



## EPHEMERALS - September 2006

DATE	WHEN	WHAT & WHERE
7	7:30p	September Meeting @ TCC Campus
15	Dusk	Skywatch @ Northwest River Park
16	Dusk	Cloverwatch @ Franklin Fairgrounds
23	Dusk	Nightwatch @ Chippokes Plantation

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## LOOKING UP

### GET READY FOR FALL

Labor Day marks the end of our summer, and the kids are back in school. I hope many of our members had a chance to take a vacation and have some fun this summer. I spent a restful week up the road in Williamsburg, spending time with family, especially my adorable grandchildren, ages 6 through 1 ½ years.

With school starting up again, we can expect the BBAA to be called upon to help support some of the science teachers and school activities. If you have been a BBAA member, but have not participated in a school outreach event, you don't know what you have been missing. When the kids (and their parents and teachers) look through our telescopes and the light comes on in their eyes, it is a wonderful experience. I don't know who enjoys it more, them or us.

No matter how long you have been in the club, chances are, you will know more than the average per-

son or school kid about what's up in the sky. Even if you don't have a telescope yet, you can join in the fun and learn something yourself under the tutelage of one of the more experienced club members.

Of course, we also want to see as many as possible at our regular events, the monthly meeting at TCC VB Campus the first Thursday of each month, and our monthly Skywatch at Northwest River Park and Nightwatch at Chippokes Plantation State Park. Garden Stars at Norfolk Botanical Garden is a unique opportunity as well, and Cloverwatch in Franklin has great skies and horizons.

Start thinking ahead to the November elections. Of course, don't forget to vote for your choice for Congressman and Senator, but also be thinking of who you want to be our next BBAA club president. After two one-year terms I will be relinquishing the post to another worthy individual, who will be chosen by YOU the members at our November meeting. Be there - if you don't want to get elected in absentia! <Grin>

**KEEP LOOKING UP!**

*George Reynolds*

# THE BACK BAY AMATEUR ASTRONOMER'S OBSERVER

## AUGUST MEETING MINUTES

The August meeting of the Back Bay Amateur Astronomers was called to order by President George Reynolds on Thursday August 3rd, 2006 at 7:30 PM at the Cox Communications Campus in Chesapeake Virginia.

**Members in Attendance:** Attendance was low with the following members present: Dale Carey, Ted Forte, Steve Hamilton, Chuck & Karen Jagow, Georgie June, George Reynolds, Michelle Shinn, Kevin Swann, "Bird" Taylor, Kevin & Barb Weiner and William Shelton. I had counted fourteen people present, but for the life of me I could not account who was missing.

**Treasurer's Report:** Barb Weiner reported that there was \$4,934.70 in total funds. This included \$900.25 for the scholarship fund and \$4,034.05 in general funds.

**Secretary's Report:** Chuck Jagow reported that we had 114 members and that only nine folks were delinquent in paying their dues. It was also reported that about ten or twelve folks were dropped from the membership roster.

### **Astronomical League Coordinator's Report:**

The Astronomical League Coordinator, Georgie June, officially presented the Master Observer award to Ted Forte. Much merriment ensued with noisemakers and the crimson turn of Ted's face as the applause ensued. Very good job Georgie and of course Ted!

### **Rapid Response Robotic Telescope Project Report:**

Ted Forte reported that the bid to build the building was still in negotiations and more information may be available next month. Dr. Salgado could not comment much at this point because of the ensuing negotiations. BBAA member Ben Loyola is one of the folks bidding on the project. Chuck Jagow reported that the POD observatory BETA test list had not yet been announced. So the 12" Meade is still without a protective cover and must be moved in and out every time it is used.

**Old Business:** None was discussed.

### **New Business:**

The election for new BBAA officers will take place at the November BBAA meeting. BBAA officers hold office for one year, but may be re-elected for a second term. President George Reynolds is the only seat that must be filled this fall. So if anyone wants to move & shake things up a bit, put yourself up for a job! It is rewarding and fun! So far Dale Carey has announced his run for president!

