

## KATIE MOORE WINS THE HORKHEIMER AWARD

*(Editor's Note: This was the first Special Edition of the Observer that FRAC ever published. It appeared during the summer of 2003, between the May and June issues, and has been updated. I might have included the interview with Katie as part of an extended series in the newsletter, but I felt that the unique nature of Katie's accomplishment at such a tender age warranted special treatment above and beyond what we normally offer our readers.)*

**Editor's Message.** Admittedly, the first part of this Special Edition repeats information that some you already know about. If you regard **Katie Moore's** quest for the Horkheimer Award as old news because it occurred three years ago, please feel free to skip ahead to the interview on p. 5.

If, however, you want to join our newer members who don't know exactly why we hold Katie in such high regard, take a stroll down memory lane with us and be reminded of what she did to earn that prestigious award. As I noted in the April, 2000 issue of the *Observer* (p. 3), "Next time you come home tired at the end of a long day, consider spending a day or two in Katie's shoes."

As you'll find in the interview, nothing has changed for Katie except her location and the complexity of the challenges facing her. She is still finding ways to cram 36 hours into every 24-hour day.

Katie didn't win the Horkheimer Award in a lottery – nor, in fact, did she win it merely because she is a hard worker. *She won it because her work consistently reached the very highest levels of excellence in both quantity and quality.*

So sit back and enjoy what you're about to read. As I'm sure Katie would be the first to tell you, FRAC is, and always will be, special to her: Cox Field was the training ground where she developed the basic skills of astronomy that led her to where she is today.

Similarly, Katie Moore will always be special to us, no matter where she goes and how far she rises in astronomy, and for the very same reasons. She was the first person to bring FRAC from obscurity into the spotlight of national attention. We have basked in the warm, reflective glow of that recognition for three years.

**-Bill Warren**

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**Background.** When Katie – the daughter of Griffinites **Tom & Cathy Moore** – joined FRAC in Dec., 1997, like everyone else in the club she had a deep-seated fascination with the universe and what it contains.

Unlike most of us, Katie was 14 years old at the time. Her observing socks had "Twinkle, twinkle little star" printed on them.

Later, during Katie's junior year at Griffin Senior High School, she asked **yr. editor** to nominate her for the **Jack Horkheimer 2000 Award or Exceptional Service**

**By a Young Astronomer.** It was the sort of thing we should have thought of without being asked.

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**The Nomination Letter.** We submitted our nomination letter for Katie to the Astronomical League on March 8, 2000:

Sirs:

It is with great pride and pleasure that we nominate 16-year-old **Katie Moore**, a junior at Griffin (GA) Senior High School, for this year's AL "Jack Horkheimer Award for Exceptional Service by a Young Astronomer."

The Flint River Astronomy Club applied for (and subsequently received) AL affiliation in March, 1997; 14-year-old Katie and her father Tom joined FRAC nine months later, in Dec., 1997. Since that time, Katie has grown into a seasoned veteran observer and highly active participant in our club's ongoing program of public outreach and education.

In June, 1999, Katie attended Advanced Astronomy Camp at the University of Arizona, and she has applied for admission to the same camp for this summer. Her project in the 1999 state science fair – "Barometric Pressure and Its Relation to the Quality of Seeing for Celestial Objects" – won third place honors in the Earth/Space Science category. Katie has earned her Messier pin and certificate, and is presently working on the Binocular Messier, Binocular Deep-Sky, Universe Sampler and Herschel 400 observing programs. She plans to major in astronomy at either Agnes Scott College in Atlanta or the Univ. of Arizona, both of which offer excellent undergraduate and graduate astronomy programs of study. With a grade-point average of 3.96 (on a 4.0) scale, there is little doubt as to Katie's ability to excel at that level. She recently visited Agnes Scott and sat in on undergraduate classes in astronomy and physics. ("I answered every question they asked me!" she told us excitedly.)

For the past year, Katie has been our Club Librarian, a function perfectly suited to her avid interest in reading about astronomy and science. Her father Tom recently expressed his amazement at finding her one evening reading – and understanding – writings by Albert Einstein. Katie is presently attempting to persuade the Griffin-Spalding Co. Board of Education to add astronomy to the GSH curriculum as a separate course.

