

**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:

The 2nd & 4th Saturdays 2-4 pm or
by special appointment.

Officers & Directors

Paul Below, President

(206)842-0469, aurorae@sprynet.com

George McCullough, Vice-Chairman

(360)697-3525, geomac@sprintmail.com

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)

Bill & Anna Edmonds, Publicity Directors

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

Diane Colvin, Events Director

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

Harry Colvin, Special Interest Group Coordinator

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

Edward M. (Mac) Gardiner,
President Emeritus

Ed Ritchie, Chief Astronomer/Founder
1993-1997

Don't let your subscription lapse. If your address label is red it means this is your last issue.

If so, get in touch with Rik Shafer at
PO Box 5385, Kent, WA 98064 or email
<<RikShafer@aol.com >> and get up to date.

Battle Point Astronomical Association News, Issue 48

January - February 2002

CALENDAR OF EVENTS

(All events at Ritchie Observatory,
Battle Point Park unless otherwise noted.)

January

January 1: Jupiter at opposition

January 2: BPAA Board Meeting 7 p.m.

January 3: Quadrantids meteor shower. Earth at perihelion (0.983 AU from Sun)

January 8: Stephen Hawking's 60th birthday (1942)

January 9: BPAA Annual Meeting 7 p.m. at the Observatory. January

12: Observatory tours 2 to 4 p.m. Gena Ritchie & Don Trantow

January 12: Mercury at greatest eastern elongation (19 degrees)

January 19: Star Party - Battle Point Park. Beginner session 5 p.m. Paul Below & Bruce Muggli

January 22 : Comet C/2000 WM1 (LINEAR) perihelion (0.555 AU)

January 24: Moon occults Saturn

January 26: Observatory tours 2 to 4 p.m. Gena Ritchie & Don Trantow

January 26: Moon occults Jupiter

January 27: 35th anniversary of Apollo 1 fire (Cont. on p. 2)

February

INSIDE THIS ISSUE

1. Calendar of Events - January,
2. Calendar, Feb., March; Calendar Notes.
3. News Briefs: *BPAA Newsletter Form*,
Clear Sky Clock,
4. The Showers.
5. Annual Meeting 2002
6. Reports of 2001 Activities: President's
Report*, Chief Scientist's Report*,
8. Education Report*, Operation Director's

Report*.

9. Reports & Articles: Facility Director's
Report
10. Bob Wilson 16-inch Telescope,
11. Astrobiology,
12. Book Review,
13. "Sinister Plot" Foiled, ISS-AT,
14. Financial Report, Cartoon,
15. Seeing Stars.

*Reports marked with an asterisk are
summaries of those presented at the meeting.

- February 6: BPAA Board Meeting 7 p.m.
- February 7: Venus passes 0.7 degrees from Uranus
- February 9: Observatory tours 2 to 4 p.m. Gena Ritchie & Don Trantow
- February 12: Chinese New Year
- February 13: Member Meeting 7 p.m. Paul Middents: "Measuring the Universe." Harry Colvin
- February 21: Moon occults Saturn
- February 23: Observatory tours 2 to 4 p.m. Gena Ritchie & Don Trantow
- February 23: Star Party - Battle Point Park. Beginner session 5 p.m. Paul Below & Bruce Muggli
- February 23: Moon occults Jupiter
- February 24: Mercury passes 0.5 degrees from Neptune

March

- March 6: BPAA Board Meeting 7 p.m.
- March 7: John Herschel's 210th birthday (1792)
- March 9: Observatory tours 2 to 4 p.m. Gena Ritchie & Don Trantow
- March 13: Member Meeting 7 p.m. Patrick Rooney
- March 20: Vernal Equinox
- March 20: Moon occults Saturn
- March 23: Observatory tours 2 to 4 p.m. Gena Ritchie & Don Trantow
- March 23: Star Party - Battle Point Park. Beginner session 6 p.m. Paul Below & Bruce Muggli
- March 31: Deadline for Shoemaker Near-Earth Object Grants
- March 31: Comet Kohoutek Closest Approach to Earth (2.492 AU)

Calendar Notes:

Greetings from a new Calendar Crew, Harry Colvin (Calendar Guy) and Diane Colvin (Calendar Babe). Business as usual, except that we will be listing a name (person responsible) with club events. This change is aimed at making sure all events are held as advertised, and that no one ever shows up at the observatory when there is no one around.

Note the addition of a monthly Member Meeting, starting in February, including the introductory lecture in Paul Middents' series, "Measuring the Universe.". These meetings are, as indicated by the name, for the benefit of members. The agendas will include reports on recent club activities and board actions, reports from the various interest groups of the club, and reports on current astronomical events. Some meetings may feature lectures, films, or other presentations of interest to the general membership.

The telescope construction, imaging and optics meetings, normally held on successive Tuesday evenings, are temporarily suspended. These activities will be discussed at the first Member Meeting in February. They will be reconstituted in some form, after discussion of the best way to proceed for the benefit of all members.