### *Any contenders out there???*

George Reynolds discussed the upcoming month's calendar of events.

Seems like the Norfolk Botanical Garden has been exceedingly difficult to coordinate the Garden Stars program with the new individual in charge of such things. Kevin Weiner has made many attempts to straighten things out, but it is hard to milk an unconscious cow.

The annual VAAS will be held in Ashland Virginia up near Richmond on the 30th of September.

**Observer's Corner:** Darn Clouds... Bird spoke of his and Richard Dickson's observances of Jupiter, while Ted noted that two individuals had completed the requirements thus far for the Planetary Nebula award.

### **Presentation:**

George Reynolds put together a very informative paper titled "Observing Tips". This paper is of great value to novice observers and was well received. Many key topics were openly discussed adding to the value of the information provided.

Dale Carey provided a spectacular DVD presentation of the Green Bank Star Party.

**In Conclusion:** The meeting was adjourned about 9:18 PM.

*Chuck Jagow*

## SOAP BOX

This issue of the Observer is late, for that I apologize. On the 20th of August my mother was taken in treat a brain tumor and I had to fly to Colorado. The tumor was removed about a week later as I returned home. Her condition is guarded but improving, unfortunately the tumors were migrations from her previous bout with breast cancer. She will undergo some serious radiation treatment and we will see how it goes. Thank you for all the notes of support.

Several days after I returned it dawned on me that I had forgotten about publishing the Observer! So I have spent the last few days gathering material for this issue.

I hope to see everyone at the September meeting. Just to stay even with the cloud Gods, Karen and I bought some binoculars for use while we were in Colorado. And true to form, once again we were skunked by clouds...

*Chuck Jagow*



## DEADLY PLANETS

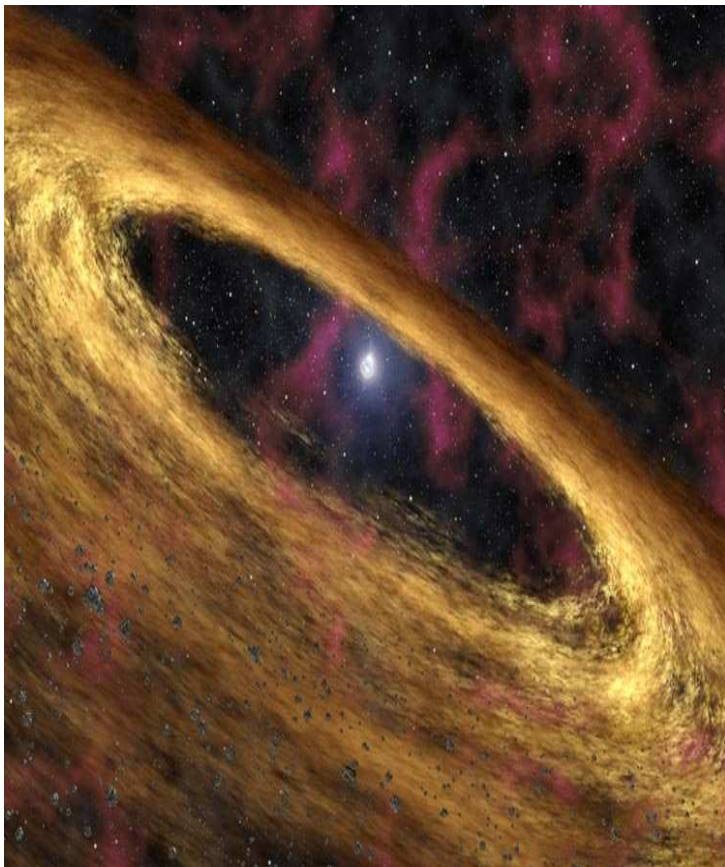
*By Patrick L. Barry and Dr. Tony Phillips*

About 900 light years from here, there's a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.



Our own sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At first, no one believed worlds could form around pulsars-it was too bizarre. Supernovas were supposed to destroy planets, not create them. Where did these worlds come from?

