

Skylights

Newsletter of the Astronomical Society of Northern New England



JUN 2021



Member of NASA's
Night Sky Network



Astronomical League

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 is named for Juno, who was the queen of the gods and the wife of Zeus. She had the power to see through a veil of clouds that Zeus put up. Our latest mission to Jupiter is also named Juno and it is doing much the same for us today except that it uses scientific instruments that humans designed using the principles of mathematics to see through the clouds of Jupiter instead of magical powers.

Summer starts at exactly 11:32 p.m. on Sunday, June 20 for us in the northern hemisphere this year. This marks the longest day of the year and the highest altitude that the sun will reach above our horizon, which is 68 degrees for us at this latitude.

This particular June is packed full of incredible events, it truly has something in store for everyone. These include a 74% partial solar eclipse, a comet named 7P/Pons-Winnecke, a couple of asteroids at their best, Juno and Vesta, all 5 planets are visible and about evenly split between the morning and evening sky, some nice conjunctions with the moon, Mars crossing through the Beehive star cluster, a meteor shower called the Bootids, and the anniversary of the most explosive natural event to occur on Earth in over 100 years.

Even though it will only be a partial solar eclipse for us, the Thursday morning June 10 eclipse will be the major highlight for us this month. We are in an eclipse season again and the northeast was the only part of this country that could not see any of the May 26 total lunar eclipse. Now the roles are reversed. The northeast will see most of the sun covered by the moon during this annular solar eclipse.

To see the entire ring of fire that defines an annular solar eclipse you would have to travel north to Polar Bear country by Hudson Bay in Canada. The moon's shadow cone will not quite be able to touch the earth during this eclipse because it will be just a little too far away near apogee to completely cover the sun, hence creating only an annular or ring-shaped eclipse.

The path of the antumbra will trace a narrow arc across the earth stretching 4831 miles starting

by Lake Superior and connecting Canada, Greenland, and Russia. During a total solar eclipse this path would be called the umbra, or deep shadow of the moon like the one much of this country experienced back on August 21 of 2017.

I saw a beautiful annular solar eclipse right over Kennebunk, ME on May 10 of 1994. That was a nice prelude to the real thing 23 years later, when I was completely immersed in the moon's shadow and witnessing the tenuous and ethereal corona of the sun reaching out over 4 million miles of the sky along with all the visible planets coming out around noon and also some of the brighter stars.

This time the antumbra will cross right over some interesting places on Earth that we don't usually hear much about since they so few people live there. The greatest part of this eclipse will occur just south of the northernmost permanently inhabited place on Earth, Alert, in Nunavut, Canada at over 80 degrees north latitude, or over 13 degrees north of the Arctic circle. Then this path will also cross right over a tiny community of fewer than 100 people in northwestern Greenland on Meteorite Island where the famous Cape York meteorite fell to earth more

"Continued on page 2"

Inside This Issue

Club Contact List	pg. 2
Moon Data Observer's Challenge	pg. 3,4,5,6
Meteor Showers in 2021 Club Merchandise for Sale	pg. 7
Astrophotography With Your Smartphone	pg. 8,9
Astroimaging with a Point & Shoot	pg. 10,11
Astronomy Club & Library Resources	pg. 12
Club Meeting & Star Party Dates Directions ASNNE Locations	pg. 13
Become a Member	pg. 14

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What's Up "Continued from page 1"

than 10,000 years ago. Its biggest fragment was the third-largest iron meteorite ever found on Earth, the 31 ton fragment named Ahnighito which was transported to American Museum of Natural History in 1904 where I have seen it several times.

For us near Portland, ME, the sun is already about half eclipsed when it rises at 5 am. Then the moon continues to cover the sun more and more from right to left. It will be 74% covered by 5:30 am and the penumbral shadow of the moon will leave the sun by 6:30 that Thursday morning. That will be similar to a partial solar eclipse that I saw over the ocean one morning on August 11 of 1999. However, that one became total over the Atlantic and then crossed over England, France, Germany, Hungary, and other countries in Europe.

