



The Summer Skies...

This essay was written by Marc Siskin and was downloaded from the Compuserve Astronomy Forum. I thought that since we provide the more experienced telescope user with a monthly column (The Observing Chairman's Report) we could include an overview of what's in the summer sky for the less experienced amateur that may have only binoculars to use. EDITOR

The summer months are some of the best and most frustrating for observing. There are many fine constellations and objects to observe but the lateness of sunset and twilight makes for short observation periods. In mid-June there are only about 3 1/2 hours of dark skies available for observing, to extend this you can do planetary observing during the twilight hours.

Summer (for the Northern Hemisphere) begins this year at 22:11:01 on the 21st of June. This is when the sun reaches the highest point in it's journey along the ecliptic. Astronomically speaking the Sun enters Gemini at longitude 89.99 on the ecliptic. Astrologically speaking the sun enters the sign of Cancer. The Sun is now one constellation ahead of itself. In 2 years the Sun will still be in the constellation of Taurus at the solstice and so will be 2 constellations ahead of itself.

One thing you may want to track in June is the timing of sunrise and sunset. We all know that the longest day of the year occurs on the Summer Solstice. However if you look at the times of sunrise, you will notice that the sunrise will be later on the 21st than it will be a week earlier. The earliest sunrise in June is on the 13th (4:31am at lat 40), and the latest sunset will be on the 27th (7:33pm for lat 40). Since we see more sunsets than sunrises the days seem to get longer even though after the 21st they aren't.

SCORPIUS

While observing, be sure to look at the constellation Scorpius. The scorpion is in the southern sky in the evening. Look for a bright red star about 15 degrees above the horizon this is Antares the heart of the scorpion. The claws are represented by the curve of stars to the right of Antares. And the body and tail are a line and hook of stars pointing down from Antares. The Bottom of the constellation is just above our horizon and is best visible on clear dry nights. Just to the right of Antares is the star cluster M-4 which is easy to find in good binoculars. The cluster is 1.3 degrees to the right of Antares. This is the width of your little finger at arms length.

LIBRA

To the left of Scorpius in the southern sky is the only non-animal in the Zodiac Libra the scales. Libra wasn't always a separate constellation. This is shown by the names of the two bright stars in Libra, Zuben-El-Gemubi and Zuben-El-Schemali they mean respectively, the Southern and Northern claws. If you extend the constellation of Scorpius to include the stars in the current constellation Libra it forms a frightening picture of a scorpion ready to strike. The rest of the scales are portrayed by a faint pair of stars between the bright stars in Libra and Scorpius.

SAGITTARIUS

When we look at the constellation Sagittarius, we are looking towards the center of our galaxy.

The actual center is obscured by interstellar dust so all we see is the greater concentration of stars in that direction. The brighter stars form the shape of a giant teapot the handle is on the left side and is formed from a curve of 3 stars. The top of the teapot points to the north and the spout is a triangle of stars pointing to Antares in the constellation Scorpius. The area between Scorpio and Sagittarius and the area above the teapot is an area with many binocular and small telescope accessible clusters and nebula. One of the best objects to look for is the Lagoon Nebula M-8. It is located 6 degrees above the spout (the spout is about 6 degrees high). A degree and a half above M-8 is the Trifid Nebula M-20. It is 7th magnitude and within the reach of binoculars. What you will see of M-20 will be a small cluster of stars though with a telescope, you should see some of the nebulosity that gave this object its name.

SUMMER TRIANGLE

A major feature in the sky this season is the summer triangle. This asterism has risen at the end of twilight in late spring and moves across the sky all summer. The triangle is made up of three bright stars in separate constellations. The highest and brightest star in the triangle is Vega in the constellation of Lyra. To the left of Vega is the star Deneb which is the tail of the Swan Cygnus. Finally below and between these two stars is the third star in the triangle Altair in the constellation Aquila the eagle.

LYRA

The main part of the constellation Lyra is a box of 3rd magnitude stars to the east of Vega. A degree and a half to the northeast of Vega is the star Epsilon. Epsilon is a pair of double stars. In binoculars each pair will look like a single star. However, if you look through a small telescope you will see that each of the two stars is itself a double. Between the southern pair of stars in the box of the lyre is M-57 the Ring nebula. It is visible in most telescopes and is almost halfway between the two stars.

