

 **Current** SEPTEMBER  
2005  
**Astronomy**  
**RIVER BEND ASTRONOMY CLUB NEWSLETTER**

Light  
bucket



**He reeled in a big one: That's Rich Halasey next to his new Orion SkyQuest XT12 Intelliscope. Large for an amateur telescope, the tube weighs 50 pounds and the base an additional 30. A computerized locator can help pinpoint 14,000 celestial objects. PHOTO BY ERIC YOUNG**

# RIVER BEND ASTRONOMY CLUB

*River Bend Astronomy Club serves astronomy enthusiasts of the American Bottom region, the Mississippi River bluffs and beyond, fostering observation, education and a spirit of camaraderie.*

## Officers and administrators

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Affiliated with the Astronomical League, dedicated to fostering astronomical education, providing incentives for astronomical observation and research, and assisting communication among amateur astronomical societies.  
[www.astroleague.org](http://www.astroleague.org)



Affiliated with the NASA Night Sky Network, a nationwide coalition of amateur astronomy clubs bringing the science, technology and inspiration of NASA's missions to the general public.  
[nightsky.jpl.nasa.gov](http://nightsky.jpl.nasa.gov)

## Current Astronomy CLUB NEWSLETTER

**EDITOR** Eric Young  
younger@wustl.edu

## Monthly Meeting

**Saturday, September 10th, 2005 • 7:00 p.m.**

**Kronk Observatory**

132 Jessica Drive, St. Jacob, IL 62281

## Looked up lately?

### Join River Bend Astronomy Club

Want to learn more about astronomy? The members of River Bend Astronomy Club invite you to join. You won't need expensive tools or special skills — just a passion for observing the natural world.

- Meetings offer learning, peeks through great telescopes and fun under the stars.
- You will receive the club newsletter, *Current Astronomy*, packed with news and photos.
- Get connected with our member-only web site and discussion group.
- Borrow from the club's multimedia library.
- And that's not all! Through club membership you also join the Astronomical League, with its special programs and a colorful quarterly newsletter to enrich your hobby.

We meet monthly, observe regularly, e-mail news and quips constantly, and generally have a good time. Won't you join us?

Name(s) \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Phone (Day) \_\_\_\_\_ (Evening) \_\_\_\_\_  
 Email address (to receive club news and information): \_\_\_\_\_

Where did you hear of our club?  
 \_\_\_\_\_

How long have you been interested in astronomy? \_\_\_\_\_

Do you have optical equipment?  Telescope  Binoculars

Are you afraid of the dark?  Yes  No (just kidding)

I am submitting my application for:

\_\_\_\_\_ Adult membership(s) \_\_\_\_\_ Youth membership(s)  
 @ \$20.00/year @ \$15.00/year  
 (18 years or older) (under 18)

I enclose a check for a total of \$ \_\_\_\_\_  
 made out to "Mike Veith, Treasurer, RBAC."

Signature \_\_\_\_\_

Date \_\_\_\_\_



**River Bend Astronomy Club**

c/o Gary Kronk, 132 Jessica Drive, St. Jacob, IL 62281  
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AUGUST 05

# Star Hill seeing, continued

## More about the Breeden's dream dark-sky vacation

BY BILL BREEDEN

**T**uesday, June 7, 2005: The sky was spectacularly clear, the temperature in the 60s, and the Moon was one day past it's New phase. We could not have asked for a better combination of circumstances for our first of two nights with Star Hill Inn's 24" Ritchey-Chrétien telescope under the observatory dome. Phil Mahon, owner of Star Hill Inn, patiently taught Rita and I how to operate the large instrument and it's NGC-MAX controller box. He also showed us how the operate the observatory dome — rotating it, opening and closing the viewing slit, and the locations of all the cabling, power switches, and controls. That was really cool!

