

 **Current** MARCH
Astronomy 2004
RIVER BEND ASTRONOMY CLUB NEWSLETTER



Whether helping a child observe our nearest star at Astronomy Day, researching the history of comet observation or leading the members of River Bend Astronomy Club, Gary Kronk enjoys astronomy on many levels. PHOTO BY ERIC YOUNG

Far-out honor

Asteroid named for RBAC president Gary Kronk

BY ERIC YOUNG

A lifelong resident of southwestern Illinois is now an official permanent resident of the solar system. And he's proud of it.

A city-sized worldlet orbiting the Sun, asteroid 48300, has been named for River Bend Astronomy Club (RBAC) president Gary Kronk, who lives in St. Jacob, Ill. The International Astronomical Union's Minor Planet Center (MPC) announced the designation in January.

The e-mail Kronk received from the world's registrar for minor members of the solar system defied categorization at the greeting card rack: "Congratulations on your newly named minor planet!"

RBAC at its January meeting honored Kronk with a certificate commemorating the event. And, attempting to maintain Kronk's ego at less-than-planetary proportions, he was then surprised with "the first-ever, high-resolution image" of the asteroid, revealing "strange anomalies" including a large footprint, discarded soda can and Milky Way candy wrapper.

Kidding aside, the recognition pleases Kronk. "Over the years I've seen lots of people get their names attached to asteroids — it's become a 20th century tradition. This is a neat way to acknowledge people who've made contributions to astronomy. I'm grateful that someone found what I've done important enough to have an asteroid named after me."

Over a hundred asteroids bear the names of amateur astronomers. Asteroid 48300's discovery team, amateur astronomers Charles Juels and Paulo Holvorcem, titled their find to honor Kronk's lifetime of comet research and observation.

Two decades ago, Kronk began a quest to chronicle every comet observation ever recorded, a much-needed but exacting task no one in the modern era had shouldered. He haunted libraries and hounded comet-seekers and astronomers around the planet, amassing file cabinets and hard drives full of data. In 2003, Cambridge University Press published the second volume of Kronk's ongoing series, *Cometography*.



The club presented Gary Kronk with a certificate commemorating the designation of asteroid 48300.

Images of 48300 Kronk taken 90 seconds apart by the Near Earth Asteroid Tracking (NEAT) program, September 12, 2002.



At the MPC, a longtime correspondent of Kronk's, Dan Green, was pleased to announce the asteroid's designation. "Gary Kronk is widely known in the astronomical community for his valiant and painstaking efforts over the last 20 years to research and catalogue all known comets in history from the available literature. His *Cometography*, already partly in print, is the most extensive catalogue of historical cometary appearances ever undertaken, and much appreciation is extended to Mr. Kronk for his work on this important project."

"*Cometography* filled a real need," noted Green, "as nothing along these lines has been in print for decades. The last resource was a 1960s Russian publication, full of errors and problems, translated into English and published by the US government. Nothing this extensive in a comet catalogue has been done since [Alexander] Pingré in the late 18th century." (Though Pingré chronicled early comets, modern scholars find his *Cometographie* lacking.)

Green added that "The professional community is impressed with the amount of work and effort that Gary has put into this project."

Years of research and writing was no mean feat for the husband of Karen Kronk; father of teenage sons David and Michael; president of RBAC; president of Frieden's United Church of Christ in Troy, Ill; lecturer to youth groups; scout badge counselor; and full-time systems analyst at Washington University in St. Louis.

And Kronk's contribution to cometary science reaches beyond simply cataloging the efforts of others. Green said that "in the course of his research, Gary has uncovered — or discovered — many interesting things that had not been known, including making suggested identifications of 'unknown' comets with known comets through their orbits, which we have

A rock by any other name

Five naked-eye planets were plotted by early astronomers, meteors and meteorites have long rained fire on Earth, and comets menaced the skies of antiquity. But other travelers of the solar system were unknown until 200 years ago.

Astronomers suspecting a "missing planet" between the orbits of Mars and Jupiter and began a systematic search which led to the discovery of Ceres, the largest asteroid, by Charles Piazzi in 1801. Then Heinrich Olbers spotted Pallas, the next find, in 1802. Two new planets? Observing Ceres and Pallas, William Herschel estimated these objects to be far less than planet-sized, and went on to propose a name based on their star (*aster*)-like appearance: asteroids.

Other terms used to describe these objects include "minor planets" or "planetoids."

Today, most popular periodicals, amateurs and even professional astronomers still use the name "asteroid," whereas the *Minor Planet* Center announced both the discovery and the naming of "minor planet" Kronk. What gives?

