



## NAAPO (North American AstroPhysical Observatory)

"Signals"  
Volume 9 Number 10  
The NAAPO Newsletter  
(November 1993)



**Editor:**

Earl W. Phillips, Jr.  
7893 Thornfield Lane  
Columbus, Ohio 43235  
614-764-0476

**NAAPO Coordinator:**

Dr. Philip E. Barnhart  
Dept. of Physics/Astronomy  
Otterbein College  
Westerville, Ohio 43081  
614-898-1516

## CONGRESS CUTS SETI FUNDING

In a recent vote, Congress has decided to completely wipe out the budget funding NASA's SETI program, HRMS (High Resolution Microwave Survey). The congressman behind the drive to zero out the budget, **Senator Richard Bryan**, (D-Nev), is quoted by the **Gannett News Service** as saying "*The great Martian chase has finally come to an end. As of today, millions have been spent and we have yet to bag a single little green fellow. Not a single Martian has said 'take me to your leader', and not a single flying saucer has applied for FAA approval. It may be funny to some, except the punchline includes a \$12.3 million price tag to the taxpayer*".

This is reminiscent of a previous battle in congress a while back, in which excerpts from *The Daily Globe*, reporting on UFO landings, was read into the Congressional Record as reason not to fund the SETI project. It seems fairly obvious that, if we are to ever truly get serious regarding this most important research, we must first educate, or vote for educated, congress-people. Following will be articles related to this travesty.

## COORDINATOR'S CORNER

**By: Dr. Philip Barnhart**

The attack on NASA's SETI program in congress is another demonstration of the problem of attempts on the part of senators and representatives to micromanage the performance of recipients of government support. It is unfortunate that so many of our elected officials failed to take note of the history of scientific breakthrough and discovery. Contemplate the results if:

- 1) Willem Conrad Roentgen had been ordered not to investigate the phenomenon of cathode ray emission because it would have very little application when it was understood. (He would not have discovered X-rays).
- 2) Jocelyn Bell Burnell had been ordered not to investigate scintillating radio sources because the wires to construct the antenna would require money better used for more traditional studies. (She would not have discovered pulsars).
- 3) William Herschel had been ordered not to investigate the possibility of measuring stellar parallax because if it existed it would already **have** been found. (He would not have discovered binary stars or the planet Uranus).
- 4) Allan Sandage had been ordered not to investigate compact radio sources because it was not the kind of thing the Carnegie Institution had been established to

study. (He would not have discovered quasars).

5) Ernst Rutherford had been ordered not to study the scattering properties of gold when bombarded with alpha particles because we would rather believe the alchemists model of matter because it was good enough for our ancestors. (He would not have become aware of the atomic nucleus).

There are countless examples of great strides in our understanding of the world that came about strictly in response to naked curiosity and wonder about the essential character of reality. Serendipity (the discovery of valuable and useful things for which one is not searching) is a great part of the scientific endeavor. Every time a theory makes a prediction about world behavior, checking that prediction stands the chance of showing something entirely different.

Heinrich Hertz performed extensive experimentation to validate the prediction of Maxwell's E-M Wave theory of light that long wave radiation should exist. He was first to generate and detect radio waves AND at the same time discovered the photoelectric effect; a phenomenon totally at odds with the Maxwell E-M Wave theory! Had he been ordered to not perform his experiment FOR ANY REASON, how far behind would we be in the communications arena and the development of our quantum view of the world?

To support a scientific endeavor AND proscribe what may be examined is hypocritical, short-sighted and in the present case nothing short of a stupid tragedy. Our elected congresspersons have demonstrated their collective lack of wit, judgement, and most of all their lack of understanding of what it means to support scientific endeavor. The case was argued eloquently by **Senator Barbara McCaulsky** [sic; correct spelling is "**Mikulski**"] of Maryland. It is just too bad so few heeded her plea.

Our best wishes go to the **NASA SETI** team. I hope greater minds prevail in this matter. This is still potentially the most significant scientific endeavor in the history of life on earth.

## **FUNDING LOSS WON'T DETER OSU RADIO TELESCOPE OPERATORS**

**By: Michael B. Lafferty**

**Columbus Dispatch Science Reporter**

*ed. note: The following article originally appeared in the Columbus Dispatch.*

The director of Ohio State University's Big Ear radio telescope says it will continue to scan the heavens for signs of intelligent life in outer space despite the pending cancellation of the federal government's own efforts.

"Even if we don't have the **NASA** money, we can still probably keep going, although we would just be limping along", said Robert Dixon.

Big Ear receives \$100,000 a year from the **National Aeronautics and Space Administration**.

Dixon said it is unclear whether the NASA money that Big Ear receives was eliminated along with the \$12 million cut from the space agency budget during a House-Senate conference committee earlier this month. Congress must approve the budget, and President Clinton must sign the legislation.