CYGNUS

Another double star in that area of the sky is the rather beautiful Alberio. Alberio is the bottom of the Northern Cross, Cygnus the Swan. Look for the last bright star in the long bar of the cross, this is Alberio. If you hold them steady, a good pair of binoculars will split these two stars. They will appear as yellow and green in a telescope see if you can see their colors in binoculars. Cygnus the swan is swimming along the Milky Way. Alberio is the head of the swan and Deneb is the tail. If you are in an area where you can see the Milky Way you should be able to see that there is an area along the long neck of the swan that is darker than the rest of the Milky Way. This is the Cygnus Rift and it is an area of dust that is blocking the light of the stars behind it. Near the star Deneb (which means tail) is an object that is called the North American Nebula. It is a glowing cloud of gas and dust about a degree and a half in diameter (the moon is a half degree wide) that looks like the outline of the North American continent. It is considered to be extremely faint but I have friends who have seen it with their naked eye in exceptionally dark skies. Binoculars may help you find it. Look to the right of Deneb for it. Place Deneb out of the field of view of your instrument to get rid of it's bright glow.

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THE NEXT SCHEDULED STAR PARTIES ARE MAY 29TH, JUNE 19TH, AND JUNE 26TH AT THE ATLAS SITE. All of you who want to use the site any time will want to think about key rental. The cost per year was settled on at the last meeting at \$15.00 (see what happens when you don't attend?!) If you don't have a key, you will still be able to use the site, but only when a keyholder is present.

The shortest nights of the year are coming up, but there is still enough darkness to see some interesting galaxies in Draco. Look about three degrees south and two and one-half west of Iota to find M102, one of the so-called "added" Messier objects. It should be visible in a good three inch telescope as a small lens shaped fuzzy patch. Larger instruments show the rather pointed ends and brighter nuclear region of this nearly edge-on galaxy. A larger but fainter galaxy is NGC 5907, located about one and a half degree north-east of M102. Visible in a six inch, this galaxy shows as a long faint streak of light with a small and slightly brighter nucleus. An eight inch shows hints of mottling especially near the center of the galaxy, while a ten inch shows it to be very much like its photographs.

If you are tired of galaxies, take a swing to the east into Hercules to find M13, the great globular star cluster. Located about two and a half degrees south and a bit west of Eta, this object has been seen at times with the unaided eye, and with telescopes as small as four inches showing some stars near the cluster's edges. In a six or eight inch the sight is glorious, but it does require 120 to 200 power for the best views. About half a degree to the north and a bit to the east of M13 is the small spiral galaxy NGC 6207. It should be visible in a six inch as a faint elongated fuzzy patch with a slightly brighter center, and a ten inch should reveal some vague hints of detail.

Another great globular cluster is M5, located just north-west of ϵ Serpentis. Easy in binoculars, this cluster is much tighter than M13 and shows stars at high power in a four inch. In a six or eight inch, the sight is fantastic with high power fields being just packed with faint stars. A ten inch shows a star-like center surrounded by a blaze of starlight that will take your breath away.

As a challenge to those of you with eight inch and larger apertures, there is a large group of about eight galaxies within two degrees of the star ι Virginis. The brightest members are NGC 5846

The Observing Chairman's Report

by David
Knisely



and NGC 5850, both just east of the star. NGC 5846 is an elliptical galaxy that appears as a small faint fuzzy spot, and NGC 5850 is a faint barred spiral. Both galaxies are about 12th magnitude and don't show much detail. A somewhat easier galaxy is NGC 5746, located about a half degree due west of ι Virginis. This galaxy should just be within range of a six inch, with an eight inch showing it as a faint streak of light with a small brighter nucleus and vague dark lane. Just to the south-west is another galaxy, NGC 5740, which shows as a faint oval fuzzy patch with a slightly brighter middle when viewed in an eight inch.

As a final target for you galaxy lovers, look about three degrees north and one and a half degrees west of ι Centauri for the large barred spiral M83. Visible in binoculars, this galaxy has a very low surface brightness and a bright nucleus that shows up well in a six inch instrument. This object responds well to use of the Lumicon Deep-Sky filter and shows clear spiral structure in a ten inch telescope.

