

BPAA Newsletter

Battle Point Astronomical Association, Bainbridge Island, WA
ISSUE 55: MARCH – APRIL 2003

MARCH – APRIL - MAY CALENDAR

(Unless otherwise noted, all events are at the Edwin Ritchie Observatory, Battle Point Park.)

March

- March 2: New Moon 6:36 p.m.
- March 5: BPAA Board Meeting 7 p.m.
- March 9: Observatory tours 2 to 4 p.m. Paul Below
- March 11: First-quarter Moon 3:16 a.m.
- March 12: Member Meeting 7 p.m. Speaker: UW Grad. Student Andrew West on Radio Astronomy
- March 13: Lecture Series 2003 7 p.m. BHS Rm. 311 Paul Middents: Archeoastronomy in the Americas
- March 18: Full Moon 2:35 a.m.
- March 20: Lecture Series 2003 7 p.m. BHS Rm. 311 Paul Middents: Archeoastronomy around the World
- March 21: Vernal Equinox
- March 22: Star Party Battle Point Park. Beginner session 6 p.m. Paul Below
- March 24: Last-quarter Moon 5:52 p.m.

April

- April 1: New Moon 11:20 a.m.
- April 1–8: National Dark-Sky Week
- April 2: BPAA Board Meeting 7 p.m.
- April 4: Jupiter closest to M44 (Beehive Cluster)
- April 6-7: Daylight Saving Time begins
- April 9: Member Meeting 7 p.m. Speaker: UW Prof. Dr. Toby Smith on Earth Impacts
- April 9: First-quarter Moon 3:41 p.m.
- April 10: Lecture Series 2003 7 p.m. BHS Rm. 311 Paul Middents: Astronomy in the Classical World
- April 16: Full Moon 11:37 a.m.
- April 17: Lecture Series 2003 7 p.m. BHS Rm. 311 Paul Middents: Cosmology
- April 23: Last-quarter Moon 4:19 a.m.
- April 24: Hubble Space Telescope placed in orbit 1990
- April 26: Star Party Battle Point Park. Beginner session 7 p.m. Paul Below

May

- May 1: Lecture Series 2003 7 p.m. BHS Rm. 311 Paul Middents: Cosmology
- May 1: New Moon 5:10 a.m.
- May 7: BPAA Board Meeting 7 p.m.
- May 9: First-quarter Moon 4:54 a.m.
- May 10: Astronomy Day
- May 14: Member Meeting 7 p.m.
- May 15: Lecture Series 2003 7 p.m. BHS Rm. 311 Paul Middents: Cosmology (Cont. on p. 2)

May 15: Full Moon 8:37 p.m.; Total Eclipse of the Moon 8:41 p.m.
May 22: Last-quarter Moon 5:32 p.m.
May 24: Star Party Battle Point Park. Beginner session 7 p.m. Paul Below
May 31: New Moon 9:20 a.m.

Calendar Notes:

In March and April, BPAA is hosting two excellent speakers, thanks to the efforts of George McCullough. Both are from the University of Washington. On March 12, the speaker is Andrew West, a graduate student at the University of Washington. He will speak on Radio Astronomy. On April 9, Professor Toby Smith will present a lecture on Earth Impacts.

BPAA is also privileged to host another lecture series by Paul Middents, held at Bainbridge High School (BHS), rather than at the Observatory. The lectures started in February and continue through May. These lectures, albeit part of a series, each do well on a stand-alone basis. You don't need to attend all to appreciate the excellence of and gain from each individual lecture.

April 1 through 8 is National Dark-Sky Week. This is a grassroots effort to highlight the beauty of the night sky and to draw attention to the ever-increasing levels of light pollution across the country. We on Bainbridge should be especially cognizant of this cause, now that we are part of the solution to night light pollution, having adopted a new city ordinance to protect our night skies. If you haven't complied already, this is the time to place shields on your existing lights to direct light downward and to replace existing bulbs with lower wattage bulbs. For more information check out our web site at www.bicomnet.com/ritchieobspages/lights.htm, as well as www.darksky.org and www.lightsearch.com

And while you're out there admiring those shields and replaced bulbs, look up. Jupiter stands high in the southeast as the brightest point of light in the sky. In the south, Saturn is high in the sky, between Capella and Orion's belt. Look through a small telescope for the bands on Saturn's disk and details in the rings.

