

The Flint River Observer

Newsletter of the Flint River Astronomy Club

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Officers: President, **Steve Knight:** sdknight@flintriverastronomy.org Vice President, **Steven (Smitty) Smith:** Saratoga@flintriverastronomy.org; Secretary, **Doug Maxwell:** doug@flintriverastronomy.org Treasurer, **Dawn Knight:** sdknight@flintriverastronomy.org
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Please notify **Dawn Knight** if you have a change of address, telephone number and or new e-mail address.

President's Message:

Fall is shaping up to be a busy time for us. When you read this the club will have hosted our regular observings, dinner for the Coxses, two boy/cub scout observings and a girl scout observing. We have also been contacted for several other public observings. GSV 06 is in the works. We raised the attendance level to 150. We hope to see everyone there and to reach our max. We have made the official announcement and hope to get a great response.

Also, please note that we have a new submitter to the newsletter. This month's article was written by Curt Cole. I had never heard of Maria Mitchell until this article but have learned a lot from this very informative write up. I hope that Curt will continue to submit articles and that others will take his example and submit some of their own.

Club Calendar: November 4, dark: Cox Field Observing; November 5, dark: Cox Field Observing; November 10, 7:30 p.m.: Club meeting, UGA Experiment Station; November 25, dark: Cox Field Observing; November 26, dark: Cox Field Observing

Membership Renewals: All renewals are due during the month of February.

Calendar of Events:

Chiefland Winter Star Party, Chiefland, FL is **October 30 to November 5.**

Peach State Star Gaze (PSSG) is schedule **November 2 – 6**, White Water Express High Adventure Camp Ducktown, TN (Just across the Georgia border).

Cox Field – Club Observing - September & October:

September 30th we had nine club members and one guest (Charlie had an out of town visitor, Ron). David O. had with him a couple of new toys, a nice pair of binoculars and a GPS unit. I think I overheard David and Chuck brainstorming the GPS unit. Doug and Felix were able to observe the North American Nebula at low power (UHC filter). The nebula was seen as a faint nebulosity as it extends from Mexico. Charlie came over and also observed the nebula with us.

October 1st was a fun observing evening. The skies cleared out and it turned out to be a good observing night with steady skies, lots of transparency and very good visibility. We had a club member (can't remember the name) that came in with two guests. They asked for Steve and then for Doug. Doug spent part of the evening discussing the making of his telescope and pointing out to the group some of the showcase/best objects of the evening.

Constellations - November

Constellation	Messier	Caldwell	Double Star	Herschel 400
Andromeda	M31 M32 M110	C22 NGC7662 C23 NGC891 C28 NGC752	Gamma Andromedae	NGC205 NGC404 NGC752 NGC891 NGC7662 NGC7696
Cassiopeia	M52 M103	C8 NGC559 C10 NGC663 C11 NGC7635 C13 NGC457 C17 NGC147 C18 NGC185	Eta Cassiopeiae Sigma Cassiopeiae	NGC129 NGC457 NGC136 NGC559 NGC185 NGC637 NGC225 NGC654 NGC278 NGC659 NGC381 NGC663 NGC436 NGC1027 NGC7789 NGC7790
Pisces	M74	None	65Piscium Alpha Piscium Psi 1 Piscium Zeta Piscium	NGC488 NGC524
Triangulum	M33	None	Iota Trianguli	NGC598

Maria Mitchell
America's First Female Professional Astronomer
by Curt Cole

On a recent trip to New England, Irene and I went to see the home of Maria Mitchell on Nantucket Island, Massachusetts. We usually take our vacations in September so we'll miss the summer crowds. Unfortunately, this means that occasionally we come to a site that has already closed for the season or limited its hours. This was the case with Ms. Mitchell's place. A man there allowed us to go in the observatory building and look around in one room but all they had in there were some posters.