Still, it is in the area of public observings that we feel Katie has made her greatest impact thus far, especially with educational groups such as schools and public libraries. Our club is extremely active in the public domain, and Katie is our most frequent and dynamic participant despite her rigorously demanding schedule. Katie's friendly manner; her infectious enthusiasm and obvious love for the night sky and its wonders; and her patience and ability to talk with (as opposed to talking down to) young children; all of those things have rendered her invaluable to our club in fulfilling our commitment to educating the public in matters astronomical.

Katie brings the night sky down to earth for youngsters of all ages, and she inspires young stargazers toward pursuing their own visions of greatness. That fact has been attested to on numerous occasions during the scores of public observings Katie has

participated in since joining FRAC. First, there's the perpetually long lines of participants gathered at her telescope long after the lines at other 'scopes have dwindled and their owners are studying their own favorite observing targets; and second, there are the favorable comments we invariably receive at observings regarding Katie's performances. "She's wonderful." "She's remarkable." "She really has a way with children, doesn't she?" (parents) "She's neat; I want to be just like her." (a third-grade girl). "She's cool, for a girl." (a fifth-grade boy)

Lest we somehow inadvertently imply that Katie is one-dimensional, we hasten to add that her interests and activities are by no means limited to astronomy. She has been a varsity cheerleader at GSH for the past two years, and she is a member of the school's Science Club, Junior Classical League, Beta Club, National Junior Classical League Latin Honor Society, and Y-Club. Beyond those activities, Katie also tutors students in Geometry, Algebra I and Algebra II three days a week, attends cheerleading practice for two hours after school every day, and takes gymnastics/tumbling classes 2-3 days a week.

Outside school, besides her responsibilities and activities in FRAC Katie is also a member of the Junior Guild of the Griffin-Spalding Historical Society (a community service program) and is actively involved in her church's MYF group.

Academically, Katie was an **All-American Scholar** in 1998-99, her most recently completed school year. That same year, she received the GSH **International Foreign Language Award** and was listed in **Who's Who Among American High School Students**. With half of the 1999-2000 school year left to go, she has already received **National Leadership and Service Award 2000** recognition and will be eligible for further honors at the end of the current school year. She made her schools' yearly All-A honor roll in Grades 1, 2, 3, 5, 6, 7, 8, 9 and 11, and All A-B honor roll in Grades 4 and 10.

**Summation.** When we asked Katie what she envisioned herself doing ten years from now she replied, "In ten years, I will still be an amateur astronomer and doing the same things our club is doing now for school groups, etc. I want to be a professional astronomer; I don't know what I'll specialize in at this point, since the more I learn the more I realize I need to know. But I *do* know that I want to be involved in astronomy my whole life."

In an activity – amateur astronomy – that has until recently been largely the domain of adult males, Katie Moore is literally a breath of fresh air, serving as a constant reminder to her fellow FRAC members and the people she shows the sky to as well that neither age nor sex is (or should be) a deterrent to the pursuit of what one thinks is worthwhile in life.

Our nominating Katie for this prestigious award serves a dual purpose: it honors Katie for her hard work in raising the level of public awareness of both the Flint River Astronomy Club and the majesty of the universe around us; and it honors the Horkheimer Award itself because Katie embodies precisely the qualities of commitment and service that the award was created for in the first place. We know that Katie would be exceedingly proud to win the Jack Horkheimer Award for Exceptional Service by a Young Astronomer – and we are equally sure that the award committee would be proud of its choice in naming her its 2000 recipient.

Respectfully Submitted,

Stephen Smith (president)  
Bill Warren (vice president)  
Ken Walburn (secretary/treasurer)  
Flint River Astronomy Club  
Griffin, Ga.

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“Dear **Katie (Moore)**,” the letter began. It was dated May 12, 2000.

“On behalf of the officers and 18,000 members of the Astronomical League, I would like to congratulate you for winning this year’s Jack Horkheimer Award for Exceptional Service in Astronomy. The competition was intense for this award, and your achievement is absolutely superb.

“Thanks to the generosity of Mr. Jack Horkheimer, we will present an Astronomical League check for \$1,000 to you at our annual awards banquet in Ventura, California, on July 22. We will also present the first place plaque at our banquet. In addition, the International Dark-Sky Association is pleased to give you a one-year gift membership. IDA promotes better outdoor lighting to preserve the beauty of our night skies.