Should clear nights prevail, any member who plans to observe can invite others to join in by sending an email to bpaa@yahoogroups.com. To join our email group, send an email with your name to bpaa-owner@yahoogroups.com and we can enroll you. If you want to also have web access to the messages and files, you can join the yahoogroups by clicking the register link for new users on <http://groups.yahoo.com/>, and then you can request to join our group on this page: <http://groups.yahoo.com/group/bpaa/>. The system will send us a message, and we'll approve your request after we verify your membership.

Diane Colvin
(dcolvin@bainbridgeisland.net)

NEWS BRIEFS

In mid-January a bushfire caused \$20 million damage to the **Mount Stromlo Observatory** in the outskirts of Canberra, Australia. Eighty people had only twenty minutes to get away, leaving six telescopes, a new imaging spectroscopy intended for the Gemini North telescope in Hawaii, the library, and staff members' homes to be destroyed.

Grote Reber, the man who built the first radio telescope for astronomy, died at the age of 90 this past December. An amateur astronomer when he became interested in Karl Jansky's discovery of cosmic radio waves, his work contributed to the discoveries of quasars, pulsars and the Big Bang's remnant glow.

The Tacoma Astronomical Society (TAS) held its first public Star Party, January 29th at its new location on the Lakewood campus of Pierce College. The new

club president, Matt Flood, is excited about this increasing opportunity to interest others in astronomy.

If you are a teacher of a class between kindergarten and senior high school, **NASA wants you**. NASA is looking for educators whom it will train to help explore the frontiers of science, technology, engineering, and mathematics. The deadline for application is April 30, 2003; you can find more information at: <http://edspace.nasa.gov>

The New Comet NEAT, was a binocular object visible in the early evening in the west at the beginning of February. Reportedly it was magnitude 5.5 and had the possibility of brightening somewhat over the two weeks it was visible (after which it passed behind the Sun). It (News Briefs cont. on p. 3)

was in the area between Aquarius and Pegasus and to the left and somewhat higher than M15. You should check the amazing pictures in the web site:

http://www.space.com/spacewatch/comet_neat_030131.html

Harry Colvin tried to spot it: "I could not see it with naked eye. Scrambling around to get my telescope on it before it got too low, I tripped over my cat Ashley and almost crashed into the scope. Then there was this tree branch that took another 10 minutes to trim. No good ending here. I did not make it with the 'scope."

The Ritchie Observatory is now a listed location on the **Clear Sky Clock**. Check it out at: <http://cleardarksky.com/c/RitchObWKey.html> There is also a link to the BPAA web site on the listing. H. C.

Horkheimer Award

The Astronomical League has posted the 2002 Horkheimer Award winners on their web site. Our very own **Jared Barnhill** won 3rd place!

When you consider that the Astronomical League is composed of over 260 astronomy clubs and 19,000 members, it is obvious that an annual award with only 4 winners is very special indeed.

This is a belated recognition, since the award was based on service Jared performed for our club and for Project ASTRO over the last several years, and since Jared was informed of the decision last year. However, this was the first official notification that I have seen. Please see:

<http://www.astroleague.org/al/awards/horkhmr/horkhm02.htm>

and scroll down to the section on Jared.

For more on the award, see:

<http://www.astroleague.org/al/awards/horkhmr/horkhmrs.html> Congratulations, Jared! Paul Below

Open Houses

The NASA Educator Resource Center will have open houses on BOTH March 1 and March 8 from 1-4 p.m. in Johnson 401 **on the University of Washington campus**. The theme is Planets, Stars and Galaxies. ERC Director Julie Lutz will be doing some activities and distributing materials on Planets (1 p.m.), Stars (2 p.m.) and Galaxies (3 p.m.).

EVERYONE is welcome to attend and to bring family members. HOWEVER, room capacity is limited to about 50 people so please contact nasa@u.washington.edu or call 206-543-1943 to reserve places.

The ERC is co-located with the offices of the Washington NASA Space Grant. Go to www.waspacegrant.org to find directions to Johnson 401. Parking on the University of Washington campus is free

after noon on Saturday and there is no charge for the Open House. P. B.

An Interior Asteroid

Astronomers with the Lincoln Near Earth Asteroid Research (LINEAR) project have observed the first object in the solar system (Venus and Mercury excluded) having an orbit entirely within that of Earth -- albeit barely. The minor planet dubbed 2003 CP20 has a 235-day orbit that stretches out to 0.980 astronomical unit from the Sun. At our own closest approach to the Sun, we only get within 0.983 a.u. The newly found asteroid is estimated to be only 2 kilometers across. And though it poses no risk to Earth (with a minimum possible distance of 28 million kilometers), the object can pass within 0.05 astronomical unit (7.5 million kilometers) of Venus. More information will be known as astronomers refine the asteroid's orbit. P.B.

