



July 2004 Newsletter of the Omaha Astronomical Society Issue 199

Hard at Work Mirror Grinding



General Meeting of the
Omaha Astronomical Society
Friday, July 2nd at 7:30 PM
Durham Science Center, Room 169
UNO Campus

Program: See Page 3

Events

JUNE CLUB STAR PARTY
Saturday, 17 July 2004
Club Site Weeping Water

MAHONEY PUBLIC STAR PARTIES

Friday July 9, 2004

Friday August 13, 2004
Friday September 17, 2004

**PLANNING MEETING FOR 2004
NEBRASKA STAR PARTY**
8 July, 7:30 pm
Mahoney State Park Lodge
Join us and do your part to help plan NSP 10!

NEALE WOODS NATURE CENTER PROGRAMS
Phone number: (402) 453 - 5615

Done until Fall

OAS members are encouraged to help out with these events.

STELLA is a publication of The Omaha Astronomical Society. Please send related correspondence to: STELLA, c/o Omaha Astronomical Society, P O Box 540424, Omaha, NE



BULLETINS

July Meeting

"The 2004 MSRAL Convention"

By Al Dorn

Good June Dates to Observe at the OAS Club Site or at any good location

Friday 9 July, last quarter moon
Saturday 10 July, last quarter moon
Friday 16 July, new moon
Saturday 17 July, new moon

Upcoming Events

July 10th look for Mars & Mercury close
together about 10 degrees above the
horizon

August 11 is this years date for the
Perseid Meteor shower

An Astronomy Quiz

This Month Quiz - Answers on page 11.

1. Which constellation probably contains the most dark nebula, and why?
2. What is B72?
3. What is most widely known dark nebula, and which constellation is it in?
4. What was discovered June 5, 1764 that is about 28,000 light years away?
5. How far away is the closest black hole?
6. How many fragments of Comet Shoemaker-Levy 9 hit Jupiter in July, 1994.
7. Which constellation is the only one in two separate sections, and what are they?
8. What is M6 sometimes called?
9. How far does the moon move away from the earth every year?
10. What is the picture below?



Front page shows the following at the grinding table:
(left to right) Sandy Vequist, Karl Niehaus, (coach) Bob
Allen, (host) George Allen, Bill Bond, and Nick
Valentour.

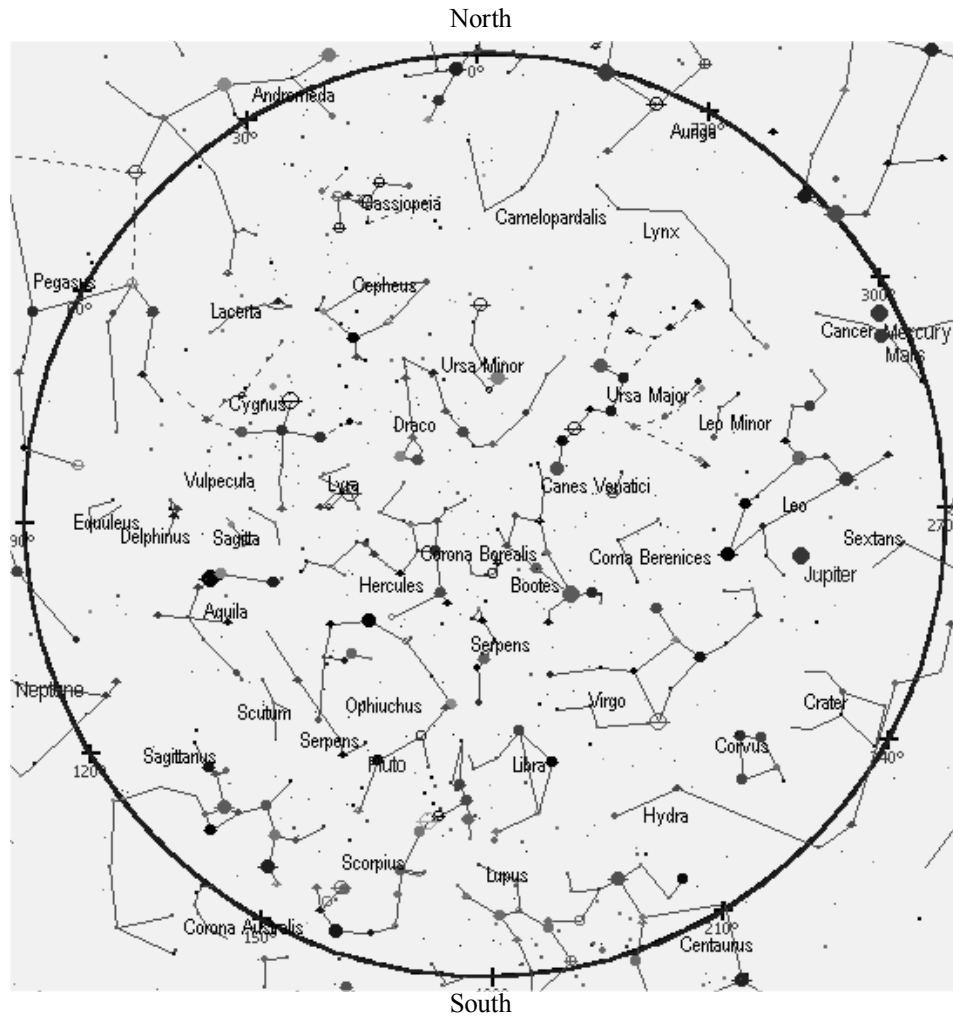
The image below is JoDee Allen at the polishing stand.



