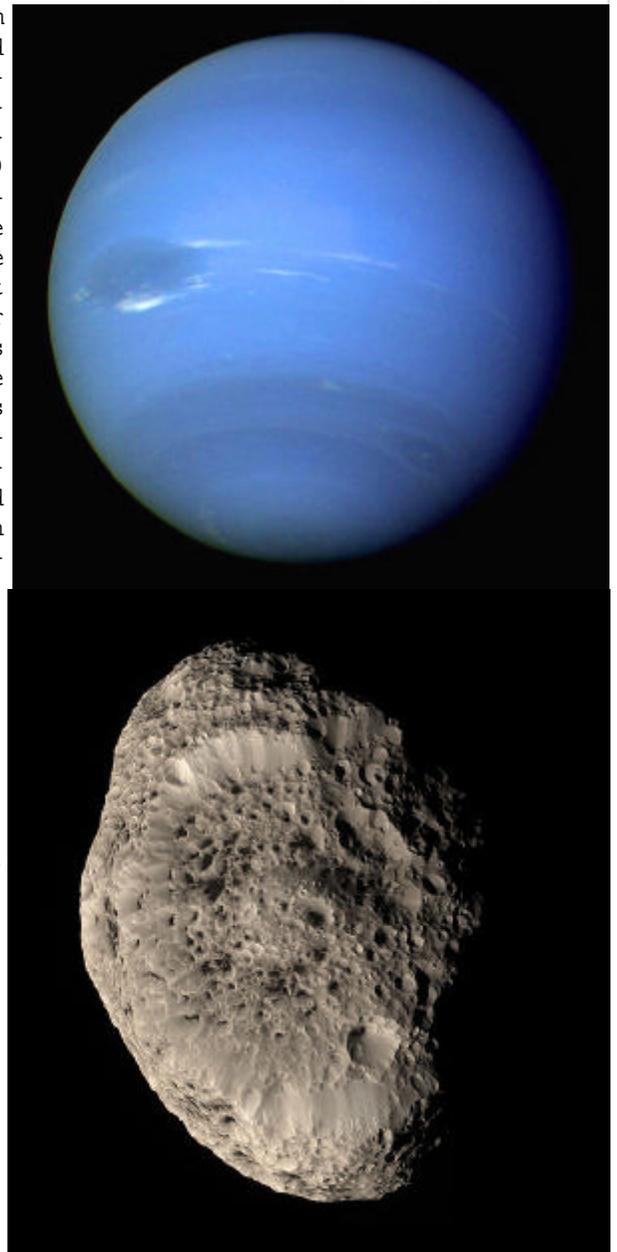
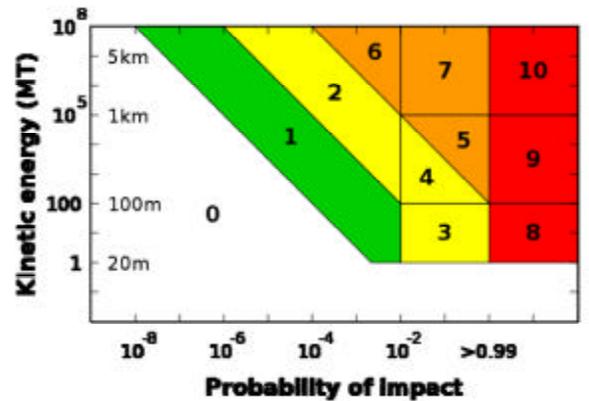


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the Dactyls, creatures which inhabited Mount Ida in Greek mythology. Dactyl is about one-twentieth the size of Ida. Dactyl and Ida share many characteristics, suggesting a common origin.

