

SKYLIGHTS

Newsletter of the Astronomical Society of Northern New England



JUN. 2009



Member of NASA's
Night Sky Network



Astronomical League
Member

ASNNE MISSION

ASNNE is an incorporated, non-profit, scientific and educational organization with three primary goals:

- 1) To have fun sharing our knowledge and interest with others.
- 2) To provide basic education in astronomy and related sciences to all who are interested.
- 3) To promote the science of Astronomy.

What's Up In June

By *Bernie Reim*

The month of June always marks the beginning of summer for us in the Northern Hemisphere. This year the summer solstice will happen at 1:46 am on Sunday, June 21st. The sun will reach its highest and northernmost point for the year at that minute. The word solstice means "sun stands still", which is what it will seem to do that day at the apex of its yearly tilted figure eight, called the analemma that it traces in our sky.

Saturn is the only bright evening planet visible this month. The ringed planet ended its retrograde or westward motion towards Regulus, the brightest star in Leo last month and is now on its direct or eastward motion again towards the next constellation east of Leo on the ecliptic, which is Virgo. Since it takes Saturn about 29 years to orbit the sun, it will spend a little over 2 years in each of the 12 zodiac constellations.

Watch the waxing crescent moon pass below Regulus and then Saturn during the evenings of June 25th through the 27th. Look into the western sky about one hour after sunset to witness those conjunctions. Remember that although those three celestial objects will look like they are close together, there is actually a vast amount of space between them. The moon is the closest at 240,000 miles or just one and a half seconds at the speed of light. Then you have Saturn at nearly one billion miles or just over one hour at the speed of light. Then you have Regulus, the 21st brightest star in the sky, at 77 light years away, or nearly 700,000 farther away than Saturn.

Regulus, the "king", is a slightly larger than average star at 3 times the mass and 240 times the luminosity of our sun. However, it is quite different from most stars because it rotates very rapidly on its axis, at 700,000 miles per hour. By comparison, our sun rotates at a modest 4500 miles per hour and takes 30 days to rotate once. Regulus only

takes 16 hours to make one rotation, so it is stretched out into a pumpkin shape, being much wider around the middle, though you will not be able to see that in an average telescope. If Regulus were to spin just 10% faster, it would tear itself apart.

Through a telescope you will see that Saturn's rings are only tilted 3 degrees from edgewise now. They will disappear completely by early September, but the planet will also be too close to the sun to observe until it shows up again in the morning sky in early October. The last time I saw Saturn without its rings was in October of 1996.

Jupiter now rises around midnight in eastern Capricornus near Aquarius. The King of the Planets will begin its retrograde motion on June 15, reach opposition on August 14, and end its retrograde motion on October 13. Watch as a waning gibbous moon passes just above Jupiter during the early morning hours of June 13 and 14.

Jupiter has at least 62 moons, but you can see the four largest ones, called the Galilean moons, in just a pair of binoculars. Each one of these four giant moons is a unique and dynamic world. Ganymede, at 3200 miles in

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What's Up "Continued from page 1"

diameter, is the largest moon in our solar system of over 150 moons, and is larger than the planet Mercury and the dwarf planet Pluto. Callisto is the most heavily cratered place in our solar system. In stark contrast to Callisto, Europa has the smoothest surface of any moon since it is all ice. There are many mysterious dark streaks running across this ice and also many ever-changing cracks. It probably has a liquid ocean under its frozen surface that could be up to 50 miles deep. That would make the volume of water on Europa twice that of all the oceans on Earth, even though Europa is slightly smaller than our own moon which is only one quarter the diameter of our 8,000 mile wide Earth. The oceans on Earth are not nearly that deep, with the deepest trenches only getting about 6 miles down below the surface. The massive ocean under the icy surface of Europa is kept liquid by the constant tidal interaction of nearby giant Jupiter. So Europa has the best chance of life as we know it anywhere in our solar system because of all this liquid water.

As if those three contrasting worlds were not amazing enough, then you have Io, the most volcanically active place in our solar system, that is essentially turning itself inside out every few million years because of the great tidal force it experiences from its proximity to massive Jupiter. Io's volcanoes are constantly expelling enormous amounts of particles into space which are then swept up by Jupiter's strong magnetic field. All this matter becomes ionized and forms a doughnut-shaped track all along its orbit, called the Io Plasma Torus.

As Io circles through this torus, an enormous electrical current of 2 trillion watts of power is generated, which creates lightning and northern lights on Jupiter, as well as radio waves which periodically sweep across the earth. I have heard those radio waves on two separate occasions for several hours each time. There are L-bursts which sound like ocean waves crashing on a distant shore, and then there are S-bursts, which are a short, staccato sound like rapidly knocking on a door.