The terms are used interchangeably; however, those who scrutinize orbital characteristics prefer "minor planet," while folks who study appearance and composition remain wedded to "asteroid."

Take your choice. In the future, if you're tempted to exclaim, "Nice asteroid, Gary," you may prefer to compliment his "minor planet" instead.

helped to verify. And his *Cometography* will serve as a launching board for other historians to delve into the circumstances regarding individual comets."

A chance encounter, via e-mail, brought Kronk's efforts to the attention of Juels and Holvorcem, an international astronomical duo who collaborate via the Internet using robotic telescopes to ferret out asteroids.


"After someone discovers a comet, I usually write to them and ask for their discovery story, to be included in my books, my Web site, or both," said Kronk. He queried Juels and Holvorcem in October, 2003, after they "found" a "lost" comet.

A comet discovered in 1978, 157/P Tritton, could not be spotted on its predicted return in 1984. The next chance came in 2003, when, according to Kronk, "No word of this comet came forth — until October." This is when Juels "detected a fast-moving object on CCD images obtained with a 0.12-m refractor on October 6." After combining three digital images, Holvorcem spied a comet with a faint tail. "Numerous other individuals also measured precise positions for the comet," noted Kronk, "and a German astronomer noticed a resemblance to the lost comet Tritton. Brian Marsden of the MPC was alerted to the possible link and later, on October 7, his calculations confirmed that this comet was identical to comet Tritton of 1978."

Once Tritton was in the bag, Kronk queried Juels about the recovery. The response came as a surprise.

After checking the logs of the MPC, Juels wrote back: "I did not find an asteroid 'Kronk' or 'Garykronk' in their database of named asteroids. But this can easily be remedied. We will be pleased to submit a citation to the MPC which will highlight your significant contribution to the study and documentation of comets." And so Juels and Holvorcem exercised their prerogative to name one of their asteroid finds for Kronk.

The team praised Gary for his dedication. Wrote Juels, "With all the work you have done to educate, promote interest in, and advance knowledge of comets, I'm amazed no one has named an asteroid in your honor. Paulo and I are very, very pleased to do this."

With an eye to the future, Juels concluded to Kronk: "So let's keep in touch, and hopefully we will find more comets for you to write about, and even observe." 

Next month: Meet the asteroid hunters

Meet asteroid 48300

But it's hard to shake hands from so far away

BY ERIC YOUNG

Gary Kronk is well-known to members of the River Bend Astronomy Club — as president, he conducts club meetings at his kitchen table and invites folks to park telescopes in his backyard for monthly observing sessions. But as for his distant namesake, numbered 48300 in the logs of the Minor Planet Center (MPC), we must resign ourselves to the fact that — like a million or so companion asteroids — it's just a cipher in space. Kronk's orbiting mountain remains a mystery.

Curious? Here's a stew of sound facts and reasonable assumptions about asteroid 48300 Kronk:

The asteroid was discovered on June 11, 2002, by amateur astronomers Charles Juels and Paulo Holvorcem. The Minor Planet Center gave the object the provisional designation 2002 LG35. With further orbital data it became 48300 among the known and numbered asteroids. In other words, 48,299 asteroids had been plotted and numbered before it. (As of January 2004 the list included 50,000.)

Imagine it's dark. Most asteroids are dark, black to brown in color, and classed as "C-type" or "carbonaceous." This is especially true in the far reaches of the main belt of asteroids between Mars and Jupiter that 48300 calls home. Asteroid Kronk orbits the Sun at an average of 2.9 A.U. — nearly three times the distance from the Earth to the Sun.

Its probable diameter in miles ranges from several to as large as 20. This diminutive size guarantees an odd shape. 48300 never grew large enough to evolve from potato-like to more spherical in appearance.

It's so small and so far away that you won't see it in a backyard telescope, because it shines — if we can call it that — via the Sun's reflected light at a dim magnitude 17. An electronic camera (like that used by its discoverers) attached to a telescope could capture a time exposure portrait, however.


It's unlikely that 48300 is a solid body but rather a conglomerated rock pile leavened with varying sized particles overlain with a veneer of heavily cratered dust.

Seeing a resemblance

Asteroids are a disheveled lot — bizarre asteroid shapes are deduced from ground-based radar images as well as pictured close-up via space probe snapshots. Asteroid researcher Erik Asphaug compares the motley crew he studies to "lizard heads, kidney beans, molars, peanuts and skulls" — ample fodder for scientists' and science fiction-writers' imaginations. But Asphaug looks kindly on the objects of his enthusiasm. "You know how they say that people look like their pets? I'd say there's an asteroid for each of us! I recall Lex Luthor, who used slave labor to engineer a small planet to take on the shape of his own head. With a few billion dollars, any evil genius could give a small asteroid such a face lift."

