



NAAPO (North American AstroPhysical Observatory)

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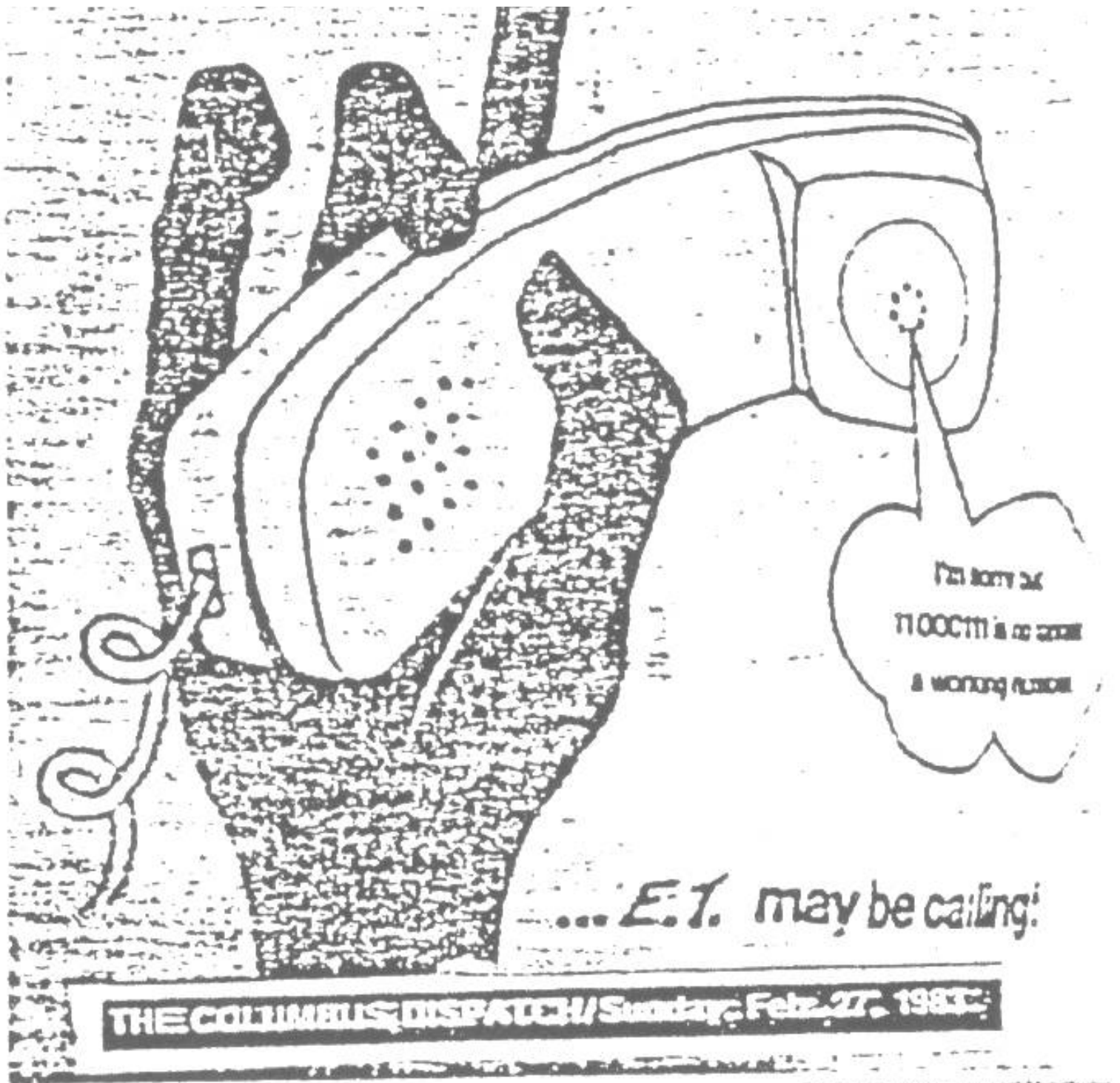
NAAPO Coordinator -- Philip E. Barnhart, Department of
Physics/Astronomy
Editorial Interns -- Michele Davis, Beth Helwig; Otterbein
College, Westerville, Ohio 43081

NAAPO'S SUSAN LEACH TEACHER OF THE YEAR!!!