Martian Gullies Revisited

Mars Odyssey, the latest orbiter to map the red planet, is continuing to earn its stripes. In a recent paper in *Nature*, Phillip R. Christensen (Arizona State University), the principal investigator on the craft's Thermal Emission Imaging System (THEMIS), has uncovered what might be the answer to one of the most enigmatic Martian questions of the past few years: Why do shadowed sides of some crater walls bear deep ruts?

Since June 2000, Mars experts worldwide have been fussing over this "gully problem." Theories to explain their formation have ranged from hidden liquid-water reservoirs that leak out from behind ice dams, to carbon dioxide deposits creating dry-ice landslides. Now Christensen has presented what may be the most simple explanation of all -- they are formed by melted snow. http://SkyandTelescope.com/news/current/article_880_1.asp P. B.

Astronomy Day, Saturday, May 10

The theme for this year is **Mars!** We're looking for someone to head up this event. Please contact Paul Below if you are willing to be the focal person. May will be here before you know it! See:

<http://www.astroleague.org/al/astroday/adtips.html>

P. B.

REPORTS AND ARTICLES

President's Message – Paul Below

February 25th Richard Berry explained the ISSAT Project (International Space Station Amateur Telescope) to us, as well as the need for obtaining funds for Telescope ALPHA (a ground-based autonomous

telescope with control via Internet). Following his talk, BPAA hosted a fund raising activity with Richard at the Observatory.

Your Board of Directors voted to match all of the donations received (up to a maximum of \$1000). If you would like to make a donation to the ISSAT, please send a check to BPAA with a note that the money is to go to the ISSAT. Double your donation with our match! Please don't delay, as we need to wrap up the matching soon.

We hope that other Astronomical League clubs will step up and do what we have done. We intend to send an article to the *Reflector* explaining our fund-raiser and issuing our challenge.

Meanwhile, back at the Park... As we move into the new year, and as the weather begins to warm, perhaps your thoughts have dwelled on astronomy. If so, please become active in BPAA. Certainly there is an activity that would interest you.

We are still looking for help in the following areas:

- * Docents to lead tours, only requires a 2-hour per month commitment
- * Large Telescope Team needs additional members committed to operate the Ritchie Telescope
- * Archivist to manage our historical collection
- * Small telescope manager for our collection of 4 -inch and 16-inch telescopes
- * Astronomy Day 2003 manager

If any of these (or any other astro activity!) sounds like fun, please contact me or one of the other Board Members soon!

Finally, I have to tell you about the Beginner Session and Star Party on Feb. 22. It was a mostly cloudy day, but the Clear Sky Clock (see it on the bottom of our events page on the BPAA web site) promised clearing late. We had a group of Girl Scouts who did an indoor planisphere activity and toured the dome. Their badge requirements included learning how to find the North Star and learning how telescopes operate. Then, we were visited by a group of Brownies. Luckily, gaps in the clouds opened to allow them to view Jupiter (all four Galilean moons were on the same side) and Saturn. After the Beginner Session, the visiting adults also got to view these two giant planets.

The clouds came back, the newcomers departed and Bruce, Russ, and I hung out for awhile and visited. Good thing we didn't leave, as more people arrived (including a couple who had come all the way from the east side), and soon after the sky cleared completely. We used the club's 6-inch reflector to view open clusters, the Orion Nebula, double stars, and galaxies. As Doug Tanaka said last year, that old 6-inch really has nice optics! I was very impressed with the views we had.

Everyone had a great time, we received lots of thank yous.

Here's to more successful events!

The Columbia, the Hubble and the Amateur Telescope in Space

By Harry Colvin

With the tragic loss of the Columbia and its crew, we must now realize that the Hubble images we take for granted are not free. The images and scientific data come to us with a high price, far beyond the dollars we spend for the materials to construct and maintain such a wonderful instrument. It was the Columbia and its crew that last serviced the Hubble, and except for fate it could have been that crew that was lost.

And as fate would have it, I had a chance to meet astronaut John Grunsfeld at the American Astronomical Society meeting held in Seattle in January. As a volunteer, I was assigned to monitor a session that included "Hubble Space Telescope Fourth Servicing Mission: The Perspective from Orbit." As was customary, most of the presenters arrived early to check their presentations, making sure they had been correctly downloaded from the network servers. I was very busy, and John introduced himself, but I did not connect him with the Hubble presentation until later. Our encounter was brief and our discussions were mostly about the Seattle weather (unusually good that week) and downtown restaurants. Like many astronauts John was gregarious and personable.