We didn't get to see the scope or the interior of her home. Anyway, it got me curious enough to find out more about this woman who I had not heard of before. Nantucket Island is about 30 miles south of Cape Cod. The whaling industry used to be big business in Massachusetts, and Nantucket was the busiest port of all in the 1830s. Maria (Ma-rye-uh) was born there August 1, 1818. She was the 3rd born of the ten Mitchell kids. Her dad, William Mitchell, was interested in astronomy. He made use of his knowledge of the sky by "rating", or calibrating chronometers. These accurate clocks were important instruments aboard ships. He checked them by comparing the chronometer readings to the known rate of movement of stars across the sky. For a while when Maria was young, William was a teacher. He and his wife Lydia, both Quakers, encouraged learning by all their children, not just the boys as was the custom. Among the children, Maria in particular took a liking to both helping her dad with the work and studying astronomy to satisfy her own curiosity. On one occasion when she was twelve, she helped him with timing during an eclipse. William had a Herschelian scope that he used in his backyard for "sidewalk astronomy", showing the moon to the neighbors.¹

When she was about 17, she opened her own school for girls on Nantucket. After about a year, she was offered the job of librarian at the Athenaeum, the local library. She kept this job for twenty years. It operated under limited hours so Maria spent many hours alone in the closed building, diligently reading everything she could get her hands on. She was reported to have said that "I was born of ordinary capacity, but of extraordinary persistency."² This intense desire to learn was something she strove to instill in her students.

Maria's dad became cashier at a local bank, the Pacific. His boss allowed him to install his telescope atop the bank. There he had a 4" on an equatorial mount and a two or two and three quarter-inch (depending on the source) Dolland. Both he and Maria used it often. Maria was known to skip out on parties in order to peruse the sky. On the night of October 1, 1847, when she was 29, she left a party at her home and went to the roof to study the sky. There she came across what appeared to be a comet, near Polaris. She and her dad checked it again the next night and confirmed it as a comet. Her dad notified a friend at Harvard Observatory who verified the sighting. Notice was sent to the King of Denmark who had offered a gold medal to the first person to discover a comet that was so dim as to be visible only through a telescope. The Vatican astronomer Father Francesco de Vico also saw the comet, but not until two nights after Maria. Unfortunately, due to the difficulty of communicating over long distances, his notification reached the king before Maria's. It appeared that Maria would miss out on her award, but after some controversy she was awarded the medal and the comet was named "Miss Mitchell's Comet", (C/1847 T1). This discovery and award brought Maria instant fame. A crater on the moon was also named for her. (More later about the comet and crater).

¹ *The Project Gutenberg EBook of Maria Mitchell: Life, Letters, and Journals* by Maria Mitchell found at <http://www.gutenberg.org/files/10202/10202.txt>

² *Notable American Women: A Biographical Dictionary*. Edited by Edward T. James. p. 555

There were few women in science at that time but she would've known of Caroline Herschel (1750-1848) who discovered numerous comets, and maybe acquired inspiration from her.

In 1848 she became the first, and for a century the only, woman elected to the American Academy of Arts and Sciences. The next year she took on a side job as a computer for the *American Ephemeris and Nautical Almanac*, performing this work until 1868.³ In 1850 she was also elected to the American Association for the Advancement of Science. In 1857 she chaperoned a banker's daughter to Europe for an extended trip and there met a number of notable people, including Sir John Herschel and Sir George Airy⁴. She also saw a number of observatories, including the Vatican's in Rome. Apparently because of her gender, she was not allowed to look through the Vatican scopes, at least at night. The next year, 1858, a group of women admirers bought and gave to Maria a 5" Alvin Clark scope.⁵ In 1869 she was elected to the American Philosophical Society, the first woman in the society.⁶ She made another trip to Europe in 1873, again making a point to see various observatories and meet important astronomers. She also served on the editorial staff of the journal *Scientific American*.⁷

After her mother died, she and her dad moved in 1861 to Lynn, Mass., Northeast of Boston. Then in 1865 she became the first faculty member hired for the new women's college, Vassar, in Poughkeepsie, NY. Initially she was concerned that since her formal education was limited, she might not be qualified to teach college. Mr. Vassar reassured her and as an added incentive offered to buy a 12" scope for the school, which would be the third largest scope in the country. Nearing fifty she finally accepted the job of Professor of Astronomy and she and her dad moved there. By all accounts found, she became an excellent and much loved teacher. She did however raise some eyebrows with her methods. She balked at giving grades to students or reporting them absent. She also tried to get out of attending church services, despite her strong Quaker upbringing. She had been kicked out of the Quaker society in 1843 since she admitted to having doubts about the religion. Once, she even asked the preacher at Vassar to shorten his sermon since it was interfering with her attempts to observe Saturn!⁸

She remained heavily involved with astronomy, observing, photographing and publishing reports. Besides her trips to Europe, she took her students across the US to view solar eclipses.