**NASA's SETI** program (*Search for Extra Terrestrial Intelligence*) involves using the Arecibo radio telescope in Puerto Rico and a receiver at Goldstone, Calif., to methodically scan microwave frequencies from 1,000 nearby stars thought most likely to have solar systems.

Big Ear and the programs at Harvard and the University of California at Berkeley are so-called whole sky efforts aimed at scanning the entire Northern Hemisphere.

While the university radio telescope programs are considered part of the overall **SETI** effort, Dixon said, their **NASA** funding comes from a separate account to pay university research.

The **NASA** money, practically all the cash spent at Big Ear, goes to pay salaries of some graduate students, repairs and upkeep. Most support comes in the form of volunteer labor and contributions of equipment and some cash, he said.

The question of whether there is other intelligent life in the universe is viewed by scientists as one of the basic questions of humanity.

The idea is that it's likely there are intelligent beings on at least one of the other half-trillion stars in our own Milky Way galaxy and that they might try to communicate.

The decision to suspend **NASA's** 10 year, \$100 million federal effort has angered supporters of the SETI program.

"It is sensible, and we can afford to do it", said Stuart A. Kingsley, a local consulting electrical engineer and a **SETI** expert. "The trouble is, there's not enough pork in this".

Kingsley is trying to organize a nationwide campaign to bombard President Clinton with electronic mail to protest the cut.

Kingsley is also setting up a backyard telescope to monitor the so-called visible or optical portion of the electromagnetic spectrum. Because optical signals carry more information and are easier to aim than microwaves, he thinks they are more likely forms of interstellar communication.

**OSU's** own efforts to boost the capability of the Big Ear scope had been dependent on obtaining a sophisticated receiver capable of scanning 10 million frequencies at once, compared with the 3,000 Big Ear now is able to scan.

That receiver is being built at Stanford University and will have cost \$50,000 by the time it is completed in early 1994. But, given the **NASA** funding cloud, Dixon isn't sure he'll be able to pay for it.

## **BRYAN AMENDMENT PASSES TO CUT EXPENSIVE SEARCH FOR "MARTIANS"; GREAT MARTIAN CHASE TO END?**

*ed. note: the following article was received as a news release from the Gannett News Service; dated 9/22/93, and marked for immediate release.*

The United States Senate agreed with Senator Richard Bryan (D-Nevada) today by voting by more than two to one to eliminate an expensive program to find intelligent life in outer space. The Senate supported Bryan's position by a vote of 77 to 23.

*"The Great Martian Chase may finally come to an end", Bryan said. "As of today, millions have been spent and we have yet to bag a single little green fellow. Not a single Martian has said 'take me to your leader', and not a single flying saucer has applied for FAA approval. It may be funny to some, except the punchline includes a \$12.3 million price tag to the taxpayer".*

Bryan offered an amendment to the **NASA** appropriations bill today to eliminate \$12.3 million in funding for NASA's program to search for life in outer space. Bryan successfully eliminated Senate funding for the program in 1992, when the Senate Commerce Committee voted 11 to 6 in favor of a Bryan amendment to cut funding for the program, and the full Senate approved the Bryan cut. To avoid the cut, **NASA** simply renamed the program from the original: **Search for Extra Terrestrial Intelligence (SETI)** to "**High Resolution Microwave Survey**".

*"This is a horrendous case of bureaucratic arrogance that somehow by simply renaming the program NASA can avoid the cut", Bryan said. "NASA wants to spend more than \$100 million and they have got to get the message that this program doesn't make the final cut. This is a low priority and should be put on the shelf."*

*"I hope that the conference between the Senate and the House will see this vote as a clear vote of no confidence for this program", Bryan said.*

**NASA** officials advocate that the program is designed to search and identify signs of intelligent life in outer space by analyzing radio waves bouncing around in space.

*"I don't doubt that some scientists in NASA really believe this should be funded, but this is a question of priorities", Bryan said. "Only in Washington, D.C. is \$100 million considered small change. This is a lot of money, and, frankly, I think this money could be better left unspent, which means we don't have to borrow as much and add to the debt It really is that simple."*

## **CONGRESS SPURNS UNIQUE SILICON VALLEY JEWEL**

**By: Bernard M. Oliver**

It looks as if Silicon Valley may never reach the stars. For the last ten years talented and dedicated teams at **Ames Research Center** and the non-profit **SETI Institute** in Mountain View have been developing the strategy, designing the equipment, and refining the observational programs that represent the only way we can imagine today of making contact with other intelligent life in the universe — cultures of unimaginable diversity — around the stars. The contact would be by radio: the detection of signals emitted by them.

