



SearchLites

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The Quarterly Newsletter of The SETI League, Inc.

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No Longer Science Fiction

by H. Paul Shuch

Executive Director Emeritus

I recall becoming aware of SETI science in the summer of 1960, around the same time I started reading science fiction. My exposure to the former came through media coverage of Frank Drake's *Project Ozma* experiment at Green Bank, just a year after the Cocconi and Morrison article *Searching for Interstellar Communications* appeared in the journal *Nature* (though I will confess that I never actually read that article until decades later). SF had been on my radar for as long as I can remember (my mother was a reader, and subscribed to *Amazing Stories* during my formative years), but I didn't really start reading the genre until High School, when my sister Robin handed me her copy of Clarke's *Childhood's End*. At the time, I regarded the two (SETI and SF) as equally implausible, and equally entertaining.

When I earned my ham radio ticket the following year, SETI science began to seem no longer so science-fictional. If I could communicate around the entire globe using a five-watt homebrew CW transmitter, I reasoned, how difficult could it be to reach out to the planets that just had to be orbiting distant stars? I even penned a short story for my local ham club newsletter, about making contact with a distant radio amateur whom I called Marsconi. Not my best literary effort, to be sure, but well within the realm of possibility to my adolescent mind.

By the time my friend Richard Factor (also a ham, and an SF reader) founded The SETI League three and a half decades later, the two areas of interest had simultaneously merged and diverged. Most of the SETI scientists I had met were indeed strongly influenced by the SF literature (a few of them even contributed to it), yet we all had begun to realize that observational science was more difficult than simple storytelling. Which is not to say that we didn't all continue to appreciate Forward's Law: "never let the facts get in the way of a good story."

Over the years, I came to learn that the SF and amateur radio communities were each a cohesive group, with their own family reunions. The World Science Fiction Convention was in many ways reminiscent of the Dayton Hamvention. Participants in each had their own specialized language, wore funny hats or costumes, and spent far more on their hobbies than prudence would dictate.

I also began to notice an intriguing overlap between the two. Which is why The SETI League was able to attract a host of members with whom I felt an affinity. I mean, radio hams who reached out toward the stars -- what's not to love?

Which brings me to last month's WorldCon 76 gathering in San Jose CA (my old stomping grounds). For a week, I was surrounded by fellow nerds -- all readers, many radio hams, quite a few SETI League members, and a sizeable handful of serious scientists who, like Richard and I, had early been inspired by SF's Grand Masters. Few of whom are still among us, but whose literary contributions are immortal.

The SETI League website, and our FaceBook pages, and this latest issue of *SearchLites*, your League's quarterly newsletter, are chock full of photos I took at this year's WorldCon, featuring quite a few friends of, and contributors to, SETI science. They serve to remind us all that SETI, no longer fiction, is indeed real science.



Guest Editorial

Why Should We Update the Rio Scale?

by Elisabeth Piotelat

SETI League Regional Coordinator for France

"So, did you receive THE signal?" A lot of SETI League members have already heard this question from acquaintances, friends, colleagues, or neighbors. It may be hard to answer that this is not really the right question to ask, that they should instead have asked what signals we've received so far. The Richter scale is used by journalists who never studied geology, so why not have such a clear, understandable tool for SETI?

The idea of the Rio scale came from Ivan Almar and Jill Tarter, who proposed it at a conference in Rio in 2000. In 2003, the SETI Permanent Committee of the International Academy of Astronautics officially adopted Revision 1.2 of their Rio Scale. No changes have been made for the past 15 years, whereas it had been designed to be a work in progress.

Scientists, engineers, technicians, ham radio operators, and all SETI enthusiasts have used an online calculator designed by SETI League member Daniel Boyd Fox each time a signal made the headlines. The Javascript and HTML code written in 2003 work fine on 2018's smart phones and tablets, but they remain difficult to explain to friends. "For me," I say, "this signal scores only a 1 (insignificant) on the Rio Scale, because I judged the report to be 'Possible, but should be verified before taken seriously'. If I had instead chosen 'Very probable, with verification already carried out', the score would have been a 2 (low)."

The actual Rio Scale is subjective, and that's both a good thing, and a big problem. We would like to have a scale so strong, so robust, that every SETI League member, every astronomer, every institute would arrive at the same figure. For this, we need to have a lot of people of different backgrounds scoring a lot of candidate signals, in order to improve the scale by asking more objective questions.

