



# SearchLites

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The Quarterly Newsletter of The SETI League, Inc.

**Offices:**

433 Liberty Street  
PO Box 555  
Little Ferry NJ  
07643 USA

**Phone:**

(201) 641-1770

**Facsimile:**

(201) 641-1771

**Email:**

info@setileague.org

**Web:**

www.setileague.org

**President:**

Richard Factor

**Registered Agent:**

Marc Arnold, Esq.

**Secretary/Treasurer:**

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## Annual Meeting Notice

In accordance with Article IV, Section 1 of our duly approved Bylaws, the Trustees of The SETI League, Inc. hereby schedule our Fourteenth Annual Membership Meeting for 1 PM Eastern time on **Sunday, April 20, 2008**, at SETI League Headquarters, 433 Liberty Street, Little Ferry NJ 07643. Our office is located just two blocks north of Route 46 and one mile east of the Teterboro Airport, on the northwest corner of Liberty and Kinzley Streets.

We recommend that out-of-town members and guests flying in commercially use the Newark International Airport (EWR), which is about twenty minutes South of our office. There is a wide variety of hotels available at the Newark Airport. A rental car is recommended. From Newark, drive North on the New Jersey Turnpike to US Route 46 West-bound, cross over the Hackensack River, and two long blocks after the traffic circle, turn right onto Liberty Street.

Our members and guests using General Aviation are invited to use the Teterboro Airport (there *is* a landing fee). Of the half-dozen Fixed Base Operators offering transient parking, we recommend Atlantic Aviation (ask Ground Control for parking in the Atlantic Midfield). They should be able to assist you with ground transportation. Please coordinate your schedules and needs in advance through our secretary, Heather Wood.

As attendance by one percent of the League's membership constitutes a quorum, all members in good standing are encouraged to attend. The preliminary agenda for this meeting, per Bylaws Article XII, appears below.

Per Article IV, Section 3 our Bylaws, written or electronic notice of this Meeting is being provided to all members in good standing, not less than ten days nor more than ninety days prior to the meeting date. Members are encouraged to submit additional Old Business and New Business items for inclusion in the Agenda. Please email your agenda items to paul@setileague.org, not later than **April 1, 2008**.

The annual Board of Trustees Meeting required per Bylaws Article V, Section 3 will immediately follow the Membership Meeting. All SETI League members in good standing are welcome to attend.

### Preliminary Agenda

- Call to Order
- Minutes of 2007 Membership Meeting
- Financial Report
- Committee Reports
- Old Business
- New Business
- Good and Welfare
- Adjournment



## SARA Call for Papers

The Society of Amateur Radio Astronomers (SARA), a SETI League Affiliated Society that represents several hundred amateur radio astronomers around the world, hereby solicits papers for presentation at its 2008 Annual Meeting and Technical Conference, to be held June 30 - July 2, 2008, at the National Radio Astronomy Observatory (NRAO), Green Bank WV. Papers on radio astronomy hardware, software, education, research strategies, and philosophy are welcome.

H. Paul Shuch, The SETI League's volunteer executive director, also serves as SARA vice president. In that capacity, he is coordinating this joint technical meeting. SARA members, SETI League members, or supporters wishing to present a paper should email a letter of intent, including a proposed title and informal abstract or outline (not to exceed 100 words) to the SARA vice president at [vicepres@radio-astronomy.org](mailto:vicepres@radio-astronomy.org), no later than **15 March 2007**. Be sure to include your full name, affiliation, postal address, and email address, and indicate your willingness to attend the conference to present your paper. Submitters will receive an email response, typically within one week, along with a request to proceed to the next stage, if the proposal is consistent with the planned program.

A formal Proceedings will be published in conjunction with this Meeting. Papers will be peer-reviewed by a panel of SARA members with appropriate professional expertise and academic credentials. First-draft manuscripts must be received no later than 1 April 2008, with feedback, acceptance, or rejection emails to be sent within two weeks thereafter. Upon final editing of accepted papers, camera-ready copy will be due not later than 1 May 2008. Due to printer's deadlines, manuscripts received after that deadline will not make it into the Proceedings. Instructions for preparation of final manuscripts will be emailed to the authors of all accepted papers.