This is no UFO cult. These people are scientists responding to the findings of other scientists. Astronomers tell us that innumerable homes for such like [sic; "life"(?)] exist on planets circling billions of sun-like stars. They also tell us that even the nearest such star is so far away that there is no hope of us going there, and conversely, no fear of them coming here. It is the most benign of all possible situations: two, possibly many, such cultures in contact, with only the thrill of pooling their histories and knowledge over the centuries. Could this happen? Certainly. Already, our own culture has been profoundly enriched by that of another world, one we could never reach: ancient Greece and Rome.

The only way to make interstellar contact is to build a receiver capable of listening to millions of channels at once and sensitive enough to respond to the few photons it might receive across the light years. For all of human history no such receiver could be imagined. Now it can, and has been nearly completed. What makes this all possible is the jewel of Silicon Valley, the Very Large Scale Integrated Circuit.

Millions of transistors, memory cells, and other high-tech products of our ingenuity have been woven into a brain whose sole aim in life is to detect and verify the origin of tiny signals — less energetic than the smallest atomic particle — that have crossed the light years we cannot. Such signals will tell us that we are not alone, that the astonishing process that has produced us out of the fiery furnace of the Big

Bang has also occurred elsewhere. Lo, from that single fact, all our philosophy would be enriched.

The **NASA Search for Extra Terrestrial Intelligence (SETI)**, begun in 1992, was to have been a 10 year listening program coupling the world's largest radio telescopes with state-of-the-art digital receivers. In the course of the experiment, the neighborhoods of a thousand nearby stars would be examined for signs of advanced civilizations. Additionally, a lower sensitivity scan of the whole sky would be made. The telescopes, huge metal ears primarily used for astronomical research, were outfitted with receivers capable of slicing the radio dial into tens of millions of channels. It is these receivers, with their on-board, dedicated computers, that make the **NASA** program the most comprehensive **SETI** effort of all time. They are the remarkable product of a decade of development, and over \$50 million in cumulative expenditure.

Now, less than one year after beginning the experiment, Congress has seen fit to reject this application of Silicon Valley technology. The **NASA SETI** project has been cancelled. To save the American Taxpayer about eight cents per year, we are to be denied the chance to explore the universe and the sentient life forms that fill it.

Who knows, we might even one day choose to ensure the survival of the human race as our Sun begins to expire billions of years from now. Having by then developed allies on another world, all our descendents would have to do is wire them the human genome and let them build us. *There*. Colonization by radio? Why not? All we are sending them now is sitcoms and tabloid journalism. As the heirs of three and a half billion years of evolution, we should do better than that.

Mr. Clinton, you promised to help this Valley. How about restoring **SETI**? It may be the greatest jewel Silicon Valley has given the world: the means to end our isolation.

*Biographical Info: Dr. Oliver joined the Hewlett Packard Company in 1952 as Director of Research, and in 1957 became its first Vice President for Research and Development, a position he held for the next 25 years. He is a recipient of the National Medal of Science, a member of the National Academy of Science and the National Academy of Engineering, and former President of the Institute of Electronics and Electrical Engineers. Since retirement from HP, he has served part-*



*time for NASA, providing technical leadership for the SETI programs at Ames Research Center and the Jet Propulsion Laboratory.*

*Note: The SETI Institute, 2035 Landings Drive, Mountain View, 94043, is presently exploring alternative ways to fund the research.*

## **Clarke Humor**

**From: Stuart A Kingsley**

**Date: 1 Nov 1993**

### **Bureaucratium**

Nuclear Scientists at Harwell have discovered the heaviest element in the Universe, which they have named Bureaucratium. This extraordinary element has no protons or electrons, and its atomic number is zero. What it does have is one neutron, eight assistant neutrons, ten executive neutrons, 35 vice-neutrons and 256 assistant vice-neutrons. These particles are held together by a force that involves the continuous exchange of meson-like particles called 'morons'. Bureaucratium is completely inert but can be detected since it impedes every reaction it comes into contact with.

*Contributed to the Space Frontier Foundation by Arthur C. Clarke.*

## **11/6/93 MEETING NOTES**

**By: Steve Janis**

**Present:** Barnhart, Dixon, Janis, Hanson, Campanella, Schumacher, Huck, Bolinger, Schultz

**Dixon:** Bob related his recent adventures in Austria and Italy. Dr. Dixon presented the current version of the **Argus** paper at the *International Astronautical Federation's Congress* in Graz, Austria. The 2 scheduled **SETI** sessions were significantly shorter than planned since no **NASA SETI** people were in attendance after the **NASA SETI** budget problems. Bob purchased several reprints of other **SETI** papers presented at the conference, including one on the history of **SETI**. Bob provided a **Flag of Earth** which flew over both **SETI** sessions. It was then presented to the Chairman of the SETI sessions of the Congress. Before proceeding to Italy, Bob toured local Austrian points of interest including the largest medieval armory in the world. Bob presented the **Argus** paper at the *Conference on Space Missions and Astrodynamics* in Turin, Italy, hosted by Claudio Maccone. He also presented a colloquium at the *Medicina Radio Telescopes* near Bologna, Italy.