John Grunsfeld is unique among astronauts in that he has been to the Hubble on two servicing missions. He was on board March 1, 2002 when the Space Shuttle Columbia departed planet Earth to rendezvous with the Hubble Space Telescope in a nearly 600 km orbit for a ten-day mission. The Hubble was captured by the robotic arm and placed in the payload bay for repair. There were 2 teams of 2 astronauts that each performed (Cont. on p. 5) five space walks to replace, install or repair solar arrays, Reaction Wheel Assembly, Power Control Units, Advanced Camera for Surveys, and the Near Infra-Red Multi-Object Spectrometer cooling system. During this time the Hubble was completely powered down for the first time in 12 years.

John's presentation was detailed and colorful as he described the launch, the sensation and thrill of being in orbit, and the space walks. Space walks require attention to detail and adherence to procedures that are rehearsed many times during training. One job that he had to

perform was to replace a Power Unit that had 25-30 cable connections to unscrew from the old unit and reattach to the new unit. In describing how difficult this procedure was, he asked us to imagine putting on two snowmobile suits, two pairs of thick gloves, and trying to replace wiring under the dashboard of a sports car in the middle of the night with temperatures hovering at 30 degrees below zero.

It is clear that putting astronauts in space, having them work there, and returning them to earth with current technology is very risky. Thanks to Mac Gardiner's vision, our association is the "birthplace" of the concept of placing an "amateur telescope" on the International Space Station. Now the ISSAT project under the direction of the Astronomical League, presents some interesting philosophical issues: How much are we willing to pay for education, scientific discovery and the promotion of science awareness in our society? I believe this is a worthy endeavor and well worth the risk. But someday when Mac Gardiner's vision is implemented, the Columbia tragedy will make us mindful of the dangers that astronauts will be exposed to. We should all be grateful for John Grunsfeld and the crew members of the Columbia who have the courage to accept those risks for the betterment of mankind.

The American Astronomical Society (AAS)

By Diana Colvin

The AAS held its 201st annual meeting in Seattle on January 5 –9. My spouse and I answered the call for volunteers that appeared on BPAA/groups. We're glad we did.

For volunteering, we gained free admission to each day of the meeting and were given the registration packets prepared for the attendees. The requisite work requirement was minimal. We had to commit to just two days of availability, and on those days we simply sat in on a few of the sessions, making sure the poster boards were in place, the moderators had their time clocks, and all the audio visuals were functional. If something went wrong, we ran off and got a technical expert to fix it. It was easy duty. The society's staff was cordial and a pleasure to work with.

I have to admit that I sat in on sessions in which I understood nothing after the introduction of the speaker by the moderator. Bewildering perhaps, but interesting nonetheless. We quickly came to the conclusion that professional astronomers' lives bear little resemblance to those of amateur astronomers. Many of them never even touch a telescope; instead they record and analyze mounds of data.

Interestingly enough, one of the biggest draws at the meeting was astrobiology. The astrobiology sessions were moderated by University of Washington Professor Woody Sullivan and there were standing-room only crowds. The focus of this interdisciplinary program is how life might have begun here and how it might exist on other planets. The speakers emphasized that this quest isn't easy, as there is no universal definition of life, not to mention that if life exists elsewhere, it might be totally unlike life as we know it, which would make it hard to know it if we see it.

Confounding as all of this may be, we did learn during the course of the meeting one fundamental thing: Einstein was right. Astronomers have now concluded that the speed of gravity matches the speed of light. This conclusion was drawn by measuring the amount that light from a distant star was deflected by the gravity of Jupiter as the planet passed in front of the star.

We sat in on some of the many press conferences held during the meeting. The Dark Sky Association scheduled one to explain its mission and announce National Dark-Sky Week, set for April 1-8. Bainbridge Island, ably represented by Ryan Vancil, was applauded for adopting its recent lighting ordinance. BPAA was given kudos for its efforts in bringing it all about.

Finally, there's the loot. As any intrepid conference goer knows, in the end, it's about the freebies. We collected a bunch, some of which may constitute door prizes for Astronomy Day. The *pièce de résistance* was a chubby chrome pen with a bulbous head and green eyes. We'll treasure it forever.