The last two year's Proceedings were landmark accomplishments for both organizations. Please help the Society of Amateur Radio Astronomers to make the 2008 edition even better! SETI League members in particular are encouraged to participate in this meeting by presenting their work for the benefit of the two sister societies. Further information about SARA can be found on their website, <http://radio-astronomy.org>.

Largely using radio telescopes and optical telescopes, SETI scientists seek to determine whether humankind is alone in the universe. Since Congress terminated NASA's SETI funding in 1993, The SETI League and other scientific groups have privatized the research. Amateur and professional scientists interested in participating in the search for intelligent alien life, and citizens wishing to help support it, should email [join@setileague.org](mailto:join@setileague.org), check the SETI League Web site at <http://www.setileague.org/>, send a fax to +1 (201) 641-1771, or contact The SETI League, Inc. membership hotline at +1 (800) TAU-SETI. Be sure to provide us with a postal address to which we will mail further information. The SETI League, Inc. is a membership-supported, non-profit [501(c)(3)], educational and scientific corporation dedicated to the scientific Search for Extra-Terrestrial Intelligence. ❖

*Guest Editorial*

## Probing Distant Atmospheres

by Paul Gilster

Hunting for terrestrial planets is not going to be easy, and even when we start getting images of such worlds, there will be plenty of questions to answer. How to detect life on a terrestrial planet was one of the subjects that came up last September at the Pale Blue Dot workshop at Adler Planetarium in Chicago. Cassini's recent picture of Earth from Saturn space, much like Voyager's 'pale blue dot' image of 1990, reminded everyone at the conference of our fragile place in the cosmos. It also forced the question of how we might find other such worlds.

And finding a blue planet in a star's habitable zone isn't enough. As laid out in a JPL backgrounder, the key will be to gather enough spectral data to make a judgment call that could change how we view our place in the universe. Breaking down the light from a distant planet should tell us much about its chemical composition. Carbon dioxide and water vapor, for example, are both clues to life, their dual presence suggesting both an atmosphere and an ocean.

But even liquid water isn't sufficient to make the call. In reality, we'll need a combination of things. Oxygen is useful because it suggests plant life or some kind of living cycle to produce it and keep it in the atmosphere. Methane likewise suggests life processes at work, though by itself it's not sufficient (we can certainly find the stuff in places where life seems less likely, as witness Titan). So here's the take from the JPL story:

Scientists say that oxygen is a more reliable sign of life than methane, but if they found large quantities of both, they'd be more convinced. "Finding two of these molecules together would be much better than one. The more, the better," said Dr. Victoria Meadows of NASA's Spitzer Science Center, Pasadena, who served as chair of the third Pale Blue Dot conference. "For example, if we found carbon dioxide, oxygen and water vapor, in addition to methane, then we'd be pretty convinced that we were looking at an environment like our own."

Inevitably, the hunt for extraterrestrial life looks first for the kind of life we find on Earth. But we may have to widen that view, and the key is to make as few assumptions as possible. For if we've learned one thing from the 200+ extrasolar planets found thus far, it's that solar systems around other stars can be utterly different from anything we had imagined. Finding that alien blue dot with the right mix of chemicals in its atmosphere would be profoundly suggestive, but it doesn't rule out more bizarre abodes of life that we don't yet know how to categorize. Not all those pale, living dots are going to be blue.

*This editorial first appeared on Centauri Dreams, and is used here by the kind permission of the author.*

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## **Implications of Astrobiology for SETI** **by Albert A. Harrison, Ph.D.**

Astrobiologists use telescopes, interferometers, spectrometers and other devices to discover suitable locations for life, find life's physical or chemical precursors, and identify signs of past or current biological activity. As currently practiced, astrobiology strengthens preliminary terms in the Drake Equation (stars, planets, habitability, initiation of life), for now avoiding concluding terms such as the evolution of intelligence and longevity. SETI searches bypass specific components of the Drake Equation and seek unequivocal signs of technologically advanced civilizations. By developing evidence in support of specific parts of the Drake Equation, astrobiologists bolster the rationale for SETI. This brief editorial identifies other possible implications of astrobiology for SETI.

Astrobiologists are discovering large (multiples of Jupiter) planets almost faster than they can be catalogued. Within a decade, new Earth-based and space-based telescopes will go on line. NASA's planned Terrestrial Planet Finder (TPF) and Next Generation Space Telescope (NGST) are but two examples. These instruments will make it possible to image Earth-like planets in other solar systems. Subsequent generation (circa 2020) devices will enable us to identify more distant habitable planets and monitor chemical activities suggestive of simple forms of such as bacteria. Within the 21st Century, the range of these imaging devices could increase from 30 to 100 LY.