NASA's Spitzer Space Telescope may have found the solution. Last year, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

More news and images from Spitzer can be found at <http://www.spitzer.caltech.edu/>. In addition, The Space Place Web site features a cartoon talk show episode starring Michelle Thaller, a scientist on Spitzer. Go to <http://spaceplace.nasa.gov/en/kids/live/> for a great place to introduce kids to infrared and the joys of astronomy.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

## IMAGE CREDITS / CAPTION

NASA Artist's concept of a pulsar and surrounding disk of rubble called a "fallback" disk, out of which new planets could form.



# THE BACK BAY AMATEUR ASTRONOMER'S OBSERVER

## B B A A I N F O

The BBAA meet the first Thursday of every month. While school is in session we meet at the VA Beach TCC campus in the Pungo building. Summer meetings are usually held at the Chesapeake COX campus. The September meeting will be on Thursday September 7th at 7:30 PM at the VA Beach TCC campus in Virginia Beach.

## WHERE IS THE MEETING?

### TIDEWATER COMMUNITY COLLEGE CAMPUS

The TCC Campus is located in Virginia Beach off of Princess Anne road. The following should help you locate the campus.

#### FROM Interstate I-64:

Proceed to the I64 / I264 junction and take I264 East .  
Take the S. Independence Exit, 17A, right hand lane  
(.0000000484 AU).

Turn LEFT onto Princess Anne road  
(.0000000102 AU).

Turn LEFT onto Community College Place  
(.00000000214 AU).

At the Stop Sign turn right and follow the road around to the left and park in one of the parking lots.

The meeting is held in the Pungo Building which is on the right hand side of the pathway that splits the two major parking lots. The Astronomy classroom is in the far back right hand corner of the building.

### COX COMMUNICATIONS CAMPUS

The COX Communications Campus is located in Chesapeake's Greenbrier section. The following should help you locate the facility.

#### FROM Interstate I-64:

Take exit 289B (between the Indian River & Battlefield exits).  
South on Greenbrier Parkway (.7382 miles).  
Turn RIGHT onto Eden Way West (.9231 miles).  
Turn RIGHT on Crossways Blvd (.88901 miles).  
Turn Right into the Cox Campus

The meeting is usually held in the Silver room located on the North side of the facility. Enter and tell the guard that you are with the BBAA and they will issue a badge and direct you to the room.

## BBAA INTERNET LINKS

### BBAA WEB SITE

<http://groups.hamptonroads.com/bbaa/>

### YAHOO GROUP

<http://groups.yahoo.com/group/backbayastro>

### BBAA OBSERVER NEWSLETTER

<http://www.backbayastro.org/newsletters/newsletter.shtml>

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What do you want to do?

## OBSERVER INFO

The BBAA Observer is published monthly, the monochrome version is mailed to members who do not have Internet access. Members who do have Internet access can acquire the full color version on the Internet at:

<http://www.backbayastro.org/newsletters/newsletter.shtml>

Please submit articles and items of interest no later than the 20th of August for the September issue. Please submit all items to:

[ObserverBBAA@cox.net](mailto:ObserverBBAA@cox.net)

OR

BBAA Observer  
P.O. Box 9877  
Virginia Beach, VA 23450-9877

## The Eight Planets

On August 24th 2006 the word "planet" was given its first-ever scientific definition by a vote of the International Astronomical Union.

The following statement from Mike Brown, one of the discoverers of the "tenth" planet 2003 UB313, provides an intelligent discussion of the categorization of planets. It corrects a misstatement in the press of what it means to have "cleared its orbit". For now, this article should answer some of the questions about Pluto that have come up as a result of the IAU decision.

With the raising of a few yellow cards in Prague Pluto was demoted from full-fledged planet to "dwarf planet." The object 2003 UB313, sometimes called Xena, sometimes called the "10th planet," which in many ways precipitated this final debate, becomes the largest known dwarf planet.

Unless astronomers revisit this issue at some point in the future, it is unlikely that there will ever be more than eight planets.

What was the problem with nine (or ten) planets?

Pluto and 2003 UB313 are significantly smaller than the other planets.