Our next-door planetary neighbors, Mars and Venus, will still be our evening planets all this month. Look west half an hour after sunset and you will see Venus in Gemini and Mars in Cancer. On the 11th, a very slender waxing crescent moon will pass just 3 degrees below Venus. Mars is about 15 degrees up and to the left along the ecliptic and near Castor and Pollux in Gemini. Notice that the closer one, Pollux, is about the same brightness and orange hue as Mars. Then keep watching each clear night as Mars crosses right through the Beehive open star cluster in Cancer the Crab on June 22 and 23, just after summer started. Mars passed right below the Pleiades in Taurus on March 4 of this year. Venus is nearly fully lit by the sun now and it will set just before 10 pm each night, followed by Mars about an hour later. When you look at Mars now remember that the Chinese just successfully landed a rover on Mars a few weeks ago named Zhurong after the god of fire in Chinese mythology.

Saturn starts the month by rising just after midnight, but it will rise 2 hours earlier by the end of June. Then Jupiter rises about an hour later in Aquarius, 15 degrees to the east of Saturn. Notice that Jupiter is 15 times brighter than the ringed planet. They are both getting brighter and closer now as they approach their oppositions later this summer. Jupiter will end its direct, eastward motion on June 21 and begin its retrograde motion back towards Saturn. Mercury will show up in the morning sky again during the last week of this month.

An asteroid named Vesta will reach 7.5 magnitude and move from Leo into Virgo this month. An asteroid named Juno, with the same origin in names as the month of June, will reach opposition on the 6th. It is 84 miles across, about 4 times smaller than Vesta and about 10 times fainter.

A minor meteor shower named the Bootids will peak on June 27 in the constellation of Bootes near the Big Dipper. The brightest star in Bootes is named Arcturus, and you can find it easily by just following the arc of the Big Dipper's handle. The saying goes "Arc to Arcturus and speed on to Spica". You may see more meteors this year than usual since it is caused by the dust trail of Comet Pons-Winnecke which orbits the sun every 6.4 years and is now visible in our sky in Capricorn, right

between Saturn and Jupiter. You will need a telescope to see it since it will only reach 11th magnitude, or 100 times fainter than anything you could see without optical aid.

June 1. The moon passes near Jupiter this morning.

June 2. Last quarter moon is at 3:24 a.m. EDT. Mars passes near Pollux.

June 3. On this day in 1948 the largest telescope in the world at the time, the 200-inch Mt. Palomar reflecting telescope, was dedicated. There is a great quote by someone looking through this huge telescope at that time "Adrift in a cosmos whose shores he cannot even imagine, man spends his energies in fighting with his fellow man over issues which a single look through this telescope would prove to be utterly inconsequential".

June 4. The Compton Gamma Ray telescope came back to earth on this day in 2000 after 9 years in space and discovering about one new and extremely powerful gamma ray burst every day.

June 5. On this day in 1989 Voyager 2 passed close to Neptune which was broadcast live and called "Neptune all Night". They discovered ice volcanoes on Triton that night and many other amazing things.

June 10. New moon is at 6:53 a.m. This will create an annular solar eclipse over Canada, Greenland, and Russia. We will be able to see a 74% partial eclipse that morning as the sun rises.

June 12. The moon passes just north of Venus this evening.

June 13. James Clerk Maxwell was born on this day in 1831. He is known as the father of modern physics for bringing together electricity, magnetism, and light as different manifestations of the same phenomenon. The moon passes near Mars this evening.

June 16. On this day in 1963 Valentina Tereshkova became the first woman in space.

June 17. First quarter moon is at 11:54 p.m.

June 18. On this day in 1983 Sally Ride became the first American woman in space.

June 20. The summer solstice is at 11:32 p.m.

June 22. On this day in 2000 NASA announced that they had found evidence of former liquid water on Mars. Venus passes near Pollux this evening.

June 24. Full moon is at 2:40 p.m. This is also called the Strawberry or Flower Moon.

June 26. Charles Messier was born on this day in 1730. He was a French comet hunter that made a catalog of 110 objects that turned out not to be comets because they did not move. He did discover about a dozen comets in the process.

June 29. George Ellery Hale was born on this day in 1868. He designed and built the four consecutive largest telescopes in the world from 1899 right up to the 200 inch Mt. Palomar telescope dedicated in 1948.

June 30. On this day in 1908 a comet or asteroid that was about 100 feet in diameter exploded about 5 miles high over Tunguska, Siberia with the force of 20 megatons of TNT, or 1,000 times the energy of the first atomic bomb dropped on Hiroshima. This leveled 80 million trees over 1000 square miles but did not leave a crater.