Despite various rules of thumb or "heuristics" such as exploring frequencies in the vicinity of the "cosmic water hole," a continuing difficulty confronting SETI astronomers is where they should look. Advances in astrobiology will lead to new heuristics that should help astronomers aim their telescopes in promising directions. Of course, astrobiology cannot help astronomers locate machine intelligence broadcasting from interstellar space, and many promising planets will host life that does not progress to technologically advanced civilizations. Still, astrobiology may help astronomers steer clear of really unpromising locations.

Many SETI organizations including the Planetary Society, the SETI Institute, and the SETI League are supplementing microwave observation (MSETI) with optical observation (OSETI) intended to find continuous or pulsed lasers. One rationale for adding OSETI is that Earth may be "pinged" by a civilization within 50 LY that has detected terrestrial radio activity. Perhaps a

much older and more technologically advanced civilization could use advanced astrobiological procedures (including remote imaging from multiple locations) to discover life on Earth from hundreds or even thousands of LY away. If so, we may not be invisible beyond the 50 LY boundary of our radio signature. Astrobiology increases the plausibility of theories suggesting that Earth has been detected by civilizations that fall beyond the range of our radio emissions.

We discount interstellar probes (such as Pioneer and Voyager) as practical means for encountering distant cultures. One of the many reasons for this is that there are countless possible destinations, and another is the tremendous time requirement for traversing interstellar distances. Still, an ancient civilization's discovery of life on Earth would give their scientists a promising destination and eliminate the need to dispatch fleets of probes in every imaginable direction. Because extraterrestrial civilizations are estimated to be billions of years older than our own, and because imaging extrasolar planets (like radio, lasers, and spacefaring) is a relatively early technology, extraterrestrial astrobiologists could have found our life-bearing planet well before the evolution of humans. There could have been ample time for a probe traveling at a small fraction of the speed of light to reach our solar system.

Thus, astrobiology is more than an esteemed partner conducting routine grunt work to increase our confidence that SETI will lead to a confirmed detection. Advances in astrobiology force us to rethink our search strategies and our plans for managing contact and its aftermath. Could it be that the step-by-step approach of astrobiology, rather than the direct approach of SETI, would first confirm the existence of extraterrestrial intelligence? Astrobiology's advantage over SETI is that it does not have to depend on civilizations billions of years older than our own sharing contemporary terrestrial technology. Breathe easy, SETI aficionados, NASA specifically prohibits its astrobiologists from searching for extraterrestrial intelligence!

### **References**

- Allen Tough, Ed., When SETI Succeeds: The Impact of High-Information Contact (Bellevue, Washington: Foundation for the Future, 2000)
- David Darling, Life Everywhere: The Maverick Science of Astrobiology (New York: Basic Books, 2001)
- Brian McConnell, Beyond Contact (Santa Rosa, CA: Charles O'Reilly and Associates, 2001) ❖

## Event Horizon

SearchLites' readers are apprised of the following conferences and meetings at which SETI-related information will be presented. League members are invited to check our World Wide Web site ([www.setileague.org](http://www.setileague.org)) under *Event Horizon*, or email to us at [info@setileague.org](mailto:info@setileague.org), to obtain further details. Members are also encouraged to send in information about upcoming events of which we may be unaware.

**April 4 - 6, 2008:** *CONTACT 2008*, NASA Ames Research Center, Mountain View, CA.

**April 4 - 6, 2008:** *I-Con 27*, Stony Brook University, NY.

**April 15 - 17, 2008:** *Astrobiology Science Conference*, Santa Clara CA.

**April 19, 2008, 0000 UTC - 2359 UTC:** Eighth annual SETI League *Ham Radio QSO Party*, 3.551, 7.0309, 7.2039, 14.084, 14.204, 21.306, and 28.408 MHz. **April 20, 2008, 1:00 PM Eastern Daylight Time:** Fourteenth SETI League *Annual Membership Meeting*, Little Ferry NJ.