Remember all this when you see peaceful looking Jupiter this summer. If you could see the giant magnetic field around Jupiter within which all this dynamic activity is always occurring, it would be the size of the full moon, which is about 50 times larger than the visible part of Jupiter.

Mars and Venus will be only a few degrees apart in our morning sky this month. Look East-Northeast about 45 minutes before sunrise from June 19 through the 21st, the beginning of summer, and you will see a waning crescent moon glide a few degrees above our next-door-neighboring planets. Mercury, just below the Pleiades, will join this celestial morning trio around the middle of June.

June 6. Venus is exactly half illuminated by the sun this morning and is getting fuller, so this day marks the end of its crescent phase. The moon will just miss occulting the bright star Antares this evening for us at this latitude. It will be visible over about half of this country, starting just south of us.

June 7. Full moon is at 2:12 p.m. EDT. This is also called the Strawberry or Rose Moon.

June 9. The shadows of Ganymede and Io are visible simultaneously crossing the face of Jupiter between 4 and 6 am. You will need a telescope to see this double transit.

June 15. Last quarter moon is at 6:15 p.m.

June 21. Summer begins in the Northern Hemisphere at 1:46 am, marking the shortest night and longest day of the year.

June 22. New moon is at 3:35 p.m.

June 26. Charles Messier was born on this day in 1730. He was a French comet hunter who developed a catalog of 110 objects, over half of which can be seen with just binoculars.

June 30. On this day in 1908 a 100-foot wide fragment of a comet exploded 5 miles high in sky over Tunguska, Siberia with the force of 10 megatons of TNT, or about 1000 times the force of the first atomic bomb we dropped on Hiroshima. 80 million trees were leveled in an area over 1000 square miles and the shock waves were felt thousands of miles away. Suspended dust from this great explosion stayed in our stratosphere for months afterwards. If the comet had exploded just a little later, it would have happened right over some large Russian cities.

Moon Phases

Jun 7
Full

Jun 15
Last Quarter

Jun 22
New

Jun 29
First Quarter

Moon Data

Jun 7
Antares 0.6° south
of Moon

Jun 10
Moon at apogee

Jun 13
Jupiter 3° south
of Moon

Neptune 3° south
of Moon

Jun 16
Uranus 6° south
of Moon

Jun 19
Mars 6° south
of Moon

Jun 21
Mercury 7° south
of Moon

Jun 23
Moon at perigee

Jun 27
Saturn 7° north
of Moon

Astronomical Society Of Northern New England

Business Meeting

May 1, 2009

Present:

Richard Beaulieu (secretary), David Bianchi, Ron Burk (president), Joan Chamberlin (vice-president), Bob Conley, Jim Hatch.

Treasurer's Report:

The bank balance is \$2300. We have paid the bills for the signs on route 111.

Observatory:

We are having an observatory clean up day on May 2nd. The Boy Scouts are not coming. Jim hatch will work on the telescope.

Monthly Meetings:

The speaker for our June meeting will be Prof. John Wardle, from Brandeis University. He will talk on radio astronomy.

On July 10th , Bro. Albert will talk on the calendar.

For August 7th, Paul Howell will speak on the history of astronomy.

Starfest will be September 18, 19 and 20. Dave Bianchi is working on confirming a guest speaker.

October 2nd, we will get Jerry Lasala. His talk will be on "How do we know how the sun works?"

Globe at Night:

Joan Chamberlain directed events at Sacopee Middle School, Biddeford Middle School, and Kennebunk and Shapley schools.

100 Hours of Astronomy:

For this event, we had clear skies for the first few hours only, and from then on, clouds.

Galileoscope:

We will get a sign up list of those who want to order one next month. Joan will find out how much the shipping will be.

Astronomy Day, May 2nd:

Although there are no sun spots right now, there might be some solar prominences to see.

May 29th:

On that day, Shapley will come to the observatory. That is also our public viewing night.

Website:

The board members will get passwords so that each can make changes to the website. For example, a member could note there that he plans to go to the observatory that night. Then other people could go.

Respectfully submitted,
Richard Beaulieu

**Principal
Meteor
Showers in
2009**

January 4
Quadrantids

April 22
Lyrids

May 6
Eta Aquarids

July 30
Delta Aquarids

August 12
Perseids

October 9
Draconid

October 21
Orionids

November 9
Taurids

November 18
Leonids

November 26
Andromedids

December 14
Geminids

December 22
Ursids

*Note: Dates are
for maximum*

Got any News? 
Skylights welcomes your Input.