Moon Phases

June 2
Last Quarter

June 10
New

June 17
First Quarter

June 24
Full

Moon Data

June 1
Jupiter 5° north
of Moon

June 2
Neptune 4° north
of Moon

June 7
Uranus 2° north
of Moon

Moon at apogee

June 12
Venus 1.5° south
of Moon

June 13
Mars 3° south
of Moon

June 23
Moon at perigee

June 27
Saturn 4° north
of Moon

OBSERVER'S CHALLENGE* – June, 2021

by Glenn Chaple

NGC 5746 – Edge-on Barred Spiral Galaxy in Virgo (Mag: 10.3, Size: 7.4' X 1.4')

Telescope aperture is a major factor in determining how difficult each monthly Observer's Challenge is. Under dark-sky conditions, our June Challenge - the 10th magnitude edge-on barred spiral NGC 5746 in Virgo - would be an ultimate test for a common 2.4-inch (60mm) refractor and a piece of cake in a 10-inch (254mm) reflector.

When considering the difficulty of any Observer's Challenge, you also need to factor in the ease with which it's located - particularly if you find your way by star-hopping. In this case, NGC 5746 is quite accommodating. It's just 20 arc-minutes (1/3 degree) west and slightly north of the 4th magnitude star 109 Virginis.

NGC 5746 is a classic example of an edge-on spiral or barred spiral galaxy. It's comparable in visual splendor to the better-known Messier 104 (the Sombrero Galaxy), NGC 4565 (the Needle Galaxy), and NGC 891 (the Silver Sliver Galaxy). In Stoyan and Schurig's *Interstellarum Deep Sky Atlas*, NGC 5746 is labeled as the "Mini Sombrero Galaxy," All of these edge-ons are bisected by a distinctive dust lane, which appears particularly stunning in deep sky images.

When I viewed NGC 5746 with a 10-inch f/5 reflector at 139X under magnitude 5 suburban skies, it appeared as an elongated 2- to 3-arc-minute-long streak oriented roughly north-northwest to east-southeast. There was no sign of the galaxy's dust lane. Knowing exactly where to look and resorting to averted vision, I was able to glimpse NGC 5746 with a 4.5-inch f/8 reflector.

NGC 5746 was discovered by William Herschel February 24, 1786. Some 95 million light years away, this huge galaxy spans 160,000 light years.

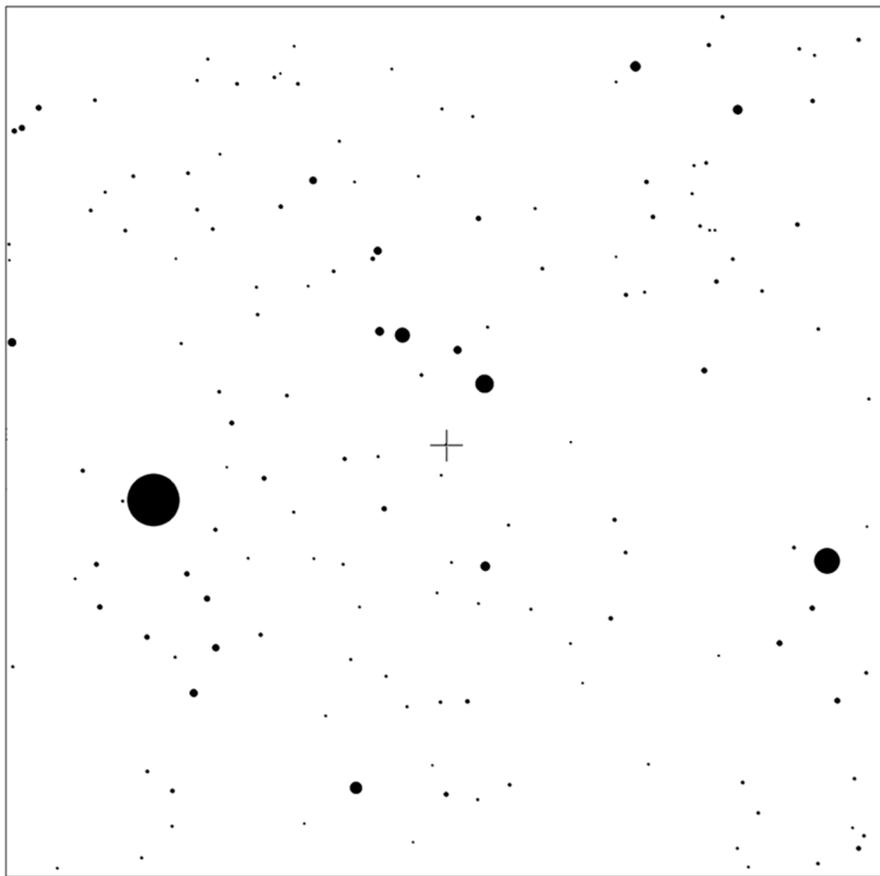
*The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to anyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'd be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge, log on to rogerivester.com/category/observers-challenge-reports-complete

