



## **NAAPO (North American AstroPhysical Observatory)**

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**NAAPO Coordinator - Philip E. Barnhart,  
Department of Physics/Astronomy  
Editorial Intern - Michele Davis, Otterbein  
College, Westerville, Ohio 43081**

### **OTTERBEIN STARTS MICRO INTERFACE PROJECT**

In connection with the implementation of the microprocessors into the radio observatory as co-processing equipment a development project is being undertaken at Otterbein to interface the hardware to the real world of the telescope environment. This project will be carried out by student volunteer interns and it is hoped a number of techniques and innovations will be developed that certainly will have application beyond the performance of radio astronomy.

At the present time hardware to be used in the project consists of two IBM PCjr's, Apple II-plus computers and a Tektronix Model 4054 Graphics Work Station. All of these are programmed in BASIC with options of other languages.

As part of the project effort will be spent on developing peripheral hardware in the

form of transducers and interfaces to other computers, particularly the PDP 11/23. A further aspect of the program will be to generate the output display in both terminal and hard-copy graphics.

One of the definite outcomes will be the adaptability of all such equipment to use in a laboratory for other applications. As a result the development work on this project should have immediate appeal to physics lab instructors and may even result in commercially viable applications. Progress of the effort will be followed and reported in NAAPOnews. We will also seek advice from consortium members as distinct problems arise.

Any suggestions, questions, or problems you might like to see attacked by this group should be addressed to NAAPO Headquarters.

**"NEWLY HATCHED OSTRICHES LOOK LIKE PORCUPINES."**

### **NAAPO ATTRACTS CORPORATE SUPPORT**

A phone conversation last week resulted in the first request to become a corporate member of the NAAPO Consortium. Pending further discussions with the on-site staff the Coordinator is tentatively considering the addition of Cosmic Connections, Inc. of Aurora, Illinois as a member of NAAPO. The retail astronomical supply store is owned and operated by Jeff Hunt, a planetarian (director of the Waubonsie Planetarium) and graduate of Otterbein College. Jeff is volunteering to try to track down lower cost micro- peripherals and astronomical supplies.

We certainly welcome the commitment of Jeff to our cause and it is conceivable that should we develop materials for commercial distribution we could use his marketing experience and help. When we clarify the role of the corporate member we will officially welcome Jeff and CCI as official member of NAAPO. Watch these columns.

### **OSU PHONE NUMBERS CHANGE**

Bob Dixon reports that all Ohio State University phones now respond to the prefix 292- as well as the 422- numbers which will shortly be phased out. Anyone trying to reach an OSU number should use the new prefix. The old will continue to work for a limited time only.

## **WORKING SESSION**

**OCT. 18, 1986**

### **BIG EAR**

This was a large meeting with many new faces. The business session was followed by a tour of the facility for all who had not seen it before.

In attendance: Bolinger, Ave, Huck, Abel, Abbott, Guthrie, Barnhart; Guests: Jill Rugare (DeVry Inst. Physics instructor), Mohamood Razack and Don Ray (DeVry students), Carl and Diane Engle, Mike Saum (Otterbein interns).

Bolinger reports that the security system has not been adequately maintained in the past week or so. On two occasions the inner chain was not locked across the driveway and the alarm system was found not armed twice. Closer attention MUST be paid to these conditions in the future! All people using the facility be sure to sign in the log book each time you are on site.

The decision was made to go ahead with the prototype board for the synthesizer interface. This must be wired and tested before we can request the fabrication of the etched circuit boards. Work is scheduled to proceed at the fastest possible rate.

The time has come to order the parts for the synthesizer interface. Appreciation is expressed to all who provided parts in response to the appeal. We have covered nearly a fourth of the component requirement.

Work seems to be continuing on the security fence. The pedestrian gate is now up and locked. Work is evident on the truck gate.

Back issues of Cosmic Search are accounted for here at Big Ear. Barnhart has at least 100 copies of all issues except Vol II, No. 4 (Serial #9) [40 copies]; (Vol III, No. 1 (Serial #9) [20 copies]; and Vol II, No. 2 (Serial #10), [0 copies]. Barnhart is seeking return of the short supply issues from Delta Vee in California.

Discussion was made of the possibility of taking on a new type of member. We have been approached by Jeff Hunt of Cosmic Connections, Inc of Aurora, Illinois asking to become a corporate member of NAAPO. We will reach a decision about this matter very soon.

Carl Engle introduced us to the possibility of an affordable Write Once Read Many [WORM] system that has the capability of storing a Gigabyte on a single compact disc. This would seem to be a natural solution to our archive problems. He also offers hope for a system to convert all paper records to the CD format. A demonstration of the system is a distinct possibility in the near future. We will inform all interested parties of the plans.

The meeting was concluded with a brief introduction to the new MICRO- Group which will be housed at Otterbein (providing Barnhart gets the lab cleared out by Friday). A summary of the structure and goals of this group will be outlined elsewhere in this Newsletter.

Meeting was adjourned at 11:53 am.

### **GRAVITY WAVES AT BATTELLE**

On Oct. 28, Kip Thorne spoke on "Gravitational Waves: A New Window onto the Universe". A brief report may appear in the next issue of NAAPOnews.