No doubt many of you are in a state of shock, having had the actual opportunity to observe during the holiday week. It was a long dark period, even for seasoned Pacific North Westerners, but what a fine few nights for observing the Winter sky we had. Orion, the most distinctive stellar configuration in



SEEING STARS **Astronomy**

0.001

Anna Edmonds

Refracting and reflecting telescopes are two kinds used commonly by amateurs to help us see objects more clearly in the night sky. The problem of blurred colors caused by the lenses of refracting 'scopes, as we mentioned in the last *Newsletter*, prompted Isaac Newton to develop a reflecting 'scope. His solution was a mirror which reflected the light rays equally, regardless of their wavelength (color). Because the glass of the mirror doesn't refract the light, the colors aren't broken into a prism.

With a mirror, the angle at which the beam of light strikes each place is reflected off it at exactly the same angle. In order to concentrate the light, the mirror is ground down until the surface is concave. For all the reflected light to be focused, the concavity needs to be in the shape of a parabola. (Remember your geometry and the names for conic sections? a: circle; b: parabola)

Newton placed a second, flat mirror to deflect the light rays to a point at the side of the mirror to where he could see the object through an eyepiece. This design is called a Newtonian reflector.

Like glass lenses, the surface of the mirror must be completely free of irregularities. Newton used a tin-copper alloy to plate his mirror; today the plate is usually either silver or aluminum.

A parabolic shape and the proper surface present their own problems for telescope makers: Secondly, achieving a perfectly uniform parabola takes a lot of very careful work. Ed Ritchie designed and made his own grinder for our 27.5-inch 'scope. But with its help, he took over a year to grind and figure the glass before he was satisfied. (To say nothing of the quantities of glass dust that had to be swept out of his basement and out of Gena's kitchen.) Whatever metal is used for the surface, over time it develops irregularities with exposure to the air. Thus the surface then has to be renewed, involving disassembling the telescope and sending the mirror to a distant place for replating. Silver plating lasts about 6 months. Aluminum plating plus a second shield of plastic (such as is on our 'scope) is more complicated and more expensive to do, but should last 20 years.

By being able to reflect the light either to the bottom of the 'scope or away from it, the designers are able to attach heavy instruments like cameras without pulling it off balance.

In their desire to see better and farther into space, scientists are continuing to develop increasingly versatile telescopes, including those that search electromagnetic wavelengths other than the ones our eyes can see.



BPAA Financial Report for month of November 2001

BALANCE SHEET:	\$	
Current Assets	12,969	
Fixed Assets	241,448	
Total Assets	254,417	
Liabilities	-0-	
Equity	254,417	
Total Liability/Equity	254,417	
PROFIT & LOSS:	\$ Nov. \$ YTD	
Income:		
Contributions	78	8,596
Membership Dues	80	2,455
Other	41	2,163
Total Income	199	13,214
Expense:		
Administration	33	1,999
Program	65	2,384
Utilities	47	520
Total Expenses	145	4,903
Net Income (Loss)	54	8,311

Survey of the Year Ending 31 December 2001

Balance Sheet

The Balance Sheet at December 31 reflects continued stability in current assets (cash), with the year end showing over \$12,000 in cash, slightly ahead of the prior year's totals. This was accomplished while fixed assets increased by more than \$7,700 over the previous year's total. Major additions to fixed assets for the year consisted of the new roof on the building (BPAA's share of the cost was just over \$5,500), a 20" telescope mirror (\$816 cost), Mars globes, a new canopy, and a replacement bulb for the Boxlight projector. During the year the organization's total assets reached

\$250,000.

Income Statement

The year's net income, at just over \$8,000 was only slightly less than the preceding year's (\$8,334) despite having more than \$3,500 less revenue (\$13,288 compared to \$16,794 in 2000). The reasons were first, no travel expense this year, and second, selectively fewer program and administrative expenses as well. A tight ship!

Other details of note include a strong showing for Bainbridge Foundation funds this year (\$1,800 more than last year). However, some special contributions that were made in 2000 were not repeated in 2001. There seems to be an up-trend in membership dues revenue; it was about 10% higher this year than last. There was also more tuition revenue this year, which was an encouraging sign.

Eric Cederwall, Treasurer

CARTOON

the sky after the Big Dipper, was at its best. Unlike most constellations, which bear no resemblance to their namesakes, Orion the hunter actually looks like a hunter. Face south to find the unmistakable three-star belt. Then look up and to the left for a bright red star, Betelgeuse. Betelgeuse is one of the largest stars known. With an estimated diameter of about 800 times greater than the Sun's, Betelgeuse would enclose the orbit of Mercury, Venus, Earth and Mars if it were to replace our Sun. To the right find Bellatrix, a blue-white gem. Look below and right of the belt to Rigel, a hot bluish star. Then imagine a sword hanging from Orion's belt. The middle glow is the Orion Nebula, visible even to the unaided eye as a small, fuzzy patch.