1987 Meteor Showers...

FROM COMPUERVE'S ASTRONOMY FORUM

01-04-1987	01-04-1987	15h28'+50	Quadrantids	Average speeds
01-17-1987	01-17-1987	19h40'+53	Chi Cygnids	Slow, evanescent trails
02-05-1987	02-10-1987	5h00'+41	Alpha Aurigids	Very slow, fireballs
02-05-1987	03-19-1987		Delta Leonids	Average speeds
03-10-1987	03-12-1987	14h32'+12	Zeta Bootids	Fast, persistent trails
03-21-1987	05-13-1987		Sigma Leonids	Average speeds
04-22-1987	04-22-1987	18h16'+34	Lyrids	Fast, persistent trails
05-02-1987	05-07-1987	22h25'+00	Eta Aquarids	Associated with P/Halley
05-05-1987	05-05-1987	22h24'+00	Gamma Aquarids	Very fast, long trails
05-11-1987	05-24-1987	16h28'+28	Zeta Herculids	Fast; white
05-19-1987	06-14-1987		Tau Herculids	Slow
05-30-1987	05-30-1987	22h12'+27	Eta Pegasids	Very fast, persistent trails
06-01-1987	09-30-1987	17h56'+48	Gamma Draconids	Slow, evanescent trails
06-02-1987	06-17-1987	16h52'-22	Alpha Scorpiids	Very slow, fireballs
06-27-1987	06-30-1987	15h12'+57	Iota Draconids	Very slow
06-30-1987	06-30-1987	5h41'+19	Beta Taurids	Associated with P/Encke
07-01-1987	08-31-1987	21h00'+48	Alpha Cygnids	Fast, long trails
07-14-1987	08-25-1987	22h38'-11	M. Delta Aquarids	Fast
07-15-1987	08-10-1987	20h16'-12	Alpha Capricornids	Very slow, bright
07-15-1987	08-25-1987		S.Iota Aquarids	Average speeds
07-15-1987	09-20-1987		N.Iota Aquarids	Average speeds
07-23-1987	08-04-1987	3h12'+43	Alp/Beta Perseids	Very fast; P/Swift-Tuttle
07-29-1987	07-29-1987	22h36'-17	Delta Aquarids	Slow
08-01-1987	09-30-1987	22h00'+49	Lacertids	Average speeds, short
08-09-1987	10-06-1987		Kappa Cygnids	Average speeds
08-10-1987	08-20-1987	19h20'+54	Chi Cygnids	Average speeds, bright
08-12-1987	08-12-1987	3h04'+58	Perseids	Very fast
08-12-1987	10-02-1987	4h56'+42	Alpha Aurigids	Very fast, persistent trails
08-21-1987	08-23-1987	19h24'+60	Omicron Draconids	Very slow, max. in 1879
08-21-1987	08-31-1987	17h32'+62	Zeta Draconids	Rather slow, bright
08-31-1987	11-02-1987		S. Piscids	Average speeds
09-07-1987	09-15-1987	4h04'+35	Epsilon Perseids	Fast, persistent trails
09-19-1987	12-01-1987		N. Taurids	Average speeds
09-25-1987	10-19-1987		M. Piscids	Average speeds
09-25-1987	11-12-1987		Annual Andromedids	Slow
10-12-1987	10-23-1987	2h48'+21	Epsilon Arietids	Very slow, fireballs
10-21-1987	10-21-1987	6h20'+15	Orionids	Fast; P/Halley
10-30-1987	11-17-1987	4h16'+22	Epsilon Taurids	Slow, fireballs
11-03-1987	11-03-1987	3h32'+14	E Taurids	Slow, bright; P/Encke
11-17-1987	11-27-1987	1h40'+43	Andromedids	Very slow
11-18-1987	11-18-1987	10h00'+22	Leonids	Very fast; P/Tempel-Tuttle
12-12-1987	01-23-1988		Coma Berenicids	Extremely fast
12-14-1987	12-14-1987	7h32'+32	Geminids	Average speeds
12-23-1987	12-23-1987	14h28'+76	Ursids	Average speeds
01-04-1988	01-04-1988	15h28'+50	Quadrantids	Average speeds

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AQUILA

Third constellation in the Summer Triangle is Aquila the eagle located between Cygnus and Sagittarius. The brightest star in Aquila is Altair the local of the movie Forbidden Planet. It is the eye of the eagle and the rest of the constellation spreads out to the south towards Sagittarius.