**April 20, 2008, 2:00 PM Eastern Daylight Time:** SETI League *Annual Board of Trustees Meeting*, Little Ferry NJ.

**April 25 - 26, 2008:** *Southeastern VHF Conference*, Orlando FL.

**April 25 - 26, 2008:** *Trenton Computer Festival*, The College of New Jersey, Trenton NJ.

**May 16 - 18, 2008:** *Hamvention 2008*, Dayton OH.

**May 23 - 26, 2008:** *Balticon 42*, Baltimore MD.

**May 30 - June 1, 2008:** *Rochester Hamfest*, Rochester NY.

**June 29 - July 2, 2008:** *Society of Amateur Radio Astronomers Conference*, NRAO Green Bank WV.

**July 24 - 26, 2008:** *Central States VHF Conference*, Wichita KS.

**August 6 - 10, 2008:** *Denvention 3*, 66th World Science Fiction Convention, Denver CO.

**August 8 - 10, 2008:** *EME 2008*, Florence Italy.

**September 22 - 26, 2008:** *Searching for Life Signatures*, Paris, France, under the sponsorship of the International Academy of Astronautics SETI Permanent Study Group.

**September 29 - October 3, 2008:** *59th International Astronautical Congress*, Glasgow, Scotland.

**October 24 - 26, 2008:** *AMSAT Space Symposium*, Buckhead, GA.

**February 13 - 15, 2009:** Dr. SETI to be Featured Filker at *Boskone 46*, Boston, MA.

**April 3 - 5, 2009:** *I-Con 28*, New York City area.

**April 18, 2009, 0000 UTC - 2359 UTC:** Tenth annual SETI League *Ham Radio QSO Party*, 14.204, 21.306, and 28.408 MHz.

**May 15 - 17, 2009:** *Hamvention 2009*, Dayton OH.

**May 29 - 31, 2009:** *Rochester Hamfest*, Rochester NY.

**June 2009 (dates TBA):** *Society of Amateur Radio Astronomers Conference*, NRAO Green Bank WV.

**July 23 - 25, 2009:** *Central States VHF Conference*, St. Charles IL.

**August 6 - 10, 2009:** *Anticipation*, 67th World Science Fiction Convention, Montreal, Quebec Canada.

**October 12 - 16, 2009:** *60th International Astronautical Congress*, Daejeon, Korea.

**April 17, 2010, 0000 UTC - 2359 UTC:** Eleventh annual SETI League *Ham Radio QSO Party*, 14.204, 21.306, and 28.408 MHz.

**June 4 - 6, 2010:** *Rochester Hamfest*, Rochester NY.

**June 2010 (dates TBA):** *Society of Amateur Radio Astronomers Conference*, NRAO Green Bank WV. ❖

*Ask Dr. SETI* ®

## Justifying the Investment

**Dear Dr. SETI:**

*If you invest so much effort in looking for ETI, it seems to me that you must already know about their existence. So, what your purpose in continuing the search?*

*Rafael (Argentina)*

**The Doctor Responds:**

A very valid question, Rafael. First off, SETI in general is a very inexpensive science, and The SETI League's *Project Argus* all-sky survey in particular is probably the world's least costly SETI program. So, the investment (in both effort and funding) is minimal -- and easily justified, given the tremendous opportunity for positive returns, should Contact be made.

As for knowing about the existence of ETI: there is ample circumstantial evidence to suggest a Universe teeming with intelligent life, but it is by no means definitive. Many of us in the SETI community strongly believe in the existence of ETI, but that is a matter of faith, and science demands fact. In fact, we demand duplicable, reproducible evidence, that can be scrutinized by multiple investigators. Otherwise, we run the risk of fooling ourselves into finding what we *want* to find. Hopefully, The SETI League, with the wide range of talents and interests available among its 1500 members, provides us with the kind of objective analysis necessary for credible science. ❖

## SARA Announces Keynote Speaker

**Little Ferry, NJ., January 2008** -- The Society of Amateur Radio Astronomers (SARA), a SETI League Affiliated Society that represents several hundred amateur radio astronomers around the world, is pleased to announce the selection of Dr. Steven J. Dick, chief historian of NASA, as Keynote Speaker for its annual technical conference, being held from 29 June to 2 July 2008 at the National Radio Astronomy Observatory, Green Bank, WV. Dick's presentation, "Cosmology and Biology," dealing with the Anthropic Principle and the search for life in space, is scheduled for Monday morning, 30 June 2008.