So here's hoping we'll experience another break in the weather sometime this winter. Remember that if the weather appears promising we can schedule a last-minute star party via our email yahoogroup! Any member who plans to observe can invite others to join in by sending an email to bpaa@yahooogroups.com.

To join our email group, send an email with your name to: bpaa-owner@yahooogroups.com and we can enroll you. If you want to also have web access to the messages and files, you can join the yahoo-groups 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.

Harry & Diane Colvin
(hcolvin@bainbridgeisland.net);
(dcolvin@bainbridgeisland.net)

BPAA Newsletter Form

Beginning with the next issue of the *BPAA Newsletter* (March-April), the publication will be distributed via email and website to all members

elec- whose
a d - tronic

NEWS BRIEFS

addresses are available. Those without such addresses will get their copies via the US postal service.

This change is happening for four reasons. First, we want to be able to distribute the *Newsletter* more promptly. Email allows this. Secondly, the costs, both financial and in time, have increased, and we are concerned, as our treasurer remarks, "to run a tight ship." Third, we can publish in color; and fourth, members can store it in their electronic file.

Those who want to receive both an email copy and a hard copy should notify the secretary, Rik Shafer, to continue holding their name on the labels he supplies for mailing the *Newsletter*.

A.G.E.

Clear Sky Clock

The most useful forecast tool for astronomers that I had found to check out clear weather is: <<<http://cleardarksky.com/c/Seattlekey.html>>> It only forecasts 34 hours in advance, which is rather short, but realistic. It shows the amount of cloud cover that would interfere with visibility on one level, and directly below that the amount of humidity that would hinder transparency. If you find the site useful, please send an e-mail to Alan Rahill and Attila Danko (there are links at the site) so that Alan's boss will know it's being used.

When I first found out about the site, the closest location was Vancouver, BC, so I requested a Seattle clock one morning and when I got home there was an e-mail (Cont. on p. 4) from Alan Rahill, with a link to the new Seattle clock and a thanks for using the site! I was impressed.

I've been continuing to monitor the satellite water vapor images of the Pacific, and have come surprisingly close to predicting clear (well, as

clear as it gets around here) skies. In fact, by watching clear areas over the Pacific and tracking the movement, I've actually done better than our weather forecasters as far as clearing goes.

Doug Tanaka

THE SHOWERS

In the Calendar of Events for November, the Leonid meteors were listed for November 16-18. This event was expected to be one of the most spectacular meteor showers for many years, with North America in the right time zones for the best viewing.

Paul Below, Malcom Saunders, and Lyon McCandless sent reports on their experiences:

Paul, reporting from Battle Point Park, Saturday, Nov. 17: "At one point around midnight, we were seeing one meteor per minute. Then, before 1 am, the sky clouded up, and as I had to get up early Sunday morning to leave town, I decided to leave."

Malcolm Saunders continues; "More or less as you thought it might, Paul, the sky opened up shortly after you left Saturday night. We stayed until 3:30. The meteors came and went and came and went. At their peak I could see a meteor every 5 or 10 seconds. There was a lot of ground fog but at the straight up there were a lot of periods when it was pretty clear. There was a great coming and going of people too.

An awful lot of people started showing up around 1:30 or 2:00. Most of them had no notion of keeping their headlights off, and there was quite a sound of internal combustion engines. Most of them had left by the time I went home but there were still several cars at various place around the park, so I didn't close the gate." (Mac Gardiner, who was there agreed about the problem of light pollution from headlights.)

Lyon McCandless was watching from another place: "The meteor showers were thrilling, and totally justified staying up until 3 am. I went to the High School football field to get away from the town lights and the low fog. There were more than a dozen people there, some better dressed than others for the 35 degree weather. I was bundled up lying back in a portable camp chair.

For an extended period around 2:30 am the count was 10 or 12 a minute. At times I had a hard time counting to 6 slowly between trails. Twice there were three in the sky at one time, and many times 2 at once. The longest trails were 30 and 45 degrees of arc. Some seemed greenish, but I'm not sure of that. I'll have to check with other members of the BPAA. What atmospheric gas would incandescence green?

The meteor trails were fairly uniform in intensity, lasting for only three seconds or so. I didn't observe any splits. The ground fog rose and fell several times, and often limited good viewing to the field observers with their heads fixed. So we didn't have to worry about scanning from side to side. That was just fine, though. The hard core guys who went to high ground in eastern Washington probably had a really good show, and they deserved it."

Several others got up in the early morning hours and were rewarded with the show right in their back yards. A similar Leonid meteor shower is predicted for November 2002, but viewing will not be as satisfying because it will coincide with a full moon.

A.G.E.

der the porta-potty. Their plan was to unbalance the low-tech relief unit so that an unsuspecting astronomer, seeking solace and relief, would overbalance the unit at a time of maximum stress and the thing would slam down on the ground, door first, trapping the poor victim inside and (shudder) covering him with the contents of the honey bucket. An ugly and cruel fate.