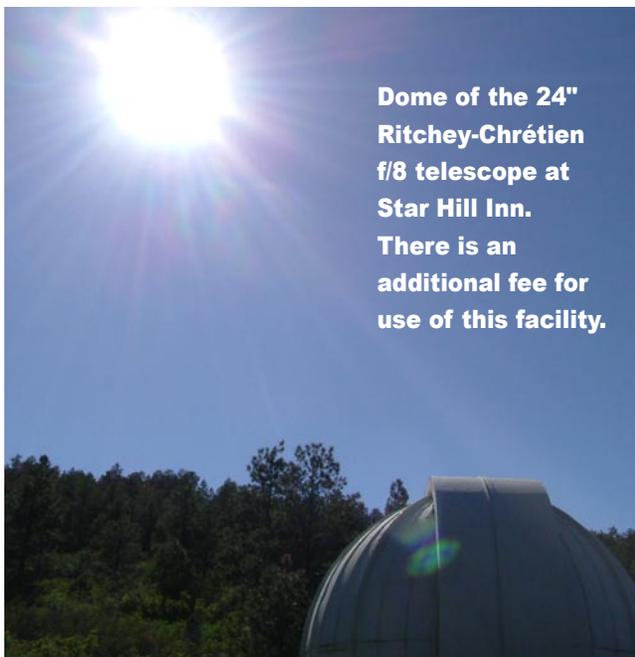
We set out to find M51, the Whirlpool Galaxy in Canes Venatici. How would it look using so much aperture? I couldn't wait to find out. Using the NGC-MAX, I selected M51 and slewed the large instrument. Rita and I watched in awe as the telescope moved with a distinctive but pleasant whirring sound. I placed a 27mm Panoptic 2" eyepiece into the diagonal and took my first look. Sensational! A tweak of the focuser

*Bill and Rita Breeden vacationed from June 5–9, 2005, at Star Hill Inn, Sapello, New Mexico. See the August issue for Bill's first report from the trip.*

brought M51 into crystal-clear detail. I felt a lump in my throat and swallowed hard as I peered into space at M51. It seemed to hang in the eyepiece in 3-D detail, with sort of a crystallized appearance. The spiral arms and companion galaxy were not only visible, but closely resembled a clear, gray-scale photograph. It was absolutely wonderful. Rita and I admired M51 for nearly half an hour. The light-gathering power of 24 inches of aperture is truly amazing!

The next object I wanted to see was M5, a globular cluster in Serpens Caput, since I had enjoyed it so much in the 17.5" Dobsonian the previous two nights. What would it look like in the 24"? I selected "M005" on the NGC-MAX and moved the telescope according to it's countdown readout. For this object, it was necessary to rotate the observatory dome. With the flip of a switch, the dome slowly rumbled into position. I felt like a kid again — what kid wouldn't want to rotate the dome? Once the observatory's viewing slit was positioned above the telescope, Rita climbed the ladder to take a look at M5. "Wow! It's right in the center and it's huge!" she said. I looked too, and it was breath-taking. M5 looked even better than a photograph, with a 3-D appearance. M5 presents me with an interesting illusion — it looks as if the core is further away than the outer stars, as if you are going into a globular cluster "tunnel" with the core at the far end. Maybe I've seen too many space movies.

**Wednesday, June 8, 2005** Rita and I took an early afternoon walk, then drove into Las Vegas (New Mexico) for an authentic New Mexican lunch. When we came back, we went into the library to relax and read some astronomy magazines. We put in a DVD and settled in to relax for a couple of hours.



**Dome of the 24" Ritchey-Chrétien f/8 telescope at Star Hill Inn. There is an additional fee for use of this facility.**

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Near the end of the movie, a family from New Orleans arrived, Lowell, Mary, and Steve. Lowell was the astronomer in the family, and he brought his 16" Dobsonian telescope with digital setting circles on a motorized mount with go-to capability.

That's right — a go-to Dob! Not a push-to like the Orion Intelliscope — but a real, motorized go-to Dobsonian. As a second alternative, the mount's clutch can be disengaged and the Dob can be used as a push-to. What's more, as a third alternative, the command box can be switched off and the mount's clutch disengaged, so the Dob can then be used like a standard Dob. Amazing!

Before sunset, Rita spotted the two-day-old waxing crescent Moon with a shout: "I see the Moon!" It was a very, very thin crescent visible just above the dome of the observatory.

As darkness fell, Rita and I headed back to the observation deck to wait for Phil to open up the observatory. As excited as I was about a second night in the dome with the 24", I felt sort of disappointed that we had to leave our newfound astronomy friends behind at the observation deck. I figured Lowell was excited about using his telescope under such pristine skies, so I didn't want to bother him (too much, anyway). Once Phil opened up the observatory, Rita and I went in to align the large telescope. I had designated tonight as "Galaxy Night," as we planned to use this telescope's 24" of aperture to capture the sights of the Messier galaxies in Virgo and Coma Berenices.

Our first object to observe would be an encore performance: M104, The Sombrero Galaxy in Virgo. Since we weren't entertaining guests tonight, we really took our time observing M104 with three eyepieces. Rita said she saw the black lane across M104 very, very clearly. M104 nearly filled a 2" eyepiece's field of view, so we felt like we were looking out a space-

ship window at the galaxy! Add to that the "feel" of the observatory, and we could easily have been on the bridge of the starship Enterprise.