Before joining NASA in 2003, Dr. Dick worked as an astronomer and historian of science at the U. S. Naval Observatory for 25 years. He obtained his Bachelor of Science in astrophysics (1971), Master of Arts and Ph.D. (1977) in history and philosophy of science from Indiana University. He is a well-known expert in the field of astrobiology and its cultural implications. He spent three years at the Naval Observatory's Southern Hemisphere station in New Zealand. Dick served as the first Historian of the Naval Observatory, as well as Acting Chief of its Nautical Almanac Office.

Dick served on the panel to examine the societal implications of possible life in the Mars rock. He received the NASA Group Achievement Award, "For initiating the new NASA multidisciplinary program in astrobiology, including the definition of the field of astrobiology, the formulation and initial establishment of the NASA Astrobiology Institute, and the development of a Roadmap to guide future NASA investments in astrobiology." He is also the recipient of the Navy Meritorious Civilian Service Medal, and the 2006 LeRoy E. Doggett Prize for Historical Astronomy of the American Astronomical Society. He has served as Chairman of the Historical Astronomy Division of the American Astronomical Society, as President of the History of Astronomy Commission of the International Astronomical Union, and as President of the Philosophical Society of Washington. He is a corresponding member of the International Academy of Astronautics.

He is on the Editorial Board of several journals, including the *Journal for the History of Astronomy*, and is an associate editor of the *International Journal of Astrobiology*. He was Chairman of the Historical Astronomy Division of the American Astronomical Society (1993-1994) and President of the History of Astronomy Commission of the International Astronomical Union (1997-2000). He has also served as President of the Philosophical Society of Washington.

Dick has authored more than 100 publications, including: Plurality of Worlds: The Origins of the Extraterrestrial Life Debate from Democritus to Kant (Cambridge University Press, 1982); The Biological Universe: The Twentieth Century Extraterrestrial Life Debate and the Limits of Science (Cambridge University Press, 1996); and Life on Other Worlds (1998), the latter translated into four languages. He was also editor of Many Worlds: The New Universe, Extraterrestrial

Life and the Theological Implications (2000), and (with Keith Cowing) Risk and Exploration: Earth, Sea and Stars (NASA SP-2005-4701 (Washington, D.C., 2005).

His history of the Naval Observatory, Sky and Ocean Joined: The U. S. Naval Observatory, 1830-2000 (Cambridge University Press, 2002), received the John Lyman Award of the North American Society for Oceanic History for best book in 2002 in Science & Technology. It also won the Naval Observatory's Captain James Melville Gilliss Award for extraordinary dedication and exemplary service. Dick is also the author (with James Strick) of The Living Universe: NASA and the Development of Astrobiology (Rutgers University Press). His latest books are an edited volume (with Roger Launius) on Critical Issues in the History of Spaceflight (NASA SP-4702, 2006), and Societal Impact of Spaceflight, also edited with Roger Launius (2007).

At the 2008 gathering, Steve will be helping SARA to celebrate the club's 27th Anniversary. SETI League members and guests are invited to participate in the annual Conference. ❖

### **Book Review:**

#### **The Living Cosmos: Our Search For Life In The Universe by Chris Impey**

*Reviewed by David Ocame, WS1ETI, Argus Station FN31og*

At the outset, I have to state it was very difficult for me to read this book. Not because it was incomprehensible. From the back cover of the dust jacket Kirkus Reviews is quoted describing the book as "Lively, clear and up-to-date...a skillful account of the universe, the nature of life and where in the universe life might occur." I found it to be mostly clear, certainly up to date, but there was nothing new said. In fact, it read just like a number of similarly fashionable tomes on astrobiology that had already been written and published. It failed to hold my attention. As a matter of fact, I read the first few chapters in depth and then found myself skimming the rest looking for something of note. I came up short.

I do want to make clear that it's not a "bad" book. In fact, it is good, at some level. However, I would not recommend this for someone who is already somewhat familiar with the literature. I would find value in keeping it around to loan, or give, to an intermediate level reader - say middle to late high school age. Students who are unfamiliar with the history of astrobiology. Indeed, I find the discussions to be, for the most part, insufficiently in-depth to be satisfying to the advanced reader. ❖

## 90th Birthday Reflections

by Sir Arthur C. Clarke  
SETI League Technical Advisor

As I celebrate my 90th birthday, my friends are asking how it feels like, to have completed 90 orbits around the Sun.