These terra-ists were at first thought to be connected with the Hare Krismus organization, but these allegations have been denied. Links with Bun Leader are much more likely. The FBI has yet to show an interest in this development, right under our collective noses. They have suggested however, that this could be a recognized international organization known as Leporidae Lagomorpha. Swat team specialists from the Park District who have had experience and training with these matters were informed forthwith and appropriate steps were promised, one way or another to make the Ritchie Observatory a safe place from which to observe and to commune with nature.

We are confident that they will hop to it. Hopefully, nipping this underground conspiracy in the bun will prevent further local and worldwide depredations. Members will be kept abreast of our movements.

John H. Rudolph

(Ed. Note: The "terra" is now "firma.")

**ISS-AT, quoted from
SKY & TELESCOPE,
January 2002, pp. 24-25**

"After spending two years quietly developing the idea, the Astronomical League of U.S. astronomy clubs has announced plans to design and operate an 'amateur' telescope that could be observing from orbit within five years. Slewing around the sky from a perch on the International Space Station, the telescope will have an aperture of 35 to 40 centimeters (14 to 16 inches)—large enough to resolve detail as fine as 0.2 arcseconds on planets, nebulae, and galaxies.

"So far, the response to the idea from NASA and Boeing (the ISS's main contractor) has been enthusiastic. In July, League president Charles E. Allen III and project manager Orville Brettman discussed the concept with Louis A. Mayo, an official in the space-science operations office at the NASA/Goddard Space Flight Center.... In addition to Brettman, the League has tapped imaging expert Richard Berry and 10 other well-known amateurs to serve as project team leaders. 'It'll be our proposal,' Brettman notes, 'but Boeing will build it.'...

"Plans call for half the observing time to be allocated to schoolchildren worldwide and the other half to amateur astronomers....

"Mac Gardiner, a member of the Battle Point Astronomical Association in northwest Washington, came up with the idea of putting an amateur telescope aboard the space station about two years ago...."

Says Mac to us about all this, "Now that the program is running, my part in initiating it is over, but I am still involved in support of the design and documentation for procurement."

WAY TO GO, MAC !!!!!

ignorant, such as astronomy and geology, and others far advanced in fields, such as microbiology, of which my knowledge had become outdated. (My thesis research concerned the step-by-step synthesis of an antibiotic by a microbe, but that was over 35 years ago.)

Thus, for example, I'm auditing a course at UW on marine microbes, taught by a leading microbiologist who is studying life more than a mile deep on the geothermal mid-ocean ridges of the seabed, known as black smokers.

Through this column I'll draw attention to various developments related to the possible origin and early evolution of life as I become aware of them. In August, it was my good fortune to be among about 75 scientists who participated in a 3-day conference on Astrobiology at Crystal Mountain, near Mt. Rainier. By the end of 2002, the UW faculty who organized that conference expect to publish a textbook based on the 25 lecturers' presentations.

Meanwhile, there are at least a couple of popular books I can recommend which provide good overviews of the topic. My favorite is Rare Earth, published in 2000 by Peter Ward and Don Brownlee - founding members of the UW Astrobiology Program faculty.

A markedly contrasting point of view is presented in *Life Everywhere*, by David Darling (2001). Let me know if you are interested in this subject and what you'd like to know about it.

Bill O'Neill (biophil@bainbridge.net)

BOOK REVIEW: by Paul Below
Mars: the Lure of the Red Planet, by William Sheehan and Stephan James O'Meara. Prometheus Books, 2001, 406 pp.

I ran across this book on the New Arrivals rack at the Bainbridge Library. The authors' names were familiar to me: O'Meara wrote a wonderful book about the Messier objects; and Sheehan previously wrote a book on Mars,

came before and after, to the present day.

The history of Mars fiction is presented with an emphasis on Edgar Rice Burroughs and H.G. Wells.

In the space age, the Mariner missions get a large section of the book, and the authors expound on the major things we learned from them and also from Viking and from the current Mars Global Surveyor. Unfortunately, the Pathfinder mission gets short shrift, and the results of the spectrum analysis of the rocks by the rover are nowhere to be found. On the other hand, the Mars meteorite and the possible fossils made it into the book.

Are you thinking ahead to the next opposition? In August of 2003 we will have the closest approach of Mars to Earth of any time in recorded history (3000 years)! Remember how bright Mars was this summer? At its closest it was only 42 million miles away. In 2003 it will close to only 34 million miles!

Anyone that is planning on doing semi-serious Mars observing or imaging will want to grab this book just for the Appendices. There is a detailed section on the features of Mars that are visible from Earth-based telescopes and the use of colored filters to bring out various features. Observing Mars is difficult because the planet is small, but an experienced observer can make out major regions, clouds and frosts as well as dust storms and the polar caps.