"Continued on page 4"

NGC 5746 Finder Charts



jwinman.com



AAVSO Variable Star Plotter (VSP) Stars to magnitude 14.5. One degree field, North is up

“Continued on page 5”

NGC 5746 Images/Sketches



Image by Mario Motta, MD (ATMoB) 32-inch f/6.5 telescope with ZWO ASI6200 camera, 3 hours - 1 hour each Red, Blue, Green. Processed CCD stack, pixinsight, and touch up photoshop. North is up.

“Continued on page 6 ”



(above) NGC 5746, as seen with 10-inch f/5 reflector at 139X under magnitude 5 skies. 0.6° field, South is up.
(below) For comparison - portion of above sketch showing same area as in Mario Motta's image.



Principal Meteor Showers in 2021

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

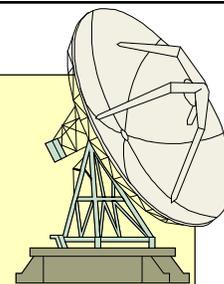
December 14
Geminids

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.***

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.***

Contact David Bianchi dadsnorlax@yahoo.com for further details.

Benefits of Membership

- Attend our monthly meetings and club star parties
 - Our Monthly Newsletter: *Skylights*
 - Discounts on *Sky & Telescope*. and *Astronomy* magazine subscriptions
 - Automatic subscription to the Astronomical League's quarterly newsletter, *The Reflector*
 - With proper training, access to the equipment at ASNNE's Talmage Observatory at Starfield.
 - By special arrangement, free admission to the Southworth Planetarium at USM in Portland
- Enjoy sharing your interest and have fun learning about Astronomy!



This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Astrophotography With Your Smartphone

By David Prosper

Have you ever wanted to take night time photos like you've seen online, with the Milky Way stretched across the sky, a blood-red Moon during a total eclipse, or a colorful nebula? Many astrophotos take hours of time, expensive equipment, and travel, which can intimidate beginners to astrophotography. However, anyone with a camera can take astrophotos; even if you have a just smartphone, you can do astrophotography. Seriously!