Here are some suggestions:

*Book reviews -- Items for sale -- New equipment -- Ramblings --
Star parties -- Observing -- Photos.*

Club Items For Sale



Our club has merchandise for sale at:
www.cafepress.com/asnne

All money raised goes to our operating fund.

Any design can be put on any item.
Just let our Director, David Bianchi, know.

SHOP CATEGORIES

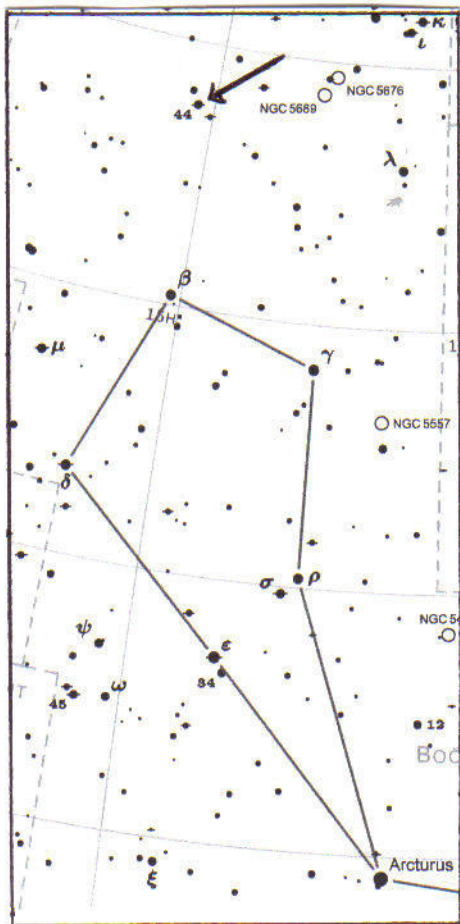
Postage · Apparel · Housewares
Hats & Bags · Stickers, Buttons & Magnets

Editor: I would like to welcome a new contributor to our newsletter: *Glenn Chaple*. Glenn may be familiar to most of you as not too long ago he gave a presentation to our club. “Sky Object of the Month” will be a welcomed addition to Skylights. Glenn currently writes a monthly column for “Astronomy Magazine.” He is also working on a book about the outer planets.

Sky Object of the Month - June 2009

44 Bootis

By Glenn Chaple



Finder chart for 44 Bootis.
From Mag-7 Star Atlas
(Copyright Andrew L. Johnson)

Rule #1: Never write about a deep-space object you haven't seen.

Rule#2: Ignore Rule #1.

In the early 1970s, during my tenure as a “rookie” backyard astronomer, I observed double stars with relentless abandon. My instrument of choice at the time was a 3-inch f/10 reflecting telescope, made by Edmund Scientific. For a reference, I chose the 1966 edition of *Norton's Star Atlas*.

One evening, I decided to dine on double stars in the constellation Bootes. According to *Norton's*, one particular pair, 44 Bootis, had a separation of 2.6 seconds of arc – close, but not impossible in a 3-inch scope. To my surprise and disappointment, I couldn't split the pair – not that night or on subsequent evenings. Had I read *Norton's* more carefully, I would have seen a note describing 44 Bootis as a binary pair that was closing. I would later learn that its magnitude 5.3 and 6.2 components were separated by a mere 0.4 arc-seconds at the time of my futile attempts.

Fast forward four decades to the present. 44 Bootis, whose 210-year orbit is highly inclined to our line-of-sight, has opened up. Orbital data indicate that its component stars are separated by 2.2 arc-seconds. Time for a feast!

I haven't yet seen 44 Bootis, at least not double. But I'll be outside this month trying. Although a 2+ arc-second separation is within reach of a 3-inch, I'm going “loaded for bear.” My instrument of choice this time will be a 5-inch f/12 Maksutov-Cassegrain telescope, paired with an eyepiece that magnifies at least 150X. To be safe, I'll conduct the observation on a night of above average seeing. Instead of my reporting what I ultimately see, check out 44 Bootis for yourself, and we'll compare notes.

Your comments on this column are welcome. E-mail me at gchaple@hotmail.com.

June Meeting

5:30-6:30 PM: Business Meeting

6:40-7:30 PM: Social hour and Joan's Beginner Astronomy Class

7:30-9:30 PM: Club Meeting

Meeting Items

2009 NASA NSN Hot Topic- Clusters of Stars- Observing target: The Hercules Cluster

-Bernie Reim's "What's Up"

-Astro shorts & Astro News

-NASA Night Sky Network activity:

-Dark Skies: Friendly Lighting updates

-Guest Speaker: **Professor John Wardle - Talking on Radio Astronomy**

Professor of Astrophysics

Brandeis University

John Wardle studies powerful extragalactic radio sources and especially the nuclei of quasars using the Very Large Array and the Very Long Baseline Array of the National Radio Astronomy Observatory. He specializes in making polarization observations of quasars to map the magnetic fields near the super-massive black holes at the heart of these objects. Recent results include the first detections of circular polarization at milli-arcsecond resolution, and a new technique for measuring the distance to high redshift quasars. Professor Wardle is a member of the Brandeis Astrophysics group.