If you were to start to classify things in the solar system from scratch, with no preconceived notions about which things belong in which categories, you would likely come to only one conclusion. The four giant planets -- Jupiter, Saturn, Uranus, Neptune -- belong in one category, the four terrestrial planets -- Mercury, Venus, Earth, Mars -- belong in one category, and everything else belongs in one or maybe more categories. You wouldn't lump the largest asteroid -- Ceres -- in with the planets, you would group it with the other asteroids. Likewise you wouldn't group the largest object in the vast swarm of objects beyond Neptune (the "Kuiper belt") with anything other than the Kuiper belt.

The previous nine (or ten) "planets" encompassed the group of giant planets and the group of terrestrial planets and then awkwardly ventured out into the Kuiper belt to take in one or two of the largest of those objects. Using the word in this way makes no scientific sense whatsoever.

Two solutions to the problem of Pluto and 2003 UB313 Leave no ice ball behind Astronomers were faced with two options for a scientific definition of the word planet. One option was to say that what makes a planet a planet is simply the fact that it is large, round, and orbits a star. Ignore everything else that you know and concentrate on that. Why round?

If you place a boulder in space it will just stay whatever irregular shape it is. If you add more boulders to it you can still have an irregular pile. But if you add enough boulders to the pile they will eventually pull themselves into a round shape. This transition from irregularly shaped to round objects is important in the solar

system, and, in some ways, marks the transition from an object without and with interesting geological and planetary processes occurring (there are many, many other transitions that are equally important, however, a fact that tends to be ignored in these discussions).

Of course, to truly talk only about the object in isolation and to ignore everything else you know you should also ignore the fact that the object is in orbit around another planet. It is hard to make a consistent argument that a 400-km ice ball should count as a planet because it might have interesting geology, while a 5000-km satellite with a massive atmosphere, methane lakes, and dramatic storms (Titan) shouldn't be put into the same category, whatever you call it. For most people, considering round satellites (including our Moon) "planets" violates the idea of what a planet is.

The other difficulty with this definition is that it instantly makes 50 planets in the solar system with the likelihood of hundreds coming soon.

Such a huge change in the number of planets is a big hint that this definition is a huge change in what we commonly think the word "planet" means. While most astronomers would agree that round vs. non-round is an important distinction in the solar system, most appear to feel that forcing the word "planet" to be the word that describes this transition is incorrect. This radical re-definition was initially proposed by the IAU but was met by heated opposition and had to be dropped.

Consider the circumstances The other scientific definition that makes sense is to acknowledge that by any classification scheme that considers circumstances -- where the object is, what else is in orbit near by, whether an object is a satellite -- the first eight planets are clearly in a class of their own. There are many ways to attempt to state this definition: a planet is by far the dominant mass in its region of space, a planet has cleared its neighborhood of all other significant masses, a planet is the accumulation of most of the material in its orbital vicinity. While none of these definitions can be stated with rigorous precision, they are precise enough for the case of the Solar System where the division between objects with have and have not mostly cleared their regions of space is enormous.

One of the best ways to view this definition is to consider some of the distinct regions of space. The asteroid belt, for example, is a collection of small rocky bodies between Mars and Jupiter with many millions of members. The largest asteroid Ceres is not nearly massive enough to have accumulated all of the other asteroids, nor is it massive enough to shove the asteroids out of the solar system. It is not a dominant mass within the asteroid belt. The exact same could be said of Pluto and 2003 UB313 (which are essentially the same size and both in the Kuiper belt along with millions of other bodies). Every one of the eight planets easily passes this test though. The eight planets were created from an accumulation of most of the material that remained in their vicinity. They are the dominant bodies in their regions of space.