“The League will pay your travel expenses to the convention and your registration for the meeting and banquet...

“Based upon your outstanding achievements, we plan to publish an article about you in an upcoming issue of the *Reflector*. For this publicity, we would appreciate a photo of you in an “astronomical setting,” if possible...

“In closing, I would be pleased to write letters of recommendation for any of your college applications. Let me know when and where to send the letters...

“Clear skies, good observing, and best wishes in your future astronomical endeavors.

Sincerely,

Robert L. Gent, Vice-President  
Astronomical League”

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**...And Here’s a Bit More About Mr. Jack Horkheimer and the Award He Sponsors:**

Since 1976, Jack Horkheimer has hosted a five-minute syndicated weekly TV show, “*The Star Gazer*,” that is devoted to promoting public interest in naked-eye astronomy. Witty, animated and passionately devoted to astronomy, Horkheimer brings the universe down to earth for 300 seconds every week for an estimated 20 million viewers world-wide, many of whom are inspired to go outside and see the wonders he

describes so fervently. Horkheimer's talent lies in making the universe seem *important* to people who never thought of it in such terms before.

The **Jack Horkheimer Award for Exceptional Service by a Young Astronomer** is one of two awards presented annually for young astronomers by the Astronomical League. (The other is the National Young Astronomer Award (NYAA). The "Horkheimer Award," as it is commonly known, is made possible through the generosity of Jack Horkheimer, the "Star Gazer." The winner receives a check for \$1,000 at AlCon, the Astronomical League's national convention. The award is given in honor of **Arthur P. Smith, Jr.** Art Smith was president of the Astronomical League from 1964-66, and he inspired Mr. Horkheimer to become active in astronomy.

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**An Interview With Katie.** Katie began her studies at the Univ. of Arizona in September, 2001. For the past two years she has been a varsity cheerleader for the Wildcats' athletic teams while pursuing her dream of becoming a professional astronomer.

What follows is an interview conducted during the summer of 2003 with Katie via e-mail. Since most of us in FRAC have absolutely no idea what preparing to become a professional astronomer is like, Katie's insights offer us a tiny glimpse into a world that likely none of us but her and **Dr. Richard Schmude** will ever know.

**Editor: How long have you been interested in astronomy, and why?**

**Katie:** I've been interested in astronomy all my life, but especially since 8<sup>th</sup> grade, the first time astronomy was studied in-depth in my school. After studying astronomy in class, I wanted to get out and look at the Moon, planets, and other things with a telescope, so I started observing in my backyard with a 60-mm refractor.

**Editor: What, if any, positive impact did joining FRAC have on your development as a young astronomer?**

**Katie:** When I found out that Griffin had an astronomy club, I asked my parents to let me go to a meeting, and soon we were doing things regularly with FRAC. The members taught me how to use star charts, how to find things in the sky, how to use my telescope, which objects were good to look at, etc. They also had a range of different telescope types and were very willing to share telescope time and let me use their books, telescopes and anything else that would help me. I got a taste of what type of 'scope I liked best and found easiest to work with, and after saving money I bought a 10-inch Dobsonian. The A. L.'s observing clubs, especially the Messier Club, were great for giving me goals to reach for and a sense of which objects were good, attainable and challenging but within my reach, so I knew what to look for – and look at – when I went observing.

Another thing that became a big part of astronomy for me was the public outreach events which I would not have been a part of without FRAC. One of the best ways to learn about something is by teaching it to someone else, and sharing the sky with adults

and children at the different events made me more experienced and familiar with the sky, and it made astronomy even more exciting for me.

**Editor: How is studying astronomy at the Univ. of Arizona different than you expected it to be?**

**Katie:** Studying isn't as much fun as going to Cox Field! I don't know what I expected from U of A, and I still have taken only two classes that are actually "astronomy." I'm (finally!) through with the introductory sequence of physics classes and the math required for me to start taking the upper-division classes that are focused on astronomy. Hopefully, those classes will go well...

**Editor: Arizona is considerably more than a hop, skip and jump from Griffin, Ga.; was homesickness a problem for you initially? What other problems, if any, does the distance between you and Griffin pose?**

**Katie:** This has not been a problem for me. I still talk to my parents a lot, and I keep busy enough most of the time. Tucson is great, and the weather couldn't be better so I really love it here.