Instead of giving just a number from 0 to 10, we have to consider both credibility and consequences. When we read headlines such as "NASA Expected to Reveal a Major Discovery Beyond the Solar System in a Press Conference," we need to understand that, were we to have two verified signals with the same credibility, but one coming from a nearby star and the other a distant galaxy, the consequences would be vastly different, for both humanity and the media.

As a SETI League volunteer coordinator from France, I have to answer journalists' requests from time to time. I'm not a communications professional, but I've quickly understood that speaking about the SETI@HOME screen saver in 1999, or the extensive SETI League technical manual, is really a waste of time. I still remember SETI League executive director H. Paul Shuch's advice after my first interactions with the

press: keep it 12 words maximum per sentence, and use no words longer than 3 syllables.

I was once asked to write a one page scenario for a 2 minute science video. The editor requested a revision, because I used the word "radio-telescope" and four members of his team didn't know what that was. A few years ago, I tried to describe the Rio Scale to a scientific journalist who told me she used to work at the Paris Observatory. The effect was the same as if I had given her a detailed technical description of a project Argus station. Everything I said about this scale ended up being cut from her radio show, which was ironically called "the scientific method".

On august 27, 2016, Paul Gilster wrote a blog post about "an Interesting SETI Candidate in Hercules". The signal was received by RATAN-600 radio-telescope, in the direction of HD164595, on May 15, 2015, 18:01:15.65 (sidereal time), at a wavelength of 2.7 cm. The estimated amplitude of the signal was 750 mJy. Imagine explaining all that to the general public! The data came from Dr. Alexander Panov's paper at IAC 2016. The title was "SETI observation with the RATAN-600 telescope in 2015 year and detection of a strong signal in the direction of HD164595," and there were some e-mail discussions about it among radio astronomers and SETI professionals.

When the signal was announced to the media, every available SETI antenna began to look for it, every SETI institution wrote press releases, saying they are looking for this signal but have heard nothing yet, or that they found nothing in their databases. Good and bad news articles were published, mainly in the English language, in newspapers or on web pages with lots of advertising and big headlines about contact, aliens and so on. The first papers in French appeared a few day later, mainly awful translations of buzz web pages illustrated by pictures from "Contact", "ET" or "Independence day".

By the time the news came to France, in French, the Russian TASS agency had already announced that the signal turned to be terrestrial interference, and most experts had given the observation a very low Rio Scale score. That's the reason why, when a journalist asked me for an interview on the 21st of September, I found it logical to speak not directly about the reported signal, but rather about the IAA SETI permanent committee, the SETI protocols, and the Rio Scale.

Here are the questions one must attempt to answer in determining a Rio Scale value, and the responses I selected regarding the RATAN-600 detection:

Select class of phenomenon: Leakage radiation, without possible interpretation, or an ET artifact the purpose of which is understandable.

Select Type of Discovery: From archival data; a posteriori discovery without possibility of verification

Select Apparent Distance: Within the Galaxy

Select Credibility of Report: Possible, but should be verified before taken seriously

The HD164595 signal makes it rather easy to answer the first three Rio Scale questions. For the last one, there's some subjectivity. Having never heard about Dr. Alexander Panov before, I choose "Possible, but should be verified before taken seriously." But, I do know Claudio Maccone, who was a co-author of the paper, so I might just as easily have chosen "Absolutely reliable, without any doubt".

I gave the previously mentioned reporter the IAA SETI paper on the Rio Scale, and did the above exercise to rank the signal "1-insignificant". Her first question surprised me: "Can you translate the interpretation of the values into French?" It seems obvious that if we want to use the Rio Scale worldwide, we have to translate the quiz and the scores into French, Chinese, Arabic, etc...

With the announcement of any candidate signal, some reports are published by SETI scientists. They are the source journalists should be referring to. But, this would be in an ideal world. We first need good articles in the international press with objective Rio Scores, to hope that the French press will refer to the Rio Scale.

The revision 1.2 is a good tool for those of us with scientific or technical backgrounds. But, we can hardly use it to explain to friends why we don't believe that we have received THE signal. A Rio 2.0 version is needed, to be used on social networks, between space geeks and maybe specialized journalists.

SETI is an interdisciplinary field of science. The help of linguists, psychologists, anthropologists, and sociologists is requested to have the Rio Scale versions 3, 4, 5... understood and used by every earthling.