ATTENTION

"Attention all members who ordered 2004 RASC
Observing Guides -- your books arrived nearly six
months ago. You need to pay for them (\$15 each) at or
before the July meeting."

The July Sky

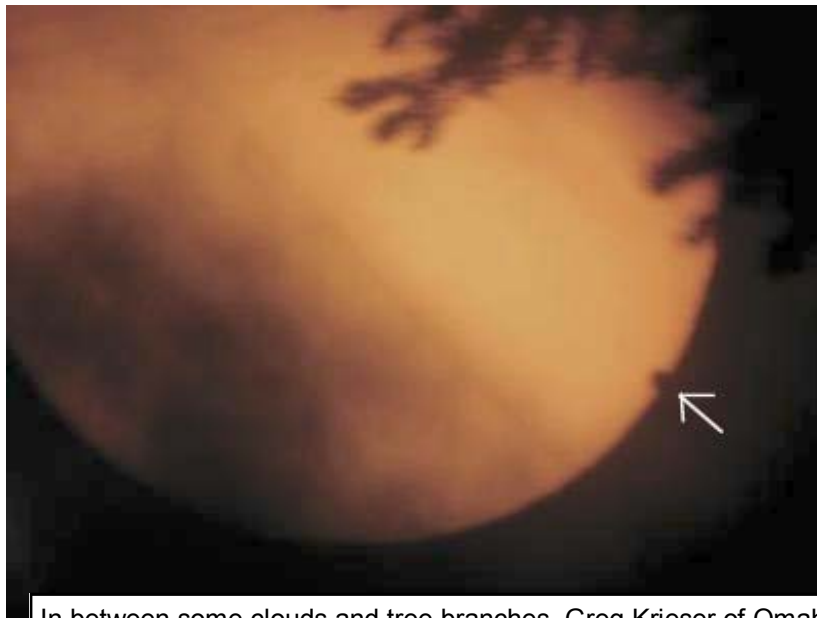


This map reflects the Northern Hemisphere sky at the following times:

Early July, 2004	10 pm
Late July, 2004	9 pm
Early August, 2004	8 pm

July Sky Calendar

2nd of July	Full Moon
5th of July	Earth at Aphelion
9th of July	Last quarter Moon
17th of July	New Moon
24th of July	First Quarter Moon
31st of July	Full Moon



In between some clouds and tree branches, Greg Krieser of Omaha captured this view of Venus transiting off the edge of the Sun.

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Sobieski's Shield Hangs In There
Harlan Seyfer

Poor Scutum. One is tempted to call it the Rhode Island of summer constellations. Of the 88 constellations, it ranks 84th in size, taking up about ¼ of one percent of the sky. Its brightest star, Alpha Scuti, glows only at magnitude 3.9. To heap on additional insult, Scutum has no named stars. H.A. Ray, in his classic *The Stars*, is brutally brief: "Modern constellation, small and dull." The Victorian popularizer of astronomy, Reverend T.W. Web, held a quite different opinion: "This asterism, which worthily associates the memory of the Polish hero with the most brilliant part of the Galaxy visible in our latitudes, is full of splendid telescopic fields; and the very ground of the Milky Way seems here resolvable." The American astronomer Edward Emerson Barnard called Scutum "the gem of the Milky Way." And so it is, as we shall see.