Word was sent through the electronic mail last week that Susan Leach, Upper Arlington educator and NAAPO trustee, has just been named TEACHER OF THE YEAR. At the time of the infamous land sale involving Big Ear in 1982-83, she mobilized her eighth grade students in a campaign to call attention to the plight of the radio telescope. The students wrote letters to many of the parties involved as well as political figures and newspapers. They also designed and promoted T-shirts with an ET logo to earn money to "Save Big Ear". [See image below.]



SAVE BIG EAR



"Save Big Ear" T-shirts being sold at Jones Junior High

Susan organized a special field trip to Big Ear for members of her class. It was out of this group that Marc Abel came to realize there might be a future for him in radio telescope affairs. Marc has been an active (and very effective) volunteer at the radio observatory ever since.

It is to the dedication and concern, and most especially, to the energetic actions taken by people such as Susan Leach that we owe the continued existence of Big Ear and the opportunities this gives us to use a valuable technological resource.

BEST WISHES SUSAN. NAAPO salutes you for a well deserved honor and the recognition that you are, like Big Ear, outstanding in your field!

NAAPO SUPPORT NOTED

During the past few months financial contributions have been made to the radio observatory by:

Dr. Charles H. Ave
Dr. Del Waggoner
Dr. Geoffrey Hulse
Bill Mook (Applications Innovations, Inc)
Carol Abbott
Saint Mary's University Physics Department
Denison University Physics Department

We gratefully acknowledge these and other gifts to the operation of the radio observatory. Without the dedicated support of our friends we would not be able to continue the work at Big Ear. We will endeavor with all due care to be outstanding stewards of the resources you have placed into our hands.

COORDINATOR'S CORNER

Some weeks it just doesn't pay to get out of bed. Following the last working session I went to my resident blood-letter for counsel and advice on a minor problem I have lived with comfortably for a number of years. Mild hypertension and my even temper and carefree approach to life are all right for typical college classrooms and raising unreasonable teenagers, but ophthalmologists want to see lower BP's before they will treat certain retinal disorders. So . . . we started on a "mild" medication designed to lower my blood pressure to a more reasonable level. The result has been nearly two weeks of sharply elevated blood pressure sandwiched about a four hour stay in the Riverside Hospital Emergency room. After x-raying my head and finding nothing the attending physician had the audacity to tell me ". . . continue present medications and call your doctor in the MORNING!!!!"

In spite of a rather miserable two weeks my blood pressure is now down to where we were aiming in the first place. I must say my physician did know what to do about the medication, but I now know what the role of guinea pig must be like.

Into this swarming malaise came the Wall Street Journal of October 24. I wanted to react quickly and lash out to inform the poor slob's quoted in the article that they knew neither the nature of science nor the values of radio to our world of knowledge. My hypertensive stupor headed off that response and in hindsight I can see that we are not so bad off after all. They spelled all names right so that the unwashed ignorant are now identified and the good guys continue to let the stuff run off their backs like rain off the ducks.

I continue to maintain that without SETI at Big Ear Bob Dixon would not have saved the 110-meter telescope from the golf club's wrecking ball. The people want SETI even though a small faction of purists in science do not appreciate the fact that most scientific discoveries have been made while searching for something entirely different from that which is discovered. I predict that with ET contact or not, this will be the legacy of SETI. Discovery will be made to more than justify the search!

We should also be mindful that "rediscovering the sun" has its valuable features. We do not view the sun in the same way that George Ellery Hale viewed it primarily because we can see it now using x-rays, neutrinos, mm waves and radio waves. Our world view will always be changing and if we are unwilling to acknowledge that, then we must accept the consequences of being blind, ignorant and quite insensitive to the rest of the world..

LONC ARTICLE APPEARS IN AJP

NAAPO faculty liaison at St. Mary's University, Halifax, Nova Scotia, Fr. William P. Lonc co-authored an article in the September 1986 issue of the American Journal of Physics of interest to us all. George Lo, the other author, was an undergraduate student at the time the experiment was carried out. The title of the article is "Solar Temperature at 4 GHz: An undergraduate experiment".

This represents a fine demonstration of the possibilities for radio measurements appropriate to available instrumentation and techniques in the typical college community.