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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) under *Event Horizon*, or email to us at info@setileague.org, to obtain further details. Members are also encouraged to send in information about upcoming events of which we may be unaware.

September 28 - 30, 2018: Mid-Atlantic States VHF Conference, Bensalem PA.

October 1 - 5, 2018: 69th International Astronautical Congress, Bremen, Germany

November 2 - 4, 2018: AMSAT General Meeting and Space Symposium, Huntsville, AL.

November 16 - 18, 2018: Philcon, Cherry Hill, NJ.

February 15 - 17, 2019: Boskone 56 Science Fiction Convention, Boston MA.

April 14, 2019, 1300 EDT: Twenty-Fifth SETI League Annual Membership Meeting, Little Ferry, NJ.

May 24 - 27, 2019: Balticon 53 Baltimore Science Fiction society Annual Convention, Baltimore MD.

August 15 - 19, 2019: 77th World Science Fiction Convention, Dublin, Ireland

October 21 - 25, 2019: 70th International Astronautical Congress, Washington DC

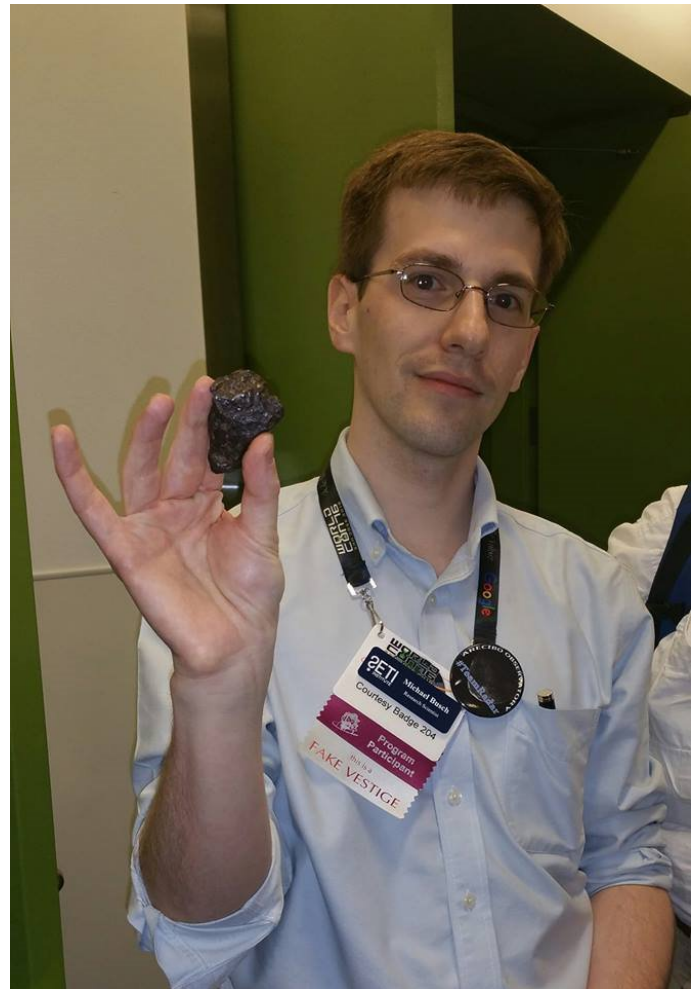
August 15 - 23, 2020: 43rd COSPAR Scientific Assembly, Sydney Australia



SETI League members are encouraged to nominate SETI-relevant websites for our monthly SETI SuperStar Award. Nominating emails to our Awards Committee may be sent to: Awards_at_setileague_dot_org. Please be sure to indicate the URL of the candidate website you are nominating, and a brief explanation as to why you consider the site worthy of recognition.



At last month's World Science Fiction Convention in San Jose CA, Dr. Michael Busch of the SETI Institute met up with fellow Hertz Fellow Dr. H. Paul Shuch, who serves as SETI League Executive Director Emeritus.



At the 2018 World Science Fiction Convention, Michael Busch of the SETI Institute showed off this meteorite fragment shed by a near-Earth asteroid.