*(Continued on page 6)*

# THE BACK BAY AMATEUR ASTRONOMER'S OBSERVER

(Continued from page 5)

This view is the one officially adopted by the International Astronomical Union. Because of the relatively chaotic process that occurred before reaching this very rational decision the actual wording of the definition is not as precise as it might have been, giving people room to quibble and to say that the definition is unclear. The important point to remember, however, is that the difference between the eight planets and everything else known in the solar system is so huge that even a definition with a lot of wiggle room will not make any difference. If you are trying to define the difference between North America and Europe, for example, the exact position of the line that you draw in the middle of the Atlantic Ocean does not matter much. The precise definition in the IAU resolution may be a tad unclear, but the concept is absolutely rock solid with absolutely no room for doubt about which objects do and do not belong. Here are some of the issues that have come up:

What about Pluto crossing Neptune's orbit?

Partly this issue has come up from an incorrect statement in an AP wire story which says that Pluto is automatically disqualified because it crosses the orbit of Neptune. Untrue. Pluto is disqualified because it is in the Kuiper belt but has not cleared out the Kuiper belt nor accumulated most of the mass in the asteroid belt, nor does it dominate the Kuiper belt. Pluto is part of a vast population and is rightly classified with that population where it belongs.

But surely this means Neptune has not cleared out Pluto and thus is not a planet, right? No. The problem here is simply with the hasty way in which the final definition was drafted, not with the concept, which is quite solid. And the concept is more important than a lawyerly reading of the definition. Neptune has a mass more than 8000 times greater than that of Pluto, and, in fact, totally dominates Pluto's region of the Kuiper belt. Much of the material in the Kuiper belt has indeed been tossed aside or accumulated by Neptune, but a very special region ("the Plutinos") have actually been captured by Neptune instead.

We now know that Neptune formed much closer to the sun than where it was today, and, as Neptune moved out, it pushed these Plutinos out with it while forcing them into a peculiar orbit where they orbit the sun precisely twice for every three orbits of Neptune. Pluto is the largest of the Plutinos, and it and the others only exist where they do because of the dominance of Neptune. While a lawyer could make a case that Pluto has not been cleared by Neptune, the concept and intent of the definition is sound, and Neptune's total domination of Pluto's dynamics is actually an excellent demonstration of precisely the concept the definition is meant to convey.

What about Jupiter and the Trojan asteroids?

Jupiter (and now also Neptune) is known to have asteroids in orbits that are almost identical except 60 degrees ahead or 60 degrees behind the planet, in what are known as the Lagrange points. Jupiter exceeds the mass of these Trojan asteroids by a factor of many millions. Like the case of Pluto and the Plutinos

above, the Trojan asteroids are in fact captured by Jupiter and only exist where they do because Jupiter totally dominates their dynamics. Jupiter is so totally dominant in this region that it even prevented the asteroid belt from accumulating into a planet.

What about near-earth asteroids?

There are asteroids and comets strewn throughout the solar system that don't fit nicely into the asteroid belt or into the Kuiper belt. Some of these are, for example, the near-earth asteroids. Again, a lawyerly reading of the definition might try to argue that there are therefore no planets in the solar system whatsoever! The concept of clearing and dominance is still sound. All of these extra bodies flying around the solar system are on unstable orbits and will eventually get ejected from the solar system or collide with a planet. This process, in fact, is precisely what astronomers refer to when they talk about "clearing."

Much like at home, the process never actually ends. But the planets have mostly cleared their regions, even if that process always continues.

What about the moon?

The earth hasn't cleared the moon, so why is the earth a planet? Like the arguments about Pluto and Trojan asteroids above, the Earth totally dominates the orbit of the Moon. And the pair totally dominate everything else around. Ergo, by the concept, planets.

What about the astronomers who say this is a poor definition? Astronomers might quibble with the definition, but no rational astronomer is going to disagree with the concept. The precise wording of the definition might need to be fixed still, but the hugely important astronomical concept of what now separates planets from non-planets should be clear to all.

Disclaimer: I didn't make the definition or even participate in the vote, not being a member of the IAU and all. I'm just trying to explain it. While I think it is the best possible scientific definition we could have had, I am still in mourning.

