



North Star Newsletter

March 2009

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NHAC General Meeting February 27, 2009

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Proud member of:



Novice Program
“Our Winter Sky Revisited”
 By Bruce Pollard
 And
“New Dob Workshop”
 By Bill Leach
6:30PM—715 PM
 Held in the
Cosmic Forum. CLA 221

Main Presentation

“M31 the Andromeda Galaxy”
 By Larry Mitchell
7:30 PM
 Held in the

Lonestar College—Kingwood Teaching Theater



Letter from the Editor

How time flies when you're having fun. It is hard to believe we are coming up on March already. I still feel like we just finished with the Christmas holidays and here we are almost a quarter of the way through the new year!

I hope everyone is having a good year so far. The economy seems to be a bit in turmoil at the moment and many people are cutting back on spending and trying to cut

their debt. While times are tough and people are watching their wallets when it comes to entertainment, the astronomy community has a golden opportunity to save some dough and still be entertained.

Instead of going out to eat or to the movies on Friday or Saturday night we could stay home and give our telescopes a workout. You could make a family night of it and /

or invite some friends over to share the wonders of the sky.

The AL has many observing clubs to use as learning tools to help sharpen your "astronomical skills" so you can amaze everyone with your wit and wisdom and have fun at the same time. You may just end up closer to your friends and family and save a few dollars along the way.

Joe Wagner

The Deadline for submissions for the April newsletter is March 15, 2009

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" Enjoy Yourself. These are the good old days you're going to miss in the years ahead."
 Author Unknown

Thank You

A Very special thank you to our novice program speaker Bill Christian for his lecture on "What and Where: Basics of Winter Sky Observing"

and

Our main presentation speaker Alicia Tristan for her lecture on "Carbon Stars"

Where did all these gadgets come from?!



Dawn will be the first spacecraft to establish orbits around two separate target bodies during its mission—thanks to ion propulsion validated by Deep Space 1.

Ion propulsion. Artificial intelligence. Hyper-spectral imagers. It sounds like science fiction, but all these technologies are now flying around the solar system on real-life NASA missions.

How did they get there? Answer: the New Millennium Program (NMP). NMP is a special NASA program that flight tests wild and far-out technologies. And if they pass the test, they can be used on real space missions.

The list of probes that have benefited from technologies incubated by NMP reads like the Who's Who of cutting-edge space exploration: Spirit and Opportunity (the phenomenally successful rovers exploring Mars), the Spitzer Space Telescope, the New Horizons mission to Pluto, the Dawn asteroid-exploration mission, the comet-smashing probe Deep Impact, and others. Some missions were merely enhanced by NMP technologies; others would have been impossible without them.

Where did all these gadgets come from?!

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"In order to assess the impact of NMP technologies, NASA has developed a scorecard to keep track of all the places our technologies are being used," says New Millennium Program manager Christopher Stevens of the Jet Propulsion Laboratory.

For example, ion propulsion technology flight-tested on the NMP mission Deep Space 1, launched in October 1998, is now flying aboard the Dawn mission. Dawn will be the first probe to orbit an asteroid (Vesta) and then travel to and orbit a dwarf planet (Ceres). The highly efficient ion engine is vital to the success of the 3 billion mile, 8 year journey. The mission could not have been flown using conventional chemical propulsion; launching the enormous amount of fuel required would have broken the project's budget. "Ion propulsion was the only practical way," says Stevens.

In total, 10 technologies tested by Deep Space 1 have been adopted by more than 20 robotic probes. One, the Small Deep Space Transponder, has become the standard system for Earth communications for all deep-space missions.

And Deep Space 1 is just one of NMP's missions. About a half-dozen others have flown or will fly, and their advanced technologies are only beginning to be adopted. That's because it takes years to design probes that use these technologies, but Stevens says experience shows that "if you validate experimental technologies in space, and reduce the risk of using them, missions will pick them up."

Stevens knew many of these technologies when they were just a glimmer in an engineer's eye. Now they're "all grown up" and flying around the solar system. It's enough to make a program manager proud!