July Meeting

5:30-6:30 PM: Business Meeting

6:40-7:30 PM: Social hour and Joan's Beginner Astronomy Class

7:30-9:30 PM: Club Meeting

Meeting Items

2009 NASA NSN Hot Topic- Black Holes - Observing target: Our Galaxy: The Milky Way

-Bernie Reim's "What's Up"

-Astro shorts & Astro News

-NASA Night Sky Network activity:

-Dark Skies: Friendly Lighting updates

-Guest Speaker: **Br Abert Heinrich: "Where does our Calendar come from."**

Come and learn about the people and events that led to the development of the calendar that we rely on every day.

- - *Submitted by Ron Burk*

Club Meeting & Star Party Dates

Date	Subject	Location
June 5	5:30-6:30 PM: Business Meeting 6:40-7:30PM: Social Hour and Joan's Beginner Astronomy Class (Topic TBD). 7:30-9:30PM: Club Meeting: * 2009 NASA NSN Hot Topic: Clusters of Stars - Observing target: The Hercules Cluster. *Bernie Reim's "What's Up." *Astro Shorts & Astro News. *NASA Night Sky Network Activity. *Dark Skies: Friendly Lighting Updates. * Guest Speaker: Professor John Wardle - Talking on Radio Astronomy.	Masonic Hall West Kennebunk, Me.
June 19	Open Observing Session. The public is welcome to join club members and enjoy the night sky.	Starfield Observatory, West Kennebunk, Me.

Directions to ASNNE event locations

Directions to Masonic Hall

From I-95:

If coming southbound, take Exit 25 off of I-95. Come out to Rte. 35. Turn left at stop sign and turn right at next stop sign. Proceed straight ahead and you will see a variety store on the left and the Masonic Hall will be on the right.

If coming northbound, take Exit 25 off of I-95. Turn right at the stop sign and cross over I-95. Proceed straight for about 1/2 mile. There will be a variety store on the left and the Masonic Hall will be on the right.

Directions to Starfield Observatory

From North:

Get off turnpike at exit 32, (Biddeford) turn right on Rt 111. Go 5 miles and turn left on Rt 35. Go 2 miles on Rt 35 over Kennebunk River to very sharp 90 degree left turn. The entrance to the Starfield Observatory site is at the telephone pole at the beginning of the large field on the left. Look for the ASNNE sign on the pole.

From South:

Get off the turnpike at exit 25 in Kennebunk. After toll both turn right on Rt 35. Go up over the turnpike and immediately turn right on Rt 35. About 4 miles along you will crest a hill and see a large field on your right. Continue until you reach the end of the field. Turn right into the Starfield Observatory site at the last telephone pole along the field. Look for the ASNNE sign on the pole. If you come to a very sharp 90 degree right turn you have just passed the field.

To join **ASNNE**, please fill out the below membership form. *Checks should be made payable to: Astronomical Society of Northern New England (A.S.N.N.E).* For more details, please visit our website:
<http://www.asnne.org>



Astronomical Society of Northern New England
 P.O. Box 1338
 Kennebunk, ME 04043-1338

2009 Membership Registration Form

(Print, fill out and mail to address above)

Name(s for family): _____

Address: _____

City/State: _____ Zip code: _____

Telephone # _____

E-mail: _____

Membership (check one):

Individual \$35 _____ Family \$ 40 _____ Student under 21 years of age \$10 _____ Donation _____

Sky & Telescope (\$32.95) _____ Astronomy (\$34) _____

Total Enclosed _____

Tell us about yourself:

1. Experience level: Beginner _____ Some Experience _____ Advanced _____

2. Do you own any equipment? (Y/N) And if so, what types?

3. Do you have any special interests in Astronomy?

4. What do you hope to gain by joining ASNNE?

5. How could ASNNE best help you pursue your interest in Astronomy?

6. ASNNE's principal mission is public education. We hold many star parties for schools and the general public for which we need volunteers for a variety of tasks, from operating telescopes to registering guests to parking cars. Would you be interested in helping?

Yes _____ No _____

7. ASNNE maintains a members-only section of its web site for names, addresses and interests of members as a way for members to contact each other. Your information will not be used for any other purpose. Can we add your information to that portion of our web site?

Yes _____ No _____