Overall, the book is worth reading for anyone who has an interest in the history of astronomy, or anyone who has fallen under the spell of Mars. Others will probably find the book a bit tedious. Since the book is in the Kitsap Library, the price is right, though!

“SINISTER PLOT” FOILED

There has been an insidious plot on the part of a group of terra-ists to undermine the foundations of the Ritchie Observatory. Luckily the plot was uncovered by an ever-alert Jim Vaughan because they started their nefarious deeds by digging un-

ANNUAL MEETING 2002

BPAA's Annual Meeting was held on January 9 at the Ritchie Observatory with Mac Gardiner, president, chairing the meeting. The yearly reports by the directors were presented. The president's report was followed by a standing acclamation and unanimous vote to name him "President Emeritus," with the recognition not only of his leadership in originating and guiding the Association in its formative years, but also of his creative imagination in envisioning the telescope for amateurs to be located on the International Space Station. (See article on p. 13.)

The slate of officers for 2002 was presented and accepted, noting several major changes. Paul Below steps competently into the position of President vacated by Gardiner. John Rudolph retires from being Vice President (that post goes to George McCullough), but continues his many other responsibilities. With an impressive list of accomplishments realized in 2001, Jim Young is also retiring and turning his position over to Mike Walker.

Paul Below, President
George McCullough, Vice President
Rik Shafer, Secretary
Eric Cederwall, Treasurer
John Rudolph, Facility Director
Mike Walker, Education Director
Bill and Anna Edmonds, Publicity
Directors
Diane Colvin, Events Director
Harry Colvin, Special Interest Group
Coordinator

Among appointments to other, non-Board positions are the following:

Bruce Muggli, Web Site Coordinator
Don Trantow, Ritchie Scope Coordinator

Jared Barnhill, Portable Scopes
Coordinator
Don Trantow and Gena Ritchie, Docents
David Warman, CCD/Computer Manager
Cathy Koehler, Librarian
Jim Vaughan, Robot Club Coordinator
Helen Gardiner, Archivist
John Rudolph, Planetarium Manager
Jared Barnhill, Astronomy Day Manager
Doug Tanaka, Telescope Construction
Coordinator
Dianne Todd, Lectures Coordinator
Harry Colvin, Bruce Muggli, Paul Below,
Diane Colvin, Member Meeting
Coordinators
Open to appointment: Sidewalk and Landscape

Other interested people are welcome to join in these positions. We'll try to keep this list up-to-date in subsequent publications.

Picture

Annual Meeting group listening to Paul Below

REPORTS of 2001 ACTIVITIES ANNUAL MEETING 2002

2001 ANNUAL AND FINAL REPORT OF THE PRESIDENT*

What to say? Shall I expound, with senile rapture, on the events since the founding of this noble institution? No. It's too long, and too familiar an account, and both you members and I would fall asleep during the recounting. We have an archive of memorabilia taking up four feet of shelf space under Helen Gardiner's care; and my BPAA files occupy four file drawers.

I'd rather dwell a little on what we now have.

First, we have our own, well-working observatory. Such facilities, for amateurs, are quite rare, and very important. Remember the effort and expense we have used just to endure, -- just to hold a meeting? The logistics involved in bringing together all the stuff required for the simplest of operations was daunting. Dealing with the Seattle Astronomical Association makes explicit the differences. We are fortunate.

Second, we have a reasonably stable financial base, with sufficient reserves to take on projects of modest size without delay. This provides vitality to an enterprise that would otherwise acquire the aspect of a museum.

Third, our membership is increasing, without requiring the impetus of demolition projects or other extreme measures. This means that our vitality continues, despite the increasing maturity of our members. Also, the support from Bainbridge Island, through the Bainbridge Foundation, so essential to our financial standing, continues to grow.

Fourth, we are learning how to reproduce our key personnel. Without this capability, our demise is ultimately assured. With it, members such as Jim Young and myself can ease off, take time to work on programs of personal interest at our own pace, and still know that essential BPAA matters are in good hands (if not even in

better!).

So, it's been an honor, quite a bit of work, and very rewarding to have been your president for the last five years. It's also been truly a pleasure to work with and get to know well all of you.

A few nights ago, Don Trantow let me look through the 27.5" telescope at Saturn. It was my first look. I'm glad I got to do so, as it symbolized the accomplishment of a program that has been a keystone to our whole operation.

Thank you, and my best wishes to the BPAA under its new board!

E. M. Gardiner, President

PICTURE

*Retiring BPAA Board Members
Jim Young and Mac Gardiner*

The CHIEF SCIENTIST'S ANNUAL REPORT

The Robot Club meets at the Observatory every Sunday afternoon from 1:00 until 4:20 or 5:00 pm. Usually about half a dozen kids show up. The Robot Club does a lot more than robots. We experiment with many things having to do with electronics, computer programming and building and tearing apart things. The meetings are informal at best. Malcomb Saunders and I try to keep some semblance of order.