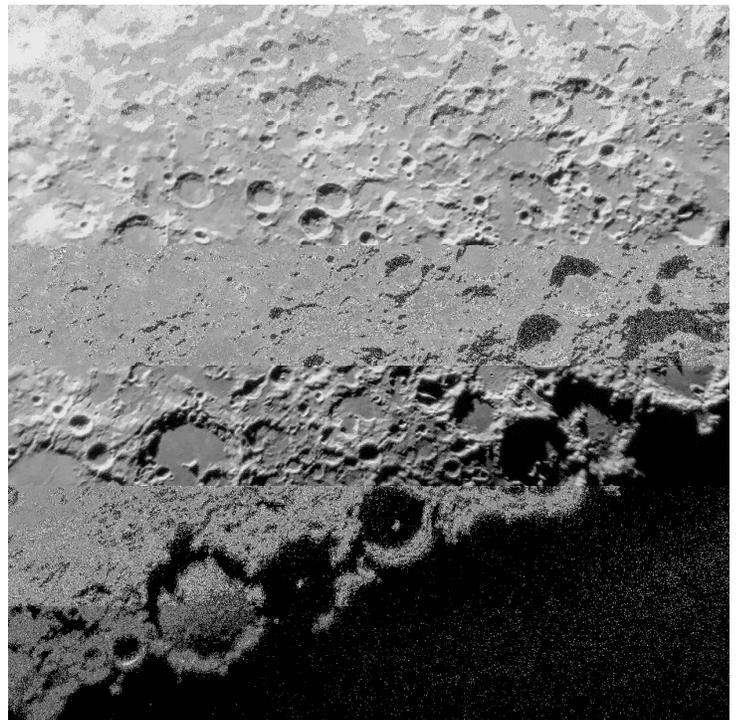
Don't expect Hubble-level images starting out! However, you can take surprisingly impressive shots by practicing several basic techniques: steadiness, locked focus, long exposure, and processing. First, steady your smartphone to keep your subjects sharp. This is especially important in low light conditions. A small tripod is ideal, but an improvised stand, like a rock or block of wood, works in a pinch. Most camera apps offer timer options to delay taking a photo by a few seconds, which reduces the vibration of your fingers when taking a shot. Next, lock your focus. Smartphones use autofocus, which is not ideal for low-light photos, especially if the camera readjusts focus mid-session. Tap the phone's screen to focus on a distant bright star or streetlight, then check for options to fine-tune and lock it. Adjusting your camera's exposure time is also essential. The longer your camera is open, the more light it gathers - essential for low-light astrophotography. Start by setting your exposure time to a few seconds. With those options set, take a test photo of your target! If your phone's camera app doesn't offer these options, you can download apps that do. While some phones offer an "astrophotography" setting, this is still rare as of 2021. Finally, process your photos using an app on your phone or computer to bring out additional detail! Post-processing is the secret of all astrophotography.

You now have your own first astrophotos! Wondering what you can do next? Practice: take lots of photos using different settings, especially before deciding on any equipment upgrades. Luckily, there are many amazing resources for budding astrophotographers. NASA has a free eBook with extensive tips for smartphone astrophotography at bit.ly/smartastrophoto, and you can also join the Smartphone Astrophotography project at bit.ly/smartphoneastroproject. Members of astronomy clubs often offer tips or even lessons on astrophotography; you can find a club near you by searching the "Clubs and Events" map on the Night Sky Network's website at nightsky.jpl.nasa.gov. May you have clear skies!

“Continued on page 9”



A small tripod for a smartphone. They are relatively inexpensive – the author found this at a local dollar store!



The Moon is large and bright, making it a great target for beginners. The author took both of these photos using an iPhone 6s. The crescent moon at sunset (left) was taken with a phone propped on the roof rack of a car; the closeup shot of lunar craters (right) was taken through the eyepiece of a friend's Celestron C8 telescope.

Point and Shoot Camera Astroimaging (no telescope)