When the ancients named the constellations, they were not concerned with filling the sky. There were many gaps, mostly wherever dimmer stars resided. It wasn't until Johann Hewelke (1611-1687 – we know him as Johannes Hevelius) came along that a conscientious attempt was made to designate every region of the sky as belonging to a constellation. Still it wasn't until his *Firmamentum Sobiescianum* was published posthumously in 1690 that the gap between Serpens, Sagittarius, and Aquila was named Scutum Sobiescianum.

Hevelius, who observed from Danzig, Poland, was a remarkable astronomer. In 1647 he published a book on the moon, in which he named lunar features after earth's major geography. Most of his names have been replaced, but the Alps, Apennines, and Caucasus remain. Although the telescope was invented the year before his birth, he would only use it to observe the moon and planets. He preferred his eyes unaided for viewing the stars. As a result, he found himself in a dispute with Robert Hooke of England over whether measurements of star positions could best be carried out with naked eye sextants, as Hevelius asserted, or with telescope-equipped sextants, as Hooke believed. In 1679, Hooke dispatched the young Edmund Halley to Danzig to resolve the issue. Halley had at that time extensive experience observing with sextant telescopes. Side by side Hevelius and Hooke observed identical stars each with their own instrument over several nights. When the results were compared, they differed by arc-seconds only. The observing skills of Hevelius had matched those of one the best telescope observers of his day. Still with ever improving telescopes, there was no future to observing with the unaided eye, as Hevelius acknowledge in later years.

So what was this “Sobiescianum” thing that Hevelius had? Hevelius’ patron was Jan Sobieski III. When the Turks marched on Vienna in 1683, Sobieski’s army met and defeated them. To commemorate the victory, Hevelius named the constellation Scutum Sobiescianum — Shield of Sobieski. Admiral Smyth, in his *Bedford Catalogue* published in 1844, quotes Hevelius, “I wish you to know, benevolent reader, that this shield consists of seven lucid stars, partly of the fourth magnitude; four of these are placed in the border of this shield [Beta, Gamma, Zeta, and Eta Scuti – HS], and designated the princes of our serene king, who at that time were all among the living. In the middle of the shield I have designed a cross, in eternal remembrance of the battles most happily fought by him for the Christian faith: three notable stars shine in this cross [Alpha, Delta, and Epsilon Scuti – HS], of which one indicates his own royal person, another the queen’s, and a third the princess’s, his only daughter; so that these seven stars represent the whole reigning family.”

The good admiral was not a big fan of Scutum, however. Writing about Hevelius and his constellation, “poor fellow [Hevelius], Mr. Baily has taken the field, and Sobieski is one of the first among the asterisms recently doomed. . . . I hope his pruning-knife is to be applied to many other interlopers, most of whom are far more petty than this.” Nonetheless, the International Astronomical Union (IAU) disagreed with Smyth many years later (in 1928) when it standardized constellation names and boundaries. In an early nod to political correctness, the IAU dropped references to any modern nation in the new scheme. As a result, we know the constellation as just Scutum, “The Shield”, today. By the way, Admiral Smyth put M11 in Antinous, a now extinct constellation.

Despite being a somewhat obscure constellation, Scutum holds more than its share of splendid deep-sky objects. One of these, a favorite of many amateur astronomers, is M11 (NGC 6705) up in the northeast corner of the constellation. (When looking south at the sky, east is to your left.) In 1844 Smyth described this stellar gathering as “a splendid cluster of stars. . . . This object, which somewhat resembles a flight of wild ducks in shape, is a gathering of minute stars, with a prominent eighth-magnitude in the middle and two following [to the east].” Smyth’s impression of a flight of ducks in “V” formation stuck, and today M11 is popularly known as the Wild Duck Cluster. M11 is about 13 arc-minutes across, but extremely rich and bright. Interestingly, until the mid-twentieth century there was some controversy as to whether M11 should be considered an open or globular cluster. Today it is recognized as an open cluster, although unusually compact for the type. It has a total visual magnitude of 5.8 and is between 5500 and 6000 light years distant. A mid-1990’s study found 5780 member stars down to visual

magnitude 22. I like to visit M11 at the Nebraska Star Party, especially to test newly purchased eyepieces. At different magnifications, details appear and disappear. Fascinating!