The kids usually bring their own projects each

scope received special kudos for its innovative design.

The telescope will serve the Association well in years to come, providing portability and performance for both members and the public. The telescope was presented to the Board at the December meeting. Board members lauded the appearance of the scope, suggesting that it might just be too beautiful to use and should perhaps be used for display purposes only. At the meeting, the Board voted to dedicate the telescope to Bob Wilson, who was instrumental in the early design and modeling stages. The scope is a tribute to Bob and to all those involved in its completion, not just those mentioned in this article, but all the other members who devoted time and effort to the project. The project is a demonstration of teamwork at its best, with folks coming together and working together to reach success.

ASTROBIOLOGY

By Bill O'Neill

2002 marks the bicentennial of the introduction of the word "biology." Perhaps in another century or two scientists may commemorate the recent coining of the term *astrobiology*, expanding the study of life to a cosmic scale. With Na-Terry Hubbert

tional Science Foundation funding, in 1998 the University of Washington initiated the world's first interdisciplinary Astrobiology Program. This will be the first of what I propose as a periodic column on the subject in the *BPAA Newsletter*, since the field has become a special interest of mine. Let me make it clear at the outset that I'm no expert in astrobiology, though I have been getting to know a number of the scientists.

My technical training was in organic chemistry (PhD, U. Illinois). Since I've always been drawn to explaining biologic phenomena in molecular terms, I characterize myself as a biophile. (Biophilia, according to Edward O. Wilson, is innate fascination with life and life-like systems.)

I worked many years with prominent molecular biologists and various biomedical specialists in the field of biotechnology as it emerged from academia to become an industry. I've always been a 'jack of all trades and master of none,' and now I am free to follow my curiosity without concern for commercial applications or delivering products. Since we moved to Bainbridge Island in '93, I became increasingly interested in evolution, both of life and of the only planet on which we know it to exist. This brought me in contact with scientists in disciplines of which I was totally (Cont. on p. 12)

ignorant, such as astronomy and geology, and others far advanced in fields, such as microbiology, of which my knowledge had become outdated. (My thesis research concerned the step-by-step synthesis of an antibiotic by a microbe, but that was over 35 years ago.) Thus, for example, I'm auditing a course at UW on marine microbes, taught by a leading microbiologist who is studying life more than a mile deep on the geothermal mid-ocean ridges of the seabed, known as black smokers.

Through this column I'll draw attention to various developments related to the possible origin and early evolution of life as I become aware of them. In August, it was my good fortune to be among about 75 scientists who participated in a 3-day conference on Astrobiology at Crystal Mountain, near Mt. Rainier. By the end of 2002, the UW faculty who organized that conference expect to publish a textbook based on the 25 lecturers' presentations. Meanwhile, there are at least a couple of popular books I can recommend which provide good overviews of the topic. My favorite is Rare Earth, published in 2000 by Peter Ward and Don Brownlee - founding members of the UW Astrobiology Program faculty. A markedly contrasting point of view is presented in *Life Everywhere*, by David Darling (2001). Let me know if you are interested in this subject and what you'd like to know about it.

BOB WILSON 16-INCH TELESCOPE

by Diane Colvin

You have heard it said that law and sausage are two things you do not want to see being made. There are those who might say the same about a telescope built by a committee. The new 16-inch scope constructed by the BPAA telescope construction team belies that concept. The scope is beautiful and innovative and came to fruition through the sustained efforts of a number of dedicated BPAA members.

First came months, even years, of planning and educational meetings. Jim Young and Harry Colvin organized and directed these meetings, in which members learned about everything to do with telescope construction, from design to optics and beyond. Opportunity knocked when a vintage but well-preserved Meade telescope with a 16-inch mirror was donated to the Association. The team requested, and the Board agreed, to the use of the mirror and other parts from the scope for a team construction project. The Board also approved \$500 in funds for materials and other expenses. In the end, the project actually came in under budget.

With the newly acquired mirror, members quickly got to work on the specifics. Jim Vaughan conceived the design of the scope, a six-string, three-pole, truss-style Dobsonian, with the string held in tension by compression from toggle levers applying pressure to the truss tubes. Bob Wilson made a cardboard, full-scale mock-up of the design.

During the mock-up stage, Doug Tanaka, who was not involved in the initial meetings and preliminary events, happened into the project by serendipity. Doug was talking to a salesperson in a local store about his telescope one day, and Dave Warman overheard the conversation. Dave asked Doug about his scope, and was informed that it was a string-truss Dob. Dave in turn informed Doug about BPAA's scope project. Doug joined BPAA, and the rest is, as they say, history.

(Note to Membership Committee: encourage all members to discuss their scopes in public places.)