Weathering a general strike in Italy, he arrived back in Columbus in time to give yet another talk at the University of Louisville, Kentucky. There Bob presented "*Modern Technological Aspects of the Search for Extraterrestrial Intelligence*". Bob related a question he received in Bologna regarding the dynamic range required for **Argus** and Jim Bolinger reminded the group that the question of handling the huge amount of data that **Argus** would produce was not yet settled. A discussion of **Argus** and dynamic range then ensued.

Schumacher: Phil presented graphical output of his Karhunen-Loeve Transform work. He has been looking at square wave plus uniformly distributed random noise (as opposed to Gaussian) as an input. His program was designed to use the KLT to identify the signal in the noise. Dr. Dixon said that the use of Gaussian noise would be more appropriate for simulations as that is a more realistic representation of what would exist in the receiver system. Phil's program can do both the KLT and FFT and he is eager to obtain some real **Big Ear** data to test his program and make comparisons. Russ Childers will be asked to provide him with an audio tape of real data. Phil says he thinks he can then find a location to digitize the data for input into his computer. Someone brought up that the Radio Observatory may already have the necessary A/D board to allow digitization of the analog audio tape, but Steve Brown will have to verify this.

*To be continued next issue-*

## **SPECIAL DECEMBER ADDENDUM:**

*Phil Barnhart, NAAPO Coordinator*

Several things have occurred since I received the copy for the November issue of **SIGNALS**. The most relevant in terms of timeliness of getting this issue out is the end-of-the-term flurry of testing, grading and cleaning up massive details of academic procedures and record keeping. The delay has given me the opportunity to gather a few more items of general interest to include in this issue. More complete information on each of these will appear in future issues.

1. We have instituted a new format for the Saturday work sessions at the Radio Observatory. Task oriented groups meet at the 10:00 am time to concentrate on an in-depth treatment of specific issues. A much improved sense of accomplishment and efficiency was noted at the 4 December meeting.

Everyone within shouting distance of the RO should drop by a Saturday session to

experience the renewed excitement and adventure.

2. With the termination of the NASA SETI funding we have lost the final two years of our contract with NASA. The good news is that we have been fully funded to complete the purchase of a SERENDIP II, a 4 megachannel receiver presently being constructed by Ivan Lipscomb in Berkeley.

This instrument is the outgrowth of the development by the team at the SETI Institute for the NASA High Resolution Microwave Survey. We are hoping this instrument will be finished and ready for installation at Big Ear sometime in the next year. We are actively pursuing the means to interface the multi-channel receiver with the outside world. This means the acquisition of the necessary computer interface — such as a Sun Workstation or equivalent.

3. A dark cloud is appearing on the horizon for the Radio Observatory. In these times of belt-tightening and decreasing state support of all forms of higher education, the University is looking to find ways of trimming operating expenses. A meeting to discuss the viability and cost effectiveness of the continued leasing and maintenance of the Radio Observatory will be held next week with the University. We watch this conference with great interest and will report any relevant outcomes in future issues.

4. We now have a Mac Plus installed at the RO to drive the Ayotte real-time display console for the focus room. This means John can install and trouble-shoot the program on-site after doing much of the development work at home. We are still in need of a large scale monitor — in the range of 19-inch. If anyone has access to a surplus color monitor that works, please keep us in mind. Donations are always welcome.

5. In our new Saturday format we are finding it more and more desirable to have on hand at the RO a modest IBM or compatible computer. It need not be sophisticated nor fast, but will enhance the process of reconciling the punch cards in the Card Transfer Project.

Donations are always welcome! ! !

6. We are progressing on the issue of obtaining HEMT LNAs to replace the

GaAsFET LNAs presently in use. It seems now the only hang-up is whether we are going to be able to build the necessary power supply necessary to run the new amplifiers while retaining the present power supply to operate the present LNAs in supplemental applications.

We continue to be optimistic. We have survived hard times before. We will continue to face down our hard times in the future.

*--peb--*

**THINK NAAPO!!!**

We appreciate the support of all our friends.

Now that we approach the end of the year, won't you all consider ways in which you can support our efforts.

NAAPO has been the recipient of many gifts in the form of volunteer labor, materials (some substantial, some seemingly minor — but very important) and MONEY.

Should you elect to send us money, check with your employer to see if the company will match your contribution. Now that your \$0.08 per year is not going to NASA for SETI.

**THINK NAAPO!!!**

[\[Back to List of Issues in Volume 9\]](#) | [\[Back to List of Volumes\]](#) | [\[HOME\]](#)

[E-mail Webmaster](#)

Copyright © 2004 North American AstroPhysical Observatory

Designed by Jerry Ehman

Last modified: March 9, 2004