**Thursday, June 9, 2005** was our fifth and last night at Star Hill, and the evening was cloudy enough to cause concern. By sunset, all of the clouds had disappeared, leaving us with a wonderfully clear night in the 50s. The Moon, now a lovely two day old thin waxing crescent, was setting in the west between Saturn and Pollux in Gemini.

Phil stopped by the observation deck to set up the 12" LX200 Schmidt-Cassegrain telescope I would be using tonight, and Lowell was preparing his 16" motorized Dobsonian. Rita and Mary chit-chatted about birds and plants, and soon we were all set up for a night's observing.

I waited for it to get completely dark, then moved the 12" SCT to M104, The Sombrero Galaxy in Virgo. The dark lane could easily be seen, and the galaxy took on a eerie presence hanging in space in the 27mm Panoptic 2" eyepiece.

Lowell and I decided to swing our scopes to M51, The Whirlpool Galaxy in Canes Venetici. In the 12" SCT a strong hint of the spiral arms was visible. I looked in Lowell's 16 inch Dob, and M51's spiral arms were very noticeable, and I thought I could detect the arm connecting the adjacent companion galaxy. M51 was breath-taking.

Next, I moved the 12" to M57, The Ring Nebula in Lyra, to take a close, long look. I inserted a 17mm Nagler eyepiece for a view at 160x. Staring at M57 and alternating my eyes, I spent about 30 minutes coaxing as much detail as possible from M57. This is a very interesting object. I found that my eye-brain kept insisting that the Ring was changing, like a smoke ring floating through the air. Of course, logic tells me this is not possible, and my next look showed no change. It creates an interesting illusion when stared at long enough!

After five out of five clear nights, our 2005 visit to Star Hill Inn was an astronomy trip to remember. I will dream about Messier objects, many galaxies, star clusters, and our next trip to Star Hill Inn in Sapello, New Mexico. [↗](#)

**Read more of Bill's observing reports at [www.geocities.com/famalhautnights](http://www.geocities.com/famalhautnights)**

**I found that my eye-brain kept insisting that the Ring was changing, like a smoke ring floating through the air.**

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# Go “Inn” for dark skies

## Two club members who’ve journeyed to New Mexico comment on their Star Hill Inn experiences

BY BILL BREEDEN AND ED CUNNIUS

### **BILL BREEDEN: We had an awesome time**

It seemed natural to take an astronomy vacation, given our level of excitement about the hobby. As our dark-sky observing opportunities tend to be fewer than we’d like, we decided to find a place to go where we could get in a whole week’s worth. I contacted Phil Mahon, owner of Star Hill Inn, and he spoke to me for an hour. He was so nice, and totally up front about what we could expect. In my excitement to book the trip and get going, I asked for a Full Moon week, as Phil gently reminded me. I rescheduled the trip.

I would absolutely recommend Star Hill to other club members. The setting is retreat-style, very quiet, and very focused on observing. A few pointers are in order, however. (1) There is no food service at Star Hill, so buy groceries in Las Vegas, NM; (2) Although Sapello, NM, gets 300 clear nights per year, there is no weather guarantee; (3) The observing deck is in a valley, which cuts off about 15 degrees above the horizon; (4) The warming house/library at the observing deck lacks restrooms so you must hike back to your cabin; (5) At an elevation of 7,200 feet, it gets cold at night, even in the summer; and (6) July and August are monsoon season, so avoid those months.

Despite these factors, we had an awesome time at Star Hill. The Milky Way was just incredible, and nearly overpowered Sagittarius. We are going back soon.

### **ED CUNNIUS: I’d go again in an instant**

I was there for the week of Thanksgiving in 2000. The cabins were comfortable with fully equipped kitchens. I made bacon and eggs — along with biscuits from scratch — every morning. (The elevation and sunlight really cranks up the appetite!) They also have these little wood stoves (called chimineas) in the cabins that are great on nights when the clouds roll in.

At Star Hill I had my coldest observing session ever: nine degrees. And bother, nine degrees Fahrenheit

at 7,000 feet is *coooooold*. There was snow on the ground, so there was more moisture in the air than normal. As a result everything frosted over except the objective on my scope — and that would have if I hadn’t been going at it with a hair dryer almost constantly. It was worth it though: the sky was blazing with diamond-white stars unhindered by smog or haze. The Sangre de Cristo Mountains to the west, dragging through the northwesterly winds, created a kind of mid-frequency seeing that I hadn’t experienced before. It was a kind of buzzy-chitter that was just detectable naked-eye even at the zenith. The sky seemed to hum in the cold.