6. The **Torino Scale** uses an integer scale from 0 to 10. A 0 indicates an object has a negligibly small chance of collision with the Earth, compared with the usual "background noise" of collision events, or is too small to penetrate the Earth's atmosphere intact. A 10 indicates that a collision is certain, and the impacting object is large enough to precipitate a global disaster. Only integer values are used. The Torino Scale is defined only for potential impacts less than 100 years in the future. The scale is expressed in megatons of TNT.
7. **Neptune** is similar in composition to Uranus, and both have compositions which differ from those of the larger gas giants, Jupiter and Saturn. In contrast to the relatively featureless atmosphere of Uranus, Neptune's atmosphere is notable for its active and visible weather patterns. At the time of the 1989 Voyager 2 flyby, the planet's southern hemisphere possessed a Great Dark Spot comparable to the Great Red Spot on Jupiter. These weather patterns are driven by the strongest sustained winds of any planet in the Solar System, with recorded wind speeds as high as 2,100 km/h. Because of its great distance from the Sun, Neptune's outer atmosphere is one of the coldest places in the Solar System, with temperatures at its cloud tops approaching  $-218^{\circ}\text{C}$ . Neptune has a faint and fragmented ring system, which may have been detected during the 1960s but was only indisputably confirmed in 1989 by Voyager 2.
8. Saturn's moon **Hyperion**, the Titan god of watchfulness and observation in Greek Mythology, is one of the largest bodies known to be highly irregularly shaped (non-ellipsoidal) in the solar system. It is also designated **Saturn VII**. The only larger moon known to be irregular in shape is Neptune's moon Proteus. The largest crater on Hyperion is approximately 121.57 km in diameter and 10.2 km deep. A possible explanation for the irregular shape is that Hyperion is a fragment of a larger body that was broken by a large impact in the distant past. A proto-Hyperion could have been from 350 to 1000 km in diameter. Over about 1,000 years, ejecta from a presumed Hyperion breakup would have impacted Titan at low speeds building up volatiles in the atmosphere of Titan.



## The Constellation Orion—The Hunter

This month we'll look at Orion, one of the most viewed items in the sky. Hopefully, you'll find a renewed interest in this Constellation.

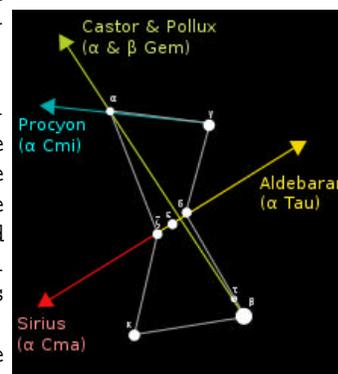
### Mythology-



The Babylonians named Orion "True Shepherd of Anu" - Anu being the chief god of the heavenly realms. Orion has also been identified with the Egyptian Pharaoh of the Fifth Dynasty called Unas who, according to the Pyramid Texts, became great by eating the flesh of his mortal enemies and then slaying and devouring the gods themselves. After devouring the gods and absorbing their spirits and powers, Unas journeys through the day and night sky to become the star Sabu, or Orion. The Bible mentions Orion three times, naming it "Kesil" - fool. Orion's current name derives from Greek mythology, in which Orion was a gigantic hunter of primordial times. In medieval Muslim astronomy, Orion was known as al-jabbar "the giant". In China, Orion was one of the 28 lunar mansions Sieu (Xiu) ( ? ). The Rig Veda refers to the Orion Constellation as Mriga (The Deer). The Malay called Orion' Belt Bintang Tiga Beradik (the "Three Brother Star"). In old Hungarian tradition, "Orion" is known as Nimród, the biggest hunter. The Seri people of northwestern Mexico call the three stars in the belt of this constellation Hapj (a name denoting a hunter) which consists of three stars: Hap (mule deer), Haamoja (pronghorn), and Mojet (bighorn sheep). Hap is in the middle and has been shot by the hunter; its blood has dripped onto Tiburón Island. The Navajo called it Átsé Ets' Ózí (A tseh ets osi) The First Slender One, a young strong warrior protecting his family and people. He is always chasing Dilyehe (The First Big One)(we recognize it as Scorpius). In J.R.R. Tolkien's mythology surrounding Middle-Earth, Orion is known as Menelvagor, which is Sindarin for "The Swordsman in the Sky." In J.K. Rowling's Harry Potter series, one of the main Death Eater characters, Bellatrix Lestrange, is named after the gamma star in Orion. Bellatrix's relations are named after other astronomical features including Andromeda, Sirius, Draco, etc.

### Observations-

**Orion** is very useful as an aid to locating other stars. By extending the line of the Belt southeastward, **Sirius** (a CMa) can be found; northwestward, **Aldebaran** (a Tau). A line eastward across the two shoulders indicates the direction of **Procyon** (a Cmi). A line from **Rigel** through **Betelgeuse** points to **Castor** and **Pollux** (a Gem and  $\beta$  Gem). I hope this is helpful for all those with all those fancy GOTO computers when the power goes out.