Maria also made a name for herself as a feminist. In 1873, she helped found the Association for the Advancement of Women, and served two years as its president,

³ *The Encyclopedia of Women's History In America*. By Kathryn Cullen-DuPont. p. 136

⁴ *A Woman of the Century: Biographical Sketches of Leading American Women*. Edited by Willard and Livermore. p. 509

⁵ *The Encyclopedia of Women's History In America*. By Kathryn Cullen-DuPont. p. 136

⁶ *Notable American Women: A Biographical Dictionary*. Edited by Edward T. James. p. 556

⁷ *A History of Women in the United States*. Edited by Doris Weatherford.

⁸ <http://www.uua.org/uuhs/duub/articles/mariamitchell>. (Dictionary of Unitarian & Universalist Biography)

beginning in 1875. For a number of years she chaired its science committee.⁹ At one point in her career at Vassar, she discovered that she was being paid less than some of the younger and less experienced men. This was a common practice, yet she protested vigorously and eventually her salary was increased.¹⁰

She taught at Vassar until the age of 69, when, due to poor health, she moved back to Lynn, probably to be near family. She died the next year, June 28, 1889, spending her last year of life still studying the heavens from her observatory. She was buried on Nantucket. Her former students and faculty members started a fund to memorialize her and by 1896 it had \$50,000 in it.¹¹ In 1902, the Maria Mitchell Observatory was founded on Nantucket in her honor. The Maria Mitchell Association now operates two small observatories on Nantucket, one right next to her former home. One is open for public viewings and the other is for student use. The association also operates an aquarium, a natural science museum, and a science library. Check out their website at <http://www.mmo.org/index.php>.

The comet Maria discovered is currently about magnitude 32, so I hope you've got a really big scope! You'll have better luck getting a view of the moon's Crater Mitchell which is N of Mare Serenitatis. It's 18 miles in diameter, 3,800' high, and is slightly overlapped by Crater Aristoteles. Your best view of it will be about five days after new or four days after full. Look for it at longitude 20.2 E and latitude 49.7 N.

Sources in addition to those already cited:

Science and Technology Firsts. By Leonard C. Bruno, 1997. p. 51.

Dictionary of American Biography, vol. 7. Edited by Dumas Malone. 1934, 1962. p. 57-8.

Websites with information on Maria Mitchell and women in astronomy:

<http://www.mmo.org/index.php> (Maria Mitchell Association)

<http://www.womanastronomer.com/>

http://search.eb.com/women/articles/Mitchell_Maria.html

<http://womeninscience.org/index.asp>

<http://www.capitalistchicks.com/html/>

http://womenshistory.about.com/library/bio/blbio_mitchell_maria

Books about Ms. Mitchell:

Maria Mitchell: A Life in Journals and Letters. Henry Albers, editor. 2001.

Maria Mitchell - The Soul of an Astronomer. By Gormley, Beatrice. 1995. Ages 9-12.

Maria's Comet. By Deborah Hopkinson. 1999. Ages 4-8.

Rooftop Astronomer. By Stephanie McPherson. 1990. Ages 4-8.

Maria Mitchell: Girl Astronomer. By G. H. Melin. Ages: ?.

Sweeper in the Sky - The Life of Maria Mitchell. By Helen Wright. 1997.

⁹ *Notable American Women: A Biographical Dictionary*. Edited by Edward T. James. p. 556

¹⁰ *Women's Firsts*. By Caroline Zilboorg. p. 381

¹¹ *Notable American Women: A Biographical Dictionary*. Edited by Edward T. James. p. 556

November

<i>Sun</i>	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>
Chiefland SP 2005	Chiefland SP 2005	1 New Moon Chiefland SP 2005	2 Chiefland SP 2005	3 Chiefland SP 2005	4 Chiefland SP 2005 Cox Field Observing	5 Chiefland SP 2005, Crescent Moon & Venus look SW skies Cox Field Observing
6	7	8 First Qtr Moon	9	10 Club Meeting	11	12
13	14	15	16 Full Moon = Frost Moon	17	18	19
20	21 Saturn close to the Moon	22	23 Last Qtr Moon	24	25 Cox Field Observing	26 Cox Field Observing
27	28	29	30			

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