**Mike Brown**

## SCALE OF THE UNIVERSE

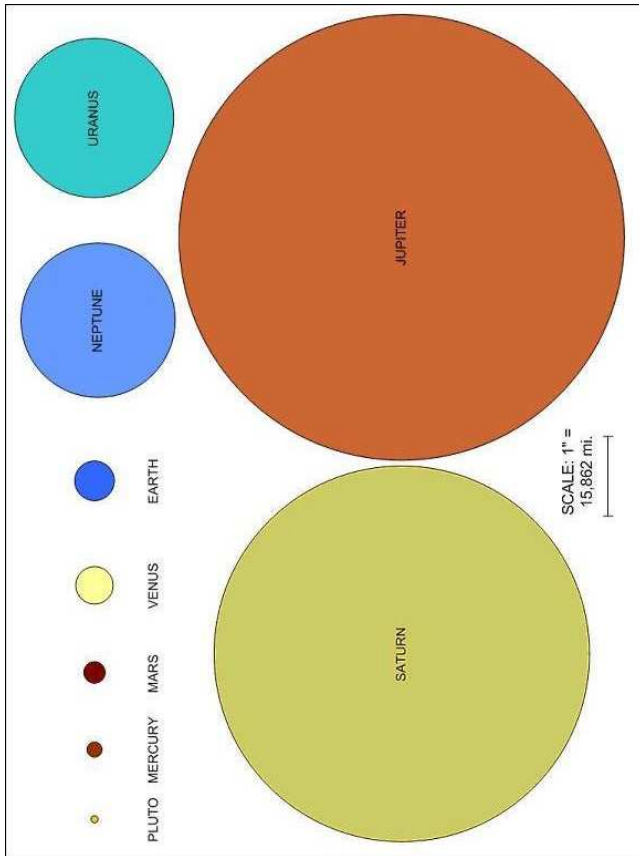
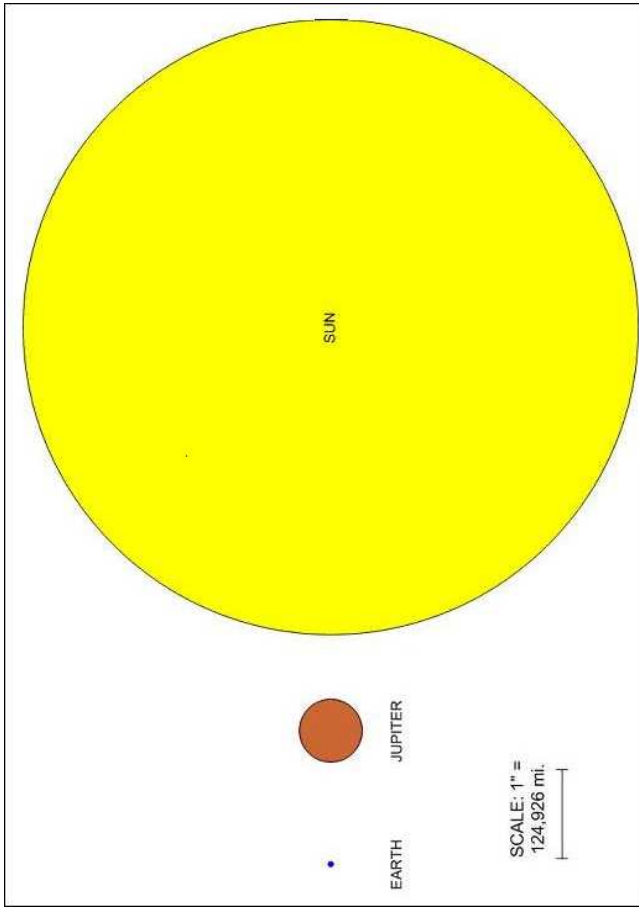
We all pretty much understand that size does matter, especially in the universe. But are we really aware of the actual size and scale of things we may speak of?

Recently there was a web site circulating that detailed the sizes of several celestial objects. The representations were accurate for the objects in our solar system, however they appeared a little askew to me for some of the stars. A little deeper investigation revealed some discrepancies. The images on page 7 represent accurate scale representations.