The biggest problem is that my telescope is in Ga., and I am in Tucson. I have just moved into a house where I have a backyard, and finally I can just step outside at night to look at constellations or whatever I can see with my binoculars. I'm on a really busy street and light pollution is definitely a problem, but I can shield myself from most of the light and it gets better once businesses close and people go to sleep. It's great to have the opportunity to conveniently observe from where I live. Now I just have to figure out how to get that Dob out here...

*(Editor's Note: The following paragraph accompanying Katie's submission of her replies to our interview questions updates her observing status.)*

This past weekend, I bought a telescope and my parents came out to visit. We went to a site outside the city and observed with my new 5-inch Meade ETX. A lot of time was spent just familiarizing myself with this new and different instrument, but the things we observed were pretty close to what I remember from observing with the 10-inch. Jupiter was great! I'm not sure how the ETX will do from my house in the city with light pollution and with buildings and such taking up more of the sky. I would be out observing right now, but there are big clouds all over the place! (I suffer from bad weather too, sometimes.)

**Editor: Roughly what percentage of UA's undergraduate astronomy majors are women? Has being a woman in what has traditionally been a male-dominated field been a hindrance to you, and if so, how?**

**Katie:** I'm not really sure about the numbers but I would say that, in the classes I have taken so far for my major – physics, math and astronomy courses – at least 2/3 of the population is male. I would guess between 5-10 girls in classes of 25-50. All of my teachers and TA's this past year have been male. I don't see this as a hindrance; my female friends and I study just as hard as the guys do, and we do just as well on

homework and tests, and most teachers just don't like anyone so no one gets preference. (Okay, the part about the teachers was a joke!)

Seriously, though, I haven't really run into any problems because of my gender. I don't notice it as far as academics go, but it is hard to make friends with many different girls when we are all in the same classes and there aren't many of us.

**Editor: What, if any, astronomy courses have you taken so far?**

**Katie:** I took an "Introduction to Astronomy" survey class when I was a freshman. It covered just about every topic on a basic level and incorporated qualitative properties and equations describing different processes and properties. It also involved observing for about an hour with the on-campus 21-inch telescope, but the telescope operators wouldn't let us move the 'scope or anything fun like that. I remember the objects looking much better with my 10-inch than in this 'scope. Maybe it was a bad night, maybe light pollution is that bad on campus, or maybe the telescope really needed to be cleaned or something.

I took a computational physics class taught by someone from the astronomy department which involved learning computer programming in C.

Most recently I took "Intro to Observational Astronomy." This covered statistical methods for finding and quantifying error when observing with CCDs, along with details of observing at all wavelengths of light and the different types of telescopes for each; and things like right ascension, declination, sidereal time, and the magnitude system. It also included a night at the 61-inch telescope on Mt. Bigelow to learn how to use the telescope for a group project, within the limits of gathering only a few hours of data and the limits of the 'scope and CCD detector. Our group made a model of how many stars there were at a particular altitude out of the galactic plane of the Milky Way. We basically just took images of star fields in steps out of the galactic plane and showed that there are more stars in the plane of the galaxy. The number of stars in a field drops as you move farther away out of the plane of the Milky Way.

Most of the class requirements for an astronomy degree are physics courses.

**Editor: Have you been able to observe, assist in or conduct any research projects?**

**Katie:** No formal projects unless the project for my observational astronomy class counts. I haven't gotten to observe much, since I was busy with cheerleading and classes. I did observe the 2001 Leonids (meteor shower) – it was amazing! – with a group from the UA astronomy club. On a couple of occasions I have accompanied **Don McCarthy**, the leader of the astronomy camp I came to in 1999, on observing runs to Kitt Peak or, most recently, to the Multiple Mirror Telescope (MMT), which presently is just a single 6.5-meter telescope, on Mt. Hopkins.

For the past two years I have been an assistant with a middle school group that comes for an astronomy camp at Mt. Lemmon. They use a 60-inch for visual and spectroscopy and a Meade LX200 12-inch for CCD color imaging at night, and solar viewing with the 12-inch with an H-alpha filter, and smaller telescopes for viewing with other filters or by projection during the day.