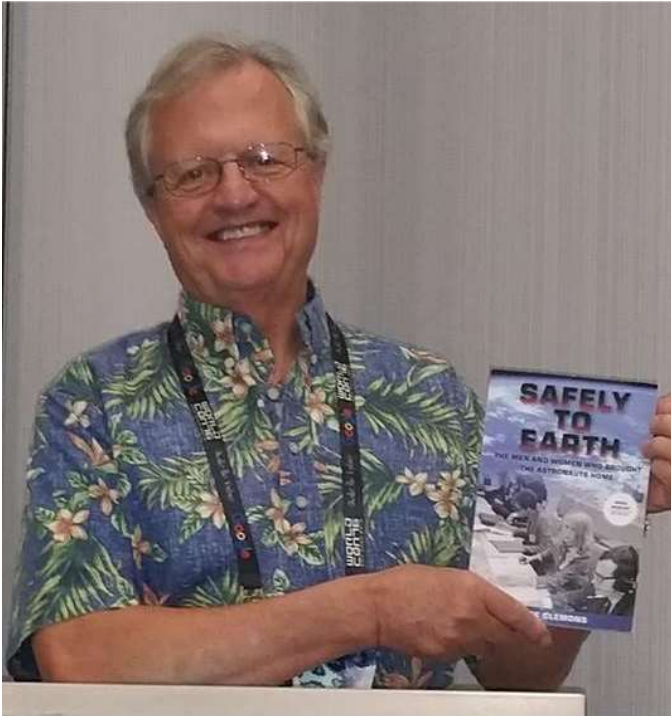
Jack Clemons, Andy Fraknoi, and Michael Busch presented a SETI panel at the San Jose World Science Fiction Convention.



At WorldCon 76 in San Jose, Dr. Doug Vakoch of METI International and Br. Guy Consolmagno of the Vatican Observatory discussed what is likely to happen following a SETI detection.



H Paul Shuch with SETI League supporter David Brin at the recent World Science Fiction Convention in San Jose. Dr. Brin, a self-described contrarian, is an outspoken critic of METI, deliberate transmissions from Earth into space.



At the recent San Jose World Science Fiction Convention, rocket scientist Jack Clemons read excerpts from his new memoir "Safely to Earth," about his years working on the Apollo and Space Shuttle programs.

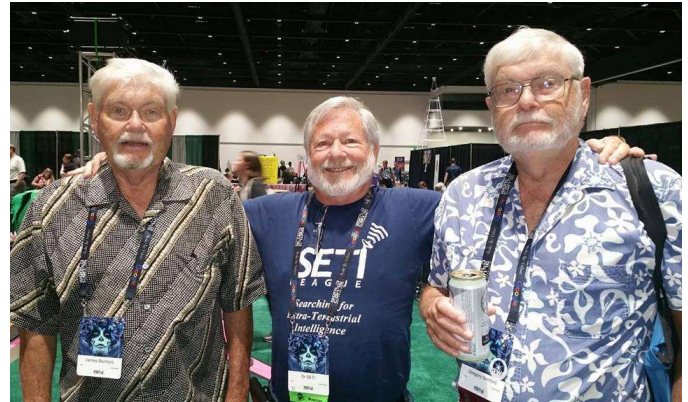


At WorldCon 76, these young performers demonstrating traditional seated song and dance from Tonga.

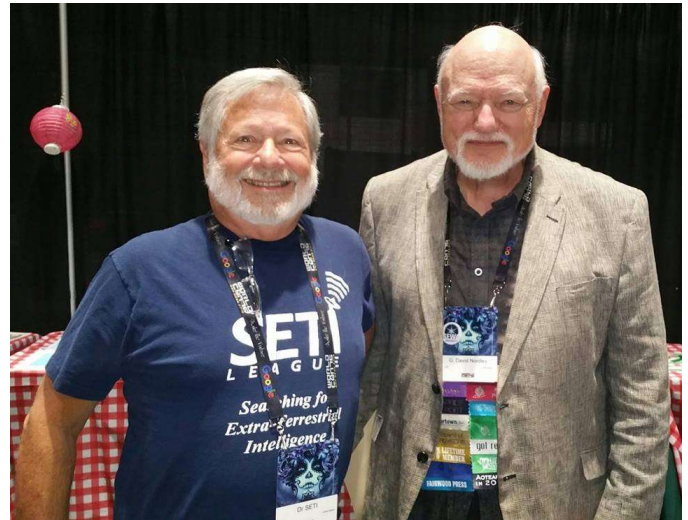


Executive Director Emeritus H. Paul Shuch met with noted author Greg Bear, who serves on the SETI League Advisory Board, during the recent World Science Fiction Convention in San Jose.