Once the mock-up was completed, Doug started building the secondary cage. The cage is constructed with a sub-core of 1" thick polystyrene foam insulation, overlaid with Kevlar tissue and epoxy, and over that, two layers of carbon tissue and epoxy. The spider assembly is a "T", made from 3"-wide carbon fiber ribbon, overlaid with 2 layers of carbon tissue. The strings and truss poles meet the secondary cage at three 1/2"-thick, Plexiglas triangles. The Plexiglas takes all of the strain of tension (from the strings) and compression (by the poles), so no unnecessary stress is put on the secondary cage.

Shortly after the secondary cage was finished, Bob Wilson passed away. The void created by that loss was filled in part by Terry Hubbert, of E T Platforms fame. Terry, a master woodworker and builder of several other telescopes, finished the mirror box. Doug built the rocker box.

The scope was now essentially complete, but the builders continued to tweak and improve it. Terry replaced the toggles with springs. Doug added two small fans to the scope, which blow over the surface of the primary mirror. The fans are opposite each other and blow over separate halves of the mirror, creating a mild swirling motion of air. The Telrad is also wired for heat with resistors so the glass will stay dew free, and there is an attachment under the focuser for an eyepiece heater. This will prove advantageous at public star parties, where one eyepiece might stay in place for a long time and would be deluged in dew if left unheated. Finally, a layer of Paulownia veneer was added to the secondary cage. Paulownia is a wood of Asian origin, as rare as it is beautiful.

The telescope was well-received at the Oregon Star Party. Mel Bartels chose the scope as one of a select few out of hundreds of scopes for

Doug Tanaka

hia annual Telescope Walk-About. The tele-

week and keep me on my toes by asking me to design and make work some kind of electronic circuit that I haven't thought about for 40 years. Sometimes we succeed, but many times we learn that electronics is hard and most things do not work the first time. ("Check your wiring.") Very early on they learn about the smoke test: When an electronic circuit is hooked up the first time, it fails the smoke test if it burns up and makes some smoke. We have failed the test several times.

On any Sunday afternoon, there will be several projects going on at the same time. Recently Malcolm was building a Theremin with his son Benjamin. (A Theremin electronic musical instrument was invented in the 1930s and featured in Disney's "Fantasia.") A couple of boys were designing a function generator circuit with opamps, using "Electronics Workbench" (a professional electronic circuit simulator that runs on the computer). They then tried to build the same circuit with real components. Another boy was dismantling a TV set.

Almost all the boys quickly learn Ohm's Law, the resistor color code, and how to count in binary. This is sort of an initiation into the Club. We have boxes full of electronic components and some breadboards that allow people to construct circuits by plugging in wires. We also have some very sophisticated test equipment including volt-ohm meters, an oscilloscope and a logic analyzer. We have worked with two very small embedded microprocessors. The Motorola 68HC11 is a microcomputer that is very suitable for controlling a robot, but isn't very easy to use. The OOPic is small and very easy to program. We are using the OOPic as the brains of the robots that we build. We sometimes work with Lego Mindstorm robots.

We have programmed microprocessors using several different computer languages including Forth, C, C++, Qbasic and Visual Basic. We have some professional CAD (Computer Aided Design) programs on the two computers that we have. "Electronics Workbench" is a professional electronics simulator which will show exactly

how a circuit works. "SolidWorks" is a professional 3D modeling program that can draw a 3D image of almost any mechanical thing.

If we ever get really serious about it, I have an integrated circuit design program and a printed circuit design program that we could use. Under Malcolm's direct supervision, they can use some of the machine tools upstairs in the shop.

Every week, we have two or three group of people come by to see the observatory and the big telescope. Malcolm usually gives them the Cook's tour and hands them a schedule of events and a membership registration form.

Sometimes we build robots.

James Vaughan

PICTURE

*Jim Vaughan & John Rudolph
Engrossed in Annual Meeting Reports*

2001 ANNUAL EDUCATION REPORT*

Paul Middents' Astronomy Course was a successful ten-lecture subscription series on the topic, "Tidal Forces: Earthly, Planetary and Galactic, with a total of 32 different participants.

The **Astronomy Techniques Seminars** covered techniques related to optics, fabrication, mounting, testing, imaging and observing. This year marked the formation of teams to apply all of these techniques to the construction of large portable telescopes.

Of the **school programs**, BPAA continues its participation in Project ASTRO, the program started by the Astronomical Society of the Pacific, supported by NASA and NSF, and administered locally by the University of Washington. This year, Jared Barnhill, Paul Below, Anna Edmonds, and Jim Young are partners with teachers in schools located on the western side of Puget Sound to bring the program to students in grades 3 to 8. Presentations have also been made to individual classes in public, private, charter, and home schools. These have included visits by classes to the Ritchie Observatory, and by visits from BPAA members to individual classrooms. Many schools take advantage of both types of visits.