The results of all NMP's technology validations are online and the list is impressive: nmp.nasa.gov/TECHNOLOGY/scorecard/scorecard_results.cfm. For kids, the rhyming storybook, "Professor Starr's Dream Trip: Or, How a Little Technology Goes a Long Way" at spaceplace.nasa.gov/en/kids/nmp/starr gives a scientist's perspective on the technology that makes possible the Dawn mission.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Observe - Learn - Share



Working with (and on) Small Refractor Telescopes

By Joseph Wagner

Do you remember your first telescope? For many of us it was a small 60 mm refractor bought from a chain store such as Wal-Mart, Sears, or maybe even Montgomery Ward. The first telescope I ever owned was a small Bushnell 60mm refractor that was given to me by my in-laws for Christmas about ten years ago. One look at that baby and I thought my astronomy career was about to take off (not knowing the slightest thing about astronomy would only be a minor setback)! Needless to say, after a few nights of not knowing what I was doing, the strain on my eyes from trying to look through a .96 eyepiece while trying to focus on objects which I wasn't sure were focused and the tireless chase of keeping these objects in my eyepiece, I frustratingly gave up my career in astronomy and decided fishing was more my thing. Several years later I was given a bigger scope which reignited my interest in the night sky, but that's another story.

If I had known ten years ago about some simple upgrades that could have been made to that small telescope, I might not have given up stargazing quite so easily. With only a few modifications to the mount, finder scope, and eyepieces I may have not had a dream scope but it would have been much more functional and I probably would have gotten a lot more use out of it.

Observe - Learn - Share

Working with (and on) Small Refractor Telescopes (Continued) By Joseph Wagner

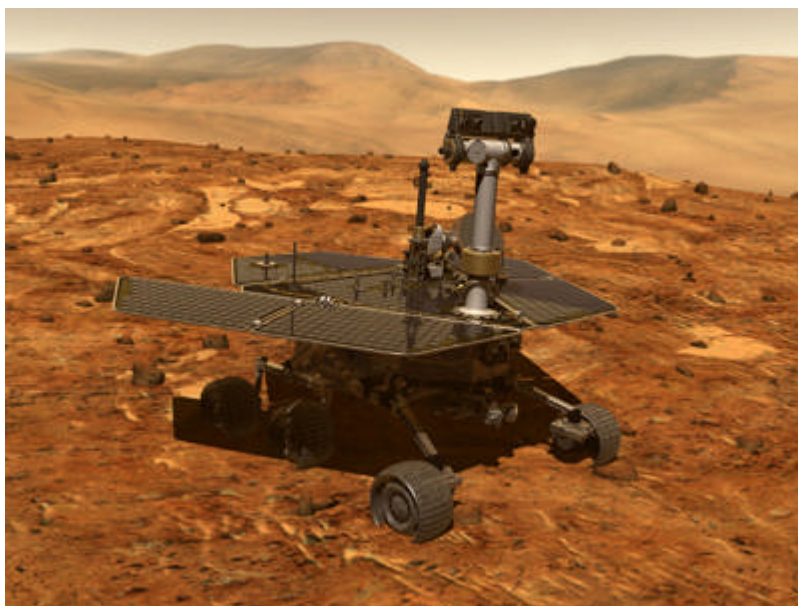
Most chain store scopes have a less than desirable mount. The mount is usually a thin wooden tripod that shakes like a leaf if you breathe on it too hard. There are several semi-fixes for this. Lowering the legs on the tripod will give more stability and it will allow you to relax in a chair during your observing. Another fix is to suspend a jug of water from the tripod to give stability but don't make it too heavy or your tripod could break. Some folks have just discarded the wimpy tripod and built a sturdier one. A sturdy tripod makes a big difference when you are trying to focus on an object.

Most finder scopes supplied with these small telescopes are sub par to say the least. They are hard to keep adjusted and the views aren't much better than the naked eye. To help them stay adjusted you might try holding it in place with a few rubber bands wrapped around the finder scope and the telescope tube. An assortment of rubber band sizes may be helpful in finding the right tension. Another option is to find a cheap red dot finder from eBay or some other source and do away with the finder scope altogether.

The last upgrade which can be made to a small telescope is to the eyepieces. Most department store scopes come with 1.25" eyepieces nowadays but if you have an older scope with the .96 eyepieces the first thing I would recommend is buying a 1.25/.96 hybrid star diagonal. This adapter will allow you to use 1.25" eyepieces and it will save your eyes and brow from premature wrinkling. Buying one or two plossl eyepieces of good quality will also take you a long way; most stock eyepieces are only good for sun imaging (NEVER look directly at the sun without a proper sun filter). Another trick I learned was to loosen the screws on the focuser knobs just a hair to allow a smoother focus.

There are all kinds of modifications which can be made to these small telescopes to make them more functional. I still have my 60mm Bushnell and use it for quick set ups and it is small enough that I can throw it in the car and take it with me anywhere when I don't feel like lugging my dob around. It makes a nice travel scope. With some of these ideas, maybe we can help some poor soul with their first scope see the wonders at night and not give up in frustration like someone I know.