The AAS will be back in Seattle in four years. If a call for volunteers again goes out, we recommend answering the call. It's well worth your time.

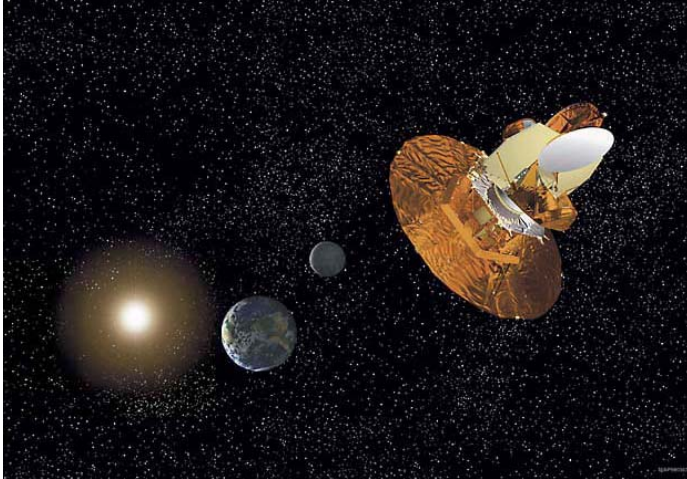
If you would prefer receiving the **BPAA Newsletter** as a printed copy rather than downloading it from the web site, please inform Rik Shafer:

rikshafer@aol.com

Wilkinson Microwave Anisotropy Probe (WMAP)

By Mac Gardiner

On the face of it, the WMAP project seems not only impossible, but silly. After all, who would build a two-telescope observatory, ship it to the Earth/Sun Lagrangian #2 point, out 1.5 million kilometers, in space, and then leave it there for years. As shown, it keeps the Sun, Earth and Moon "behind" its shadowing solar power "umbrella," as it scans the sky with its back-to-back telescopes comparing the Cosmic temperatures read from one telescope to the other. However, all that it does is to look at nothing in particular, in great detail. What gives?



To quote the investigators:

We use our new detailed picture to ask: “What happened earlier to make these pictures happen?” We now begin to probe the earliest moments of the universe: Inflation (the rapid expansion of the universe a fraction of a second after its birth). We have ruled out one textbook example of a particular Inflation model. But other examples will be supported with this new evidence.

Starting from the time of our picture we can ask: “What must have happened later?” The answer is that we have compared and combined the new WMAP data with other diverse cosmic measurements (galaxy clustering, Lyman-alpha cloud clustering, supernovae, etc.), and we have found a new unified understanding of the universe:

- a. The Universe is 13.7 billion years old with only a 1% margin error.
 - b. The first stars ignited 200 million years after the Big Bang.
 - c. There was light in WMAP picture from 380,000 years after the Big Bang.
 - d. The content of the Universe includes: 4% Atoms, 23% Cold Dark Matter, 73% Dark Energy.
- * The data places new constraints on the dark energy. It seems more like a “cosmological constant” than a negative-pressure energy field called “quintessence.” But quintessence is not ruled out.
- * Fast moving neutrinos do not play any major role in the evolution of structure in the universe. They would have prevented the early clumping of gas in the universe, delaying the emergence of the first stars, in conflict with the new WMAP data.
- e. Its Expansion rate (Hubble constant) value: $H_0 = 71 \text{ km/sec/Mpc}$ is now known to a margin of error of about 5%.
 - f. There is new evidence for Inflation in the polarized signal.

Apparently, the trip was worthwhile and worthy of further investigation! It seems incredible that:

1. The measurement of very small temperature differences would assure us that the universe is older than any of its elements--comforting, as it seems logical, and also, if the objects were older than the universe, they would have no place to be in since space did not exist before the universe started.

2. We are seeing light very close to the start of things, which seems to be the most active and interesting period of our existence.

3. Dark stuff makes up 96% of the universe; we don't know what it is and how it operates. (What laws does it respond to?) Cosmologists also don't know what dark energy is. One leading candidate is a repulsive force called the cosmological constant, which Einstein created as a fudge factor to keep the universe from collapsing in his equations, and later disavowed. But some theories of modern physics postulate mysterious force fields called quintessence as the dark energy. While the new analysis has not solved the problem, its data seem to favor Einstein's fudge factor—as though Einstein can never really miss.

4. In addition to measuring the brightness of the temperature of the microwaves, the satellite's instruments, like a pair of Polaroid sunglasses, can also measure the polarization of the microwaves. Most astronomers suspected that this had happened at about the time of the most distant and early quasars, around 800 million years of age. It was a surprise, astronomers said, to find the stars had formed so early.