Other **Community Education** activities have included Youth Programs, Boy Scouts, and Girl Scouts. The Park and Recreation Programs also made organized visits to the Ritchie Observatory. They have served to establish the BPAA in its role as a community educational facility. During the period from August 13-15, approximately 60 teachers were introduced to the educational facilities that were available through the **Naval Undersea Museum Foundation** (NUMF) in Keyport. A second activity was scheduled for September 11, which had to be canceled because of the New York and Pentagon terrorist attacks.

Jim Young, Education Director

OPERATIONS DIRECTOR REPORT, 2001*

For the entire year of 2001 we had a new service for our members of email **yahoo-group** addresses (currently 45), enabling us to share information, ask for help, and schedule last-minute events when the sky clears. There were 295 messages posted in 2001.

We have averaged over 5,000 hits per year on our home **web site** page for each of the last three years. Lots of new pictures were posted in 2001. Our online guest book recorded 23 messages.

We posted one of the Board Meeting minutes online as a test in preparation for posting the club *Newsletter* in 2002.

On April 28, 2001, BPAA held a very exciting **Astronomy Day**, with a wide array of activities and events. For the first time, Astronomy Day had a theme, "Sun-Earth." Jared Barnhill was the manager for our event.

We held one **beginner session** in the Park each month prior to the first quarter moon **Star Party**. For most of the year, we also held a third quarter moon Star Party. As winter approached, we went from two parties a month to one, and used the yahogroup to schedule impromptu Star Parties, depending on the weather. Some were well attended, particularly that for the Leonid Meteor Shower when the Park was filled with people.

I hosted a BPAA chip-and-dip party at the **Table Mountain Star Party** in the rain; fortunately we had the club's shelter to sit under. Over a dozen BPAA families were present at Table Mountain this year, and six people at the **Oregon Star Party**.

In support of **Dark Skies Northwest**, we gave a lighting presentation to the Bainbridge Island City Council. A picture montage is posted on our web site.

Harry Colvin obtained his Messier Certificate in 2001 from the **Astronomical League Observing Club**. A list of BPAA recipients is

posted on our web site. AL has a lot of different observing clubs: Why not try one?

The Journal Club went on vacation this year. In its place we are beginning a new **Member Meeting** on the second Wednesday of each month. Some of the topics that could have been discussed in the Journal Club will be presented here. Likewise, our monthly guest speaker program entered a hiatus in 2001, but we hope that we can obtain some guest speakers for this Meeting. This also will provide a space for our Special Interest groups to get together and share the latest happenings. All are welcome at 7:00 pm. Paul Below, Operations Director

FACILITY DIRECTOR'S REPORT**REPORTS & ARTICLES**

The end of 2001 saw a little activity at the Ritchie Observatory on the part of the Facility Director and a few loyal cohorts. In November Malcolm Saunders proposed that we should get some parts for both the Milling Machine and the Machine Lathe so we could do some basic work with them when the occasion demanded. We bought a Jacobs chuck, fitted to a Morse taper shaft to mount in the lathe tailstock, as well as a thread gage and other miscellaneous items.

Due to Jim Vaughan's alertness, we have been able to foil a very "sinister plot" that might have had very ill effects on our movements. (Please see details of this event in another article in this *Newsletter*.)

December found us watching the sky during the day and making offerings to bring clear skies on the Winter Solstice so we could note the time and position of the sun disk image at noon. On the 21st, George McCullough and the Chief Archaeoastronomer met at the observatory and saw that Paul Below had tracked the image a day or so earlier. Returning on the 26th and 28th, we saw a fine clear image on schedule moving across the whiteboard on the north wall of the Meeting Room. These were marked both

for position and time. We all know about the analemma and the equation of time (that lopsided figure eight on globes of the earth), but we were quite moved to see that the image of the sun on the days following the solstice not only moves down (because the sun is higher in the sky each noon) but also it moves to the left as well, the beginning of the track of the analemma.

On New Year's Eve, Gena Ritchie, Don Trantow, Mac Gardiner and I hosted a group who came from various parts of the US for a chance to see our observatory and to look through the 27.5" telescope.

No article would be complete at this time of year without a list of resolutions. In this case it turns out to look a lot like a list of projects for us of the astronomical persuasion.

1. Improve the 27.5" Ritchie so that serious imaging can be accomplished. Dan Caster, Don Trantow, Doug Tanaka, Jim Vaughan and myself (so far) have formed the team to tackle the various improvements that need to be made. Anyone else who would like to help, please let me know.

2. Hang the fluorescent light fixtures that we have on hand.

3. Calk and weatherstrip the roof access door to eliminate the small leak. The new roofing is working fine and attention to the weather stripping is all that is needed.

4. Repair water damage to the walls and ceiling near the helical stair.

5. Buy parts for our machine tools so they can be used fully.

6. Complete the Planetarium Report and move ahead on this project.

7. Complete the walls and ceiling of the upper workroom and build some storage shelves to house equipment.

So a Happy New Year to all our members!! This will be another great year for the Battle Point Astronomical Association!! We will make it so!! John Rudolph, Facility Director