I have recently been awarded a \$9,000 CATTs (Collaboration to Advance Teaching Technology and Science) fellowship where I will be working with an astronomer from NOAO (National Optical Astronomy Observatory) and a graduate student to do educational outreach stuff with local middle school classes. This is new to me so I'm not really sure what I will be doing, but it seems like mostly classroom activities. It's not exactly a research job, but it is a great program and it's really exciting to get a chance to work with someone from NOAO and to help spark others' interest in science and astronomy. I am very excited about it.

**Editor: Where is the university's observatory located, and what kinds of instruments does it house? Give us a brief tour of the facility.**

**Katie:** This is a big question. Steward Observatory has instruments all around Tucson. What I remember, which is surely not complete, are 2.3-meter and 1-meter telescopes on Kitt Peak west of Tucson; the 60-inch 'scope on Mt. Lemmon and the 61-inch 'scope on Mt. Bigelow to the north of the city; the MMT (6.5 meters) to the south; and the Large Binocular Telescope under construction farther north on Mt. Graham. (The LBT will be two 8.4-meter mirrors side by side for an effective resolution equal to something like a 20-meter telescope.) All of those facilities and 'scopes lie between 1-2 hours of Tucson. The 21-inch telescope on campus is mostly used for the Intro classes and astronomy classes for non-majors. There are definitely other telescopes at these locations and others that I just am not familiar with or don't remember.

**Editor: Do you plan to pursue your studies to the doctoral or post-doctoral levels? At what stage, if any, of your development will you be permitted to use those big 'scopes for your own research studies?**

**Katie:** I'm pretty sure I want to study astronomy beyond the undergraduate level. I'm going to get a bachelor's degree in astronomy and in math so I will have a better background for grad school; this will give me options if I decide that grad school isn't what I want.

I have been lucky to land two jobs doing what I consider to be the fun stuff of astronomy, working at astronomy camp and this new education outreach fellowship. I'm excited to see what I can learn from these activities about what my interests in astronomy as a career might be.

As far as time on the big telescopes goes, I could probably write a proposal for telescope time right now if I had a research idea and an advisor to help me out. This doesn't mean that I would get time, but if the committee thought my project was good enough I could. I haven't explored this option at all, but this is how I think it works.

**Editor: What will your duties be as a counselor at UA's "Astronomy Camp" this summer?**

**Katie:** I will be leading or helping lead daytime activities, discussions, and projects for the campers and helping the students conduct research projects on the telescopes at night and reduce the data.

**Editor: Tell us about those fabled dark skies of Arizona.**

**Katie:** Well, I have already talked about my attempts to observe from the city. I saw Jupiter and its moons, M4 with averted vision, and M7, M21 and M8 during a quick look with binoculars at 3 a.m. on May 1<sup>st</sup> after a long study session for a test. That was a great way to end a long night!

My other recent observings included a night at Mt. Lemmon that was clouded out, and another night at Mt. Bigelow using the 61-inch 'scope, which is always amazing! I don't really know how to compare this to observing at Cox Field. I'll let you know after I have been out in it for awhile during Astronomy Camp and can make a good comparison.

**Editor: Do you intend – time permitting, of course – to use your own telescope for casual backyard observing after you become a professional astronomer?**

**Katie:** I sure hope so! Observing at a computer screen in a warm room doesn't do justice to the night like having an eyepiece at the focus and being out in the night. Besides, professional astronomers only get a few nights at the telescope a year, and amateurs really are capable of so much with their ability to use their own instruments whenever they want to and to look at anything interesting that shows up on any night. It would be a shame to miss out on this opportunity or just to miss out on the fun of looking at all the neat things in the sky.

**Editor: What advice would you give to, say, a third-grade girl who is interested in astronomy?**

**Katie:** To anyone who is interested in astronomy, I would encourage them to have fun with it! Getting out somewhere with a dark sky and a low horizon with just your eyes and a good star chart is great – and if you have binoculars or a telescope to add to it, it's also great! And getting involved with a group of people who understand astronomy and can help you when you're starting out can be very encouraging!

**Editor: Is there any chance remaining that we can persuade you to come back to Griffin and work at WalMart Superstore so we can have you her with us in FRAC? (Since your answer obviously is *No*, what would you like to say to your many friends in FRAC?)**

**Katie:** I would like to say that I hope you guys are having fun and getting to share the sky with a lot of people, and I hope that the weather gets better for you!

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