Well, I actually don't feel a day older than 89! Of course, some things remind me that I have indeed qualified as a senior citizen. As Bob Hope once said: "You know you're getting old, when the candles cost more than the cake!"

I'm now perfectly happy to step aside and watch how things evolve. But there's also a sad side to living so long: most of my contemporaries and old friends have already departed. However, they have left behind many fond memories, for me to recall.

I now spend a good part of my day dreaming of times past, present and future. As I try to survive on 15 hours' sleep a day, I have plenty of time to enjoy vivid dreams. Being completely wheel-chaired doesn't stop my mind from roaming the universe - on the contrary!

In my time I've been very fortunate to see many of my dreams come true! Growing up in the 1920s and 1930s, I never expected to see so much happen in the span of a few decades. We 'space cadets' of the British Interplanetary Society spent all our spare time discussing space travel - but we didn't imagine that it lay in our own near future...

I still can't quite believe that we've just marked the 50th anniversary of the Space Age! We've accomplished a great deal in that time, but the 'Golden Age of Space' is only just beginning. After half a century of government-sponsored efforts, we are now witnessing the emergence of commercial space flight.

Over the next 50 years, thousands of people will travel to Earth orbit - and then, to the Moon and beyond. Space travel - and space tourism - will one day become almost as commonplace as flying to exotic destinations on our own planet.

Things are also changing rapidly in many other areas of science and technology. To give just one example, the world's mobile phone coverage recently passed 50 per cent -- or 3.3 billion subscriptions. This was achieved in just a little over a quarter century since the first cellular network was set up. The mobile phone has revolutionized human communications, and is turning humanity into an endlessly chattering global family!

What does this mean for us as a species?

Communication technologies are necessary, but not sufficient, for us humans to get along with each other. This is why we still have many disputes and conflicts in the world. Technology tools help us to gather and disseminate information, but we also need qualities like tolerance and compassion to achieve greater understanding between peoples and nations.

I have great faith in optimism as a guiding principle, if only because it offers us the opportunity of creating a self-fulfilling prophecy. So I hope we've learnt something from the most barbaric century in history - the 20th. I would like to see us overcome our tribal divisions and begin to think and act as if we were one family. That would be real globalisation...

As I complete 90 orbits, I have no regrets and no more personal ambitions. But if I may be allowed just three wishes, they would be these.

Firstly, I would like to see some evidence of extra-terrestrial life. I have always believed that we are not alone in the universe. But we are still waiting for ETs to call us - or give us some kind of a sign. We have no way of guessing when this might happen - I hope sooner rather than later!

Secondly, I would like to see us kick our current addiction to oil, and adopt clean energy sources. For over a decade, I've been monitoring various new energy experiments, but they have yet to produce commercial scale results. Climate change has now added a new sense of urgency. Our civilisation depends on energy, but we can't allow oil and coal to slowly bake our planet...

The third wish is one closer to home. I've been living in Sri Lanka for 50 years - and half that time, I've been a sad witness to the bitter conflict that divides my adopted country. I dearly wish to see lasting peace established in Sri Lanka as soon as possible. But I'm aware that peace cannot just be wished -- it requires a great deal of hard work, courage and persistence.

I'm sometimes asked how I would like to be remembered. I've had a diverse career as a writer, underwater explorer, space promoter and science populariser. Of all these, I want to be remembered most as a writer - one who entertained readers, and, hopefully, stretched their imagination as well.