48300 and its million kin all lumped together would equal less than half of the mass of the Moon — there are many asteroids, but they don't amount to much. Most of the mass of all asteroids is bound up in the three largest: Ceres, Pallas and Vesta.

If 48300 had a heart it might feel lonely. The main belt is that vacuous: vast distances separate its denizens (though some asteroids have companion moons.) Action-filled encounters with asteroid fields in sci-fi operas fudge the facts: a sightseeing tour from 2–3 A.U. would be hard-pressed to stumble upon anything picture-worthy because residents of the main belt are simply too small and widely spaced. Thus, spacecraft trundling through face little danger of collision.

48300 rounds the Sun every 5.2 years — a leisurely pace, slower than the terrestrial planets, faster than the gas giants. If the human Kronk orbited the Sun at this rate he would be only nine "years" old. But, of course, 48300 has made the journey many more times than 47-year-old Kronk. And if 48300 could speak, oh the stories of the early solar system it could tell. 

What's inside counts

Space mission proposed to gauge asteroid interiors

BY ERIC YOUNG

Astronomers are reconsidering asteroids. Once assumed to be solid leftovers of a failed planet, the solar system's oddball gallery of planet-bits and pieces have proven more complicated than all that. Most asteroids are now thought to be rubble piles, not solids. We're talking about bean bags here, not boulders, with long, tangled histories fraught with more shadowy mergers and shattering breakups than a soap opera family tree.

And considering the appearance and behavior of most asteroids — those less than 200 km or 120 mi across, including asteroid 48300 Kronk — this relatively new idea seems to fit the bill.

In a presentation to the 23rd Meeting of the International Seminars on Planetary Emergencies, William Bottke, now with the Department of Space Studies at Southwest Research Institute, pointed to a number of factors supporting this hypothesis:

- Asteroids less than 10 km wide rotate slowly — in fact, slow enough to keep a rubble pile from flying apart.
- Computer simulations show that a lumpy 1-km-class asteroid hit by a rocky projectile will fracture, not fly to pieces, gravity gluing most bits back together.
- Big craters on asteroids are smoking guns for rubble pile theory, too; take, for instance, the 11 km crater Stickney on Phobos, one of two hostage moons held by Mars. It seems unlikely that a solid Phobos would have survived such a konk.
- The mass of asteroid Mathilde, gauged by the Near-Earth Asteroid Rendezvous spacecraft, was little more than half that of a similarly surfaced (but definitely solid) carbonaceous chondrite meteorite.
- Minor solar system bodies have strange elongated shapes. The tidally disrupted string of cometary pearls called Shoemaker-Levy 9 that Jupiter ingested in 1994 as well as the doubled-up craters on terrestrial planets all indicate loosely bound structures that can reshape and even come unglued in the face of greater gravitational forces.


Understanding whether a heads-up incoming asteroid is solid or conglomerate poses grave consequences for dealing with the emergency of an impact threat, not to mention for altering Hollywood plotlines. Bottke concluded that “Mechanisms capable of deflecting solid coherent objects may not work on a rubble pile. For example, the explosion of an implanted nuclear device on a rubble pile, the deflection scheme used in the movies ‘Deep Impact’ and ‘Armageddon,’ may instead disperse it into an dangerous cloud of debris.”

Now rubble-pile theory verification may be only a near-Earth asteroid away.

A space mission called “Deep Interior” could reveal the inner workings of the asteroid menagerie. Researcher Erik Asphaug, an associate professor at the University of California–Santa Cruz, is deputy leader of the proposed international effort to fly radar and seismic instruments to a sampling of potentially hazardous asteroids, with the aim of providing definitive resolution to modern uncertainties regarding the interior structures of asteroids.

“It is still just a mission proposal,” said Asphaug, “but we have high hopes that it will be selected for flight. Launch would be around June 2009, to a small 1 km-diameter near-Earth asteroid.”

“Deep Interior would be the first ‘CAT Scan’ of an asteroid,” said Asphaug, “using a radio reflection tomography technique very similar to what is used in medical imaging. We’ll see inside of it, from polar orbit as the asteroid spins underneath, and will obtain a 3D map of interior properties. After completion of our mission there will be no guessing any more, whether 1 km asteroids are rubble piles or monoliths. It will also be the first seismological analysis of an asteroid, using simple probes to create blast craters and to monitor the asteroid’s reverberations.”