**Alnitak**, **Alnilam**, and **Mintaka**, are the bright bluish stars from east to west (left to right) along the diagonal in Orion's Belt. These three blue supergiant stars are hotter and much more massive than the Sun. They lie about 1,500 light-years away, born of Orion's well-studied interstellar clouds. In fact, clouds of gas and dust adrift in this region have intriguing and some surprisingly familiar shapes, including the dark **Horsehead Nebula** and **Flame Nebula** (above) near **Alnitak** at the lower left. The famous **Orion Nebula** itself lies off the bottom of this star field.

This reflection nebula, with the bright star Rigel to its right, is known as IC 2118. the **Witch Head Nebula** (right) glows primarily by light reflected from Rigel. Fine dust in the nebula reflects the light. The blue color of the Witch Head Nebula and of the dust surrounding Rigel is caused not only by Rigel's blue color but because the dust grains reflect blue light more efficiently than red. The same physical process causes Earth's daytime sky to appear blue, although the scatterers in Earth's atmosphere are molecules of nitrogen and oxygen.



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The **Orion Nebula**, Messier 42, is a diffuse nebula situated south of Orion's Belt. It is one of the brightest nebulae, and is visible to the naked eye in the night sky. M42 is located at a distance of 1,344 light years and is the closest region of massive star formation to Earth. The M42 nebula is estimated to be 24 light years across. It looks great under low power, too.



Here is a list of some of the double stars:

**Beta Orionis (Rigel)** magnitudes 0.1 and 6.8, separation 9.5 arcseconds.

**Delta Orionis** mags 2.2 and 6.3, sep 52.6" Westernmost star in Orion's belt.

**Lambda Orionis** mags 3.6 and 5.5, sep 4.4" .

**Iota Orionis** mags 2.8 and 6.9, sep 11.3" .Fine white and blue pair.

**Theta 2 Orionis** mags 5.2 and 6.5, sep 52". Located on the edge of the Orion Nebula.

Triple stars-

**Sigma Orionis** mags 4.0, 7.5, and 6.5, seps 12.9" and 43" Nice, wide triple.

**Zeta Orionis** mags 1.9, 4.0, and 9.9, seps 2.4" and 58" Most easterly of Orion's "belt" stars.

Quad star- **Theta 1 Orionis** mags 6.7, 7.9, 5.1, and 6.7, seps 8.8", 13", 21.5" The "Trapezium". Located in the brightest part of the Orion Nebula.

The targets below will thrill and delight you.

**NGC 1662**-nice little open cluster apparent mag. 6.4 size 20'



←←

**NGC 2169**- Another nice little open cluster. It was discovered by Giovanni Batista Hodierna before 1654 and discovered by William Herschel on October 15, 1784. **NGC 2169** is at a distance of about 3,600 light years away from Earth. It is nicknamed "**The '37' Cluster**" due to its striking resemblance to the numerals "37".

**NGC 2194**-nice little open cluster apparent mag. 8.5 size 10'



→→

**NGC 2244 and NGC 2237-9,46**- The Rosetta Nebula is a vast cloud of dust and gas, extending over an area of more than 1 degree across, or about 5 times the area covered by the full moon. Its parts have been assigned different NGC numbers: **2237**, **2238**, **2239**, and **2246**. Within the nebula, open star cluster **NGC 2244** is situated, consisted of the young stars which recently formed from the nebula's material, and the brightest of which make the nebula shine by exciting its atoms to emit radiation. It is one of the more massive diffuse nebulae.