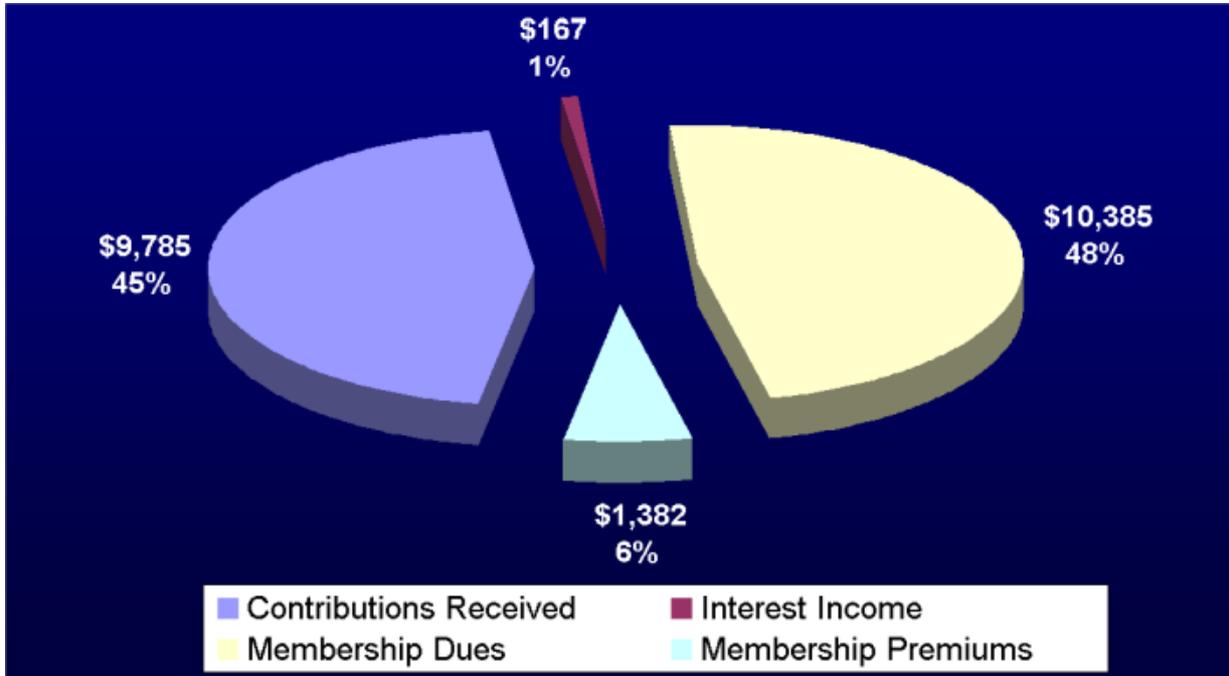
I find that another English writer -- who, coincidentally, also spent most of his life in the East -- has expressed it very well. So let me end with these words of Rudyard Kipling:

If I have given you delight  
by aught that I have done,  
Let me lie quiet in that night  
which shall be yours anon;  
And for the little, little span  
the dead are borne in mind,  
seek not to question other than,  
the books I leave behind.