MOON BOUNCE EXPERIMENT PROPOSED

Some local amateur radio operators have proposed using Big Ear for a moon bounce experiment. It is probably a reasonable experiment and would be a good opportunity for some student involvement. We should put this on our agenda and see what we can work out. It may very well be that the local hams can provide some equipment that could be used in this manner at other times in the future to give interns a chance at some interesting experiments.

DIRECTORY WANTED

Does anyone have a spare Columbus phone directory to donate to the radio observatory? Gene Mikesell is trying to use the last one left at the observatory site which happens to be a 1976 version. This is ridiculous.!

TO CHARGE OR NOT TO CHARGE . . ?

After much discussion and soul-searching it was decided at the last working session that a 'voluntary' subscription price will be requested for the privilege of receiving NAAPONews. To alleviate the growing burden of reproduction and postal costs we are establishing a subscription structure that has three categories:

1. Consortium institutions will continue to receive multiple issues for distribution to students at **NO CHARGE!**
2. Donors of money, equipment or substantial commitments of time and energy will receive a copy at **NO CHARGE!**
3. Friends of Big Ear or NAAPO or any of our affiliates or volunteers will receive a copy through each volume during the lifetime of which they donate at least \$10 to the cause of NAAPO.

It is possible for a Friend of the Observatory to join any of the other two categories and save all that donation!

After this issue, watch your mailing label. If it contains a row of asterisks (*****) anywhere on the label you are 'safe' till the end of this volume; i.e., sometime around August 1987. If there is no row of asterisks after three or four more issues, there is a strong likelihood that your copy of NAAPOnews will not be arriving again.

FRIENDS DONATIONS MAY BE PROCESSED THROUGH THE HEADQUARTERS OFFICE - - c/
oPEBARNHART, DEPT OF PHYSICS/ASTRONOMY, OTTERBEIN COLLEGE, WESTERVILLE,
OHIO 43081

HURRY !!!

INTERMITTENT SOURCE REPORTED BY SARA

An alert has been issued by the Society of Amateur Radio Astronomers (SARA) based in Ft. Pierce, Fla., to be on the lookout for a source which seems to ". . . pop in occassionally with a flux exceeding the nearby galactic arm by 3 dB." This source is within 3 degrees of the position of Jerry Ehman's "WOW" signal of 1977. Although the "WOW" signal was narrow bandwidth (5kHz) the SARA source is a continuous source, appearing at 432, 680 and 900 MHz.

Those interested in learning more about SARA and the work being done at the amateur level may contact:

Bob Sickels
The Journal of the Society of Amateur Radio Astronomers
7605 Deland Ave.
Ft. Pierce, Fla 33451

HARDWARE AND APPLICATIONS DEMOS BECOME AVAILABLE

Carl Engle taps a number of providers of new, neat technologies as a part of his job and as a result is able to make arrangements for no-cost no-obligation demonstrations of hardware, systems and processes "after hours" to interested NAAPO representatives. As these events occur we will announce them in NAAPOnews. We will probably not have more than a week notice on such visits, but for those who are interested we will be glad to call with a special invitation.

Demonstrations will usually take place at Otterbein, or occassionally at Dreese Labs at OSU. Bob Dixon, Phil Barnhart and Bill Mook have asked to be notified as soon as such an event can be set up. If you would like your name included for a pre-demonstration call just get in touch with PEB at NAAPO Headquarters -- (614) 898-1516.

Scientists Listening For Space Voices Get Discouraging Words At Ohio State and Harvard, Radiotelescope Jobs Draw Little Money, Much Grief

By PAULETTE THOMAS
Staff Reporter of The WALL STREET JOURNAL

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MIDWEST EDITION

FRIDAY, OCTOBER 24, 1986

BOWLING GREEN, OHIO

COLUMBUS, Ohio - A team of intrepid Ohio State University astronomers searching for intelligent life in space has had its close encounters.

Take the one three years ago with a hostile group of club-wielding terrestrials: The Delaware Golf Club proposed expanding its golf course on the three-acre site of the group's radiotelescope, which has been scanning the skies for messages from intelligent extra-terrestrials for 13 years. To get their back nine, the golfers wanted to flatten the elephantine telescope, which resembles a pair of oversized drive-in movie screens.