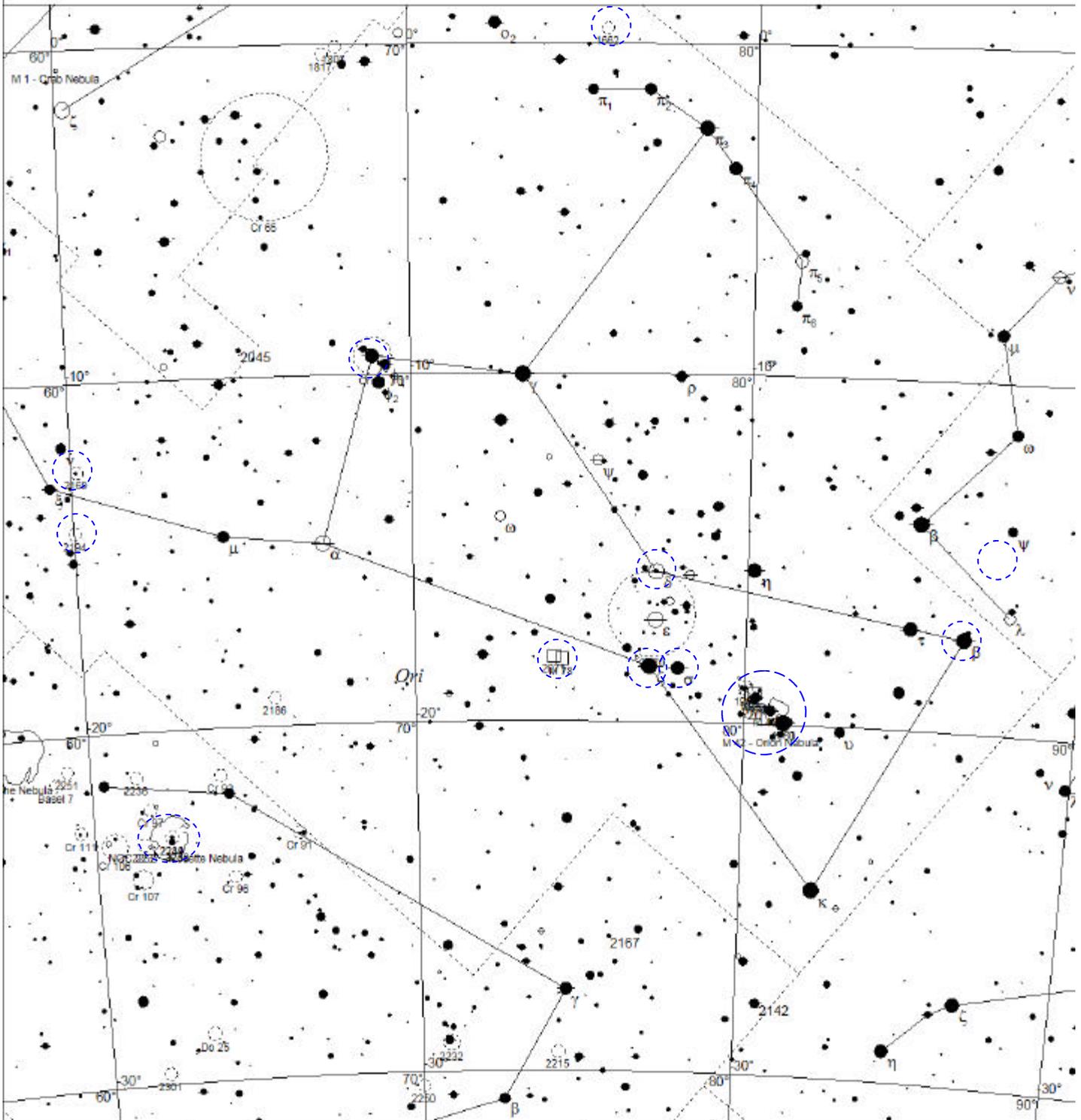
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## The Solar System in February

**Mercury** puts on a good show right after **Sol** sets in the latter half of the month. By the 28<sup>th</sup> and into early March, Mercury is 10° above the sun after sunset, the best of the year. **Venus** is in the SW sky this month. **Mars** is in the east, just left of Luna on the 9<sup>th</sup>. **Uranus** is there also, just 0.3° S of **Venus** on the same night (9<sup>th</sup>).! **Jupiter** is high above **Venus** on the 1<sup>st</sup>. **Neptune** is in conjunction with the Sun on the 19<sup>th</sup>, so no viewing. **Saturn** rises around midnight in western Virgo.

Zodiacal Light is visible from the 9<sup>th</sup> to 23<sup>rd</sup>. Look West 80 minutes after sunset towards Venus. Check it out.

# Orion the Hunter



Shows location of some of the items on pgs. 6 & 7.

| STARS |      | SYMBOLS         |                    |                |
|-------|------|-----------------|--------------------|----------------|
| ● <3  | ● >8 | ● Multiple star | ◻ Dark nebula      | △ Radio source |
| ● 4   |      | ○ Variable star | ⊕ Globular cluster | × X-ray source |
| ● 5   |      | ☄ Comet         | ○ Open cluster     | ○ Other object |
| ● 6   |      | ☄ Galaxy        | ⊕ Planetary nebula |                |
| ● 7   |      | ◻ Bright nebula | ⊕ Quasar           |                |

Local Time: 22:00:00 24-Feb-2012      UTC: 17:00:00 24-Feb-2012      Sidereal Time: 22:12:13  
 Location: 38° 58' 0" N 75° 56' 0" W      RA: 5h40m56s Dec: +2° 23' Field: 32.0°      Julian Day: 2455982.2083