Spirit Resumes Driving



PASADENA, Calif. -- NASA's Mars Exploration Rover Spirit resumed driving Saturday after engineers gained confidence from diagnostic activities earlier in the week evaluating how well the rover senses its orientation.

Spirit drove about 30 centimeters (1 foot) Saturday, during the 1,806th Martian day, or sol, of what was originally planned as a 90-day mission. The rover team had commanded a longer drive, but Spirit stopped short after its right-front wheel, which no longer turns, struck a partially buried rock. The rover drivers prepared commands Monday for the next drive in a slightly different direction to get around that rock.

A diagnostic test on Sol 1805 provided an evaluation of how accurately Spirit's accelerometers sense the rover's orientation or attitude. The testing was a follow-up to Spirit's mistaken calculation of where to expect to see the sun on Sol 1802. The sol 1805 results indicate the accelerometers may have a bias of about 3 degrees. This would explain why Spirit pointed a camera about three degrees away from the sun's actual position on Sol 1802. However, the Sol 1805 test also showed that Spirit's gyroscopes are operating properly, which convinced engineers that the rover could safely resume driving. Only the gyroscopes are used for orientation information during driving.

Diagnostic tests last week also checked possible explanations for behavior for one period of activity on Spirit's Sol 1800, when the rover did not save information into its non-volatile flash memory, so the information was lost when the rover next powered down.

"We may not find any data that will explain what happened on Sol 1800, but there's no evidence that whatever happened then has recurred on subsequent sols," said Jacob Matijevic of the rover engineering team at NASA's Jet Propulsion Laboratory, Pasadena.

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Spirit Resumes Driving (Continued)

One possibility is that a cosmic-ray hit could have temporarily put Spirit temporarily into a mode that disables use of the flash memory. The team intentionally used that mode -- relying only on volatile random-access memory -- during recovery from a memory problem five years ago on Spirit.

Spirit is just north of a low plateau called "Home Plate." It spent 2008 on a north-facing slope on the edge of Home Plate so that its solar panels stayed tilted toward the winter sun for maximum electrical output.

Spirit drove down off Home Plate on Jan. 6, 2009. It subsequently checked whether a patch of nearby soil, called "Stapledon," had a high concentration of silica, like a silica-rich patch of soil Spirit discovered east of Home Plate in 2007. The earlier discovery was interpreted as evidence left by a hot-spring or steam-vent environment. Examination with Spirit's alpha particle X-ray spectrometer confirmed silica at Stapledon. This indicates that the environment that deposited the silica was not limited to the location found earlier.

JPL, a division of the California Institute of Technology, Pasadena, manages the Mars Exploration Rover project for the NASA Science Mission Directorate, Washington. Spirit and its twin, Opportunity, landed on Mars in January 2004 and have operated 20 times longer than their original prime missions.

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Spirit near "Stapledon" on Sol 1802

<http://marsrovers.jpl.nasa.gov/home/index.html>

March 2009

Sun Mon Tue Wed Thu Fri Sat

1	2	3	4 First Quarter Moon	5	6	7 Moon @ Peri-gee.
8 Daylight Saving Time Begins	9	10 Full Moon	11 NHAC Board Meeting 7:00	12	13	14 Albert Einstein born, 1879
15	16	17	18 Last quarter Moon	19 Moon @ Apo-gee	20	21 NHAC Star Party
22	23	24	25	26 New Moon	27 NHAC Public Meeting	28
29	30	31				

North Houston Astronomy Club

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Observe—Learn—Share



About NHAC

The North Houston Astronomy Club (NHAC), was formed for educational and scientific purposes, for people of all races, creeds, ethnic backgrounds and sex, for the primary purpose of developing and implementing programs designed to increase the awareness and knowledge of astronomy, especially for those living near the north side of Houston Texas.

NHAC is a non-profit organization dedicated to providing the opportunity for all individuals to pursue the science of astronomy, by observing in a dark-sky site, learning the latest technology, and sharing their knowledge and experience. Thus, our "Observe-Learn-Share" motto.

Membership Benefits

- Loaner telescopes
- Borrow from the NHAC "Library"
- Observe from [Dark Sky Observing Sites](#)
- Learn from experienced amateur astronomers
- Share your knowledge at club hosted picnics and star parties
- Discount magazine subscriptions (contact our [Treasurer](#))
- Includes membership in the [Astronomical League](#)
- The quarterly Astronomical League magazine "Reflector"
- Eligibility for NHAC Executive Board