Mining data can tell us how to safely move projectile asteroids out of harm’s way as well as help us to decide whether to dig the prospects for asteroid mining. 

The Space Place

BY PATRICK BARRY

Deep Space Network 2-for-1 sale

Call it a “buy one, get one free” sale for astronomers: Build a network of radio dishes for communicating with solar-system probes, get a world-class radio telescope with a resolution nearly as good as a telescope the size of Earth!

That’s the incidental bonus that NASA’s Deep Space Network (DSN) offers the astronomy community. Designed to maintain contact with distant spacecraft in spite of the Earth’s rotation, the large, widely spaced dishes of the DSN are ideal for performing a form of radio astronomy called “very long baseline interferometry” (VLBI).

VLBI produces very high resolution images of the cosmos by combining the output from two or more telescopes. The result is like having a giant “virtual” telescope as large as the distance between the real dishes! Since bigger telescopes can produce higher resolution images than smaller ones, astronomers need to use dishes that are as far apart as possible.


That need dovetails nicely with the DSN’s design. To maintain continuous contact with deep space missions, the DSN has tracking stations placed in California, Spain, and Australia. These locations are roughly equally spaced around the Earth, each about 120 degrees of longitude from the others — that way at least one dish can always communicate with a probe regardless of Earth’s rotation. That also means, though, that the straight-line distance between any two of the stations is roughly 85 percent of Earth’s diameter — or about 6,700 miles. That’s almost as far apart as land-based telescopes can be.

“We often collaborate with other VLBI groups around the world, combining our dishes with theirs to produce even better images,” says Michael J. Klein, manager of the DSN Science Office at NASA’s Jet Propulsion Laboratory. “Since our 70-meter dish in Canberra, Australia, is the largest dish in the southern hemisphere, adding that dish in particular makes a huge difference in the quality of a VLBI observation.”



Two or more widely spaced radio telescopes are better than one — the combined output is like that of a telescope as large as the distance between the two.

Even though only about 1 percent of the DSN’s schedule is typically spared from probe-tracking duty and scheduled for radio astronomy, it manages to make some important contributions to radio astronomy. For example, the DSN is currently helping image the expanding remnant of supernova 1987A, and Dr. Lincoln Greenhill of the Smithsonian Astrophysical Observatory is using the DSN dishes to explore a new way to measure the distances and velocities of galaxies.

And all this comes as a “bonus” from the dishes of the DSN. 

To introduce kids to multi-wavelength astronomy, NASA’s website for kids, [The Space Place](http://TheSpacePlace.nasa.gov), has just added the interactive demo, “Cosmic Colors,” at spaceplace.nasa.gov/cosmic.

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

The River's Edge

BY DEB WAGNER*

Ode to Astronomy Day

One 'scope, two 'scopes,
Old 'scopes, new 'scopes.
'Scopes that move in ALT and AZ,
'Scopes with new GOTO pizzazz.

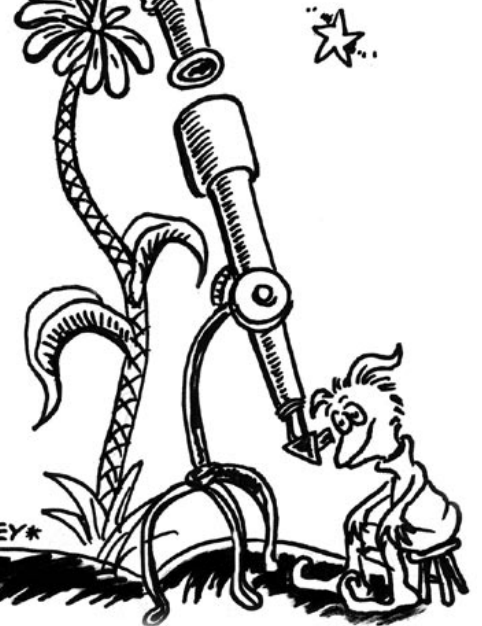
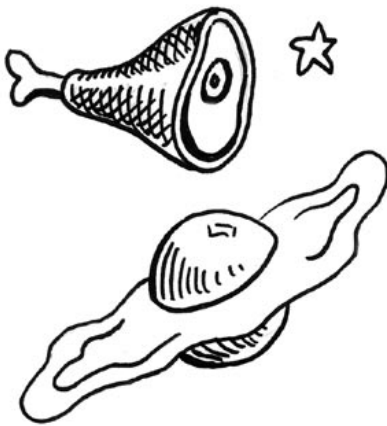
Members work to educate,
Members work from dawn 'til late.
Members must take on the task
Of answering questions visitors ask:

"Here's what I sincerely hope, Sir,
You will help me use my 'scope, Sir."
"I'm so confused by all the stars;
Where is Saturn, where is Mars?"