The first stars were probably monsters 100 times as massive as the Sun and burned out rapidly and violently, transmuting primordial hydrogen and helium into heavy elements like carbon and oxygen, spewing them out into space to form the basis for future (Cont. on p. 7) generations of stars and eventually life elements like carbon and oxygen. The satellite's instruments, like a pair of Polaroid sunglasses, can also measure the polarization of the microwaves. That ability was crucial to the discovery of the era of the first stars. Like light skipping off a lake, the electric and magnetic fields that constitute light bouncing off an electrified gas are not jumbled but show a preference to vibrate in a particular plane. Last year astronomers showed that a polarization had been imparted to the cosmic microwaves at the moment that the first atoms formed and the cosmic fireball thus lost its free electrons.

5. That theory, known as Inflation, hypothesizes that the universe underwent an enormous growth spurt during the first trillionth of a second of time under the influence of a brief but powerful anti-gravitational field that permeated space. Such behavior is allowed by the laws of physics, and it has formed the core of Big Bang

theorizing, but the details depend on the unknown physics that prevails at the energies of the early universe far beyond the capacity of modern particle accelerators. And so Inflation is often called a paradigm instead of a theory.

By analyzing the bumps in the cosmic microwaves, which according to Inflation are the result of microscopic fluctuations in the mysterious force-field that drove Inflation, along with other data, the scientists have ruled out one simple version of Inflation that is often seen in textbooks. Dr. Andrei Linde, the inventor of the model that was ruled out, said that it was "great" that theories were getting culled. He said it was "painful" for him that one of his theories got killed, but that it was good news that several of his other versions were doing well.

And so the satellite carries on, spinning for the next three years, calmly generating data that will continue to confound the public and thrill the scientists for generations.

This leads me on to wonder what and how much something as equally silly as a telescope for amateurs might produce if it were in a similar Lagrangian position beyond the Earth. Such a dream, Project ALPHA, underway since last year, includes a telescope located at the Winer Observatory in Sononita, AZ which Richard Berry presented to us on February 25th (see following article). A prototype of the one intended for space, it is a computer-controlled instrument with CCD cameras and a satellite Internet link and is operated from Vanderbilt University in Brettwood, TN. Its purpose is for people to test the kind of 'scope that will work in space and to learn to solve the problems of operating it remotely: Once the instrument is in space, no one will be able to get near it. Project ALPHA has provided much-needed experience for solving such technical problems as how to restart a computer when that computer will drive the 'scope into the ground in half an hour and the nearest nerd is a mere 2,000 miles away.

For more information on: the ISSAT and Project ALPHA go to www.issat.org; the WMAP Project go to <http://www.nasa.gov/nasagov/search/search.jsp?nasaIncludede=wmapp>

A Day with Richard Berry

By Harry Colvin



Richard Berry and one of his telescopes

After several months of planning, Richard Berry, noted amateur astronomer and author, arrived via Amtrak and the Washington State Ferry for what would be a marathon, including a Ritchie Observatory tour, an equipment check out at Bainbridge High School, dinner, a public lecture on the ISSAT project, an astronomical imaging session, and an informal technical jam session that lasted until 4 a.m. Then, after four hours of sleep, another session in my garage to fine tune the refurbished CB245 originally built by Ed Ritchie, some ten years ago. It was a busy 24 hours.

Ritchie Observatory Tour: After dropping Richard's bags off at our place we went for a tour of the Ritchie Observatory. The Observatory was a shell when he was here in April 1995. At that time he was hosted by Ed Ritchie. Richard seemed impressed with the facility and took numerous photos of the Ritchie telescope, asking about details of its construction and assembly. I told him that we had some problems with vibration, but it seemed much improved after removal of debris around the supporting pillar. Other discussions (Cont. on p. 8) centered around the scope's controlling software and collimation.

Equipment Setup: We then traveled to Bainbridge Island High School where we met Grant Twitchell, a BHS student who had set up the auditorium's audio equipment. The public presentation would consist of a pre-presentation with space theme music and deep sky images from the Hubble, followed by a remembrance and moment of silence for the crew of the Columbia, then Richard Berry's introduction and presentation, followed by comments from Mac Gardiner. We would be working with a sound track, three Power Point presentations, and two computers. While we all know technology can fail, after several stomach churning minutes, we figured out the correct settings.