Horried, the astronomers mounted a desperate "Save the Telescope" campaign. The golf-course expansion was "philosophically and morally preposterous," fumed astronomer Robert Dixon, who is in charge of the telescope operation. "This is the only radio observatory in the world where man is conducting a continuing search for other civilizations. There must be thousands of golf courses."

Those arguments helped persuade the golfers to drop their plan, but so did a less lofty concern: No one wanted to foot the \$160,000 bill to demolish the telescope.

The Search for ET

Such brushes with oblivion aren't unusual for the radio astronomers, who have had precious few signs of success in their quest for a spectacular scientific coup: the discovery of intelligent extra-terrestrial life. This small school of spunky scientists finds itself marooned between those who don't believe in little green men and, worse, those who believe only in little green men. The scientists' quest for respect and research money is every bit as challenging as their search for extra-terrestrial chatter on their radiotelescopes.

The odds against actually tuning in to an alien greeting are, well, astronomical. Harvard University in 1983 joined Ohio State in conducting full-time searches with radiotelescopes. The giant telescopes listen to—rather than look at—the six trillion stars in the known universe. Computers linked to the telescopes sift through the radio static in search of distinctive radio waves possibly sent out by living things.

"The scientific way would be to learn about the origins of life [through spectral analysis of stars and

through space probes] and determine where galaxies could support it. The shortcut is to find something out there and ask them about it," says astronomer Paul Horowitz of Harvard, who oversees research at a revolving 84-foot satellite dish.

In admittedly trying to make an end run around science, the astronomers have been the subjects of considerable scorn among their scientific brethren and even in Congress. They even earned the ignominious Golden Fleece award from Sen. William Proxmire of Wisconsin when the National Aeronautics and Space Administration to 1978 unsuccessfully sought \$15 million for a radio-astronomy project.

A Skeptic's Opinion

"They do that work because they aren't really qualified to do anything else" in astronomy, Gene Capriotti, the chairman of Ohio State's astronomy department, says of the work being done at his own campus-by electrical engineers and volunteers acting as radio astronomers rather than by optical astronomers like Mr. Capriotti.

Frank Tippler, an astrophysicist at Tulane University, is also skeptical. "It's a boondoggle-a tremendous waste," he says. "They are like evangelicals-this is a religion. They think these people will come to save us from ourselves."

Besides contending with scientific skeptics, the researchers are also hindered by a publicly perceived link to some pretty spacey outfits. One is Unarius, a group of several hundred space buffs who predict a landing of extra-terrestrials near their headquarters of El Cajon, Calif. In 1981, the Unarian "Space Brothers" posted a billboard to greet an expected alien landing party, but were stood up. "Our landing dates were wrong because we were confusing messages received in previous lives," a Unarius spokesman explained.

Mr. Dixon says with a sigh, "They don't exactly help our cause. It's guilt by association."

With little government support, Ohio State's Mr. Dixon relies on "donations, scrounges and shady dealings." Though a computer company has promised a replacement, the group makes do with a huge, chugging 20-year-old computer that is three years older than its programmer, a high-school math whiz who works as a volunteer. Mr. Dixon tried to stimulate interest-and contributions-with a quarterly astronomy magazine, but that folded after 13 issues. "It was supposed to be nonprofit, but we gave new meaning to those words," Mr. Dixon says.

The radio astronomers have attracted support from some better-known stargazers. Hollywood's Steven Spielberg, creator of the cuddliest extra-terrestrial, donated \$100,000 to Harvard's telescope research. Pop astronomer Carl Sagan acknowledges that the search for extra-terrestrial intelligence has often been confused with the most lurid science fiction. "But the technology has permitted us to step out of speculation, and into experimental science," he says. And, in fact, NASA is currently developing a new computer that will scout eight million radio frequencies at once in the search for extra-terrestrial activity, lending credibility to the radio astronomers' research goals.

Nonetheless, the results of research so far have been something less than a giant leap for mankind. One Harvard researcher thought he had a breakthrough when a computer picked a signal from space with a strength that registered well above the average of five or so emitted from most interstellar objects. "We have a four and a nine!" the researcher shrieked. "A four and a nine! It's a 49!" However, that enthusiasm was diminished when less excitable researchers noted where the revolving dish was pointed. "Unfortunately," Mr. Horowitz recalls, "we had discovered the sun."