"If I push this to the max,
Can I see the rover tracks?"
"Please Sir, I don't mean to nag,
But, can I see the lunar flag?"

Astronomy Day makes visitors cheery.
Much hard work makes members weary.
But, if we share the things we know,
We will help our roster grow!

**With apologies to Dr. Seuss*



BY ERIC YOUNG

Groundhog days and nights

FEBRUARY 21, 2004, ATTENDEES

Mark Brown, Lois Butler, Gary Kronk, Bruce Kryfka, Kurt Sleeter, George Roethemeyer, Deb Wagner, Eric Young, Mark Young.

MESSIER MARATHON The golden weekend approacheth...that is to say, the prime time when once a year we have some hope of seeing all the Messier Objects in one night. We're juiced, we're pumped, we're ready to rock, we're...uh, are we

You're invited to the Illinois Dark Skies Star Party September 16th–18th, 2004

The third annual Illinois Dark Skies Star Party will be held September 16th–18th, 2004 at the Jim Edgar Panther Creek State Fish and Wildlife Area (JEPC), 25 miles northwest of Springfield, Illinois in eastern Cass County. The park is easily accessible from Illinois Routes 78, 95 and 125. This area boasts some of Illinois' darkest skies. Naked eye views of 6 to 6.5 magnitude objects are not uncommon. Plans for star party events include guest speakers, presentations, telescope making and astrophotography contests. Attendance will be limited to 1000.

Daytime activities include hiking, biking, fishing, horseback riding and hunting. JEPC is just 30 minutes from historic Lincoln sites such as: Lincoln's Tomb at Oak Ridge Cemetery, Springfield; Lincoln's Home and Law Office, Springfield; Lincoln Homestead at New Salem State Park, Petersburg and the new Abraham Lincoln Presidential Library, Springfield.

See www.sas-sky.org for more information, registration and interesting astro-links.

ready to stay up all night? The marathon challenge can sharpen your observing skills and help you gain confidence in finding your way around the night sky. We're all set for Greenville College Observatory the weekend of Friday, March 19th and Saturday, March 20th. We'll try for Friday — if the weather refuses to cooperate then we'll try again on Saturday. See the RBAC Yahoo! Groups Web site for a map. You'll want to arrive in late afternoon and allow plenty of time to set up and get you and your gear acclimated prior to twilight. Then, the race is on, as you must locate the first objects in evening twilight just above the western horizon. Observing continues through the night until the final targets rise just ahead of the Sun at dawn. The *Year-Round Messier Marathon Field Guide* by Harvard Pennington (www.willbell.com) is a useful guide to the event and contains very handsome charts for finding the Messier's any time of the year. Remember, you can do many Messier objects with the simplest equipment. Some marathoners have used their eyes, or binoculars, or even just their finderscopes. Big, expensive optics aren't absolutely necessary for grabbing eyefuls of deep-sky wonders. Please contact Jamie Goggin if you have any questions about traveling to and participating in the event.

POT OF GOLD For all the amenities that Greenville College Observatory has to offer, a toilet is not among them. So Jamie Goggin, Messier Marathon instigator and part-time sanitation engineer, has begun collecting money to rent a porta-potti for the weekend of the event. We are all greatly *relieved* that Jamie made these arrangements, and feel more confident that a successful Messier Marathon will *all come out in the end* thanks to his efforts. Deb Wagner, who deserves a *throne* of high stature, has agreed to meet the porta-potti people that Friday to accept delivery of the most-talked-about (judging by the club e-mails) aspect of the marathon. Through it all, you know for sure *what's on our minds* at RBAC.