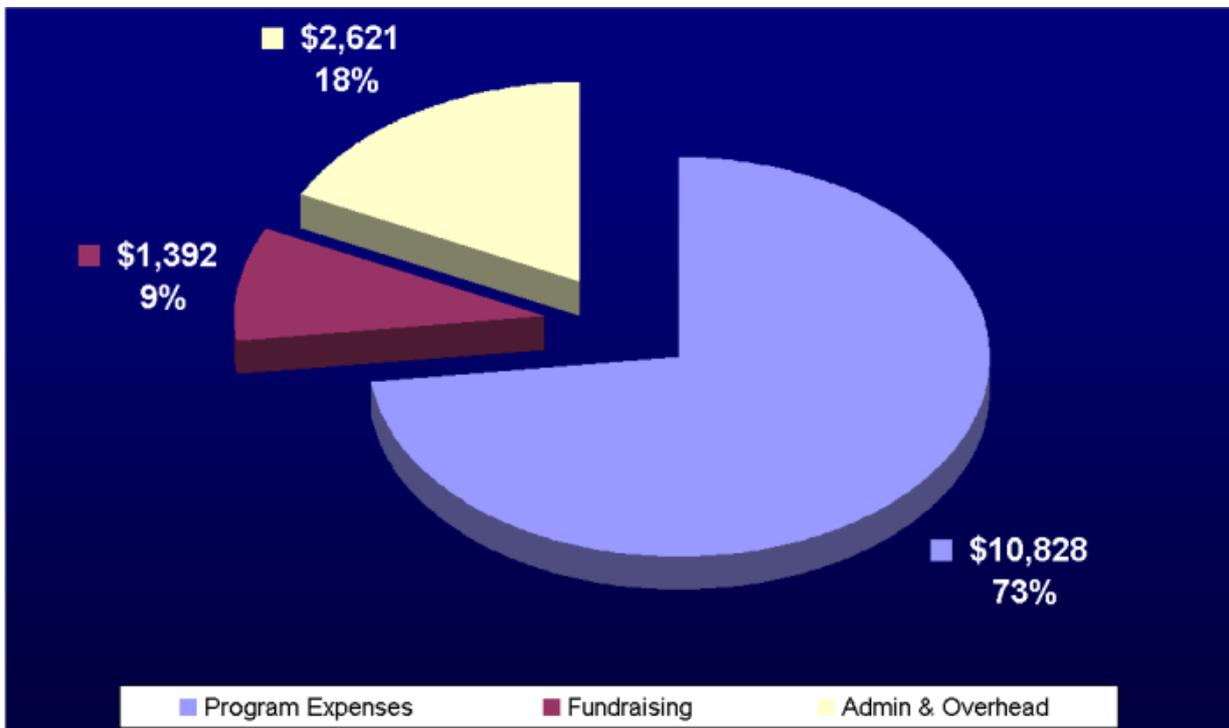
Colombo, Sri Lanka  
16 December 2007



*Financial Page:*



2007 Revenues



2007 Expenses

From SETI League 2007 Annual Report  
(now available for download at <<http://www.setileague.org/admin/report07.pdf>>)



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SearchLites Volume 14 No. 2, Spring 2008  
Printed in the USA

**Annual Renewal: Is This Your Last SearchLites?**  
SETI League memberships are issued for the *Calendar Year*. Please check the expiration date indicated on your mailing label. If it reads December 2007 or earlier, you have already expired, and *must* renew your SETI League membership **now!** Please fill out and return this page along with your payment.

**Please renew my membership in this category:**

Full Member	\$50 / yr
Supporting Member (elderly, retired, or disabled)	\$35 / yr
Scholarship Member (full-time students only)	\$25 / yr
Household Member (same address as a Full Member)	\$15 / yr
Household Life Member (same address as a Life Member)	\$300
Life Member (until we make contact)	\$1,000
Sustaining Life Member – a generous <i>annual</i> pledge of:	\$1,000 / yr
Patron (priority use of The SETI League’s radio telescope)	\$10,000
Director (Patron membership plus seat on advisory board)	\$100,000
Benefactor (a major radio telescope named for you)	\$1,000,000

Annual memberships are issued for the calendar year. Those processed in January through April expire on 31 December of that year. Those processed in September through December expire on 31 December of the *following* year. Those members joining in May through August should remit half the annual dues indicated, and will expire on 31 December of the same year.

**Pleased to Accept Credit Cards**

The SETI League invites you to pay your membership dues and additional contributions via Visa or MasterCard. Please fill out the form below and return it with any order. We thank you for your ongoing support.

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**Order Your Membership Premiums:**

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<i>Tune In The Universe!</i> (CD-ROM)	\$25	\$30
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<i>Proceedings of SETICon02</i>	\$20	\$27
<i>Proceedings of SETICon03 (CD)</i>	\$15	\$17
<i>Proceedings of EuroSETI04 (CD)</i>	\$15	\$17
<i>Proceedings of SETICon04(CD)</i>	\$15	\$20
<i>SARA 2006 Conference Proceedings</i>	\$20	\$27
<i>SARA 2007 Conference Proceedings</i>	\$20	\$27
<i>SETI League Technical Manual (CD)</i>	\$10	\$13
<i>Project Cyclops 2<sup>nd</sup> Edition</i>	\$20	\$30
<i>The Listeners</i> by James Gunn	\$15	\$21
<i>Sing a Song of SETI</i> (Songbook)	\$10	\$13
<i>Sing More Songs of SETI</i> (Songbook)	\$10	\$13
<i>Sing a Song of SETI</i> (music CD)	\$12	\$15
<i>Demented!</i> (music CD)	\$12	\$15
T-shirts, specify M, L, or XL	\$15	\$22
SETI Nerd Gift Set (one each Mouse Pad, Pocket Protector, <i>Project Cyclops</i> and <i>Tech Manual</i> ) at 20% Savings to <u>Members Only</u> :	\$30	\$43

**\*Includes postage to (u/c) US/Canada, or (o) other locations**  
**Payments in US Dollars, check payable through a US bank**

Cardholder: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ email: \_\_\_\_\_

Ham call: \_\_\_\_\_ URL: \_\_\_\_\_

Total Contribution (US Dollars): \_\_\_\_\_

Signature: \_\_\_\_\_

Today’s date: \_\_\_\_\_