Dinner at Bainbridge Thai Cuisine: It has become somewhat of a tradition at the BPAA to host speakers at dinner before their public presentations. In attendance were Richard Berry, George McCullough, Mac Gardiner, Sonny Tremoulet, Al and Helen Saunders, Anna and Bill Edmonds, Paul Below, Catherine Koehler, and myself. Spicy food at this point was not what I needed but the food was good and everyone seemed to be having a good time.

The Public ISSAT Lecture: The pre-presentation went off as hoped, with the visuals, including an image of Mac, and space theme music entertaining the audience. A moment of silence for the Columbia crew was conducted by Paul Below accompanied by an image of the astronauts on a dark screen, a fitting tribute. I then recognized Mac Gardiner as the creative genius who thought up the idea of an amateur telescope on the International Space Station in the first place. Finally, I introduced Richard Berry. Richard's presentation was detailed and well presented.

Richard first presented the mission of the program: "We of the Astronomical League propose to operate the ISSAT as a national resource to stimulate interest in science and technology among the citizens of our country, including children from kindergarten to high school. Run by dedicated amateur astronomers, the ISSAT will encompass ground-based telescopes and an orbiting amateur telescope aboard the International Space Station. We pledge to structure the ISSAT to provide an exciting combination of public access and education for all ages and academic levels."

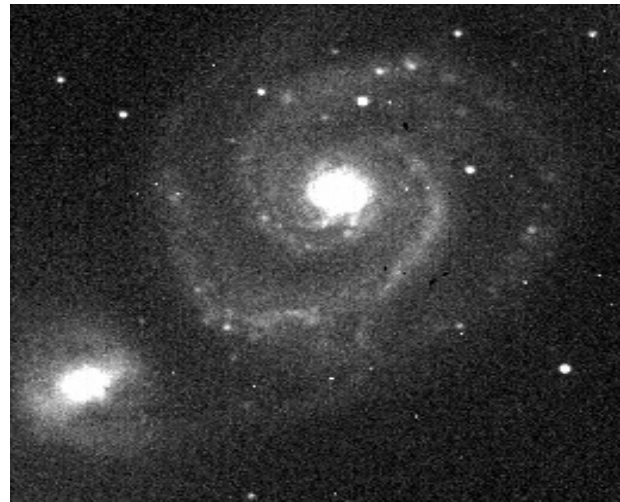
A worthy mission, to be sure. Richard explained that the program will take a two-pronged approach: setting up a telescope in space, and setting up telescopes on the ground. The initial plan is to place amateur telescopes in remote ground-based observing sites, with amateur astronomers operating the telescopes for public education. The ultimate goal is to make the telescopes a world resource open to all via the Internet to encourage and promote astronomers, space scientists and engineers.

Already established is a telescope in Sonoita, AZ (Project ALPHA). It is controlled from Dyer Observatory at Vanderbilt University. Ultimately, there will be from three to six ground-based telescopes.

All amateurs who participate will be able to enjoy the advantages of remote observing. No warm clothing will be needed. There will be no mosquitoes. Local views of the sky will be academic, because there will always be a dark sky available with excellent image quality resulting.

Richard showed several images captured from the telescope in Sonoita. The two most spectacular were the

Below: *First-light photo of Project ALPHA, M51.*



Flame Nebula and the Sombrero Galaxy. One could only sit there and contemplate the fact that you too could one day have the opportunity to participate in the ISSAT program and file an observing request, and have it take an equally spectacular picture for you.

Berry quoted from the League's proposal to NASA: "The next generation of scientists, technicians and inventors will come from children now in diapers." (See p. 2 NASA.) It struck a chord with me because I have a granddaughter now in diapers. I would like to imagine her as a high school student, with an interest in science and technology, having been stimulated by the creation of a network of remotely operated telescopes and a cadre of trained and dedicated amateur astronomers.

(Cont. on p. 9)

Berry noted the funds dedicated to date by the Astronomical League to the ISSAT. The portion of the League’s budget dedicated is impressive. The problem is that the League’s budget is miniscule to begin with. This is where the need for individual donations comes in. This need was reiterated by Mac Gardiner when he came to the podium noting that BPAA is helping to get the necessary funding started.