Ohio State's research zenith was more provocative. In 1977, a scientist scanned a telescope printout and found what fit perfectly the hypothetical descriptions of an alien greeting—a strong, artificial signal on a narrow band of frequencies. The scientist scrawled "Wow!" in the margin. But despite hundreds of efforts, the mysterious signal was never found again. In radio-astronomy circles, however, the "Wow!" event is still mentioned reverentially.

Man for decades has been intrigued with using electrical power to reach alien life forms. In 1899, inventor Nikola Tesla sent surges of electricity up a mast into a copper ball at Pikes Peak, Colo., in what he hoped was a highly charged hello to other planets. Mr. Telsa [sic; Correct spelling is "Tesla"; JRE-Ed.] certainly succeeded in communicating with at least some intelligent life. The experiment inadvertently lit up incandescent lights for 30 miles around.

In 1960, astronomer Frank Drake became the first person to use a radiotelescope to search for alien life forms. His work paved the way for other radio astronomers to discover pulsars, neutron stars whose existence had been hypothesized by physicists but never proved.

Today, astronomers hope that new technology will hasten a discovery that will attract public support. NASA is spending \$7.5 million over five years developing the computer program that will duplicate Mr. Drake's modest 1960 search in one one-thousandth of a second, says Mr. Drake, now of the, University of California at Santa Cruz. Ultimately, NASA hopes to attach the computer to radlotelescopes around the world. "It's the absolute cutting edge of the search," Mr. Drake says. He predicts that the advanced hardware will allow man to make contact by the year 2000.

But right now, the astronomers' biggest search is for bucks, and in that quest they try to drum up support by pointing out that a group of Soviets is trying to make contact first with its own radiotelescope search strategies. The Soviet star searches "are pretty terrible, with much less sensitive equipment," Mr. Drake concedes. "We don't like to say that, though," he adds. "We use their existence to generate support for our own program."

NAAPO TRUSTEE REBUTS WALL STREET JOURNAL

On Friday Oct 24 the Wall Street Journal featured Big Ear and Bob Dixon on the front page. The article (reprinted elsewhere in this issue of NAAPOnews) was not nearly as sympathetic to the radio observatory as we were expecting and no mention was made whatsoever of the work going into the observatory out of non-SETI sources. In light of the slant toward the controversy surrounding the viability of SETI research, this may be a partial blessing.

Bill Mook, a long-time supporter of both the American business community and Big Ear, fired off a carefully thought out letter to the Editors of WSJ. For the benefit of those who do not regularly read the

WSJ we have elected to print Bill's letter here.

Mr. William H. Mook, Jr.
4453 Masters Drive
Upper Arlington, OH 43220
October 23, 1986

Letters to the Editor
The Wall Street Journal
200 Liberty Street
New York, NY 10281

Dear Sirs,

Some points not mentioned in your recent article on the Ohio State University Radio Observatory (OSURO):

OSURO is a world class sky survey instrument. It is designed to analyze new and interesting objects and events in deep space, and has many notable discoveries to its credit. Robert Dixon has produced surveys of our galaxy which are standard reference works for astronomers worldwide. OSURO also supports an active program of non-SETI research in conjunction with its SETI activities.

Any revolutionary idea, such as SETI, generates strong feelings among experts. The resulting competition is however of a scientific and not a political nature. Such competition between segments of the scientific community is the only process which results in revolutionary scientific progress.

Despite furious debate among experts, the existence or non-existence of ET's is an open question, but one which can be settled by experiment. Evolution, biology and astronomy all allow for the existence of ET's, just as they allow our existence. Radio sky surveys, such as the one supported at OSURO, are as yet the only practical experiment available which can advance this question and for that reason they are valid science and should be done.

Sincerely,

William H. Mook, Jr.
Trustee
NAAPO/OSURO

[Note. I have a link to an image of the newsletter reproduction of Bill Mook's letter. [Click here.](#) Jerry Ehman, Webpage Editor]

WORKING SESSION

Nov 1 1986

at Big Ear

In Attendance: Barnhart, Bolinger, Davis, Dixon, Guthrie, Huck, Mikesell, Mitchell, Mook, Rogers, Rugare.