It is best if you take an SUV or other high-clearance vehicle, as the roads are deeply rutted gravel and dirt. We had three days where we would not have been able to go into town without 4wd due to snow and ice. You can get there in good weather in a car — but your oil pan may take a beating

Oddly enough, Star Hill is misnamed: it is not on a hill, but in a valley on the side of a mountain. You miss some sky because of the terrain and trees. The main observing area is in a clear patch and slightly elevated — so it gives some good views to the south-east. But don’t expect to be seeing much close to the horizon. It is also under one of North America’s busiest air corridors into Southern California. If you want wide-field sky photos, you’ll have trouble with planes streaking across your photos. About half of mine did.

I don’t mean this to sound negative: these are minor flaws in an otherwise excellent astronomy experience. I’d go again in an instant. The owners are friendly and knowledgeable. Everything is very laid back. You relax when you are there. You start wondering if you sold your house and cashed in the 401K, you could just maybe start a little place like this yourself someday... 

**Visit the Star Hill web site: [www.starhillinn.com](http://www.starhillinn.com)**

BY TONY PHILLIPS

## Improbable bulls-eye

**P**icture this: Eighty-eight million miles from Earth, a robot spacecraft plunges into a billowing cloud almost as wide as the planet Jupiter. It looks around. Somewhere in there, among jets of gas and dust, is an icy nugget invisible to telescopes on Earth — a 23,000 mph moving target.

The ship glides deeper into the cloud and jettisons its cargo, the “impactor.” Bulls-eye! A blinding flash, a perfect strike.

As incredible as it sounds, this really happened on the 4th of July, 2005. Gliding through the vast atmosphere of Comet Tempel 1, NASA’s Deep Impact spacecraft pinpointed the comet’s 3x7-mile wide nucleus and hit it with an 820-lb copper impactor. The resulting explosion gave scientists their first look beneath the crust of a comet.

That’s navigation.

Credit the JPL navigation team. By sending commands from Earth, they guided Deep Impact within sight of the comet’s core. But even greater precision would be needed to strike the comet’s spinning, oddly-shaped nucleus.

On July 3rd, a day before the strike, Deep Impact released the impactor. No dumb hunk of metal, the impactor was a spaceship in its own right, with its own camera, thrusters and computer brain. Most important of all, it had “AutoNav.”

AutoNav, short for Autonomous Navigation, is a computer program full of artificial intelligence. It uses a camera to see and thrusters to steer — no humans required. Keeping its “eye” on the target, AutoNav guided the impactor directly into the nucleus.

**Comet Tempel 1, as seen by the Deep Impact impactor’s camera. Three last-minute AutoNav-controlled impact correction maneuvers enabled the Impactor to hit the bulls-eye.**

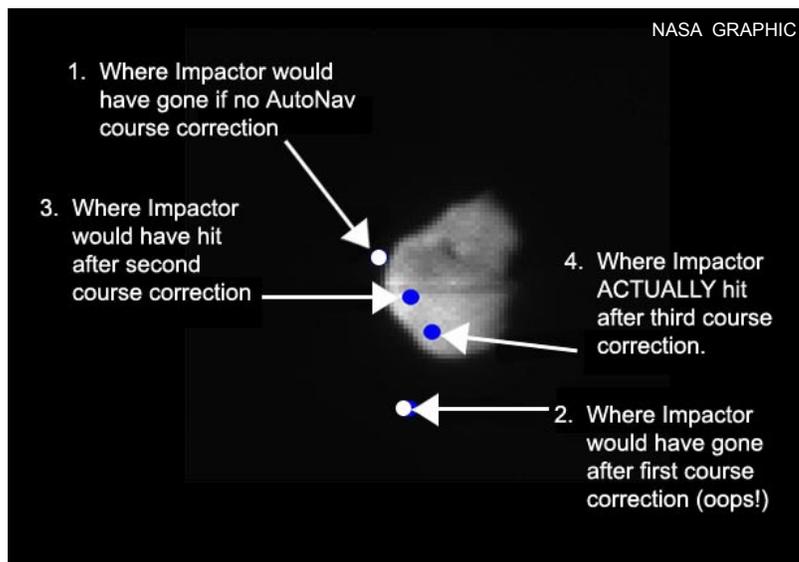
The system was developed and tested on another “Deep” spacecraft: Deep Space 1, which flew to asteroid Braille in 1999 and Comet Borrelly in 2001. The mission of Deep Space 1 was to try out a dozen new technologies, among them an ion propulsion drive, advanced solar panels and AutoNav. AutoNav worked so well it was eventually installed on Deep Impact.