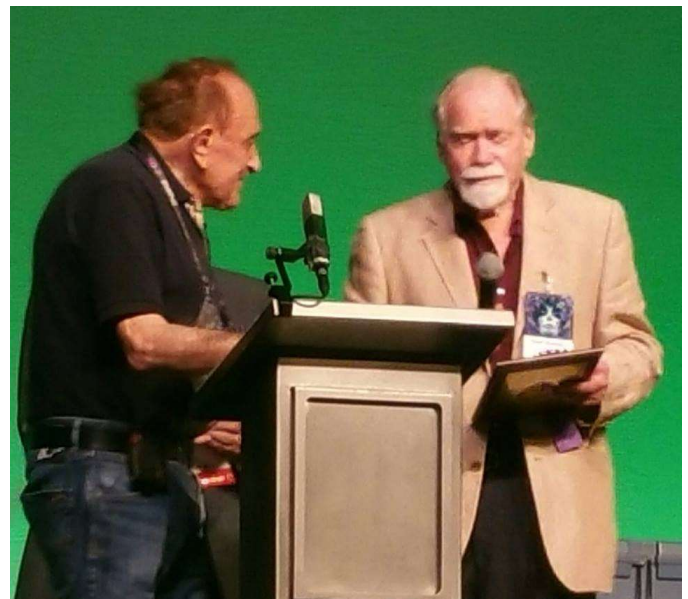
Right: Mel Korshak presents the First Fandom Award to SFWA Grand Master Robert Silverberg. →

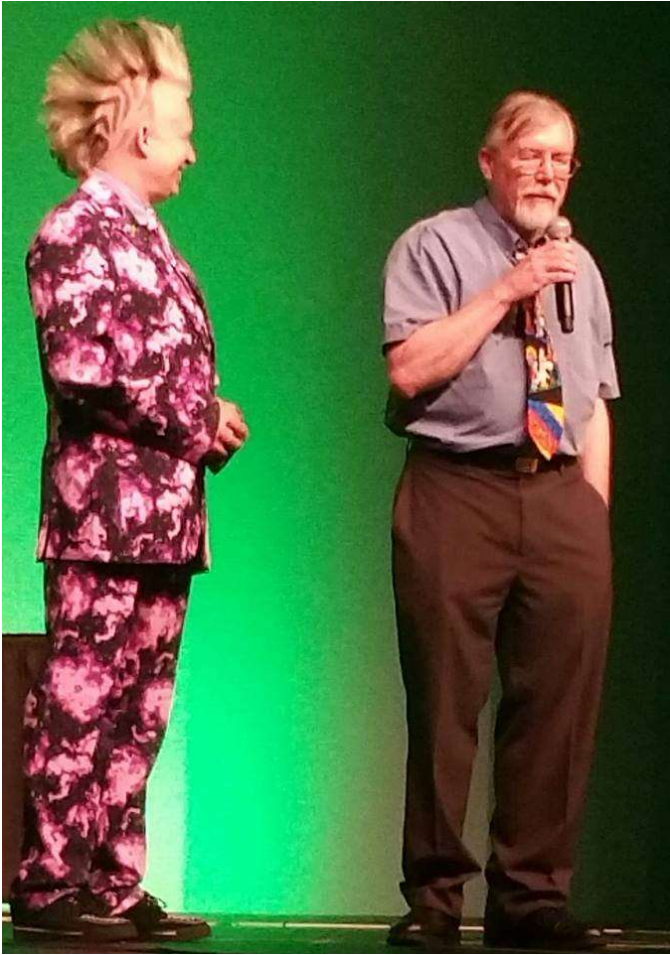


Bookends: SETI League executive director emeritus H. Paul Shuch found himself comfortably wedged between Jim and Greg Benford. The Benford brothers, both Ph.D. physicists, have been longtime supporters of SETI science.



H. Paul Shuch renewed his friendship with author G. David Nordley at Worldcon. Paul and Gerald both worked at Lockheed Sunnyvale in a previous lifetime.





Chairman Kevin Roche introduces guest of honor Spider Robinson (right) and featured filk musician Frank Hayes (above) at Worldcon 76 opening ceremonies in San Jose.





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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.

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2006, 2007, 2008, 2009 (specify)	\$20	\$27
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<i>Project Cyclops 2nd Edition</i>	\$20	\$30
<i>The Listeners</i> by James Gunn	\$15	\$21
<i>Sing a Song of SETI (Songbook)</i>	\$10	\$13
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