Canon Powershot SX50 HS

Image & write-up submitted by Paul Kursewicz

Globulars M53 & NGC 5053

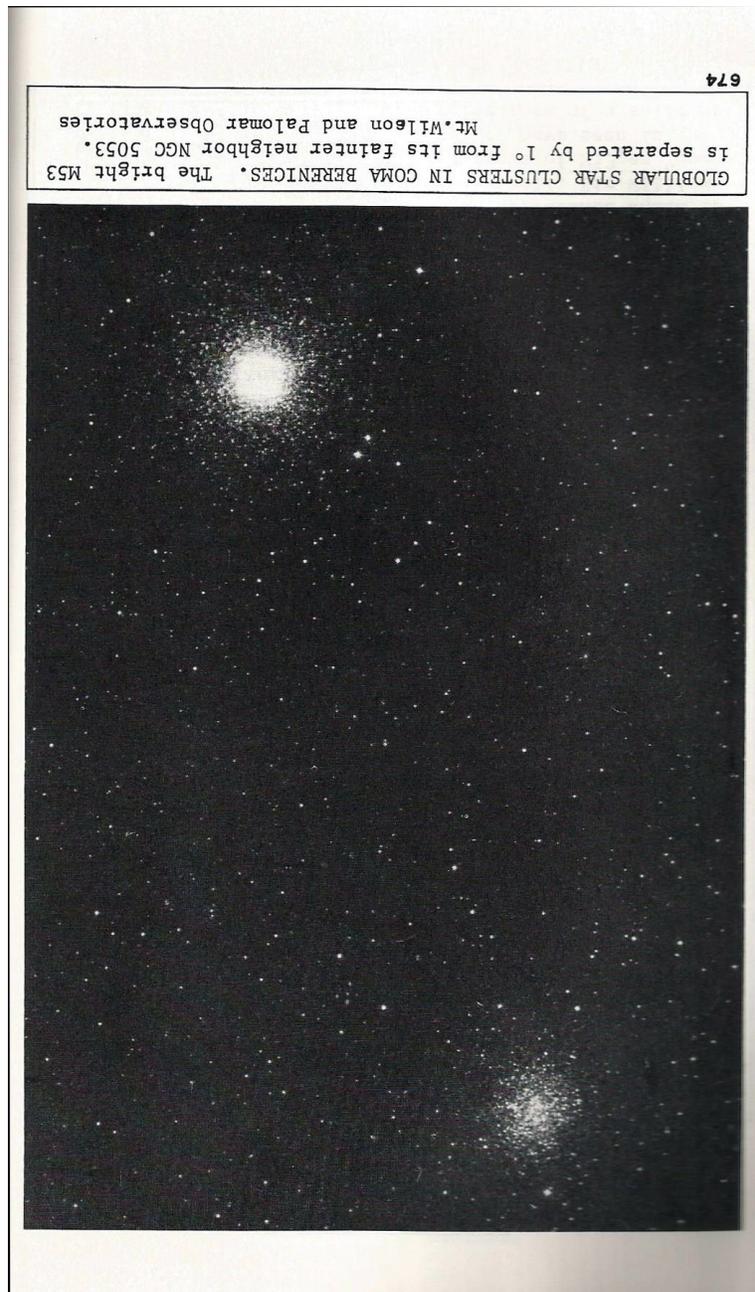
Specs: RAW mode, FL 1200mm, ISO 2500, 20 x 1 min 30 sec, 5-11-21



This close pairing of **Globular Clusters** (just separated by one degree) are located in the constellation Coma Berenices. M53 (top) is our most northerly globular cluster, having an apparent visual magnitude of 7.6 and a diameter of 230 light years. It lies at an estimated distance of 60,000 light years, one of the more distant globulars of the Milky Way Galaxy. M53 is relatively easy to find as it lies in the same area of the sky as Arcturus (15 degrees West of the orange giant). M53 contains at least 500,000 stars and an estimated age of 12.67 billion years. It lies in the vicinity of another globular cluster, NGC 5053. It is considerably fainter, looser and less populated, and can be seen in the same field of view as M53 (I rotated my image 90 degrees CCW to allow for more caption text). This fainter cluster is in fact slightly closer to us than M53, contains about 3,500 stars and only appears as a patch of light in 8-inch telescopes. I could barely see it in my single 1 min 30 sec exposure. Given that NGC 5053 lies 53,500 light years from us, that makes it about 160 light years across. It was originally classified as an open cluster. Since then, spectroscopic studies have confirmed its true nature as a loosely packed globular cluster. I'm not sure if there is another pair of globulars this close to each other. But by being this close, it allowed me to zoom in close at 1200 mm focal length.

“Continued on page 11 ”