Three and a half degrees south southwest of M11, lies M26 (NGC 6694). Dimmer than M11 — its total visual magnitude is about 8.0 — M26 has been described as having a weak concentration towards the center, moderate brightness range, and containing 50 to 100 stars. M26's brightest star is magnitude 10.3, and its distance is about 5000 light years. It has a backwards S shape in my eight-inch SCT. Or so it seems to me; let me know what you see.

The "Gem of the Milky Way" is found where the galactic equator, the mid-plane of the Milky Way, runs through Scutum. This is the Scutum Star Cloud. Easily seen with the unaided eye and stunning in binoculars, the Cloud overflows the 12 by 9 degree boundary of the constellation. Between them, M11 and M26 neatly bracket the Cloud. Here, James Mullaney cautions astronomers, "watch for an amazing '3-D' effect that can occur without warning: as the eye-brain combination makes the association that the fainter stars you're seeing in the Cloud are farther away than are the brighter ones, that you're actually looking at layer upon layer of stars, the Milky Way can suddenly jump right out of the sky at you in a striking illusion of depth-perception!"

Down in the southwest corner of Scutum and lying southeast of fifth magnitude Gamma Scuti is Barnard 312, a large dark nebula, which can be seen in binoculars. It stands out because its northern and northwestern edges are sharply defined against the dense concentration of stars behind it. During the years just preceding World War I, Edward Emerson Barnard at Lick Observatory took a series of remarkable photographs of the Milky Way using standard portrait lens. These showed areas where there were few or no stars. At first Barnard, like most astronomers of his time, believed that this was the actual distribution of stars interspersed with large areas of empty space. However, as he continued to study his photographs, Barnard realized that these were in fact dark clouds that he had imaged, which were hiding the light of stars. In 1919 he published a catalog of 182 such objects, and later increased his list to 352. At the time nearly all astronomers believed that the vast distances between stars were empty and transparent. The assertion that random blobs of gas and dust in interstellar space could dim the light of stars was a serious matter. If such was the case then the determination of stellar distance, intrinsic brightness, and even color was open to question. Intervening dust would alter the nature of a star's light reaching the earth. Understandably, the astronomers of Barnard's day were not happy with his conclusion. Some even refused to discuss the matter. As a result

Answers to Astronomy Quiz

1. Sagittarius
2. B72 is the Snake Nebula
3. The Horsehead Nebula in Orion
4. Messier 19
5. 1,600 light years, known as V4641 Sgr.
6. 21 fragments
7. Serpens Caput, the Snakes Head; and Serpens Cauda, the Snakes Tail
8. The Butterfly Cluster
9. About 1 inch
10. M88

the British astronomer Sir Arthur Eddington remarked, "Astronomers are like the guest who refused to sleep in my [400-year old home's] reputedly haunted room, because as he explained, 'I do not believe in ghosts, but I am afraid of them.'" As time passed, however, the astronomical community came to accept the idea, aided by the observation of dust lanes in nearly all edge-on nebula that we know as galaxies today.

Scutum is full of these dark nebulas. East of Beta Scuti and north of M11 is the Barnard 111 complex of dark nebula. Over a half dozen dark clouds are found in this area, many of which can be seen in binoculars. Well worth exploring at low power, the complex is the tip of the Milky Way's Great Rift.

Before we leave Scutum, we need to mention that there is one type of deep sky object not found here for a good reason: Scutum holds no galaxies except our Milky Way. Here, the latter jealously blocks our view of its rivals.

Dull, Mr. Ray? Far from it. There's a universe out there to explore.



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BENEFITS OF MEMBERSHIP

- ◆ Members receive the STELLA, our monthly newsletter.
- ◆ Each member is automatically a member of the Astronomical League, the only nation-wide organization for amateur astronomers.
- ◆ Use of the observing site at Weeping Water, NE
- ◆ The opportunity to borrow one of several club-owned telescopes.
- ◆ Organized trips to local observatories, planetariums and museums.
- ◆ Significant savings on subscriptions to **Sky & Telescope** and **Astronomy** magazines.
- ◆ Savings on astronomy books and printed materials.

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