ASTRONOMY DAY SPONSORS

Donations received as of March 1, 2004

Astronomy.com

astronomy.com/home.asp

Welcome To Astronomy pamphlets, Cosmic Tour posters, Deep Sky Picture Show pamphlets and listing our Astronomy Day on their website

Orion Telescopes & Binoculars

www.telescope.com

1.25" Stargazer's Filter Set and product catalogs

Hardin Optical Company

www.hardin-optical.com

Deep Space Hunter 6-inch Dobsonian telescope, 12 Planispheres, and product catalogs

NASA's The Space Place

spaceplace.jpl.nasa.gov/index.shtml

20 Cosmic Journey card decks

Kalmbach Publishing—Astronomy magazine

www.kalmbach.com

Two subscriptions to Astronomy magazine

Lumicon

www.lumicon.com

\$50.00 gift certificate toward any Lumicon product

Scope City

scopecity.com

Two \$25.00 gift certificates to be used toward any telescope or binoculars

Pass Systems Group

(Employer of RBAC member George Roethemeyer)
Bushnell 150 X 50mm Deep Space Telescope

Sky Publishing—Sky & Telescope magazine

skyandtelescope.com

10 Skywatch 2004 magazines, 100 Getting Started in Astronomy pamphlets, 5 Astronomy Day posters

TENTATIVE AGENDA FOR ASTRONOMY DAY 2004

- 8:00 a.m. RBAC Members arrive at the Children's Museum at Edwardsville to set up
- 10:30 a.m. Astronomy Day 2004 begins
- 11:00 a.m. Talk: *Comets Currently Visible* and *Cook a Comet* with Gary Kronk
- 12:15 p.m. Door prize drawings — Bushnell 50x150 telescope
- 1:30 p.m. NASA Night Sky Network Presentation *Distant Worlds – Planets around other stars* – RBAC members.
- 3:00 p.m. Door prize drawings — Hardin Deep Space Hunter 6-inch telescope
- 3:30 p.m. Daytime activities at the museum end. Clean up and pack up.
- 4:30 p.m. Meet at Jamie Goggin's home for dinner and socializing.
- 6:00 p.m. Set up for evening telescope observing at St. Jacob Park.
- 10:00 p.m. Evening observing ends.
- Activities: Planet coloring station
Planet walk
Mega sundial – make your own sundial
Safe solar viewing
Tour of telescopes
Astronomy information tent –
Ask an astronomer a question
Hand out lots of promo material!!!!
Planet/solar system quiz
Multimedia presentations
Astrophotography display

Events

ASTRO DAY DRAWS NEAR Planning for Astronomy Day 2004 is nearing the final phase. Mark Brown is keeping a list of the RBAC members who've volunteered with their time and/or telescopes. We're getting in synch with the staff of the Children's Museum at Edwardsville, who did such a great job last year promoting and hosting the event. Now that we have a schedule and a general idea of the giveaways, we will draft the publicity in cooperation with the museum. Stay tuned for further developments. We need your help — please contact Mark if you can donate your time and/or...? in any way.

ASTRO GIMMES Some \$800 worth of prizes and informational material has been donated to our Astronomy Day program as of March 1, 2004. The wealth of goodies are a testament to the organizational — not to mention begging — skills of Mark Brown. See the listing in this issue for all the companies that have chipped in, and be sure to patronize them if you get the chance. The donors will be listed on the RBAC Web site.

TWO 'SCOPES! This year, not one but two — that's right, *two* bottles of mouthwash will be given away in April at Astronomy Day. Hah! Just seeing if you're paying attention. "Scopes" means telescopes, of course. Once again, Hardin Optical Company has graciously donated a top-notch, 6-inch "Deep Space Hunter" Dobsonian reflector telescope. If you're unfamiliar with Hardin's line of very affordable Dobs, check out their Web site at www.hardin-optical.com. We'll never forget the ear-to-ear grin of Sam Watts who won the telescope donated by Hardin in 2003. But wait, that's not all...

WAY TO GO, GEORGE When he's not busy fixing the I.D. badge machines at Washington University in St. Louis, club member George Roethemeyer thinks about RBAC. In fact, he encouraged the generosity of his employer, Pass Systems Group, which has donated a Bushnell 150 x 50mm Deep Space Telescope. Thanks to the efforts of George and his associates we're sure to double our rate of Astronomy Day smile creation in 2004.

SPECIAL EVENT

**Friday, March 19, 2004 • AWWWL night long
Greenville College Observatory
Setup at 4:00–5:00 p.m. (sunset at 6:00 p.m.)**

MESSIER MARATHON

MARATHON RAIN DATE

**Saturday, March 20, 2004 • AWWWL night long
Greenville College Observatory
Setup at 4:00–5:00 p.m. (sunset at 6:00 p.m.)**

THERE'S NO MARCH MEETING, BUT...

**In the event of inclement weather both nights, the club will meet at Gary's place to commiserate and plan for next year
Saturday, March 20, 2004 • 7:00 p.m. •
Kronk Observatory**

Watch your e-mail for more information.