MILKY WAY

One feature of the sky that is visible in the summer is the Milky Way. To see this you must get away from all light. Once you are, look about halfway up the eastern sky for the summer triangle. Vega and Altair straddle the Milky Way and Deneb is in the middle of a bright section. The Milky Way is the rest of our galaxy. There are about 5 to 6 thousand stars visible to the naked eye as stars. Within the Milky Way however, there are billions of stars. Our galaxy is believed to contain well over 200 billion stars and in the Milky Way we see most of them. The reason we don't see the Milky Way as individual stars, is the same reason that we see newspaper or magazine pictures as complete pictures rather than a series of colored dots. There are so many stars close together in the Milky Way that our eyes see them as a haze of light rather than stars. The Milky Way does not have an even glow. There are many areas of brighter or darker glow. One of the areas of dimming is the area around Cygnus. This is caused by dust between us and the distant stars blocking the light.

MINOR CONSTELLATIONS

Between Aquila and Cygnus are three minor constellations known as Sagitta, Vulpecula and Delphinus. Sagitta is the arrow that, according to myth, Hercules used to kill Aquila. It is a small constellation of 4 main stars. To find it draw a line from Altair to Alberio the southern most star in Cygnus. Alberio is the second brightest star in that constellation. About 1/3 the way from Altair is Sagitta. Look for 3 stars in a short line with one star above the western star. Between Sagitta and Alberio is the constellation Vulpecula the fox. It is a very inconspicuous constellation. Look for a faint slightly bent line of 3 stars. The third minor constellation to look for is Delphinus representing a dolphin at play. To find this small constellation locate the long edge of the summer Triangle. Delphinus is to the east of this side of the triangle and about 3/4 of the way from Deneb to Altair. Look in this area for a small curve of faint stars about 2 degrees wide or about the width of your finger at arms length. Once you have found the curve look carefully at it for another star. The full shape of the constellation is that of a diamond with a tail. The tail and one side of the diamond are readily apparent at first sight the 4th star in the diamond is fainter than the other 3 and takes a little while and a little concentration to see. It will help your search if you are away from lights and have allowed your eyes to become adapted to the dark.

PERSEIDS

Summer is the time of year for the annual Perseid meteor shower. The maximum is due the 12th of August. This shower is one of the best each year. From about 4 days before the 12th until 4 days after the shower rises and falls in intensity. The normal maximum rate of the Perseids is around 50. The meteors seem to radiate from the area between Perseus and Cassiopeia and are best after midnight since the earth is turning into the path of the meteor shower and also the radiant of the shower is higher in the sky.

AT THIS MONTH'S MEETING Carroll Moore will be presenting a program concerning the discovery of the planet Pluto. We hope you'll be able to attend!!!

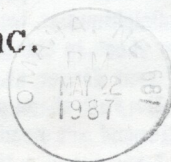
At The Last Meeting...

The April meeting was called to order at 7:29pm with 24 members present. Astronomy Day plans were discussed briefly, it was to be held at East Park Plaza with setup beginning at 8:30am. Next on the agenda was the Atlas Site. It seems the cars have been removed and the demolition crew is ready whenever we call. The actual purchase of the site will take place as soon as a proper contract can be drawn up by our lawyer. The membership voted to rent keys to the site for \$15.00 a year, with it being mandatory that club officers rent the keys. Of the 24 members at the meeting, 11 indicated they would rent keys. The membership also voted that keys NOT be loaned out to those without keys. Anyone not wishing to rent a key can still use the site, but it must be when someone else with a key is at the site. To best promote safe and enjoyable observing, it was suggested the club secretary/newsletter editor write up a list of rules to be followed at the site, i.e. clean up when done, keep bright lights away from telescope areas, etc.

Andy Corkill was back in town after visiting Colorado and India (a strange combination!). He stated that he studied some interesting dance/meditation techniques in India, as well as finding out what it was like to have hepatitis and severe diarrhea. But he made it back ok and even donated an Indian shawl to the office of President. It was indicated that the PAC President must wear the shawl at some formal occasion at least once a year (Lee Thomas looked right at home wearing the shawl at the meeting!).

Finally, Carroll Moore brought in a new telescope donated to Nebraska Wesleyan. It was a beautiful 7" Questar worth close to \$12,000. Every once in awhile it's nice to see how the other side lives! The program was presented by Ron Veys who described some of the space related projects that he and his company are working on.

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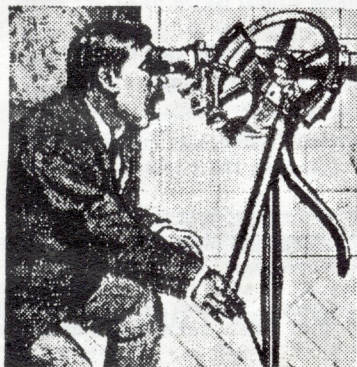


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Next PAC Meeting...
May 28th