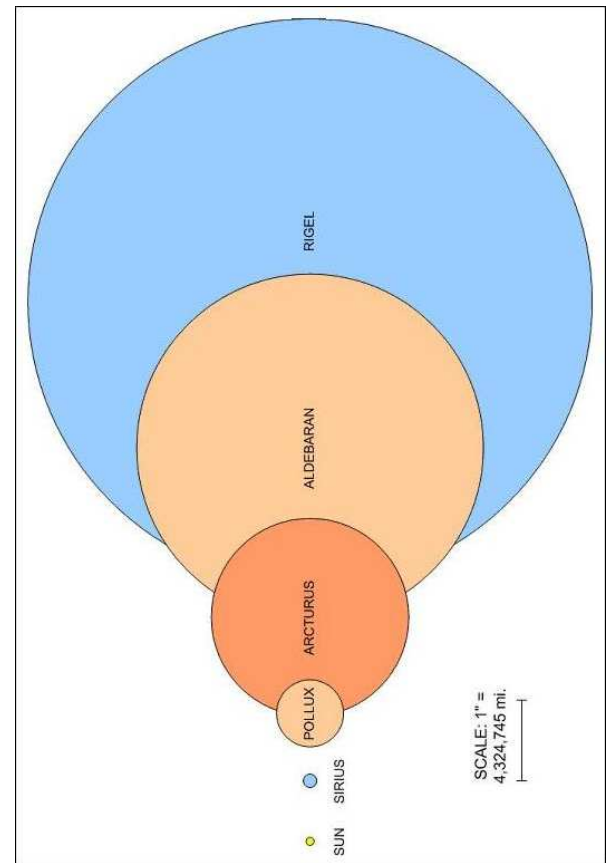
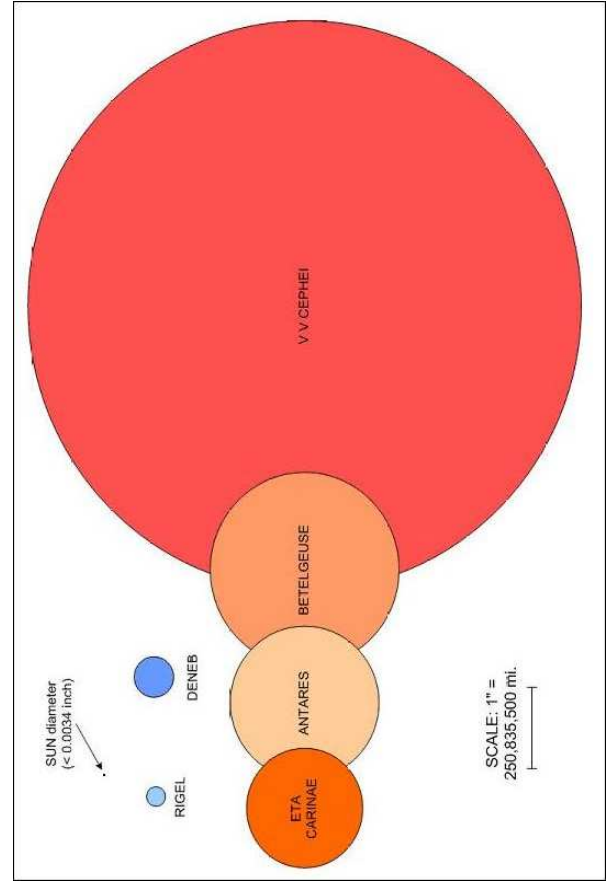
My renditions of the spheres may not be as aesthetically appealing as the Photoshop renditions, however they do convey true scale.

**Chuck Jagow**

# THE BACK BAY AMATEUR ASTRONOMER'S OBSERVER



## SCALE OF THE UNIVERSE



# SEPTEMBER 2006

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	1	2
3	4 LABOR DAY	5	6	7 BBAA MEETING @ TCC Full Moon 	8 NIGHT HIKE @ NWRP	9
10	11	12	13	14 Last Qtr 	15 SKYWATCH @ NWRP	16 CLOVERWATCH @ FRANKLIN
17	18	19	20	21	22 New Moon 	23 NIGHTWATCH @ CHIPPOKES
24	25	26	27	28	29	30 First Qtr 