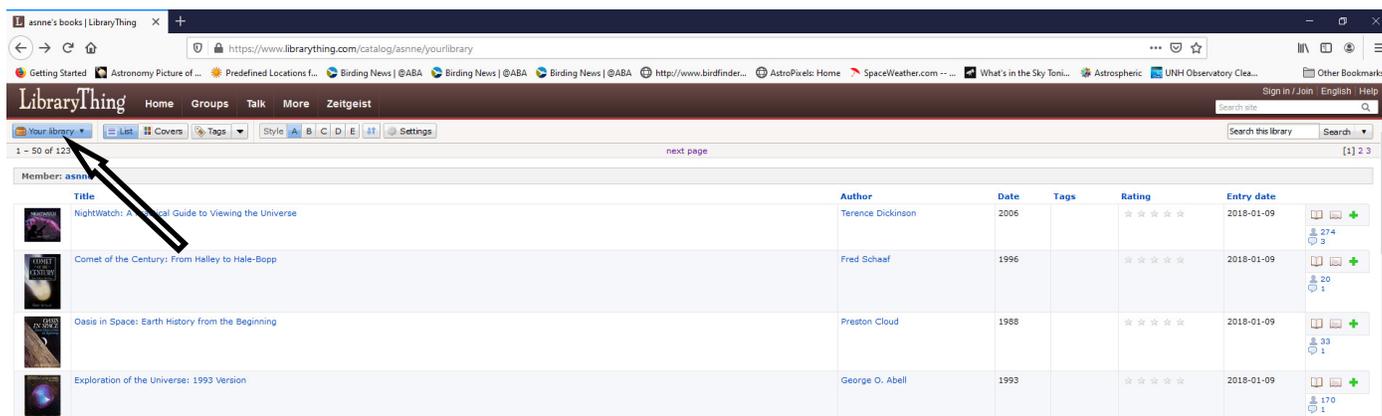
M53 & NGC 5053



I copied this picture from "Burnham's Celestial Handbook" copyright 1978. M53 is at the top and NGC 5053 is at the bottom. It is a composite image that was taken with the Mt. Wilson and Mt. Palomar telescopes.

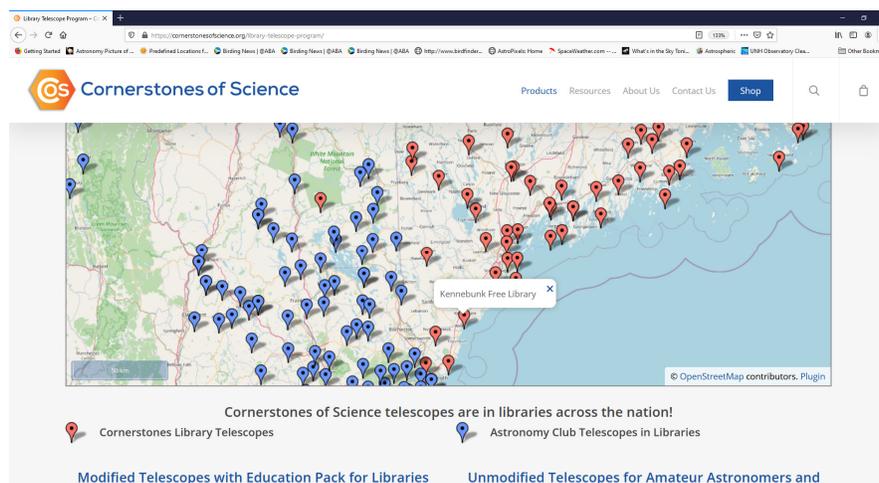
Astronomy Club & Library Resources

Our club has a library of astronomy books which are stored at The New School in Kennebunk, Maine (our monthly club meeting location). To request a book(s), contact one of the club officers. A listing of books is provided here: <https://www.librarything.com/profile/asmne> . After clicking on the link, a window will open. Click on “Your library” near the upper left corner (as shown by the arrow below). Then scroll down to the end of the page to go to the next page.



Would you like to borrow a telescope? While many astronomy clubs may have a scope to lend out, there are also many libraries which have telescopes for their guests to use. Here are a couple of links.

The following link will bring up an active map (see screen shot below) of the USA showing the libraries which have telescopes to lend out: <https://cornerstonesofscience.org/library-telescope-program/>



The below link will show a list of known participating library locations for the state of Maine.
<https://www.librarytelescope.org/locations/usa/maine>

Club Meeting & Star Party Dates

Date	Subject	Location
<u>June 4</u>	<p><u>ASNNE Club Meeting:</u></p> <p>There has been talk about having the June 4th meeting at our Observatory. The exact specifics as to the details of how this will play out is still unknown at this time.</p> <ol style="list-style-type: none"> 1. If we are meeting at the observatory, will there still be a Zoom meeting that night? 2. Are we having a BBQ before the meeting? 3. If its clear we can do observing. 	<u>The New School, Kennebunk, Me.</u>
<u>TBD</u>	Club/Public Star Party: TBD	Talmage Observatory at Starfield West Kennebunk, Me.

Directions to ASNNE event locations

Directions to The New School in Kennebunk [38 York Street (Rt1) Kennebunk, ME]

For directions to The New School you can use this link to the ASNNE NSN page and then click on "get directions" from the meeting location. Enter your starting location to generate a road map with complete directions. It works great. http://nightsky.jpl.nasa.gov/club-view.cfm?Club_ID=137

Directions to Talmage Observatory at Starfield [Alewife Road, Kennebunk, ME]

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

2021 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 _____

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 _____