LUNATIC IN OUR MIDST She's gone and done it — Deb Wagner went and earned her Lunar Club certificate from the Astronomical League. The program consists of a list of 100 objects to observe on the Moon. Don't worry, you don't need to go there and take pictures or anything like that; rather, you take the list out to your backyard (or wherever you observe from) and use your eyes, binoculars or a telescope to find the features and check them off the list. Oh, you'll need a map, too. Deb used lunar atlas software that she downloaded for free off the Web to print maps and label her targets. When diligence is applied — and the weather cooperates — it's possible to complete the list in only one, two or three lunations, or cycles of lunar phases. As Deb points out, some objects are more challenging than others and require that the lunar surface have particular amounts of light or shadow. Even so, the Lunar Club is a great way to hone your observing skills, learn how to read a map at the telescope, and discover how to observe in the freezing cold night air without losing fingers or toes. It's fun! Contact our Astronomical League correspondent, Jamie Goggin, for more information on this and other League observing programs.

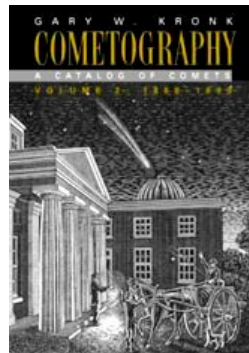
BADGERING AGAIN When not searching for the Apollo 11 landing site, Deb took time to design new name badges for RBAC. She presented two versions which members voted on at the February meeting. Deb's new badges, which include the club logo, will replace the old orange badges created by Ed Cunnius long ago when the club was still in diapers.

LOOK OUT! Deb also distributed handy, wallet-sized reference cards with the phone numbers of all members of the RBAC Astronomical Early Warning System, or AEWS for short. If your name's on the list, you may be called upon at any time of the day or night to catch a glimpse of some exciting, ephemeral occurrence such as an aurora — or maybe another appearance of Comet Young, the transient sky shape recently observed, or dreamed, by your newsletter editor.

BEGGING FOR CLEAR SKIES Recently, Jamie Goggin returned home with his knees soaked and mud-stained following a night out. Seems he was busy adjusting Deb Wagner's new 8-inch Discovery telescope while kneeling in late-winter thaw. Following the tune-up, all is well, and Deb's new toy is offering up gorgeous views of sparkling star clusters — her deep-sky favorites.

KUDOS TO CUNNIUS Ed Cunnius will be creating the monthly calendars from here on out. Thanks, Ed!


A CENTURY OF COMETS That's the apt headline that *Sky & Telescope* magazine ran with its review of Gary Kronk's new book, *Cometography*, a catalog of 19th-century comets and the second book in his planned series on the annals of comet observation. Gary, who often lives on bowls of cereal and very little sleep, is engaged in documenting every comet apparition in history. What a slacker!



Everyone knows the really hard book would have been all the comets of *pre-history* — that is, every comet back to the dawn of time. But each person must carefully choose his or her battles in life, and Gary settled for a merely improbable task instead of an impossible challenge. This

family man from small-town Illinois is over half-way there to meeting his goal (much of the writing for volume three is already in the bag — er, hard drive, that is). See page two of this newsletter for some sense of the regard both professionals and amateur astronomers hold for Gary's efforts to date.

The downside of *Cometography*, if we may register one irk, is the cover price — nearly \$200. Gary laments the fact that the steep cost of the nearly 1,000-page book puts it out of the reach of most amateurs. And he received only a few complimentary copies for his own library, so he further regrets that he cannot give copies to club members. But *Cometography* will find its reward on the hallowed shelves of research libraries and universities and in the useful hands of comet researchers worldwide. Only time (and further scrutiny by the world's leading authorities in the subject) will tell whether Gary's leisure would have been better spent memorizing *Star Trek* reruns than combing countless pages of comet observations for the most thorough comet catalogue ever assembled. So far, the answer is no, even if he still enjoys *Star Trek* now and again.

In the meantime, though it may be hard for us ordinary duffers to fully appreciate the science of *Cometography* (just what *is* an argument of perihelion, anyway?), we're grateful for Gary's contributions at every level of astronomy — and, in particular, for helping to create the River Bend Astronomy Club and nurturing it from his own home. Thanks, Gary. 



RIVER BEND ASTRONOMY CLUB
RIVERBENDASTRO.ORG

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

Officers
PRESIDENT Gary Kronk
VICE-PRESIDENT Kurt Sleeter
TREASURER Ed Cunnius
LEAGUE CORRESPONDENT Jamie Goggin
SECRETARY Eric Young

Membership
ADULT \$10.00/year (18 years or older)
YOUTH \$8.00/year (under 18)

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Astronomical League
 Members of the world's largest amateur astronomical organization.
WEB www.astroleague.org

Current Astronomy CLUB NEWSLETTER
EDITOR Eric Young
E-MAIL younger@wustl.edu
 Submissions to the newsletter are encouraged. Contact the editor for more information.