Dixon and Barnhart are going to be featured on a show with Judy Cramer on the topic of extraterrestrial life. Airing is 14 Nov., 2:30pm, WOSU-AM (820 kHz).

Susan Leach, a NAAPO trustee, has been named Ohio's Teacher of the Year. We had hoped to get story on her for this issue, but alas, she has been elusive.

Barnhart is traveling to Manchester College on 6-7 Nov. He will be speaking to the Society of Physics students about NAAPO on Thurs. and will talk to 2 physics and 2 physical science classes on Friday (no lunch!).

Gene Mikesell reported that maintenance on the flat reflector is continuing while weather permits.

The 11/23 software is developing well. Jim Bolinger did a great job on the 11/23 remounting! It is now complete and the 11/23 is up again with a few glitches.

Bill Mook reported that Horowitz is trying to compile the pieces of "suitcase SETI" scattered about his family room. He hopes to have it to us in the near future.

Barnhart is still working on the Winter Consortium meeting agenda. Some issues to consider: student opportunities at Big Ear and at their home institutions, ongoing SETI research, new projects for Big Ear, and possible use of compact disc for data storage.

It was decided to allow corporations to become members of NAAPO upon receipt of membership contribution in the neighborhood of \$100.

Walt Mitchell reported that there is a large following of the goings-on at Big Ear among the members of GLPA (Great Lakes Planetarium Association). GLPA members are high school students who circulate among many planetariums. This is a great opportunity for continued exposure of Big Ear and NAAPO to interested and talented people. He also brought back lots of information from NASA/Lewis which was distributed for general perusal.

Meeting was adjourned. Next meeting is 15 Nov., 1986, 10:00am.

NEXT WORKING SESSION:

NOVEMBER 15 at BIG EAR

FIRST DECEMBER WORKING SESSION

LOCATION CHANGE!

DUE TO AN AMATEUR RADIO 160-METER CONTEST AND THE OFFER OF USE OF THE FACILITIES AROUND BIG EAR TO THE OSU RADIO CLUB, THE FIRST DECEMBER WORKING SESSION WILL BE HELD AT THE HOME OF PHIL BARNHART -- 4655 INDIAN COURT -- WESTERVILLE, OHIO.

MAPS WILL BE PROVIDED THOSE WHO WISH TO ATTEND.

DECEMBER 6, 1986

10:00 am AT BARNHART'S

Address all comments, letters and questions to:

NAAPO Coordinator
Dr. Philip E. Barnhart
Dept of Physics/Astronomy
Otterbein College
Westerville, OHIO 43081
(614) 898 1516

NOTED IN PASSING . . .

NSF has granted \$3.74 million to a five university consortium to build a 140 inch telescope in New Mexico. This is 3.556 million wavelengths at 1 micron. The instrument should be in operation by 1988.

Space Telescope Science Institute is offering a " . . . few hours of observing time . . . " reserved for use by amateurs. Opening for proposals will be announced shortly by STScI.

Astronomical Society of the Pacific is offering three new sets of recent slide images. They are "Halley's Comet Revealed" (17 ground based images), "Voyager at Uranus" (15 slides) and "Splendors of the Universe" (15 of the magnificent David Malin color images from the Anglo-Australian Telescope). For information contact ASP Catalog Requests Dept., 1290 24th Ave., San Francisco, CA 94122.

Cambridge University Press has an interesting looking book: "Numerical Recipes - - The Art of Scientific Computing" with FORTRAN or PASCAL diskettes! Total cost is \$60. If any consortium member has one, send us a review. It sounds like something we all ought to have.

William Graham has just been confirmed as Presidential Science Advisor. He is an EE so we will have to see how effectively he champions the cause of astronomy (both radio and optical) to the administration headed by Bonzo. Perhaps we should put him on the NAAPOnews mailing list.

A SLIP OF THE PEN

As happens to all great journalists I let slip a misrepresentation of Kip Thorne's Sigma Xi lecture last week at Battelle Auditorium. He lectured on the 25th of October, and I played the ex post facto game and had him lecturing on the 18th. I hope my mistake did not foul up anyone who wanted to go hear him.

I did not make it so will await a report from someone who did.

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Designed by Jerry Ehman

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