The Funding Event at the Ritchie Observatory: For a donation of \$25 to the ISSAT project, and fortified with coffee, tea, and cookies, a number of us were led by Richard Berry, an expert in imaging processing, through the process of calibrating images with AIP4WIN. Applying dark, bias and flat frames to a raw image, he made producing a beautiful deep sky object seem like magic. Richard demonstrated the techniques of taking images through color filters and recombining them to produce colors that cannot be visualized by the human eye. The real take home lesson for this author was learning to use stack and track effectively. One can take many short exposures to improve the S/N ratio and at the same time overcome many errors in tracking. According to Berry, with the Ritchie Telescope we should never have to take more than single 60-second images. The same methods can also be used to generate tracking data for the telescope mount. Because of issues we have had with the Ritchie Telescope’s tracking it is only logical that we should apply these methods to acquire some real data about its mount. We finished up the event about midnight, locked the observatory and proceeded to my place.

The Technical Jam Session: Richard, Sonny, and I discussed a whole range of astronomical topics. Several months back I had discovered a bug in the AIP4WIN software that generates a mysterious 380 error on my computer. We worked for the better part of an hour to figure out why this was occurring but finally went on to other subjects such as adaptive optics and corrective lenses. Richard surfed the Internet looking for information and drew diagrams showing us how various groups were solving these problems. Later we got into discussions on the technical issues of mounting a telescope on the Space Station. At times it seemed as if we were engaged in a discussion with Einstein. We finally retired around 4 a.m.

The CB245 session: I just could not pass up the opportunity to have Richard Berry give me a private session with the CB245 camera that I had refurbished this past summer. I assembled the CB245 in my garage. Of course the camera would not work at first, but I managed to fix it. After breakfast Richard demonstrated how to

make the camera perform. We were taking images of a Costco garbage bag box in the dark, but they were the best images that I had ever seen.

Finally, with less than an hour before we took Richard to the ferry, I assembled my “Berry” books for him to autograph. We then took a stroll through our Japanese garden. It was a beautiful morning. The blue sky, sounds from the waterfall, shades of green from the different mosses we use as ground covers, and the white granite gravel in the Zen garden seemed to blend perfectly. Even some of the fish surfaced from the pond to see Richard. We then walked out of the garden to my observing site, adjacent to last year’s corn patch, where I have logged hundreds of deep sky objects.

I was sorry to see him leave, but his visit had been a success. Even with a low turnout we raised over \$900 and with the BPAA match we will donate close to \$2,000 to the Astronomical League to support the ISSAT project. It was an honor to serve as Richard’s host and a pleasure to serve in a good cause.

BPAA Financial Statement for January 2003		
BALANCE SHEET:		
		\$
Current Assets		20,221
Fixed Assets		242,538
Total Assets		262,759
Liabilities		-0-
Equity		262,759
Total Liability/Equity		262,759
PROFIT & LOSS:		
	\$ Jan.	\$ YTD
Income:		
Contributions	149	149
Membership Dues	790	790
Other	1,296	1,296
Total Income	2,235	2,235
Expense:		
Administration	25	25
Program	95	95
Utilities	46	46
Total Expenses	166	166
Net Income (Loss)	2,069	2,069
Eric Cederwall, Treasurer		

Seeing Stars will appear in the next issue #56.

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BATTLE POINT ASTRONOMICAL ASSOCIATION

P.O. Box 10914, Bainbridge Island, WA 98110

Website: <http://bicomnet.com/ritchieobs/>

Ritchie Observatory, Battle Point Park

Bainbridge Island, Tel. (206)842-9152

Public Tours:

To be announced during the summer, or by
by special appointment.

Officers & Directors

Paul Below, President

(360)779-2961, paulbelow@computer.org

Harry Colvin, Vice President/Special Interest Group Coordinator

(206)842-6617, hcolvin@bainbridge.net

Richard V. (Rik) Shafer, Secretary

(253)639-0927, rikshafer@aol.com

Eric Cederwall, Treasurer

(206)842-8587, ecederwall@bainbridge.net

John H. Rudolph, Facility Director

(206)842-4001, rudoarch@juno.com

Mike Walker, Education Director

(360)638-1576, miwalker@krl.org (home),

michaelw@cksd.wednet.edu (work)

Anna Edmonds, Publicity Director

(206)780-2708, waed@bainbridge.net

Diane Colvin, Events Director

(206)842-6617, dcolvin@bainbridge.net

Edward M. (Mac) Gardiner, President Emeritus/Founder

(206)842-3717 macg@bainbridge.net

Ed Ritchie, Chief Astronomer/Founder

1993-1997

Bill Edmonds, Editor BPAA Newsletter



Battle Point

Astronomical Association

P. O. Box 10914

Bainbridge Island, WA 98110