### **NEXT NAAPO WORKING SESSION**

NOVEMBER 1, 1986  
AT BIG EAR - - 10 AM

### **ANOTHER MICRO TO PROJECT.**

We have just received word from Bill Mook that NAAPO can now have a Hewlett-Packard HP 85 to add to its microprocessor arsenal. We will certainly have a lot of computing and graphics power at our finger tips now.

## REPORT FROM HRRO

### Bob Stephens

From the Northwest Territories comes a phone report about the Hay River Radio Observatory. Following is a brief condensation of my conversation with Bob. He has promised a more detailed report when he has time to sit down and run it through the word processor. -- PEB

1. After a trip to Vancouver for the purpose of filming a bit for the Planetarium show on ETI and searches for it, NASA generously flew Bob to San Francisco where he visited with a number of people in that area interested in SETI. He obtained on loan a pair of Tap Lum low noise amplifiers (similar to those now operating at Big Ear) from which he expects a factor 5 increase in sensitivity. He also hopes to reduce his system noise from 200 K to 40 K. Of course in the winter he does that without extra cryogenic fluids.
2. He wants to publicly thank Frank Drake, Tap Lum, Charles Seeger, Jill Tarter, Jack Welsh, and David Williams for their generous hospitality and all their assistance to the Hay River Radio Observatory.
3. He has the 50 channel spectrometer from Green Bank operating.
4. Bob wants a couple argon noise tubes from Big Ear if we can cut them loose. [The initial response from the local scrounges is that we still have use for them.] Bob should keep in touch.
5. He reports NRC is cutting back \$84 million from its \$250 million funding level, which may mean shutting down Algonquin Radio Observatory. [Anyone know of a scheme for using old, abandoned radio telescopes?]
6. Bob HAS A VOLUNTEER helping him at HRRO. Ben Kutz an ex-air force EE serving a disability leave is putting in time at HRRO. This will probably mean that Bob will not have to spend all his time re-firing the oil stove during the mild winters in the arctic.

## COORDINATOR'S CORNER

There is much to be said for " . . . casting bread upon the waters," if you want to attract fish that didn't know they wanted to find you. As a short notice response to a request to talk about NAAPO at the Southern Ohio Regional meeting of the AAPT at Muskingum College last weekend I landed a couple of "fishy" characters in search of interesting opportunities.

Jill Rugare and Mike Rogers collared me after the meeting and we discovered a surprising number of "small world" type coincidences. Jill started off by pointing out she is a neighbor of mine here in Westerville, but more to the point was a student of Fred Haddock and Hugh Aller at Michigan. With a penchant for radio astronomy she is interested in what we are about at Big Ear.

Mike, on the other hand, wondered about the ". . . representative from Manchester College . . ." I mentioned in connection with a slide of the August working session. Since the slide was of the back of a number of heads it is not surprising that he didn't recognize his old (?) friend and former physics professor Dwight Beery. Mike is a Physics graduate of Manchester College and has great things to say about the education he got from Dwight while there.

Both Jill and Mike are now Physics instructors at DeVry Institute of Technology here in Columbus. Mike also is instructor in Physics at Ohio University, Lancaster Branch. They expressed a strong interest in NAAPO and are looking into the situation with their administration. We hope to hear soon if they are going to be joining the consortium.

My comments about the mailing list last issue seem to have struck some tender spots. I must admit I have heard from some readers that I was not sure of before. It is even producing signs of increased cooperation and interest. Do not fear! I have not removed any names from the mailing list, yet. The temptation still grabs at me, but we are not in dire straights yet. (Dire straights is a narrow body of water somewhere between a rock and a hard place.)

In a conversation with a friend here on the OC campus the other day I mixed an unfortunate metaphor. Try steering this one through the next time you want to emphasize the need for action: "We've got to grab the bull by the horns and milk it

for all we can!" Take that, University bureaucracy!

Phil B.

## **OTTERBEIN WELCOMES NEW INTERNS**

Beginning of Fall Tern has brought to the surface interest in the work of NAAPO and the projects at Big Ear. As a result of a brief article in the student newspaper describing the formation of the consortium office at Otterbein an inquiry from junior Computer Science major Tim Lawson revealed an interest in the micro-processor project.

A few weeks into the term a student inquiring about the Adult Degree Program at Otterbein heard about the Consortium and immediately volunteered his own time and that of his wife to the micro-program. Carl and Diane Engle also attended their first working session on the 18th. Carl is a consultant in Health Physics and Radiation Safety with American Electric Power in Columbus. Diane is a computer programmer interested in expanding her horizons. They have two children and Carl will be pursuing a Bachelor's Degree with a major in Physics at Otterbein during the year.

At the suggestion of Carl Engle, Michael Saum, another candidate for continuing education toward a Physics degree, stopped by to see me. He, too, immediately volunteered to join the micro- group. He is also with AEP in Columbus.

These four volunteer interns will join Jon Guthrie, undergraduate student in the Department of Aeronautical Engineering at Ohio State University, who volunteered at the last working session to take on some of the micro-project programming.

## THE ALPHABET IN ALPHABETICAL ORDER

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Designed by Jerry Ehman

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