March 2004



February 2004

S	M	T	W	T	F	S
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	1	2	3	4	5	6

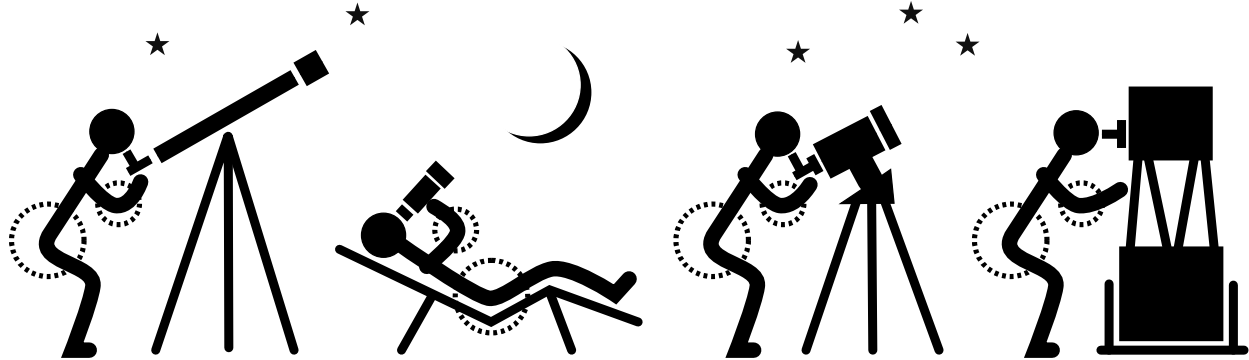
April 2004

S	M	T	W	T	F	S
28	29	30	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	1

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

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	1 ■ Comet Shoemaker-Levy 4 Closest Approach to Earth	2	3 ■ 35th anniversary of Apollo 9 ■ Jupiter at Opposition tonight	4	5 ■ 25th anniversary of Voyager I Jupiter flyby	6 ■ Full Moon (5:14 p.m. CST)
7	8	9	10	11	12	13 ■ Last-quarter Moon (3:01 p.m. CST)
14	15	16	17 ■ St. Patrick's Day	18	19 ■ Messier Marathon	20 ■ Marathon rain date ■ If rain, meet at Gary's ■ Spring Eq. ■ New Moon
21	22	23	24	25	26	27
28 ■ First-quarter Moon (5:48 p.m. CST)	29 ■ Mercury at greatest elongation ■ Venus at greatest elongation	30	31	1	2	3

We recommend light bending nightly.



Exercise your sense of wonder — join the River Bend Astronomy Club.

Meteors explode high above the Earth. Comets exhale dusty, million-mile-long tails while hurtling towards the Sun. Galactic collisions rip stellar systems to shreds of stardust. Oh, and don't forget the Big Bang...

These aren't scenes from Hollywood's latest action flick. The drama of the universe plays nightly over your backyard. All it takes to enjoy the show is a little know-how and maybe some modest optical equipment. Popcorn is optional.

While often exciting, astronomy is also a peaceful, deeply meaningful, and some might say spiritual pursuit, a search for a "cosmic connection"—reaching out from our tiny blue world to try and grasp our place in the universe.

The thrilling WOW! of a child's first glimpse of Saturn through a telescope as well as quiet, personal moments are among the many rewards of amateur astronomy. The River Bend Astronomy Club aims high to make your pursuit as rewarding as possible.

Anyone interested in learning more about astronomy may join. Expensive tools or special skills are unnecessary. But space is a big place—it helps to know someone with a road map. Members have maps, and they'll gladly show you around the sky—plus you'll enjoy sharing great sky views using quality astronomical telescopes. Besides, it's more fun to share the night together (and having a friend close by helps ward off night-feeding hungry bears, surprise alien attacks, etc.).

Through club membership, you join the Astronomical League, a national federation of over 240 local astronomy societies. The League's many special programs and quarterly newsletter will 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?



River Bend Astronomy Club Membership Application

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) @ \$10.00/year (18 years or older) _____ Youth membership(s) @ \$8.00/year (under 18)

I enclose a check for a total of \$ _____ made out to "Ed Cunniss, Treasurer RBAC."

Signature _____

Date _____

River Bend Astronomy Club

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

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