“Without AutoNav, the impactor would have completely missed the nucleus,” says JPL’s Ed Riedel, who led the development of AutoNav on Deep Space 1 and helped colleague Dan Kubitschek implement it on Deep Impact.

En route to the nucleus, AutoNav “executed three maneuvers to keep the impactor on course: 90, 35, and 12.5 minutes before impact,” says Riedel. The nearest human navigators were 14 light-minutes away (round trip) on Earth, too far and too slow to make those critical last-minute changes.

Having proved itself with comets, AutoNav is ready for new challenges: moons, planets, asteroids... wherever NASA needs an improbable bulls-eye. 🚀

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



BY ERIC YOUNG

## Going batty for astronomy

**AUGUST 6, 2005** Lurking in the night are bugs, bats and black holes, plus some amateur astronomers waiting for their eyes to dark-adapt. Can you make something out of the haze? Not eeeeeeezy.

**BATTY** Several bats winged wildly about the yard as they gobbled up mosquitoes. One of the critter's echo-locators must have been off because it careened into the neighbor's siding — and quickly recovered.

**MARTIAN PARTY** The Red Planet is on its way for a rendezvous with Earth, close but not nearly as close as some highly inaccurate e-mails are leading people to believe. Oh, well. Maybe that'll stir up interest in a viewing party. We may meet on Friday, November 11, in St. Jacob Park to give folks a look.

**ALCOR** That stands for Astronomical League Correspondent. Bill Breeden's assumed the position (so to speak) now that Jamie Goggin is the club vice-president. Bill will keep the League informed of our activities and vice-versa. Thanks, Bill.

**SCOUT'S HONOR** Nathan Goff said he's among the 42,000 people who survived the Scout Jamboree this summer.



**Mark Brown, second from left, explains the latest NASA Night Sky Network education kit which features clever demonstrations of black holes.**

### IN MEMORY

Donna Wagner, the mother of Deb Wagner, died on August 16, 2005, of cancer. Donna's visit to Astronomy Day this spring earned her "honorary member" status in the club. "She really enjoyed spending the day with RBAC on Astronomy Day and still talks about it," wrote Deb. "I noticed that she even hung her temporary RBAC name badge on the wall behind her desk." At the August meeting, members voted to send flowers following word of Donna's diagnosis. Deb e-mailed that "the flowers for mom arrived. They are beautiful and she was really surprised and touched. Thanks so much for cheering her up." Our thoughts and prayers go out to Deb and her family.

**STAR PARTY** There will be a star party on September 13 at Laverna Evans Elementary School in O'Fallon. More details to come.

**CARNIVAL** The Children's Museum will host a carnival on September 24 from 10:00 a.m. to 2:00 p.m. We're paying \$10 for a space. Contact Mark Brown at loneastronomer@charter.net for more information.

**CAMARADERIE** Astronomy can be a solitary activity — just you, some optics, and infinity. At other times, it's more fun to share the cosmos with others. That's how River Bend Astronomy Club came to be. At the August meeting, we talked about how to accommodate diverse people and purposes. Some just want to get together and talk, others may want to do serious observing, even photography. Should we section off the "serious" folks? The club decided no, let's keep things loose and relaxed. The Kronk's backyard is not the place for "serious" observing. You get 29 or 30 days a month for that. Once a month, though, let's come together as a club and remind ourselves how good it feels to share the galaxy. [↗](#)

# September 2005



August 2005

S	M	T	W	T	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

October 2005

S	M	T	W	T	F	S
25	26	27	28	29	30	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

■ Holidays    
 ■ Moon Phases    
 ■ RBAC    
 ■ Space Mission    
 ■ Observing    
 ■ Trivia

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31 ● Uranus at opposition	1 ● ICStars Star Party (1-5) ● Venus close to Jupiter	2 ● Mercury at greatest illum. extent	3 ● New Moon 1:45 p.m.
4 ● Mercury close to Regulus this a.m.	5 ● Venus close to Spica ● Labor Day	6	7 ● Cassini: Titan flyby	8 ● 30th ann. of Viking 2 Launch	9	10 ● RBAC meeting 7 p.m.
11 ● First quarter 6:37 a.m.	12	13	14 ● John Dobson's 90th B.D.	15	16	17 ● Full Moon 9:01 p.m.
18	19	20	21	22 ● Autumnal Equinox	23	24
25 ● Last quarter 1:41 a.m.	26 ● Cassini: Hyperion flyby	27	28	29 ● Prairie Skies Star Party (29-2)	30	1 ● RBAC meeting 8 p.m.